

Research on the Attention of Consumers in the Process of Crisis Evolution

-- Take Meituan as an Example

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Abstract

At present, China is still in the stage of normalized prevention and control of COVID-19. Understanding the characteristics and changing trends of catering consumers' attention during the COVID-19 event will help meet the needs of consumers and help companies cope with the crisis. This study divides the crisis evolutionary stages based on the crisis life cycle theory and obtains research data through the Meituan platform. We apply the content analysis methodology (semantic feature analysis and word frequency Co-occurrence analysis) to conduct data mining on the online reviews of consumers in three stages of crisis and comparatively analyze the characteristics and changing trends of catering consumers' attention. This study find that, with the evolution of the crisis, crisis characteristics begin to become obvious, and catering companies with superior dish hygiene quality, taste, and service level can more facilitate consumers' willingness to consume again.

Keywords

COVID-19; Crisis Life Cycle; Semantic Feature Analysis; Word Frequency Co-occurrence Analysis; Attention.

1. Introduction

In recent years, with the transformation of China's industrial structure, the consumption service industry has gradually occupied a dominant position in the national economy [1], especially the scale of catering companies in the national economy is at a steady growth level [2]. However, the sudden outbreak of COVID-19 in early 2020 has brought a huge impact to the operations of Chinese companies. Catering companies have been hit particularly hard due to social distancing, stay-at-home orders and public health concerns [3]. At this time, it is crucial for catering companies to understand the characteristics of consumers' attention, and to further meet the needs of consumers, so as to gain market competitiveness. Attention is the initial stage of the consumer behavior process [4], which reflects consumers' information preferences and attention distribution within a certain time and within a certain range of resources [5]. The COVID-19 event is a serious public health crisis [6]. American crisis management scientist, Steven·Fink, puts forward the crisis life cycle theory, which suggests that a public crisis has formed a life cycle from its generation to extinction. Existing studies usually divide the evolutionary stage of the crisis according to the crisis life cycle theory, including four stages: the prodromal stage of crisis, the outbreak stage of crisis, the chronic stage of crisis, and the healing stage of crisis [7]. Since COVID-19 has not subsided, this study divides the evolution of COVID-19 into three stages: the prodromal stage of crisis, the outbreak stage of crisis, and the chronic stage of crisis. Consumer attention in an emergency public health crisis refers to consumers' preference and attention to commodity information during an emergency public

health crisis [8]. Studies have shown that the more attention commodities receive, the more likely they are to be selected [9], that is, the higher consumers' attention to a feature, the stronger their willingness to purchase and preference. However, it is unclear what the characteristics and changing trends of consumers' attention during the evolution of the crisis. Therefore, it is crucial to study the characteristics and changing trends of catering consumers' attention in different stages of crisis, so as to meet the needs of consumers and help companies cope with the crisis.

2. Methods Data

2.1. Data Sources

In terms of platform selection, the Meituan platform is the earliest and largest independent group buying platform in China [10], with a high market share and an user influence; in terms of sample selection, Meituan takeaway and online ordering have become the first choice of contemporary young people [11]. The base of consumer demand is large and the content of reviews is rich. Based on the above two points, this study takes the COVID-19 event as the background, grabs the consumers' reviews on the Meituan platform throughout the crisis life cycle for text analysis, and studies the characteristics and changing trends of catering consumers' attention in three stages of crisis, which provide reference and basis for meeting the needs of consumers and helping companies cope with the crisis.

2.2. Data Collection and Data Preprocessing

This study uses the Octopus Collector to crawl the online reviews of consumers on the Meituan platform as data sources. The time span is from 2019.10.18 to 2020.12.31, which represents the rapid spread of COVID-19 in China. The crisis was divided into three stages according to special time points. The time of the Wuhan Military Games was 2019.10.18, the time of Wuhan's lockdown was 2020.1.23, and the time of Wuhan's unblocking was 2020.3.25. The crisis was slowly being exposed from the Wuhan Military Games to the lockdown of Wuhan, so we regarded this stage as the prodromal stage of crisis (2019.10.18-2020.1.23); the number of COVID-19 infections and confirmed cases rose sharply and catering companies closed one after another from the lockdown of Wuhan to the unblocking of Wuhan, so we regarded this stage as the outbreak stage of crisis (2020.1.24-2020.3.25); the period from the unblocking of Wuhan to the end of December 2020 had begun to resume work and production, and had entered a stage of normalized prevention and control, so we regarded this stage as the chronic stage of crisis (2020.3.26-2020.12.31). Three crisis stages constitute a crisis life cycle. Data collection is performed on the content of consumer reviews in three stages of crisis. The final number of collected comments is 15,201, of which 5,679 in the prodromal stage of crisis, 435 in the outbreak stage of crisis, and 9,087 in the chronic stage of crisis. Few consumers' reviews were collected due to the depression of the catering industry in the outbreak stage of crisis and the short outbreak time.

Data preprocessing includes two parts: data cleaning and data normalization. First, in order to improve the accuracy of this study, we filter repeated reviews and meaningless characters in the reviews. Second, we standardize the filtered reviews of consumers, such as combining words in the same context.

3. Analysis and Results

3.1. Semantic Feature Analysis

The difference of semantic features in different stages of crisis can be demonstrated through the difference of knowledge meta-words. In this study, Ros-Tcm6 software is used for word segmentation and word frequency statistics, and then the knowledge meta-words of different

stages of crisis is extracted. Zhang et al. [12] classify consumer reviews according to the attributes of knowledge meta-words, including commodity characteristic words, emotional characteristic words, and service characteristic words. According to their classification criteria, knowledge meta-words such as “dishes, type, taste, and value for money” are defined as commodity characteristic words; knowledge meta-words such as “service, attitude, enthusiasm, and waiter” are defined as service characteristic words; knowledge meta-words such as “environment, location, clean, and traffic” are defined as environmental characteristic words; knowledge meta-words such as “disinfection, epidemic, dispersion, and temperature measurement” are defined as crisis characteristic words.

The characteristics of consumers’ attention have experienced three stages: the prodromal stage of crisis, the outbreak stage of crisis, and the chronic stage of crisis. The characteristics and levels of consumers’ attention are different in three stages of crisis, as shown in Figure 1:

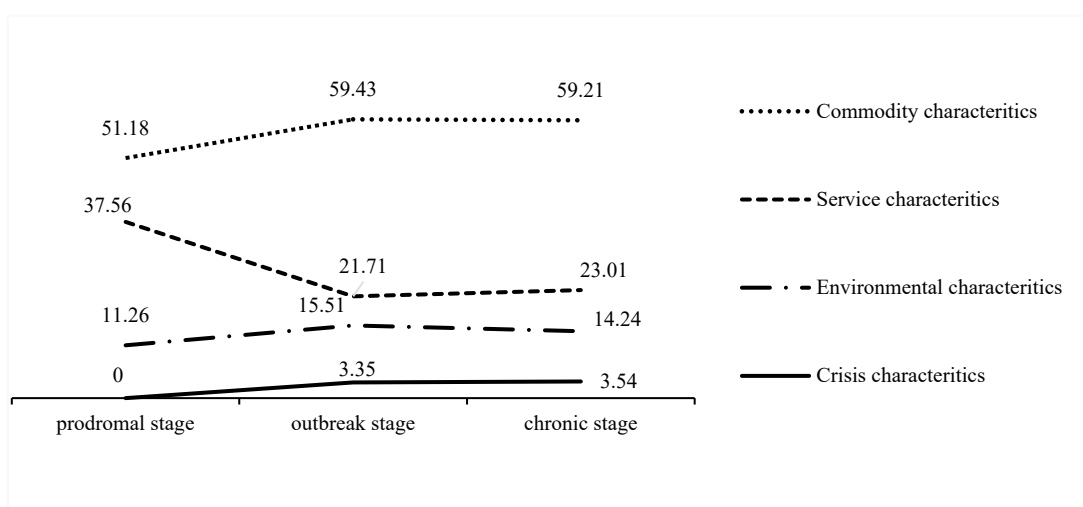


Fig 1. Change trend of consumer attention characteristics

There are similarities and differences in the content of consumers’ reviews in three stages of crisis. In terms of similarity, the commodity characteristics ratios in three stages of crisis are the highest, which are above 50%. The crisis characteristics ratios in three stages of crisis are the lowest, and the crisis characteristics ratio is 0 in the prodromal stage of crisis. It shows that consumers pay more attention to commodity characteristics throughout the crisis life cycle, while consumers are not aware of the seriousness of the crisis in the prodromal stage of crisis and their perception of the crisis is relatively weak; from the semantic characteristics of consumers’ reviews, we can know that the intensity of attention from strong to weak is as follows: commodity characteristics, service characteristics, environmental characteristics, and crisis characteristics.

In terms of differences, consumers’ attention to commodity characteristics and environmental characteristics continues to rise. Although the commodity characteristic ratio and the environmental characteristic ratio in the chronic stage of crisis are 0.22% and 1.27% lower than those in the outbreak stage of crisis, they are generally rising throughout the crisis life cycle. It shows that consumers pay more attention to commodity quality and restaurant environment in the context of crisis, that is, consumers mainly consider their own safety and pay less attention to objective conditions (such as service characteristics); crisis characteristic words begin to appear in the outbreak stage of crisis, and the crisis characteristic ratio gradually rises. The crisis characteristics of consumers’ reviews are obvious, indicating that consumers begin to realize the seriousness of the crisis in the outbreak stage of crisis. It is not until the chronic stage of crisis that consumers’ awareness of self-prevention becomes strong.

3.2. Word Frequency Co-occurrence Analysis

This study applies Ros-Tcm6 software for social network analysis to further reveal the Co-occurrence network relationship of knowledge meta-words. The node represents the high-frequency knowledge meta-words, and the larger the node indicates the higher the degree of centrality; the connection of the nodes represents the Co-occurrence relationship between the knowledge meta-words, and the thicker the line indicates the stronger the Co-occurrence relationship between the knowledge meta-words. Knowledge meta-words with large nodes and thick lines are the concentrated expression of consumers' attention characteristics, which has guiding significance for meeting the needs of consumers and helping companies cope with the crisis. The social network diagrams of high-frequency knowledge meta-words in three stages of crisis are shown in Figure 2, Figure 3, and Figure 4:

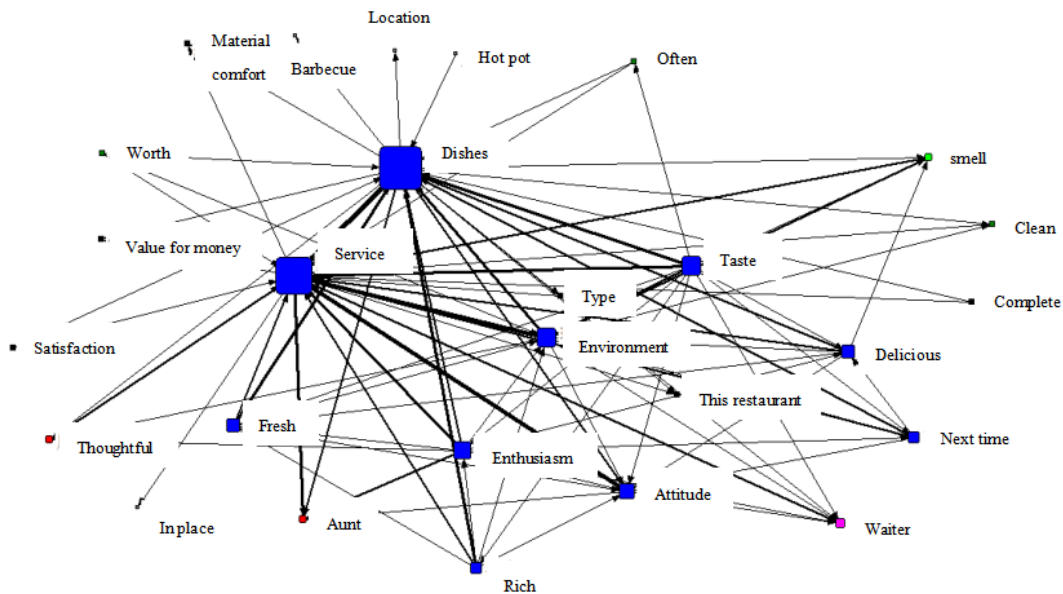


Fig 2. The social network diagram of high-frequency knowledge meta-words in the prodromal stage of crisis

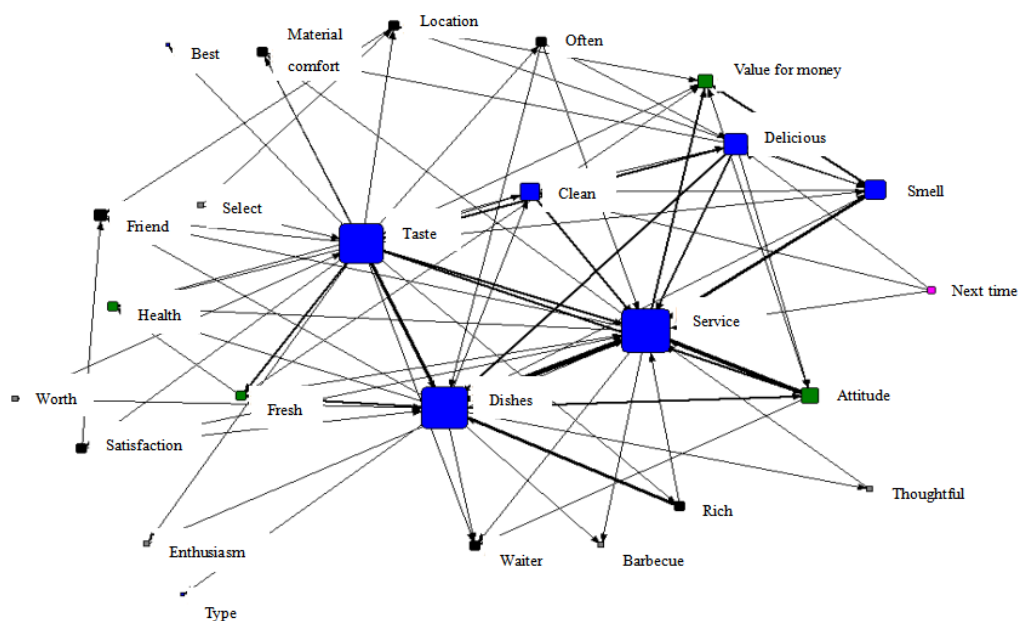


Fig 3. The social network diagram of high-frequency knowledge meta-words in the outbreak stage of crisis

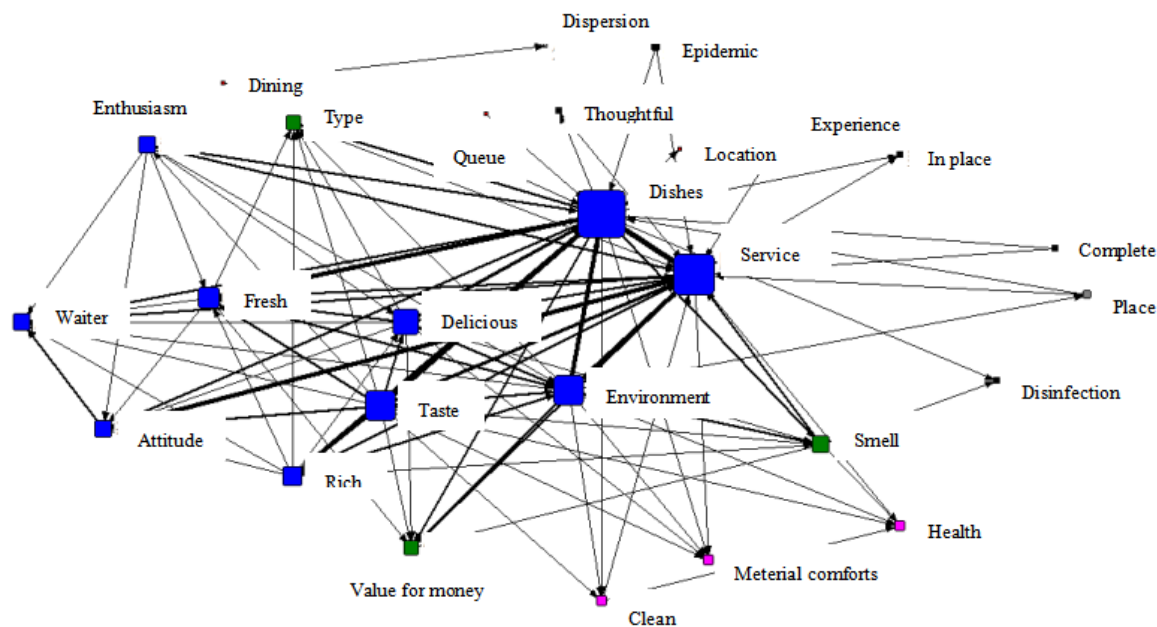


Fig 4. The social network diagram of high-frequency knowledge meta-words in the chronic stage of crisis

There are similarities and differences in the social network diagrams of high-frequency knowledge meta-words in three stages of crisis. In terms of similarity, high-frequency words such as “dishes and service” in three stages of crisis have the highest degree of centrality and it is intuitively seen that the high-frequency words connected to them are the most, indicating that consumers pay more attention to commodity characteristics and service characteristics, which guide potential consumers’ consumption decision-making.

In terms of differences, although high-frequency words such as “taste, environment, attitude, enthusiasm, rich, and fresh” in the prodromal stage of crisis are not highly central, the connections between them are relatively close, indicating that consumers pay more attention to the taste, service level and environmental quality of catering companies; the high-frequency word such as “next time” with the willingness to consume again has a high connection with “dishes, service, taste, enthusiasm, and attitude”, indicating that catering companies with superior dish taste and service level can facilitate consumers’ willingness to consume again. The degree of centrality of “taste” increased in the outbreak stage of crisis. In this stage, catering companies rarely receive customers offline, so consumers mostly purchase commodities through takeaway, indicating that consumers who purchase commodities online pay more attention commodity characteristics -- “taste”; although high-frequency words such as “clean, delicious, and smell” are not highly central, the connections between them are relatively close, indicating that consumers not only pay attention to the smell of commodities, but also pay attention to the hygiene quality of commodities in the outbreak stage of crisis; the high-frequency word such as “next time” with the willingness to consume again has a high connection with “service, delicious, and clean”, indicating that consumers have increased crisis awareness, and only catering companies with superior dish hygiene quality, taste, and service level can facilitate consumers’ willingness to consume again. Although high-frequency words such as “waiter, delicious, taste, enthusiasm, attitude, fresh, and rich” in the chronic stage of crisis are not highly central, the connections between them are relatively close, indicating that consumers’ requirements for catering companies are increasing. For example, it is specific to the service level of a waiter, the variety of dishes, and the hygienic quality of dishes; high-frequency words such as “distributed dining, epidemic, disinfection, health, and clean” have appeared. Although the degree of their centrality is not high, the appearance of new

characteristics should attract the attention of catering companies, indicating that consumers in the chronic stage of crisis are fully aware of the seriousness of the crisis and have the need to cope with the crisis.

4. Conclusions and Limitations

This study uses consumer reviews on the Meituan platform as data sources, and uses Ros-Tcm6 software to analyze the content of consumer reviews during the COVID-19 event. We finally draw the following conclusions: ①commodity characteristics are the most important intelligence content for consumers throughout the crisis life cycle, followed by service characteristics, environmental characteristics, and crisis characteristics. These characteristics have a guiding role in the consumption decision-making of potential consumers; ②with the evolution of the crisis, consumers pay more attention to commodity characteristics and environmental characteristics, while their attention to objective conditions (such as service characteristics) has declined. Especially, consumers pay more attention to the hygienic quality of commodities in the outbreak stage of crisis and the chronic stage of crisis; ③crisis characteristics begin to appear and the crisis characteristic ratio gradually rises in the outbreak stage of crisis, indicating that consumers begin to realize the seriousness of the crisis and have the need to cope with the crisis in the outbreak stage of crisis; ④consumers pay more attention to “taste” in the outbreak stage of crisis. The reason is that catering companies rarely receive customers offline, and consumers mainly purchase commodities through takeaway in the outbreak stage of crisis. At this time, consumers’ perception of “taste” is more acute; ⑤catering companies with superior dish taste and service level can facilitate consumers’ willingness to consume again in the prodromal stage of crisis. From the outbreak stage of crisis, consumers’ willingness to consume again is also constrained by the hygiene quality of dishes.

The theoretical contributions of this study are as follows: ①existing studies on the attention of consumers are mostly based on a static viewpoint, which considers the crisis as an event to study attention. However, based on the dynamic view, the research on the crisis as a process to explore the changing trends of consumers’ attention is insufficient, which leads to incomplete research on consumers’ attention and ineffective use of the value of public attention. Based on the crisis life cycle theory, this study divides the evolution of crisis into three stages: the prodromal stage of crisis, the outbreak stage of crisis, and the chronic stage of crisis. We comparatively analyze the characteristics and changing trends of catering consumers’ attention in three stages of crisis, and find the characteristics and levels of consumers’ attention are different in three stages of crisis. It contributes to further mining the value of consumers’ attention; ②in the analysis of the content characteristics of consumers’ attention, existing studies mainly focus on three aspects: commodity characteristics, service characteristics and emotional characteristics, but does not consider the background of consumers, which leads to incomplete analysis of attention. This study takes into account the background of consumers and introduces environmental characteristics and crisis characteristics, which make the analysis results more detailed and provide new analysis ideas for attention research.

This study provides practical implications for managers as follows: ①for catering companies, commodity characteristics are the most important intelligence content for consumers throughout the crisis life cycle, and with the evolution of the crisis, consumers pay more attention to commodity characteristics and environmental characteristics. Thus, catering companies should focus on improving the taste of commodities and ensuring the hygiene quality of commodity and environment to influence consumers’ decision-making, which in turn affect the overall situation of catering companies. In addition, catering companies should adopt some crisis response strategies when they realize that a crisis is coming, such as using the health code of the Meituan platform to enter the store for dining, setting up distributed dining seats for consumers,

and setting up a temperature measurement system at the entrance of restaurants. Companies take these effective measures to influence consumers' willingness to consume again and to further enhance the competitive advantage of catering companies. In general, managers of catering companies can provide information and in-kind support to mitigate the consequences of similar crisis to catering companies and help companies cope with the crisis; ②for consumers, they should increase their own activity, interact frequently and sincerely on the Meituan platform, and publish their feelings and experiences in a timely manner, so that catering companies can clearly understand consumers' psychology and better meet the needs of consumers.

This study has some limitations: ①this study only uses Meituan platform as the data source, which is relatively single; ②this study only discusses the characteristics and changing trends of online consumers' attention. Future study will expand data sources and dig deeper into the characteristics and changing trends of consumers' attention in different comment methods.

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