# Bibliometric research on brand reputation and brand crisis theory

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**Abstract.** This paper uses visual software such as Price law and Citespace to search for brand reputation topics, brand reputation and brand crisis keywords, the relationship between brand reputation and brand crisis, and the relationship between the two and other fields were analyzed by quantitative statistical method. At the same time, the author's frequency, high citation frequency is analyzed by using NoteExpress document management software, and time zone is analyzed by using visualization software such as Citespace, study on brand reputation and brand crisis.

**Keywords:** brand reputation; brand crisis; bibliometrics; knowledge graph; visualization software

## 1    Introduction

Brand reputation is the core asset to cultivate consumer loyalty. A good brand reputation can not only enhance consumers' trust in the brand, help the brand establish a loyal customer group, but also form a positive image perception and promote consumers' emotional identification with the brand.

The concept of brand reputation in foreign countries is early. Scholars define brand reputation from their own perspective. Aaker & Keller, an influential scholar, defined brand reputation in 1990 and believed that consumers' overall perception and evaluation of product quality related to brand name were the results [1].

Good brand reputation is an important factor for the survival of an enterprise's brand, which has a profound impact on the development of the enterprise. It is the impression and evaluation of the brand formed by consumers based on their own experience of products or services or indirect information. Many scholars have pointed out in their studies that brand reputation will have a positive impact on consumers' awareness and behavior. Good brand reputation is an important factor for the survival of an enterprise's brand, which has a profound impact on the development of the en-

terprise. It is the impression and evaluation of the brand formed by consumers based on their own experience of products or services or indirect information. Many scholars have pointed out in their studies that brand reputation will have a positive impact on consumers' awareness and behavior.

Rosenthal, an international famous authority on crisis management theory, proposed that crisis refers to "an event that seriously threatens the basic value of the code of conduct framework of a social system, and must make key decisions in the case of high time pressure and uncertainty" [2].

In order to make up for the lack of scholars' research focus on brand reputation and brand crisis, this paper takes brand reputation and brand crisis from 1996 to February 2022 as the key words, brand reputation as the synonym, Chinese literature as the research object, and uses relevant software to conduct visual analysis, so as to provide scientific reference value for the research on brand reputation and brand crisis.

## 2    Research methods and data sources

### 2.1    Data source

The author analyzes the current situation of brand reputation and brand crisis with several bibliometric methods, and deeply excavates its development trend with data and atlas, so as to have a deeper understanding of brand reputation and brand crisis from a more intuitive perspective, and thus draw a conclusion about the closeness of brand reputation and brand crisis to other fields. Based on the literature sources of Chinese Journal Full Text Database (CNKI) journals, the author collected and sorted out all the journal data from January 1996 to February 2022 with the earliest publication time of brand reputation and brand crisis as the starting point, and finally obtained 917 effective documents after screening by removing foreign literature through advanced search keywords brand reputation or including brand reputation and brand crisis.

### 2.2    Research tools and data processing method

1. Citespace visual analysis software. The mapping of scientific knowledge can show the development trend of a discipline or knowledge field in a certain period of time, and effectively grasp the evolution process of research frontiers.
2. COOC literature measurement software. COOC is a software for document measurement and knowledge mapping, which can process many databases at the same time and make co-occurrence matrix, keyword cloud map and cluster map.
3. Sati bibliography information statistical analysis tool. Sati can realize co-occurrence analysis, cluster analysis, multi-dimensional scale analysis and social network analysis by processing the title information of journal full-text database.

# 3    Literature data analysis

## 3.1    Trend of brand reputation and brand crisis literature

The author counted the number of periodical literatures of "brand reputation" and synonyms of "brand reputation" and "brand crisis" from January 1996 to February 2022 in CNKI, and obtained 917 valid literatures. Figure 1 shows the annual average number of documents issued.
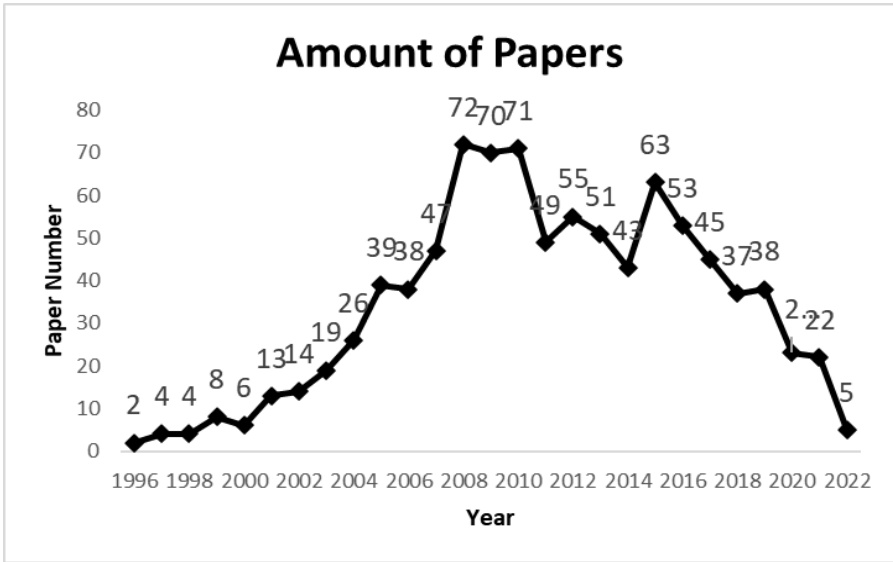


**Fig. 1.** The topic of brand reputation and brand crisis in literature's profile (Data from CNKI database)

Figure 1. shows that the number of literature on brand reputation and brand crisis is decreasing in waves. The research on brand reputation and brand crisis by Chinese scholars started relatively late. In the figure, from 1996 to 2000, the research on brand reputation and brand crisis was stagnant, with only 24 articles published in five years. The brand reputation and brand crisis in this period did not attract enough attention from scholars; The research on brand reputation and brand crisis by Chinese scholars started relatively late. In the figure, from 1996 to 2000, the research on brand reputation and brand crisis was stagnant, with only 24 articles published in five years. The brand reputation and brand crisis in this period did not attract enough attention from scholars; From 2001 to 2007, the research on brand reputation and brand crisis was on the rise, and 196 papers were published in this period. Scholars began to pay attention to the research on brand reputation and brand crisis; 2008-2010 was the peak period of brand reputation and brand crisis research. The number of papers issued in the three years was 213, and the theoretical development was gradually mature and concerned by scholars; From 2011 to 2022, the number of papers on brand reputation and brand crisis began to decline, and the number of papers in this decade was only 484.

At this time, scholars paid more attention to the impact of brand reputation and brand crisis on brand equity, brand trust, brand image, etc.

## 3.2    Author distribution analysis

Analysis of high yield authors

The number of papers published and the frequency of citations are two important indicators that can evaluate the academic achievements and influence of an author. The number of papers published refers to the number of papers published by scholars in a journal during a certain period, which is an important indicator to measure the contribution of authors to the journal. Therefore, Price law is adopted in this paper,

[3] The calculation formula is mp = 0.749 $\sqrt{n_{p\ max}}$ . mp is the number of papers published by core authors at least in the statistical period; Npmax is the number of papers published by the most authors in the statistical period. Calculated by the formula: mp=0.749 × = 2.7. From February 1996 to February 2022, core authors in the field of brand reputation and brand crisis research were required to send more than 3 papers.

In Table 1, 11 authors with 4 or more articles published from 1996 to February 2022 are listed respectively. They belong to the high-yield author group in the field of domestic brand reputation and brand crisis research. Among them, Professor Yu Mingyang has a relatively high number of articles, 13. Professor Xu Anxin, Professor Xue Ke and Professor Wei Haiying each wrote 8 articles.

**Table 1.** The frequency distribution of high yield authors (Data from CNKI database）

| High frequency authors | Frequency | Proportion % |
|---|---|---|
| Yu Minyang | 13 | 1.199 |
| Xu Anxin | 8 | 0.738 |
| Xue Ke | 8 | 0.738 |
| Wei Haiying | 8 | 0.738 |
| Yang Changzheng | 5 | 0.461 |
| Yu Shihong | 5 | 0.461 |
| Wu Xiaobing | 5 | 0.461 |
| Chen Xi | 4 | 0.369 |
| Liu Xia | 4 | 0.369 |
| Duan Hong | 4 | 0.369 |
| Shan Congwen | 4 | 0.369 |

# 4    Keyword analysis

## 4.1    Keyword frequency and centrality analysis

Keyword frequency and centrality analysis, to a certain extent, reflect the correlation of a certain research field. In this paper, Citespace visualization analysis software is used to make statistics and visualization of the number of keywords, and the displayed data information includes specific frequency and centrality. As shown in Table

2, the first six keywords with high frequency and centrality are displayed. It can be seen that "brand crisis" has occurred 339 times, and the centrality is 0.742; "Brand reputation" has appeared 80 times, with a centrality of 0.606; "Brand reputation" appeared 88 times, with a centrality of 0.512, indicating that brand crisis is more closely connected with brand reputation and brand reputation. The brand reputation and brand reputation are close to each other. Secondly, the frequency of brand image and brand is 27 and 46 respectively, and the centrality is 0.606 and 0.589, indicating that brand crisis will also have a direct impact on brand image and brand.

**Table 2.** Frequency and cardiac keywords of 1996-2022 (Data from CNKI database)

| Keywords | Frequency | Centrality |
|---|---|---|
| Brand crisis | 339 | 0.742 |
| Brand reputation | 80 | 0.606 |
| Brand trust | 88 | 0.512 |
| Brand image | 27 | 0.606 |
| Brand | 46 | 0.589 |
| Consumers | 39 | 0.574 |

## 4.2    Time Zone analysis of research frontier keywords

This paper uses Citespace visualization software to draw a time zone view of brand reputation, as shown in Figure 3. Try to analyze the interaction and evolution path of brand reputation and brand crisis from the hot topics studied from 1996 to 2022. The time sequence is arranged from left to right; The time zone view is composed of a number of bars representing the time zone. Brand reputation and brand reputation first appeared in domestic literature in 1996, and brand crisis was first proposed in 1997. Over time, scholars have paid more attention to consumer satisfaction and enterprises' understanding of brand image, brand and crisis.
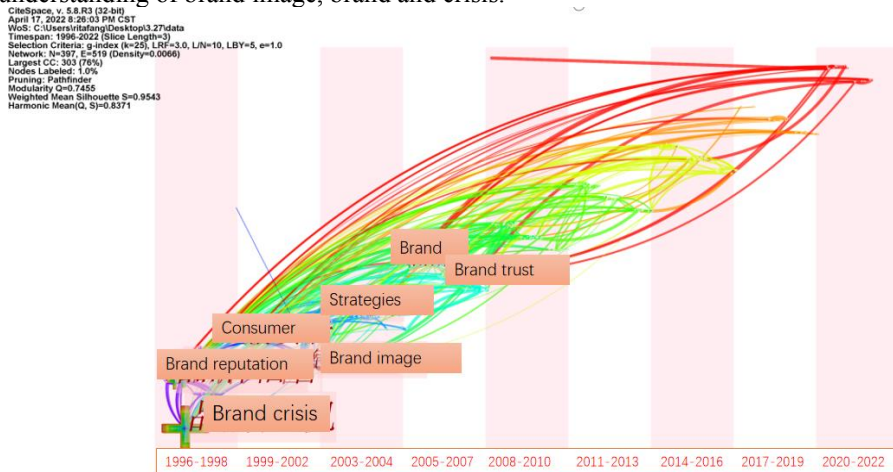


**Fig. 2.** The visualization of time-zone (Data from CNKI database)

# 5     Empirical Analysis

## 5.1     Keyword co-occurrence analysis

Co-word analysis uses the frequency of keyword co-occurrence in literature to reflect the mainstream research direction among scientific fields. It is generally believed that the more frequent the word pairs appear in the same literature, the closer the relationship between the two subjects is. Keyword co-occurrence analysis is used to construct keyword network, and the visualization of keyword network shows the degree of correlation between keywords more intuitively.

In this paper, co-occurrence matrix of COOC bibliometrics software is used, and coocurrence matrix can be obtained by importing data into COOC and transforming it, through the community clustering matrix of COOC, we can get some related indexes, such as middle centrality, near centrality and feature vector centrality, and draw the map of keyword co-occurrence matrix. AS shown in Figure 3.
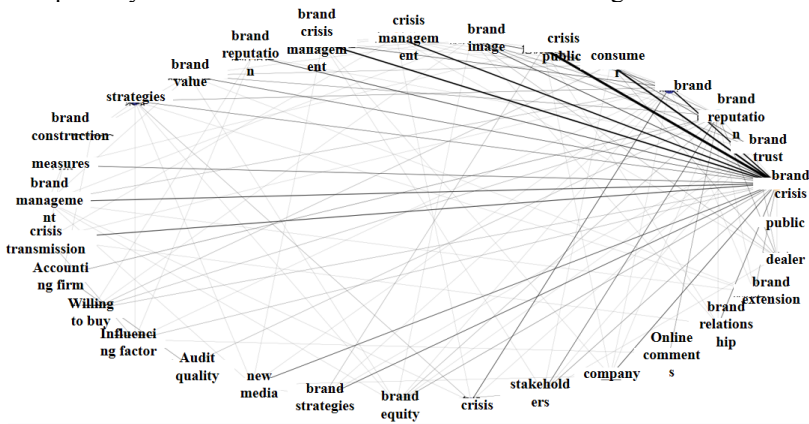


**Fig. 3.** The keyword co-occurrence matrix

As can be seen from Figure 3, brand crisis, brand reputation and brand reputation are most closely linked, the line is bold black, the distance is also the nearest, and with the brand image, Crisis Public Relations, Brand Crisis Management Link is secondary, the line is black, the distance is relatively far point. And other keywords have a certain relevance. Only the line is relatively thin, the distance is relatively far. That is to say, brand crisis, brand reputation and brand reputation for keywords and other key words of the relationship between the closeness of the thickness of the line, reflected by the distance between the near and far.

## 5.2     Hierarchical Clustering Analysis of keywords

In order to explore the hierarchical relationship between high-frequency keywords and to make use of the relationship between keyword brand reputation and brand crisis, this paper uses the statistical analysis tool of Sati Bibliography to import key-

word data into the system, select the keyword frequency of more than 10 times or more, get the keyword clustering analysis. You can analyze the relationship between keywords. As shown in Figure 4.
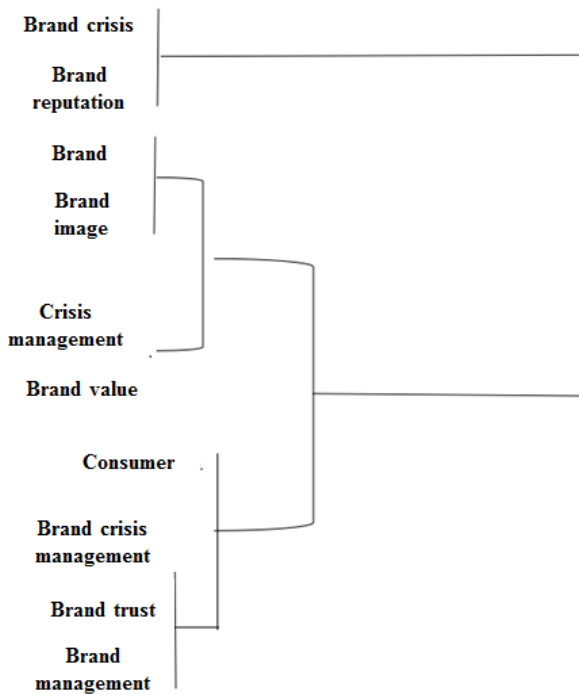
Fig. 4. The keyword cluster analysis

Figure 4 is the key word level cluster analysis, divided into two levels to study, the first level is the brand crisis and brand reputation, they have the highest correlation between the two, that is to say, brand crisis will involve brand reputation, bring certain influence to the brand reputation. There is a first level between them. The second layer is brand, brand image, crisis public relations and brand value and consumers, brand crisis management, brand reputation and crisis management. That is to say, in addition to the impact of brand crisis on brand reputation, at the same time, it will also bring about the research on brand, brand image, Brand Value, consumers, brand crisis management, brand reputation and crisis management.

# 6    Conclusion

Through the retrieval of journal papers on brand reputation and brand crisis from 1996 to February 2022, the following conclusions can be drawn after a detailed analysis of the literature age, journal sources, institutions, authors and keywords:

From the retrieval records, the research on brand reputation and brand crisis has been more than 25 years. The number of domestic research papers on brand reputa-

tion and brand crisis reached its peak in 2008-2010, but there has been a downward trend in the past decade. Scholars mostly study the impact of brand crisis and brand reputation on corporate brand equity, brand trust, brand image, etc.

The author uses co occurrence analysis, Citespace and other bibliometric methods to describe the relevance and extension of brand reputation and brand crisis. Thus, the basic theory of brand reputation and brand crisis, the crisis of brand reputation, brand trust, stakeholders, etc. will become the research focus in the field of brand reputation and brand crisis. From the perspective of social responsibility and consumers, more and more scholars realize that brand crisis has a positive or negative impact on brand reputation, and the prevention mechanism of brand crisis extends to brand trust, stakeholders and other issues.

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