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Research on Brand Value Dimensions of Employers: Based on Online Reviews by the Employees

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Abstract

This study investigates employees' online reviews, conducts in-depth text topic mining, effectively summarizes the dimensions of employer brand value, and seeks effective ways to build employer brands from a multi-dimensional perspective. This study employs samples of employer reviews, filter keywords according to word frequency-inverse document frequency, builds a review network containing the same keywords, explore the community and summarize the theme dimensions. Simultaneously, it makes a dynamic comparison and analysis of the employer brand value dimension of different industries and enterprises. The study shows that the community exploration theme can be summarized into 11 dimensions of employer brand value, and the dimensions of employer brand value are significantly different across industries and among different enterprises within the industry. The attention to the employer brand value dimension has a significant time change. Various industries pay increasing attention to the dimension of work intensity and career development, while employers pay steady attention to the dimension of welfare benefits. The findings of this study suggest that seeking the heterogeneity of employer brand resources from the multi-dimensional differences and changes is an effective way to improve the competitiveness of enterprises in the human capital market.

Keywords: Online Review, Employer Brand, Co-occurrence Network, Community Detection, Topic Mining

JEL Classification Code: M12, M14, M54, O15

1. Introduction

In the era of a knowledge economy, effective control of intellectual capital has become the key for more and more enterprises to gain sustainable competitive advantage. According to the 2022 Best Employer Report in the United States, enterprises with the brand value of “Best Employer” have higher competitive advantages than other enterprises at the same level. This makes more and more enterprises realize the importance of employer brand value. The effective promotion of employer brand value can narrow the gap between enterprises and the best employers, thus

attracting outstanding talents and accumulating intellectual capital (Ghielen et al., 2020).

Employer brand is the characteristic or image created by employers to attract target talents in the human resource market (Backhaus, 2004). Since Simon Barrow and Ambler put forward the concept of brand theory in marketing in 1996, the research on employer brands has focused on brand dimension and brand value. Generally speaking, the differences in employer brand value mainly come from two aspects: one is the differences in the structure and characteristics of different industries (Nappa, 2022). Second, the differences in resource conditions and strategic choices across different enterprises (Gunesh & Maheshwari, 2019). Previous studies mainly analyzed brand dimensions through questionnaire surveys or desk data (Schätzle et al., 2022). Due to the limitation of empirical data, we can only show the static distribution of brand value in a specific industry or enterprise, but cannot make conduct dimensional comparisons and dynamic analysis across industries or enterprises. Recently, countless users of social media have been generating countless user-generated content (UGC), which is data, information, or media created voluntarily

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by people and usually provided on the Internet (Krumm et al., 2008). Especially with the emergence of social platforms in the workplace, such as Glassdoor, Indeed, LinkedIn, and kanzhun.com. It is beneficial for employees to fully communicate their work experience and employer information. A large number of online employee reviews on the website provide a reliable data source for effectively mining the employer brand value dimension (Robertson et al., 2019; Pitt et al., 2019).

In addition, most of the previous studies discussed the effectiveness of enterprises in transmitting their unique image (external employer brand) from the external perspective of potential job seekers (Belinda et al., 2018). However, relatively few studies explored the value commitment of enterprises to employees (internal employer brand) from the internal perspective of employees. Potential job seekers perceive the external employer brand through various media, with the ultimate goal of perceiving employees' employment experience and fully understanding the relationship between employers and employees (Bustaman et al., 2020; Chițu, 2020). The essence of this process is the perception of the value of the internal employer brand. Recent studies have emphasized the importance of online feedback from employees on the attractiveness of the company as an employer and the overall reputation of the company (Symitsi et al., 2021; Stamolampros et al., 2019; Song et al., 2020).

Therefore, this study has contributed to the marketing literature in three aspects. First of all, from the perspective of internal employer brand, this paper makes relevant research to reveal the spatial distribution and formation mechanism of employer brand value. Secondly, using the topic mining method of co-occurrence analysis and community exploration, the employer brand value dimension can be extracted from employees' online reviews according to word frequency-inverse document frequency. Thirdly, the difference and time series evolution of employer brand value in different industries and enterprises are discussed, which provides a decisive basis for the formulation of employer brand strategy.

2. Literature Review and Research Framework

2.1. Employer Brand Value Dimension

At present, research on employer brands has developed from theoretical exploration to dimensional division. The employer brand dimension is originally based on the brand theory of marketing, which is divided into functional interests, economic interests, and psychological interests (Ambler & Barrow, 1996). Since then, many scholars have measured and evaluated the dimensions of employer brand value from three perspectives: (1) External employer brand for potential job seekers include employer attractiveness,

best employer, corporate image, and employer brand image (Gatewood et al., 1993; Kissel, & Büttgen, 2015; Hoang et al., 2020; Yang et al., 2022a, 2021; Zhang et al., 2021), which are mainly divided into symbolic and functional characteristics. (2) Internal employer brand for employees includes work experience, employment experience, and employee engagement (Ruch, 2001; Huang et al., 2015; Hoang et al., 2020; Knop, 2022; Koukaras et al., 2020; Bibi et al., 2022), which are usually divided into development value, incentive value, work environment value, work value, and work-life balance. (3) Employer brand from a comprehensive perspective includes the dimension division of salary and welfare, personal development opportunities, organizational culture atmosphere, and corporate image label under the theme of employer brand equity value and social concern (Pattnaik & Misra, 2016; Nguyen & Nguyen, 2021; Pernkopf et al., 2020; Samoliuk et al., 2022; Keppeler & Papenfuß, 2022).

Although the research is conducted from different perspectives, the three perspectives pay attention to the dimension division of employer brand value. Because of the limitation of data acquisition, research mainly perceives the static distribution of employer brand value in a specific industry or enterprise from the perspective of potential job seekers. In contrast, there are very few studies on dimensional comparison and dynamic analysis of cross-industry or multi-enterprise from the perspective of employees. However, due to the lack of information, potential job seekers can't make an objective and comprehensive evaluation of the enterprise, so they usually make use of the employees' work experience to make a job intention. Therefore, it is necessary from the perspective of employees to study the employer brand value dimension of different industries and enterprises.

2.2. Online Review Topic Mining

Recently, from the perspective of consumers, domestic and foreign scholars have studied the usefulness, emotional tendency, and influence of online text features by means of quantitative analysis and topic mining (Kakirala & Singh, 2020; Nguyen et al., 2021; Liao et al., 2022, Love & Singh, 2011; Lievens et al., 2005; Ji et al., 2023). However, there are few kinds of research on the dimension mining of employer brand value from employees' perspective. Among them, co-word analysis is the most commonly used quantitative analysis method, which is used to determine the relationship between topics according to the co-occurrence of words or phrases (Yang et al., 2019). It is not only used to determine the theme of literature but also used to mine the theme of online data (Mao et al., 2020). In contrast, the topic mining method based on machine learning is usually used to mine keywords and calculate the similarity between texts (Li et al., 2019), to obtain more comprehensive and specific content (Yang et al., 2022b). The LDA model is the main method for

topic mining (Ma et al., 2016; Huang et al., 2022), but it is not suitable for short texts.

Therefore, some scholars have put forward the method of topic mining by combining co-occurrence analysis and community exploration, which reflects the relevance between texts and the consensus among users. This method not only effectively avoids the limitations of a single word describing a topic, but also accurately detects the correlation between topics and each other.

2.3. Research Framework

Based on the above research background and literature review, this paper attempts to mine the online review data of the workplace social platform by using the methods of co-occurrence analysis and community detection and make a comparative analysis of the cross-industry and

cross-enterprise dimensions of employer brand value. Figure 1 shows the framework of the study.

Step 1: Extract keywords from online reviews. Firstly, the online reviews are pre-processed with filtering, word segmentation, and stop-word removal, to obtain a vocabulary database. Then, TF-IDF (word frequency-inverse document frequency) weighting technique was used to calculate the initial keywords that ranked the top five in importance in each review. Finally, to filter topic keywords better, we eliminated redundant words and combined words with the same meaning. Among them, the calculation formula TF-IDF is:

$$TF-IDF_{i,j} = TF_{i,j} \times IDF_i$$

$$= \frac{n_{i,j}}{\sum_k n_{k,j}} \times \lg \frac{|D|}{\{j : t_i \in d_j\}} \tag{1}$$

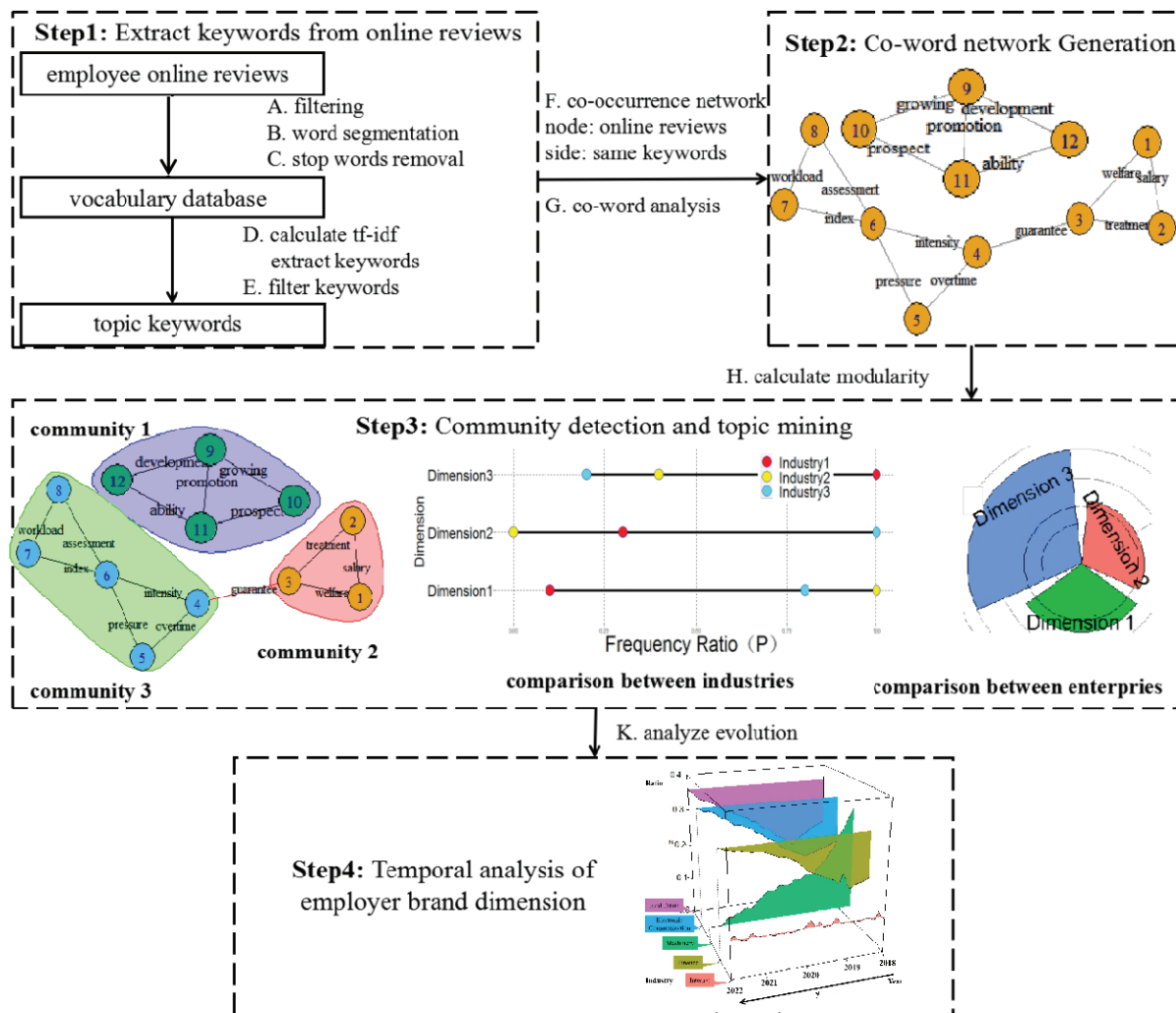


Figure 1: Flow Chart of Research Design

In the formula, $n_{i,j}$ the number of times the word appears in a review (d_j), $\sum_k n_{k,j}$ is the sum of all words in a review (d_j), $|D|$ the total number of reviews in the data set, and $j: t_i \in d_j$ the number of reviews with the word (t_i).

Step 2: Co-word Network Generation. To reflect the internal relationship between the topic keywords, the co-occurrence relationship is constructed based on whether the review set contains the same topic keywords. The nodes are online reviews, while edges are the keywords with the same topic in the co-occurrence network.

Step 3: Community detection and topic mining. By calculating the modularity, the nodes and edges that are closely related in the co-word network can be divided into the same community, and then the theme dimension of the employer brand can be extracted and compared. Among them, the modular calculation formula is:

$$Q = \frac{1}{2m} \sum_{ij} \left(A_{ij} - \frac{k_i k_j}{2m} \right) \delta(i, j) \quad (2)$$

$$\delta(i, j) = \begin{cases} 0, C_i \neq C_j \\ 1, C_i = C_j \end{cases}$$

In the formula, $2m$ is the sum of the number of edges in the network, A_{ij} is the number of edges between nodes (review i and j), k_i (or k_j) represents the sum of the number of edges connected to review i (or j). $\delta(i, j)$ is used to determine whether reviews i and j belong to the same community (i.e. C_p, C_c).

In addition, the modularity should be optimized: a. Each node should be regarded as a community, and the communities should be merged according to the criteria of maximizing modular increment. b. Taking the merged community as a new node to build the network, and then repeating the steps of a., until the modularity of the community does not change, and the optimal division is achieved.

Step 4: Temporal analysis of employer brand dimension. Based on the frequency ratio of the employer brand dimension in different industries, the dynamic time series slope diagram is drawn to reveal the time evolution of employees' attention to the employer brand dimension in different industries.

3. Data and Methodology

3.1. Data Acquisition and Pre-processing

By comparing online reviews' reliability, relevance, and universality on some employer information release websites, we acquire employee reviews from kanzhun.com. Textual

data in the form of a review is accompanied by a star rating provided as an overall assessment of an employer. To display the employer's brand more intuitively, the website divides the overall evaluation data into Select and Latest reviews. The reviews were collected anonymously on employment status, employee position, keywords of reviews, short reviews, star rating, long reviews of classification issues, and posting date (see Figure 2).

According to the "2021 College Graduate Employment Market Prosperity Report" released by Zhaopin.com, the "2022 Employment Relationship Trend Report" released by Zhaopin.com and Peking University International Development Institute, and the "Mid-and-High-end Talent Employment Data Report for the third quarter of 2022" released by Liepin, The five industries with the best job growth were Internet, electronic and communication, finance, pharmaceutical, and medical industries and machinery manufacturing. Based on the platform attention of these five industries, we select three enterprises with high attention from each industry to collect employee review data, which are as follows: Internet industry (Baidu, Tencent, Alibaba), Electronic and communication industry (Huawei, ZTE, Unicom), financial industry (Bank of China, Industrial and Commercial Bank of China, Ping An of China), pharmaceutical and medical industry (Hengrui Pharmaceutical, Fosun Pharmaceutical, Kangmei Pharmaceutical) and machinery manufacturing industry (Zoomlion, Sany Heavy Industry, Shanghai Electric).

In addition, the report shows that in terms of industry dimension, Internet-related industries dominate job recruitment. The proportion of job postings in IT, communications, electronics, and Internet industries has increased year by year, from a quarter before the pandemic to nearly a third after the pandemic. Therefore, we focused on retrieving cross-enterprise online employee reviews in the Internet industry for comparison of differences within the industry. In the end, we collected 9,064 reviews from 15 companies in five industries.

As the overall reviews in the online review data are a high summary of employees' job satisfaction and the focus on employer brand, they can provide a better reference value for the subsequent text mining. Because most of the selected enterprises are benchmarking enterprises in the industry and pay more attention to building the employer brand than other enterprises, most of the employees' scores on the enterprises are above three stars and most of the reviews are positive. Therefore, employees pay more attention to these enterprises. By collecting overall evaluations, only 3.7 percent were "dissatisfied." Finally, by filtering the extreme data, 8869 reviews were retained as a data sample.

The following process shows the steps to pre-process the original data to make it suitable for co-occurrence analysis and community detection in *R* language: (1) Each complete sentence is divided into different words.

The screenshot displays two examples of online reviews from the platform Kanzhun.com. Each review is presented in a structured layout with various filters and tags.

Review 1 (Top):

- Summary:** 全部点评 · 999+ (All Comments · 999+), 精选 | 最新 (Select | Latest)
- Classification:** Review Classification
- Status:** 状态: 在职 离职 (Employment Status: On-the-job departure)
- Position:** 岗位: 其他 产品经理 C++ Java 实习生 产品运营 内容运营 后端开发 其他职位 更多 (Employee Position: Product Manager; C++; JAVA; intern; Product Operation; other positions...more)
- Keywords:** 关键词: 福利好 氛围好 待遇好 环境好 氛围很好 工资高 福利待遇好 加班多 更多 (Key Words of Reviews: Good Welfare; Good Atmosphere; Good Treatment; ...High Wages...more)
- Rating:** Perfect! Start Rating (完美! ★★★★★)
- User:** 匿名用户 任职: 产品总监 在职 (Anonymous Users Employee Position: product detector On-the-job)
- Content:** #岗位必备特质 Essential Job Characteristics (long reviews of classification issues). 工资高, 公司市值高, 前景很好。这里工作非常的自在了 而且还能学到知识 这里的人也很好相处 而且老板也经常给我们创造学习的平台, 还有50万无锡贷款, 爽歪歪。 #你的司龄有多久... How long have you been with the company?...
- Posting Date:** 2020-07-20 发布 (Posting Date)

Review 2 (Bottom):

- Classification:** Single Review
- Rating:** Great Start Rating (很棒 ★★★★★)
- User:** 匿名用户 任职: 数据标注 工作过 (Anonymous Users Employee Position: Data Annotations Departure)
- Content:** #你的司龄有多久 How long have you been with the company?... 员工福利很好, 总部滨海大厦的设施齐全, 健身房, 食堂, 篮球场等等。各种节日还会发放贴心的小礼品。 #我想对老板说..... I want to talk to my boss... (long reviews of classification issues)
- Posting Date:** 2020-07-07 发布 (Posting Date)

Figure 2: Online Review Structure from Kanzhun.com

(2) Under-represented information in online reviews is filtered such as punctuation, emoticons, English words, etc.
 (3) Stop words are removed to reduce noise introduced due to higher frequency words providing primary information about the review.

3.2. Keywords Extraction of Online Review

The top three words of TF-IDF value in each online review were calculated and retained, and 9,216 initial keywords from cross-industries and 2,856 initial keywords from cross-enterprise in the Internet industry were obtained. Due to the high repeatability and a large number of initial

keywords, the following screening classification is needed: (1) verbs and adverbs are excluded, such as “comparison” and “frequent”; (2) phrases with the same meaning, such as “income”, “money” and “salary” are synthesized into “salary”. (3) Eliminate words that do not influence the employer brand value, such as “enterprise”, “company” and “Baidu”, etc.

3.3. Co-word Network Generation and Topic Mining

To explore the employees’ attention to employer brands in different industries and enterprises, we built a

Table 1: Results of Co-Word Networks and Community Detection Across Industries

| Industry | Number of Nodes | Number of Edges | Number of Communities |
|---------------------------------------|-----------------|-----------------|-----------------------|
| Internet industry | 1221 | 88265 | 10 |
| Electronic and communication industry | 1083 | 74951 | 11 |
| Financial industry | 979 | 67788 | 10 |
| Pharmaceutical and medical industry | 436 | 19274 | 9 |
| Machinery manufacturing industry | 658 | 46772 | 11 |

co-occurrence network according to whether the theme keywords appear together. In the co-occurrence network, the nodes are employees' online reviews, while the edges are topic keywords. At the same time, Table 1 shows the results of community exploration and topic mining based on modularity.

Because the themes of some communities are not unique, the following measures should be taken: (1) Summarize the dimensions of the employer brand value. Based on the community detection results, the topic keywords can be summarized into 11 topics, namely, the employer brand value dimension. (2) Calculate attention. According to the word frequency of the topic keywords, the attention degree of the dimension is calculated through the normalization process (i.e., the dimension with the highest word frequency is set as 1, and the other dimensions are calculated on this). (3) Extract employer brand value. According to the literature review, we conclude that the organization's management and working atmosphere belong to the internal mechanism of the enterprise and the ecological environment of employees, which is called environmental value. The salary level and welfare benefits are indicators related to the economic interests of employees, which are called economic value. Career development and job stability reflect the employee's future career planning and development desire, called development value. Work strain and operational indicators are the main sources of work stress, called psychological value. Enterprise reputation, enterprise nature, and technical level belong to the external characteristics of enterprises and are the external influences of enterprise, which are called reputation value.

4. Data Analysis and Results

4.1. Comparison of Employer Brand Value Dimensions

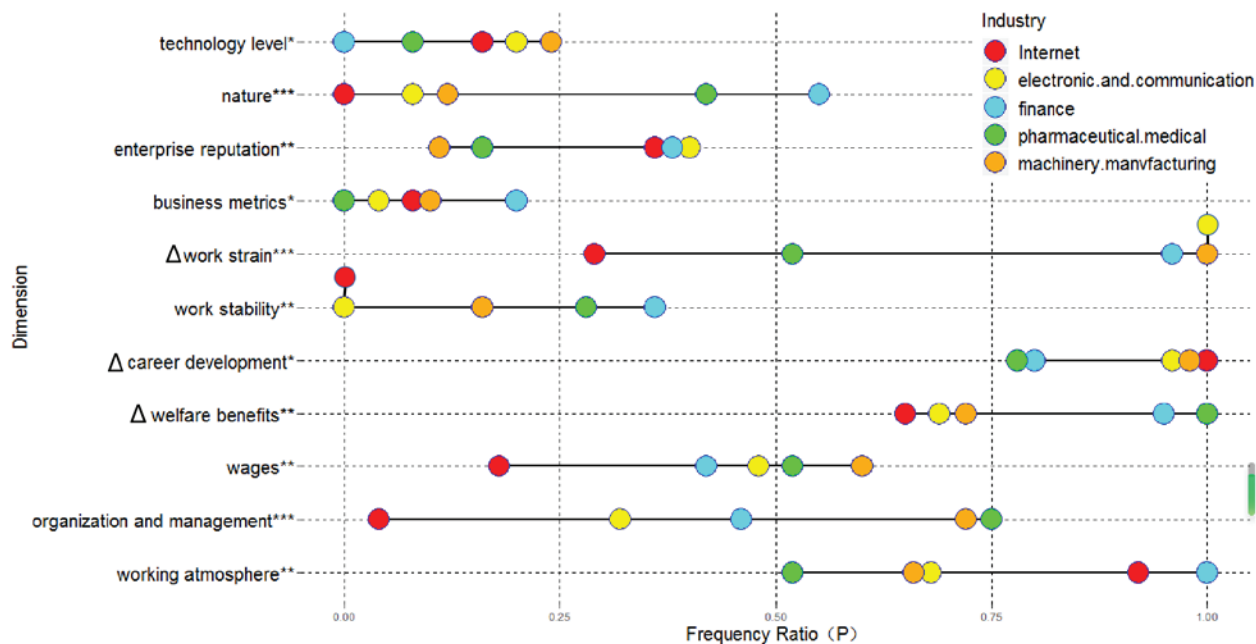
4.1.1. Comparison of Dimensions by Industry

Under the influence of industry characteristics, employees in different industries have obvious differences

in the evaluation of employer brand value. We use ΔP_k to represent the significant difference in employer brand value dimension in different industries. By expressing this $\Delta P_k = \text{Max}(P_{ki} - P_{kj})$, the dimensions of employer brand value in different industries can be better described. Among them, $K \in D$, D is a collection of dimensions, $i \neq j$, and $i, j \in H$, H is a collection of industries. In addition, \overline{P}_k is introduced to represent the focus of the employer brand value dimension in an industry. If $\overline{P}_k > 0.75$, employees pay close attention to this industry (see Figure 3).

Figure 3 shows that the ΔP_k value of the three dimensions is very significant. (1) Enterprise Nature. As can be seen from the figure, this dimension only attracts high attention in the financial and pharmaceutical, and medical industries. This is because, unlike the emerging industries of the Internet and electronic communication, most of these two industries are state-owned, and their job stability and enterprise nature are hot topics for employees. (2) Organization and Management. This dimension is paid more attention in the pharmaceutical and medical, and mechanical manufacturing industries but less attention in the Internet industry. This is because the pharmaceutical and medical and mechanical manufacturing industries, as the pillar industries of the national economy, have a stricter management system than the Internet industry, which has a freer working atmosphere. (3) Work Strain. This dimension has been highly a concern in several industries except for the Internet. According to "Big Data Report on Talent Outlook Trends in 2019," we know that different industries have different workloads and overtime hours. The working pressure of the machinery manufacturing industry is the highest among all industries. The working pressure of the electronic and communication and finance industry is higher than the average level of all industries, but the working pressure of the Internet is lower than the average level of all industries.

Figure 3 also shows that $\overline{P}_k > 0.75$ has three dimensions. (1) Work Strain. As overtime has become a common phenomenon throughout all industries, work strain is the focus of most industries. (2) Career Development. This dimension is of great concern in every industry. With the



Annotation: “ \odot ” is a special diagram to avoid duplication points, which means that the frequency ratio of a certain dimension in different industries is the same;

Assumption: *means $0 < P_K \leq 0.25$; Not significant.

**means $0.25 < P_K \leq 0.5$; significant.

***means $P_K > 0.5$; very significant.

Δ represent a hot spot of high concern.

Figure 3: Employer Brand Dimension Difference Diagram of Different Industries

breakthroughs of emerging technologies, it has penetrated many fields, and the demand for talent in every industry is increasing. (3) Welfare Benefits. This dimension is mainly focused on the financial and pharmaceutical and medical industries. Due to the impact of the epidemic, employees and job seekers are faced with a severe employment situation. In terms of work experience, different from employees in high-paying industries, they tend to be more pragmatic and conservative and pursue the welfare benefits of work.

4.1.2. Dimension Comparison of Internet Enterprises

Because of the differences in resource selection and strategy formulation, enterprises in the industry independently influence the brand image of employers and show different concerns in the dimension of employer brand value (see Figure 4).

By comparing the attention of the two enterprises in various dimensions, there is no obvious difference in the overall distribution. Both enterprises pay more attention to the working atmosphere and career development, which is consistent with the Internet industry environment

created by focusing on innovation ability training, personal development, and a humanistic atmosphere.

However, employees of the two enterprises pay different attention to organizational management, salary level, and welfare treatment. On the one hand, it is caused by the differences in the shaping of enterprise culture. Tencent advocates the “ruixue spirit” while Baidu advocates the “Wolf spirit”. On the other hand, it is caused by differences in work levels and salary structures. Taking technical posts as an example, Tencent has t1–t6 grades and each of which is divided into three subsets. Among them, t2.3 stands for key positions, and positions above t3.1 have stocks and options. In addition, all employees can receive an annual salary of 15.3 to 18 months. Unlike Tencent, Baidu divides its employees into t1–t9 categories, while t5 stands for key positions holding stocks and options. In addition, all employees can receive 14.6 months’ salary every year.

4.2. Temporal Analysis of Employer Brand Value

By calculating the frequency ratio of hot dimensions (work strain, career development, welfare benefits) of each

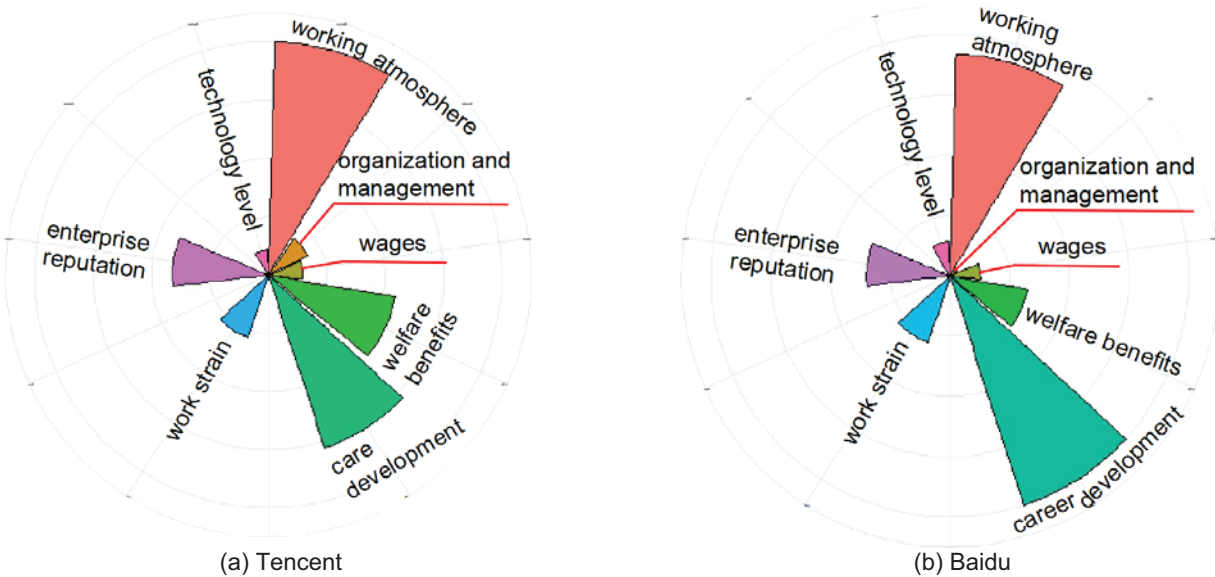


Figure 4: Distribution of Employer Brand Dimensions Among Enterprises in the Industry

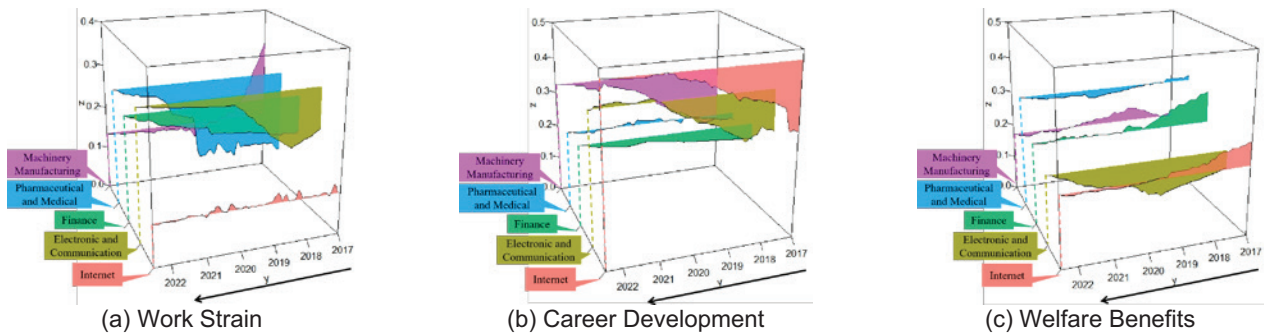


Figure 5: The Trend in Employer Branding Dimensions Over Time

industry each month, we analyzed the temporal evolution of the dimensions of employer brand value in a specific period of time, and the results are shown in Figure 5.

1. Work Strain. Figure 5(a) shows that employees in different industries have different trends in paying attention to work strain. Among them, it is a common phenomenon that the Internet industry is under great work pressure, and employees have a steady concern about it. In addition, due to the fixed content of work in the machinery industry, employees pay less attention to the work pressure. On the contrary, industries that have been most affected by the pandemic (i.e., electronic and communication, finance, and pharmaceutical and medical industries) have seen significant increases in work strain concerns since 2020.

2. Career Development (see Figure 5(b)). With the rapid development of technology, the career development of technology-oriented industries (i.e. internet, electronic and communication, and machinery manufacturing industries) has been attracting more and more attention until it leveled off. On the contrary, due to the stable working environment, corporate nature, and job content of the financial and pharmaceutical, and medical industries, employees’ attention to career development is relatively stable without major fluctuations.

3. Welfare Benefits (see Figure 5(c)). Industries that have long advocated high benefits (i.e. internet, finance, pharmaceutical and medical industries, and machinery manufacturing industries) show stable attention to it, while the electronic communication industry shows a certain degree of fluctuation.

5. Conclusion

By using the topic mining method to explore the differences in employees' attention to these dimensions, we get the following several results:

1. This work investigated reviews posted by employees on online social media streams to classify into five different employer brand value categories including 11 dimensions, i.e. environmental value (working atmosphere and organization and management), economic value (wages and welfare benefits), development value (career development and work stability), the psychological value (work strain and business metrics) and reputation value (enterprise reputation, nature, and technology level).
2. The dimensions of employer brand value are significantly different among different industries. Cross-industry differences are mainly manifested in enterprise nature, work strain, and organizational management. Work strain, Career development, and welfare benefits are the focuses of most industries. Because industry characteristics determine the dimension performance, there are some differences in employer brand value dimension among enterprises in the industry. However, due to the influence of corporate culture and strategy formulation, there are great differences in salary levels, welfare benefits, and organizational management dimensions.
3. Influenced by the development trend of the industry and the changes in the relevant human resources market, the dimensions of employer brand value vary from industry to industry within a certain period.

Its theoretical significance is as follows: (1) Text mining based on online employee reviews can reveal the dimensional distribution and different changes of employer brand value more truly and effectively than previous questionnaire research methods. (2) The method of co-word network and community detection method based on the relationship between the reviews are very suitable for topic mining of this kind of data. (3) Comparing and analyzing the dimensional differences across industries and enterprises can provide a more effective method to explain the heterogeneity of employer brand resources.

Based on the above results and discussion, there are the following revelations to the strategies and practices of employer brand building:

1. Enterprises should attach importance to the internal employer brand strategy in human resource management and employer brand building. If the company only pays attention to external propaganda

to build the employer brand, it is difficult for them to achieve sustained success. The reason is that with the popularization of online workplace communication platforms, potential job seekers will gain a value perception through online employee reviews, which will influence their job choice.

2. Enterprises should improve their competitiveness in the human resource market according to the difference between employer brand strategy in industries and enterprises. Because of the openness of online data, enterprises should learn from the employer brand advantages of the competitors within the industry and the differences across industries. According to the online database, enterprises can effectively promote the employer brand, and make the employer brand strategy fully match the industry characteristics.

In addition, this paper has a few limitations: Firstly, due to the insufficient data samples of "dissatisfaction", we could not carry out emotional analysis, so we only explored the dimensions of employer brand value. Secondly, instead of studying the different enterprises in all industries, we only selected data from the representative Internet industry to analyze the differences across enterprises within the industry. Thirdly, the time span is relatively short, which limits the evolution process of employees' attention to the employer brand. Therefore, in future research, we can select a large number of data with a long time span for emotional analysis and other studies.

References

- Ambler, T., & Barrow, S. (1996). The employer brand. *Journal of Brand Management*, 4(3), 185–206. <https://doi.org/10.1057/bm.1996.42>
- Backhaus, K. B. (2004). An exploration of corporate recruitment descriptions on monster.com. *Journal of Business Communication*, 41(2), 115–136. <https://doi.org/10.1177/0021943603259585>
- Belinda, C. D., Westerman, J. W., & Bergman, S. M. (2018). Recruiting with ethics in an online era: Integrating corporate social responsibility with social media to predict organizational attractiveness. *Journal of Vocational Behavior*, 109, 101–117. <https://doi.org/10.1016/j.jvb.2018.10.001>
- Bibi, N., Bin Saeed, B., & Afridi, M. A. (2022). An integrated approach to linking job love with contextual factors and performance: An empirical study from Pakistan. *Journal of Asian Finance, Economics, and Business*, 9(5), 157–169. <https://doi.org/10.13106/jafeb.2022.vol9.no5.0157>
- Bustaman, H. A., Mohd Nor, M. N. M., Taha, A. Z., & Zakaria, M. (2020). Job seeker attraction to organizational justice mediated by organizational reputation. *Cogent Psychology*, 7(1), 1. <https://doi.org/10.1080/23311908.2020.1816255>

- Chițu, E. (2020). The importance of employer branding in recruiting young talents. *Postmodern Openings*, 11(3), 220–230. <https://doi.org/10.18662/po/11.3/209>
- Gatewood, R. D., Gowan, M. A., & Lautenschlager, G. J. (1993). Corporate image, recruitment image, and initial job choice decisions. *Academy of Management Journal*, 36(2), 414–427. <https://doi.org/10.2307/256530>
- Ghielen, S. T. S., De Cooman, R., & Sels, L. (2021). The interacting content and process of the employer brand: Person-organization fit and employer brand clarity. *European Journal of Work and Organizational Psychology*, 30(2), 292–304. <https://doi.org/10.1080/1359432X.2020.1761445>
- Gunesh, P., & Maheshwari, V. (2019). Role of organizational career Websites for employer brand development. *International Journal of Organizational Analysis*, 27(1), 149–168. <https://doi.org/10.1108/IJOA-01-2018-1327>
- Hoang, L. V., Vu, H. M., & Ngo, V. M. (2020). Factors affecting job pursuit intention in the hotel industry in Ho Chi Minh, Viet Nam. *Journal of Asian Finance, Economics, and Business*, 7(11), 281–290. <https://doi.org/10.13106/jafeb.2020.vol7.no11.281>
- Huang, M. J., Li, P. S., Meschke, F., & Guthrie, J. P. (2015). Family firms, employee satisfaction, and corporate performance. *Journal of Corporate Finance*, 34, 108–127. <https://doi.org/10.1016/j.jcorpfin.2015.08.002>
- Huang, S. Q., Zhang, J., Yang, C. X., Gu, Q., Li, M., & Wang, W. Q. (2022). The interval grey QFD method for new product development: Integrate with LDA topic model to analyze online reviews. *Engineering Applications of Artificial Intelligence*, 6, 114. <https://doi.org/10.1016/j.engappai.2022.105213>
- Ji, F., Cao, Q. W., Li, H., Fujita, H., Liang, C. Y., & Wu, J. (2023). An online reviews-driven large-scale group decision-making approach for evaluating user satisfaction of sharing accommodation. *Expert Systems with Applications*, 15, 213. <https://doi.org/10.1016/j.eswa.2022.118875>
- Kakirala, A. K., & Singh, D. P. (2020). The mediating role of social media in tourism: An eWOM approach. *Journal of Asian Finance, Economics, and Business*, 7(11), 381–391. <https://doi.org/10.13106/jafeb.2020.vol7.no11.381>
- Keppeler, F., & Papenfuß, U. (2022). Employer value propositions for different target groups and organizational types in the public sector: Theory and evidence from field experiments. *Review of Public Personnel Administration*, 11, 105. <https://doi.org/10.1177/0734371X221121050>
- Kissel, P., & Büttgen, M. (2015). Using social media to communicate employer brand identity: The impact on corporate image and employer attractiveness. *Journal of Brand Management*, 22(9), 755–777. <https://doi.org/10.1057/bm.2015.42>
- Knop, S. (2022). Internal branding and job satisfaction: Investigating the roles of brand individuality and personality-brand fit. *Industrial Marketing Management*, 107, 70–81. <https://doi.org/10.1016/j.indmarman.2022.09.017>
- Koukaras, P., Tjortjis, C., & Rousidis, D. (2022). Mining association rules from COVID-19-related Twitter data to discover words and inferences. *Information Systems*, 6, 109. <https://doi.org/10.1016/j.is.2022.102054>
- Krumm, J., Davies, N., & Narayanaswami, C. (2008). User-generated content introduction. *IEEE Pervasive Computing*, 7(4), 10–11. <https://doi.org/10.1109/MPRV.2008.85>
- Li, C., Feng, S., Zeng, Q. T., Ni, W. J., Zhao, H., & Duan, H. (2019). Mining dynamics of research topics based on the combined LDA and WordNet. *IEEE Access*, 7, 6386–6399. <https://doi.org/10.1109/ACCESS.2018.2887314>
- Liao, S. H., Widowati, R., & Lee, C. Y. (2022). Data mining analytics investigation on TikTok users' behaviors: Social media app development. *Library Hi Tech*, 13, 368. <https://doi.org/10.1108/LHT-08-2022-0368>
- Lievens, F., Van Hove, G., & Schreurs, B. (2005). Examining the relationship between employer knowledge dimensions and organizational attractiveness: An application in a military context. *Journal of Occupational and Organizational Psychology*, 78(4), 553–572. <https://doi.org/10.1348/09631790X26688>
- Love, L. F., & Singh, P. (2011). Workplace branding: Leveraging human resources management practices for competitive advantage through “best employer” surveys. *Journal of Business and Psychology*, 26(2), 175–181. <https://doi.org/10.1007/s10869-011-9226-5>
- Ma, J., Luo, S., Yao, J., Cheng, S., & Chen, X. (2016). Efficient opinion summarization on comments with online LDA. *International Journal of Computers Communications and Control*, 11(3), 414–427. <https://doi.org/10.15837/ijccc.2016.3.700>
- Mao, X., Huang, S., Li, R., & Shen, L. (2020). Automatic keywords extraction based on co-occurrence and semantic relationships between words. *IEEE Access*, 8, 117528–117538. <https://doi.org/10.1109/ACCESS.2020.3004628>
- Nappa, A. (2022). Co-created employer brands: The interplay of strategy and identity. *European Journal of Training and Development*, 17, 456. <https://doi.org/10.1108/EJTD-05-2021-0065>
- Nguyen, H. M., & Nguyen, L. V. (2021). Employer branding, scale development, and validation: From the context of Vietnam. *Journal of Asian Finance, Economics, and Business*, 8(5), 987–1000. <https://doi.org/10.13106/jafeb.2021.vol8.no5.0987>
- Nguyen, H. T., Tran, T. M., & Nguyen, G. B. (2021). Analyzing online customer reviews for the hotel classification in Vietnam. *Journal of Asian Finance, Economics, and Business*, 8(8), 443–451. <https://doi.org/10.13106/jafeb.2021.vol8.no8.0443>
- Pattnaik, S. K., & Misra, R. K. (2016). Employer value proposition: A conceptual framework and scale development for Indian information technology professionals. *International Journal of Human Capital and Information Technology Professionals*, 7(4), 15–32. <https://doi.org/10.4018/IJHCITP.2016100102>
- Pernkopf, K., Latzke, M., & Mayrhofer, W. (2020). Employer value proposition: A conceptual framework and scale development for Indian information technology professionals. *Human Resource Management Journal*, 31(2), 392–413. <https://doi.org/10.4018/IJHCITP.2016100102>

- Pitt, C. S., Plangger, K. A., Botha, E., Kietzmann, J., & Pitt, L. (2019). How employees engage with B2B brands on social media: Word choice and verbal tone. *Industrial Marketing Management*, 81, 130–137. <https://doi.org/10.1016/j.indmarman.2017.09.012>
- Robertson, J., Lord Ferguson, S. L., Eriksson, T., & Näppä, A. (2019). The brand personality dimensions of business-to-business firms: A content analysis of employer reviews on social media. *Journal of Business-to-Business Marketing*, 26(2), 109–124. <https://doi.org/10.1080/1051712X.2019.1603354>
- Ruch, W. (2001). *How to keep your best talent for walking out the door*. <https://www.inc.com/charles-edge/how-to-keep-your-best-employees-from-walking-out-the-door.html>
- Samoliuk, N., Bilan, Y., Mishchuk, H., & Mishchuk, V. (2022). Employer brand: Key values influencing the intention to join a company. *Management and Marketing. Challenges for the Knowledge Society*, 17(1), 61–72. <https://doi.org/10.2478/mmcks-2022-0004>
- Schätzle, J., Lindenmeier, J., Saliterer, I., & Liberatore, F. (2022). Development and validation of a brand personality scale for employers of healthcare staff. *Journal of Nonprofit and Public Sector Marketing*, 14, 1–23. <https://doi.org/10.1080/10495142.2022.2133067>
- Song, Y. M., Li, G. X., & Ergu, D. (2020). Recommending products by fusing online product scores and objective information based on prospect theory. *IEEE Access*, 8, 58995–59006. <https://doi.org/10.1109/ACCESS.2020.2982933>
- Stamolampros, P., Korfiatis, N., Chalvatzis, K., & Buhalis, D. (2019). Job satisfaction and employee turnover determinants in high contact services: Insights from employees online reviews. *Tourism Management*, 23(1), 66–83. <https://doi.org/10.1016/j.tourman.2019.04.030>
- Symitsi, E., Stamolampros, P., Daskalakis, G., & Korfiatis, N. (2021). Finding meaning in contradiction on employee review sites: Effects of discrepant online reviews on job application intentions. *Journal of Interactive Marketing*, 288(2), 605–619. <https://doi.org/10.1016/j.intmar.2018.05.001>
- Yang, C. L., Huang, C. Y., & Hsiao, Y. H. (2021). Using social media mining and PLS-SEM to examine the causal relationship between public environmental concerns and adaptation strategies. *International Journal of Environmental Research and Public Health*, 18(10), 527. <https://doi.org/10.3390/ijerph18105270>
- Yang, G. L., Yang, W. P., & Yang, G. H. (2022a). Development of employer brand evaluation scale based on computer data mining and its relationship with college students' job-hunting intention. *Security and Communication Networks*, 22, 1–8. <https://doi.org/10.1155/2022/5303083>
- Yang, Y., Hsu, J. H., Löfgren, K., & Cho, W. (2022b). Cross-platform comparison of framed topics in Twitter and Weibo: Machine learning approaches to social media text mining. *Social Network Analysis and Mining*, 12(1), 7. <https://doi.org/10.1007/s13278-022-00907-7>
- Yang, Z. L., Xiong, G. M., Cao, Z. H., Li, Y. C., & Huang, L. C. (2019). A decision method for online purchases considering dynamic information preference based on sentiment orientation classification and discrete DIFWA operators. *IEEE Access*, 7, 77008–77026. <https://doi.org/10.1109/ACCESS.2019.2921403>
- Zhang, Y. C., Xu, S., Zhang, L., & Yang, M. X. (2021). Big data and human resource management research: An integrative review and new directions for future research. *Journal of Business Research*, 133, 34–50. <https://doi.org/10.1016/j.jbusres.2021.04.019>