Comparing and Measuring Textual Analysis in Chinese and US CSR Reports

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Abstract

This study aims to construct a multidimensional framework to deeply analyze sentimental characteristics in CSR disclosure on the basis of Appraisal system and Carroll's pyramid of CSR. 40 Chinese and American CSR reports are selected as the research targets of this paper. The sentimental characteristics of Chinese and American CSR reports are compared and analyzed in this research. The results of this study are as following: 1) Both Chinese and American CSR reports convey positive sentiment evaluation feature to establish positive image of the enterprises; 2) the use of attitudinal resources in Chinese and American CSR reports tend to judgement and appreciation, but there is a difference in appraisal words use tendency; 3) there are significant differences in the distribution of theme words in CSR reports. Chinese enterprises tend to disclose their economic responsibility information, while American enterprises tend to disclose the information of ethical responsibility. This research has some enlightening significance to enterprises' cross-cultural communication and discourse multi-dimensional analysis.

Keywords: textual sentiment analysis, Appraisal Theory, CSR reports, comparative analysis

1. Introduction

Business discourse, in some form, resides across many disciplines under various aliases, including linguistics, natural (or statistical) language processing, information retrieval, content analysis, or management, which has become an emerging field in recent years. Corporate social responsibility (CSR) reports, as a kind of business discourse, are non-financial documents used to disclosure corporate social responsibility to build a bridge between enterprises and stakeholders. While the phenomenon of CSR reports has been widely investigated by accounting and management scholars, discourse analysis research in this area remains limited. Previous discourse analysis of CSR reports has primarily focused on their ideational function, namely how these texts construe a particular representation of reality. The existing research on CSR reports mainly concentrates on language ontology. However, there are few research on the relationship between appraisal features of CSR reports and its CSR performance. Moreover, there are relatively little research that focus on the differences between Chinese and American culture based on Appraisal Theory in business context.

Therefore, 40 CSR reports are selected from Chinese and American top 50 CSR performance companies as the corpus of the study. A multidimensional appraisal framework of discourse sentiment tendency is applied in this paper to explore the sentiment tendency degree, the resource types and realizations of Attitude and subject features, to find the similarities and differences between American and Chinese corporations' external communication characteristics and their relationship with CSR performance. This paper attempts to shed some light on business discourse study, business English teaching and external communication of enterprises.

This study strives to answer the following questions:

1) What are the differences of sentiment tendency between Chinese and American companies' CSR reports?

2) What are the differences of attitudinal resources used in CSR reports between Chinese and American companies?

3) What are the characteristics of positive sentiment evaluation theme words used both in Chinese and American companies?

This paper is structured as follows. The section below provides a brief review of Appraisal Theory, sentiment analysis in computational linguistics, management tone and textual analysis methods. Section 3 describes the multidimensional theoretical framework and methodology employed for the analysis. The last two sections present the results and some interpretative conclusions respectively.

2. Literature Review

2.1 Appraisal Theory and Attitude System in Business Discourse

Appraisal Theory is concerned with the interpersonal in language, with the subjective presence of writers/speakers in texts as they adopt stances towards both the material they present and those with whom they communicate. Appraisal itself is regionalized as three interacting domains— 'attitude', 'engagement' and 'graduation'. And 'Attitude of Appraisal System' is the core of Appraisal Theory and the focus of the paper, encompassing all the linguistic resources for the expression of affect, judgement, assessment and for the negotiation of stances and ideological positions.

The research on business discourse evaluation at home and broad mainly focuses on the following genres: e-mails, application letters, advertisements, business letters and so on. The existing study on business discourse evaluation mainly have the following perspectives: 1) discourse strategy: Lipovsky (2013) explored the use of appraisal resources in application letters; Xu & Xia (2013) described and explained the attitudinal resources from the selected 20 English and Chinese company profiles; Li and Jiang (2017) made a contrastive analysis of 30 Chinese and 30 English forewords of academic monographs based upon the attitude of appraisal system. 2) rapport management: Ho (2014) found that professionals relied on evaluative language in constructing the grounders for workplace request e-mails for rapport management; Beangstrom & Adendorff (2013) explored the evaluation resources of advertisements of houses made by estate agencies, capturing the ways in which each estate agency manipulates linguistic choice patterns according to the monetary value they perceive their potential customers to possess. 3) leadership realization: Zhang Jun (2013) explored the general mechanism of persuasive strategy of Pathos, Ethos and Logos achieved by Appraisal Theory in CEO letters; Eley & Adendorff revealed how did appraisal resources applied in news report of business leaders influence potential readers and realize transformational leader ship; Li Lin (2017) established a three-dimensional appraisal framework to study appraisal patterns of UK and US CEO risk discourse. 4) multiculturalism and culture differences: Breit (2014) analyzed wine tasting sheets in English and Spanish on the basis of Appraisal Theory to illustrate the culture differences between different culture and languages.

Some research applied Appraisal Theory in CSR reports. Matteo Fuoji compared appraisal resources used in BP and IKEA CSR reports and revealed two markedly different approaches to the construction of a responsible corporate identity, which has inspired this study on the realization of Attitude in CSR reports. However, the studies on CSR reports are not only limited but mainly concentrates on language ontology, therefore. this study digs out the internal relationship between language use and the characteristics of companies CSR performance, comparing the use of Appraisal words in different culture.

2.2 Textual Sentiment in Business Discourse

Sentiment evaluation feature analysis has received widely attention by linguistics, natural language processing and management. Sentiment analysis in computational linguistics mainly includes extraction of themes and ideas, evaluation word extraction and sentiment recognition (Lu Wenxing, 2012). Sentiment analysis in natural language processing at abroad pays attention to product review, net news, weibo and film review to mine the point of view, carrying on the public opinion analysis of network and media. Domestically, the development of sentiment analysis models and tools in the field of natural language processing has been developing rapidly (Lu Wenxing, 2012; Fu et al, 2013). The most common methods of content analysis in the textual sentiment literature are dictionary-based approach and machine learning. The existing literature on business textual sentiment analysis mainly explores the relationship between textual sentiment and financial index with the help of wordlists, General Inquirer (GI), LIWC, DICTIION and so on (Larcker & Zakolyukina, 2012). Both the GI and DICTION are general English language linguistic dictionaries instead of dictionaries specific to the field of financial publishments. For the sake of better measuring the degree of sentiment (tone) in business context, Henry constructed a wordlist of business discourse sentiment analysis (Henry, 2008).

Three are three main sources of business texts used for sentiment analysis: corporate disclosures, media articles, and internet postings. The corporation-expressed sentiment literature mainly studies corporate annual or interim reports, or earnings press releases and earnings conference calls (Kearney, 2014). Corporate disclosure studies normally are aimed at investigating the basic relationship between tone and future firm performance or other quantitative variables. Media articles and internet posting studies concentrate on the short-term influence of sentiment on market variables such as returns, volatility, stock prices and trading volumes. Yu et al. (2013) developed a contextual entropy model to recognize sentiment words used to classify sentiment in stock market news, forecast stock trend and help investors make decisions. Yang et al (2022) put forward a news mining-based business sentiment analysis framework in order to improve the accuracy of sentiment classification. Nyakurukwa and Seetharam (2023) investigated the evolution of textual sentiment in the stock market over the past ten years using bibliometric analysis, showing that most studies are multidisciplinary.

To some extent, corporate disclosures transmit sentiment of management, that is, insiders who know their companies better. They are a potentially valuable resource. Martin and White's Appraisal Theory and theories related to cognitive linguistics are frequently employed as the theoretical basis, and discourse analysis is often adopted as the analytical method (Zhang,2022). After summarizing previous research, it is found that the study on business discourse has been a hot research area. Appraisal Theory is popularly applied in the research on business discourse. Sentiment analysis of business texts is also paid much attention by researchers. Discourse analysis of CSRRs is still a new field. Previous research has important reference value and enlightenment for this research. To some extent, corporate disclosures can convey sentiment from management, namely the insiders who know more about their firms, they are a potentially valuable source. Thus, CSR reports, a kind of corporate disclosure, are selected as the research targets of this paper. So far, the research integrating the appraisal theory into the analysis of sentiment orientation is relatively scare. Che et al (2020) proposed a specific sentiment dictionary with the aid of appraisal system to investigate sentimental characteristics in CEO letters extracted from CSR reports.

The study of sentiment tendency and theme features on Chinese and American companies CSR reports can reveal the differences of the means of corporate communication and the preference of information disclosure in CSR reports in different culture.

3. Theoretical Framework & Research Method

On the basis of Appraisal system and Carroll's pyramid of CSR, a multidimensional appraisal framework of discourse sentiment tendency is established in this study. According to appraisal theory (Martin 2000: 142-175), the appraisal framework organizes interpersonal

meaning into different systems: attitude, engagement and graduation. Attitude is concerned with feelings, including emotional reactions (affect), judgements of behavior and evaluation of things (appreciation) (Martin & White, 2005). Attitude in appraisal resources can reflect the sentiment and cognition of management on CSR performance. In addition, appraisal resources are divided into "positive [+]" and "negative [-]", from which exists tendency degree (Liu Yueming, 2011).

Corporate social responsibility encompasses the economic, legal, ethical, and discretionary (philanthropic) expectations that society has of organizations at a given point in time" (Carroll 1979, 1991). According to Carroll (2016), as a fundamental condition or requirement of existence, businesses have an economic responsibility to the society that permitted them to be created and sustained, which is a baseline requirement that must be met in a competitive business world. Profits are necessary both to reward investor/owners and also for business growth. Society has not only sanctioned businesses as economic entities, but it has also established the minimal ground rules under which businesses are expected to operate and function. In addition to what is required by laws and regulations, society expects businesses to operate and conduct their affairs in an ethical fashion. Taking on ethical responsibilities implies that organizations will embrace those activities, norms, standards and practices that even though they are not codified into law. Stakeholders interests should be respected including employees, staff, shareholders, community, society and others. Corporate philanthropy includes all forms of business giving. Corporate philanthropy embraces business's voluntary or discretionary activities, usually thought of as good "corporate citizenship".

The study adopts dictionary-based approach to measure sentiment value. In consideration of CSR reports are business texts, therefore, Henry (2008) dictionary is used in the study. According to Price et al (2012), Henry (2008) dictionary is more suitable and powerful than general word lists used in business text research. Referring to Price et al (2012), sentiment tendency degree (Tone) formula adopted in the paper as follows:

$$\text{Tone}_{iT} = \frac{Positive_{iT} - Negative_{iT}}{Positive_{iT} + Negative_{iT}}$$

In the formula, $Positive_{iT}$ is the positive sentiment evaluation value, the occurrence of positive words per 500 words in CSR reports; $Negative_{iT}$ is the negative sentiment evaluation value, the occurrence of negative words per 500 words.

CSR reports discourse sentiment appraisal framework (Fig. 1) is applied in this paper to measure and compare the evaluational sentiment tendency and the characteristics of the evaluation objects between Chinese and American CSR reports. The multidimensional appraisal framework is the theoretical framework and basis used to analyze sentiment tendency, the attitudinal resources and the appraisal theme in CSR reports.
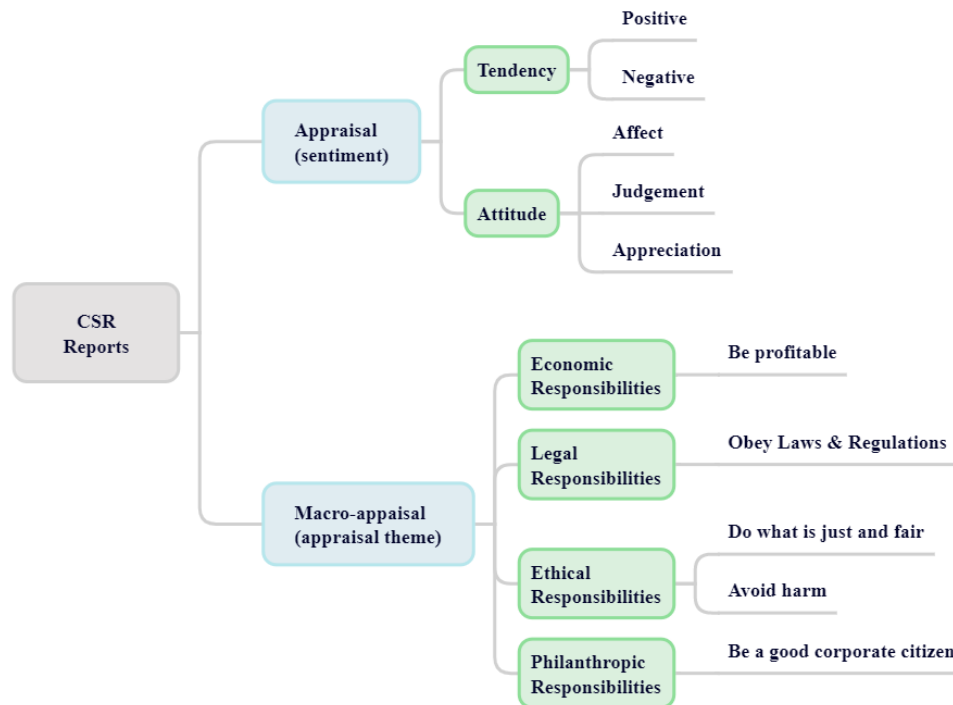

Figure 1. CSR reports discourse sentiment appraisal framework

Altogether 40 CSR reports are collected including 20 Chinese CSR reports and 20 American CSR reports in 2016. CSR performance of the 40 companies are ranked top 50. Chinese data is based on *Blue Book of Corporate Social Responsibility*, while American data based on

Reputation Institute. TreeTagger 3.0, UAM Corpus Tool 3.0 and Antconc 2017 are applied in this paper to annotate and search the concordance of the CSR reports. SPSS is used to analyze the data. VOSviewer is used for data visualization

4. Analysis & Results

4.1 Comparative Analysis of Appraisal Sentiment Tendency

According to the Tone measurement formula, Tone of Chinese and American CSR report is calculated. Independent sample T-test is used to compare the two groups of data. From the test results (Table 1, Table 2), it is clearly to see that there is a significant difference between Chinese and American CSR reports tone (t= -3.301, df=38).

Table 1. Group statistics of tone of Chinese and American CSR reports

Group	N	Mean	Std. Deviation	Std. Error Mean
CHNTone	20	.3799	.17167	.04432
AMETone	20	.5549	.11260	.02907

Table 2. Independent samples test of tone of Chinese and American CSR reports

	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	2.795	.106	-3.301	38	.003	-.17496	.05301
Equal variances not assumed			-3.301	34.165	.003	-.17496	.05301

On the basis of the test results, we can see that both Chinese and American CSR reports sentiment tendency is positive, which shows that companies apply impression management in the writing of CSR reports in order to show a positive image for their stakeholders. However, tone in American CSR reports is higher than Chinese (Mean Difference = -0.17), on the one hand, it shows that American companies pay more attention on impression management and corporate communication. On the other hand, it reflects that, influenced by Chinese culture and way of thinking, Chinese people prefer to express their idea in a more reserved and indirect way. In addition, most Chinese English version CSR reports are translated from Chinese version, which indicates that Chinese English expression ability is still limited. Thus, Chinese CSR reports writers should refer to foreign CSR reports to learn their writing styles, using more positive sentiment words in CSR reports, which is beneficial to enterprises external communication.

4.2 Comparative Analysis of Attitudinal Resources

As Attitude is the core of Appraisal Theory, it carries 'speakers' or 'writers' standpoints and views. Thus, assessing and analyzing the attitudinal resources in CSR reports can reflect the management attitude on their companies' CSR. In order to explore the attitude of the top management's attitude on CSR, the parts of "Letters from CEOs", "Message from Chairman" and "Message from President" in CSR Reports are picked out to establish a small appraisal sentiment corpus. The main features of the corpus are summarized as Table 3,

Table 3. Corpus Details

	Tokens	Types
CHN	24,273	2583
AME	20,301	2324

By means of TreeTagger 3.0, the corpus is automatically annotated with Part of Speech labels to facilitate the consolidation of the results. After manually annotating the attitudinal resources with the aid of UAM Corpus Tool 3.0, subtypes of Attitude are shown in Table 4, and the most frequent instances of Attitude in the corpus are summarized (Table 5)

Table 4. Subtypes of Attitude: Distribution

	Affect (%)		Judgement (%)		Appreciation (%)	
	+	-	+	-	+	-
CHN	4.63	1.02	52.68	0.98	38.32	2.37
AME	3.34	1.65	59.68	1.23	32.36	1.74

(Proportion of total inscription count (%))

Table 5. Attitude General wordlists

CHN	Freq.	‰.of total	AME	Freq.	‰.of total
Innovation	108	4.449	Environmental	97	4.778
Improvement	93	3.831	Commitment	83	4.088
Quality	89	3.667	Sustainability	77	3.793
Sustainable	85	3.502	Want	70	3.448
Key	80	3.296	Progress	61	3.005
Important	79	3.255	Sustainable	60	2.956
Advanced	63	2.595	Proud	54	2.660
Good	63	2.595	Renewable	48	2.364

Progress	60	2.472	Good	44	2.167
Improved	45	1.854	Innovative	40	1.970
Rapid	38	1.566	Ethical	32	1.576
Responsible	32	1.318	Innovation	30	1.478
Innovative	20	0.824	Significant	22	1.084
Responsibility	20	0.824	Excellence	15	0.739
Significant	16	0.659	Talented	13	0.640
Commit	15	0.618	Value	10	0.493
Expertise	11	0.453	Healthy	8	0.394
Intelligent	9	0.371	Trusted	7	0.345
Capability	8	0.330	Efficient	5	0.246
Friendly	7	0.288	Advanced	5	0.246

The results of the analysis show significant differences in the use of Appraisal in Chinese and American CSR reports. "**Innovation**" ranks the highest frequency in the wordlist, therefore, it is clear to see that Chinese corporate top managements pay more attention on products quality and innovation and advanced technology. Among the most frequent instances, the wordlist features *innovation, quality, advanced*, for example:

(1) Following the general principle of seeking progress while maintaining steady development, we will vigorously implement our strategies of resources, market, internationalization and *innovation*, take targeted measures for internal reform and restructuring, and focus on *innovation*-driven development with higher *quality* and efficiency as well as image improvement. (HUAWEI, 2016)

(2) In 2016, we pushed forward *technological innov*ations, intensified R&D, promoted *innovation* in management and business model through information technology, stimulated creativity of all staff, and scored more achievements in *innovation*-driven development. *Advanced* and applicable technologies enabled us to provide the public with better energy solutions. (CNPC, 2016)

In addition, examination of the 20 most frequent instances of Attitude in the corpus (Table 4) reveals that the sum of occurrences per thousand words of inscriptions which positively refer to technical competence and know-how (the words like, *expertise, capability*) substantially higher in Chinese CSR reports, making persistent use of evaluative language to positively refer to its technical strengths and expertise, for example:

(3) In addition, to ensuring our own cyber security, we also emphasize cyber security for our partners, helping to improve *expertise* in cyber security management across the supply chain. (HUAWEI, 2016)

(4) In general, State Grid has kicked off a good start in the nation's 13th Five-year Plan, with comprehensive developments in terms of operation performance, overall *capability* and brand influence. (State Grid, 2016)

"*Improvement*" and "*progress*" are also high-frequency attitudinal words used in

Chinese CSR reports. And they often collocate with economic and corporate development, for example:

(5) The company will fully implement the guidelines from the 18th National Party Congress and those of the third through sixth plenary sessions of the 18th CPC Central Committee, thoroughly carry out the spirit of the important speeches of General Secretary Xi Jinping, stay committed to the overall policy of seeking steady economic *progress*, and firmly establish and carry out the new development concepts. (China Huaneng, 2016)

Apart from paying attention to corporate development, Chinese companies also concentrate on sustainable development. "*Sustainable*" ranks the fourth position in the wordlist.

(6) We are always ready to start afresh. We will continue to follow the CGO concept, do business in a *sustainable* manner, maximize the positive impact of ICT on the economy, society, and people's lives, and team up with our partners to respond to *sustainability* challenges, to achieve smart transformation of society and *sustainable* development of the Company. (ZTE, 2016)

Comparatively, "*environmental*" ranks the highest position, and "*renewable*", "*sustainable*" are also frequently used, which highlights a comparatively stronger emphasis on sustainability in American CSR reports, for example:

(7) Our strategy to reduce our environmental impact begins by optimizing materials. We continuously evaluate the raw materials we use, including material characteristics, energy composition, social and regulatory activities, and alternatives, and have initiated efforts with select suppliers to develop and select more *sustainable* materials. We have fundamental research and development activities focused on *renewable* materials and material reduction, reusability and recyclability. (Goodyear, 2016)

(8) We continued to invest in conservation actions and new onsite alternative energy projects that enable us to drive toward the lowest *environmental* footprint possible in support of our 2020 goals, and worked to empower others to use Intel-technology to reduce their own *environmental* impact. (Intel, 2016)

In addition, differing from Chinese attitudinal resources, "*commitment*" ranks the second in American CSR reports, which shows American top managements pay attention to promise to their stakeholders, underscoring the company's perseverance towards achieving desirable goals, emphasizing the tenacity and volition of companies. "*Ethical*" appears specially in American CSR reports showing that American leaders focus on performing ethical responsibility on the basis of corporate development.

And the instances of positive Judgement are comparatively more frequent in Chinese CSR reports

(9) As part of our ongoing *commitment* to operate *ethically* and treat all people with dignity and respect, Hasbro strengthened our *ethical* sourcing game company to join a multi-sector social compliance group dedicated to working to improve social, *ethical* and *environmental* performance in global supply chains. (Hasbro, 2016)

Another difference of attitudinal resources between Chinese and American CSR reports is that American CEOs use Judgement resources "*excellence*" and "*proud*" to show their confidence in their CSR performance. This difference is reflected in the quantitative Data on the distribution of the categories of Attitude (Table 4), which indicates that instances of positive Judgement are comparatively more frequent in American CSR reports, for example:

(10) 2016 was a banner year for Hasbro. We continued to execute our Brand Blueprint with excellence, we grew our business with the most talented team in the industry.

The model "*want*" is the most frequent instance of authorial-Affect in American CSR Reports. This verb is extensively used to underline the company's desire to achieve positive goals and is frequently followed by other positive evaluative items, as in:

(11) We want to make a difference, and we *want* to be a *trusted* retailer that customers, associates, communities and shareholders are *proud* of.

On the basis of Carroll (1979) model, corporate social responsibility encompasses the economic, legal, ethical, and discretionary (philanthropic) expectations that society has of organizations at a given point in time. On the basis of the above analysis, Chinese companies pay more attention on economic responsibility, focusing on products innovation, corporate improvement. Beyond that, Chinese companies' managements also perform ethical responsibility, caring for environmental protection and sustainable development. In comparison, American companies focus more on performing ethical responsibility, protecting stakeholders' profits, inventing renewable materials, protecting environment.

4.3 Comparative Analysis of Sentiment Theme Tendency

In order to explore the features of sentiment theme tendency, I imported Henry (2008) dictionary to Antconc, then, searching and extracting the collocation of sentiment words (5L~5R) to establish a small corpus. Based on the previous study, both Chinese and American CSR reports' Tone are positive. After further retrieving it is found that the corpus of the collocation of negative sentiment words is relatively rare. Thus, positive sentiment theme evaluation words are extracted as the object of the study. The positive sentiment corpus was then imported to the visualization software, VOSviewer, to extract sentiment evaluation thematic words, and results as following:
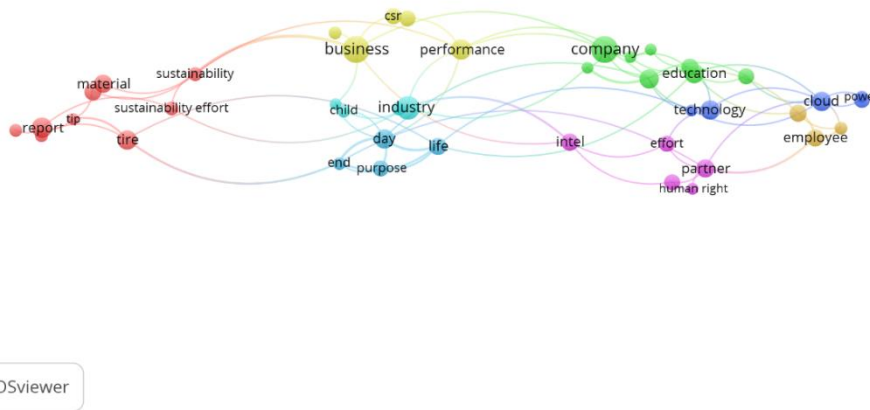

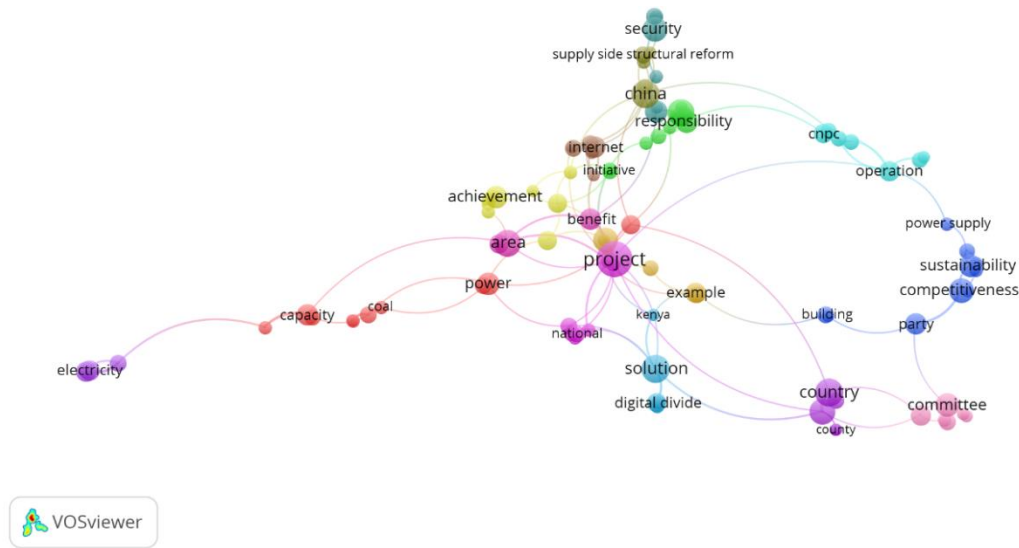Figure 2. Positive Sentiment Evaluation Theme Words in Chinese CSR Reports

Figure 3. Positive Sentiment Evaluation Theme Words in American CSR Reports

By comparing the theme words in Fig 2 and Fig 3, we can see that "achievement", "benefit" and "competitiveness" display on Fig 2. On the basis of Carroll model, companies should make profits and pursue the development of companies themselves, that is, performing economic responsibility, the basic responsibility of companies. "Achievement" (collocates with "make new …") and "competitiveness" (collocate with 'build...') reflect that Chinese corporate management pursue companies' development, namely, great achievements and competitiveness improvement, and "benefit" gives the information that Chinese companies pay attention to companies' profits growth, all of which reveal that Chinese companies emphasize on performing economic responsibility, the basic responsibility of companies. In addition, "supply side structural reform", Chinese specialized, is shown on Fig 2 reflecting that Chinese companies' leaders actively responded to government's call, performing legal responsibility. Beyond that, "sustainability" also appears in Fig 1, which indicates that under the premise fulfilling economic and legal responsibility, Chinese top managements also considers environmental protection and social sustainable development，acting ethical responsibility.

Comparatively, in Fig 3, we can clearly see "employee" and "partner", "sustainability". In view of Carroll model, ethical responsibility involving respecting the interests of stakeholders，that is，employee, staff，shareholders，community and environment. Therefore, American companies also care about ethical responsibility, but more wide-ranging than Chinese companies. Same as Chinese companies, "sustainability" also is found in Fig 3，which gives the information that American senior executives care about environmental development. The appearance of "performance" and "technology" indicate that American companies executives pay attention to enterprise development as well，referring to economic responsibility. In addition, "education" is found in Fig 3, usually collocating with "invest", which indicates that American top managements focus on social people's livelihood, developing education to fulfill philanthropic responsibility. Furthermore, American leaders also concern about human right.

According to CSR reports' multidimensional appraisal framework, sentiment words are classified into four categories, economic category, legal category, ethical category and philanthropic category (Table 6). The results show that there exists a significant difference in positive sentiment evaluation tendency between Chinese and American CSR reports. The proportion of economic theme in Chinese CSR reports is higher than the proportion of America, and the proportion of ethical theme is lower than America. Therefore, appraisal resources of economic theme are preferred in Chinese CSR reports. Comparatively, ethical appraisal resources are favored in American CSR reports. This illustrated that different companies hold different ideas on corporate social responsibility. Therefore, Chinese companies' top managements prefer to give priority to the development of companies, and American companies are inclined to concentrate on stakeholders' interests. This phenomenon is consistent with the characteristics of attitudinal resources used in CSR reports.

Table 6. Classification of Positive Sentiment Evaluation Theme Words

	CHN		AME	
economical	338	53.99%	168	28.62%
legal	54	8.63%	48	8.18%
ethical	213	34.03%	297	50.60%
philanthropic	21	3.35%	74	12.61%
Total	626	100%	587	100%

5. Conclusion

A multi-dimensional appraisal framework is applied in this research, which provides a new perspective on multi-dimensional discourse

analysis. Appraisal system and Carroll's pyramid model are combined to analyze the corpus. For answering the three research questions, there are three major findings in this research. Firstly, both Chinese and American CSR reports sentiment tendency is positive, which shows that companies apply impression management in the writing of CSR reports to show a positive image for their stakeholders. However, tone in American CSR reports is higher than Chinese CSR reports. Secondly, it is found that there exist significant differences in the use of Chinese and American CSR reports through exploring the attitudinal resources in CSR reports. Chinese top managements care more about products quality, innovation and advanced technology. In comparison, American leaders pay more attention on sustainability. Finally, there are significant differences in the distribution of theme words in CSR reports. Chinese enterprises tend to disclose their economic responsibility information, while American enterprises prefer to disclose the information of ethical responsibility, which is consistent with the characteristics of attitudinal resources used in CSR reports.

The present study innovates the research methods in exploring CSR sentimental characteristics by utilizing corpus analysis, and analyzing sentiment from a multidisciplinary perspective. However, it also has its own limitations. The corpus is not large enough. And only attitude resources are analyzed. The future research is recommended to explore engagement and graduation resources in CSR reports, discussing the value of discourse in corporate image establishment.

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Authors contributions

conceptualization, M.Q.; methodology, M.Q.; software, M.Q.; formal analysis, M.Q.; writing—original draft preparation, M.Q.; writing—review and editing, M.Q.; visualization, M.Q.; supervision, M.Q.; All authors have read and agreed to the published version of the manuscript.

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Data sharing statement

No additional data are available.

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