

# The Image of Huawei Company in Global Mainstream English Media: A Sentiment Mining Perspective

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This paper investigated the image of Huawei Company in global mainstream English media since 2018 by employing a synergy of sentiment analysis and the Discourse-Historical Approach (DHA). First, lexicon-based sentiment polarity analysis and emotion analysis displayed the sentiments and emotions in the news by six regions and two countries. Second, visualization and K-means clustering of the emotion analysis results further showed that the Middle East, Asia, Africa, and China portray a more positive image of Huawei in the news; in contrast, news from Europe, North America, Australia, and the United States depicts Huawei in a relatively more negative light. Third, the DHA-based interpretation of sentence examples revealed that news taking the positive stance represents Huawei as a leading tech giant and responsible enterprise whereas Huawei is described as a threat to national security in the news of negative stance. This paper offers an interface research paradigm of business image and critical discourse studies in the context of digital humanities.

*Keywords:* corporate image, Huawei, sentiment analysis, Discourse-Historical Approach, media discourse

In the current context of trade protectionism and anti-globalization, multinational businesses are faced with unprecedented challenges, which has been exacerbated by the breakout of the COVID-19 pandemic and ever-growing trade frictions between the United States and China. Chinese corporations are among those which find themselves in a much more complex business environment and surrounded by more diverse public opinions. Under such circumstances, how to manage company communication in order to build a positive image and good reputation is becoming more urgent for Chinese firms.

Huawei, the world's leading information and communications company, has rapidly enlarged its share in the international market and received widespread public attention since the launch of its 5G network and products in 2018. Therefore, taking Huawei as a representative example, the present paper intends to study the image of Chinese

corporations in media discourse, revealing the role played by news in building corporate image and the potential underlying causes, thereby providing firms with empirical experience for company communication.

## The Image of Chinese Corporations

The notion of corporate image was introduced in the 1950s (e.g., Boulding, 1956; Martineau, 1959) and efforts by researchers in the subsequent decades (e.g., Bernstein, 1993; Kennedy, 1977) have shown that corporate image has gained much interest, and it is moving towards a holistic definition. Today, it is commonly agreed that corporate image is the sum of feelings, ideas, beliefs, knowledge, impressions, and values towards a corporation (Tran et al., 2015). And a strong and characteristic corporate image is essential to sustainable competitive advantages (Davies et al., 2003; Karaosmanoglu, 2006 & Melewar).

Over the last three decades, the economy of China has experienced extraordinary growth. China has become the second largest economy in the world, and is expected to surpass the United States in the next decade. With Chinese

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economy fast becoming consumer-oriented to retain its economic status, many Chinese corporations are becoming multinational. How to build and maintain a positive corporate image in both domestic and global market is, accordingly, of increasing significance for them.

Against this backdrop, researchers start to investigate the image of Chinese corporations. One of their major foci is to explore the relationship between corporate social responsibility (CSR) and corporate image. Researchers in the field of corporate management commonly agree that CSR plays a positive role in promoting corporate image. In fact, benefits to company image are one of the main motivations driving recent corporate social and environmental reporting among enterprises in China (Yu & Rowe, 2017). So, it is vital for companies to manage their CSR-based projects in such a way that they not only help to improve an organization's image but also prove to be motivating and healthy for improving satisfaction among employees (Chen et al., 2020). Avotra et al. (2021) studied three different CSR types and attempted to determine which CSR type is better to reduce negative impact of corporate cynical impression on corporate image and the purchase intentions of consumers. The outcomes indicated that different types of CSR are successful in mitigating the detrimental effects of corporate cynicism on the image of a firm, with charitable CSR being a more effective technique of boosting the image of a company. Kim and Ji (2021) carried out a study on the effects of corporate leaders' CSR donations amid COVID-19, taking Bill Gates and Jack Ma as examples, revealing that the public's CSR knowledge of corporate leaders' donations leads to positive effects on both a company's reputation and a country's reputation. Most of these studies were conducted through methods including online surveys, interviews or questionnaires, common in the fields of corporate management and public relations. They are of distinct interest to Chinese businesses in understanding the significance of adopting constructive CSR initiatives in boosting corporate reputation and image, and their positive influence on firm performance.

There are also researchers investigating the discourse of CSR reports *per se* in order to shed some light on their influence on corporate image from a linguistic perspective. Sun et al. (2018) explored metaphor use as a discursive and cognitive strategy for developing corporate image in Chinese and American CSR reports from the perspective of corpus-based conceptual metaphor analysis. The study found that CSR reports of both countries share most genre-specific metaphors, which frame companies as economically

competitive, ethically cooperative, and environmentally responsible. Yu (2020) also approached metaphor use in CSR reports, yet from a cross-cultural perspective, finding that both universal metaphors and culture-specific metaphors are used to represent a company's good intentions, caring attitude, and responsible behavior, thus portraying an environmentally responsible corporation. Lin (2021) compared the discursive strategies used by Fortune 500 companies in China and the UK for legitimizing negative news in CSR reporting, identifying their similarities and differences in the communication of negative CSR news, which contributes to the understanding of crisis communication and image repair strategies used by large corporations in different cultures. These studies are largely concerned about the self-built image by Chinese companies, since CSR reports together with different kinds of corporate announcements, such as corporate mission statements (e.g., Lin et al., 2019; Sun & Jiang, 2014), are issued by companies themselves.

In order to study the image of Chinese corporations from an "other" perspective, the discourse of mass media has drawn scholarly attention over the last decade, though in a comparatively small number. These researchers tend to focus on the discursive strategies in media discourse in constructing the image of Chinese corporations (e.g., Wang, 2019; Zhao, 2021). These studies usually integrate corpus linguistics research methods with discourse analysis theories, following an analytical routine like this: first examining word frequency lists, keywords, collocates, concordances, etc. in large news corpora, and then based on certain theoretical or analytical framework, such as critical discourse analysis (CDA), interpreting the corporate images constructed by different media and their corresponding attitudes and stances. Li et al. (2018) analyzed global English-language media reports on well-known Chinese companies from 2015 to 2017 and found that Chinese companies are represented as neutral and positive on the whole, yet without diverse personalities. Based on CDA, Zuo (2019) conducted a comparative study of US media coverage of Huawei between 2009–2016 and 2017–2019, revealing that the competitive advantages of Huawei have transferred from price to technology.

Considering the fact that mass media can easily reach a vast audience and therefore play a crucial role in forming and spreading images, and the fact that media images of different groups of people in terms of gender, race, religion, country of origin (e.g., Baker et al., 2013; Baker & Levon, 2016; Wright & Brookes, 2019) have always been in the spotlight in discourse analysis, the research on media images of Chinese

corporations deserves further attention, and will, to a large extent, contribute to the understanding of how media discourse has influenced and shaped public perception of corporations. It is commonly acknowledged that news coverage, through discursive strategies, explicitly or implicitly delivers opinions, attitudes and emotions. However, it is relatively less convincing to derive positive or negative corporate images based on the list of high-frequency adjectives or the semantic prosody of some particular words, as is shown in the studies reviewed above. Therefore, it is suggested that the existing studies on media images of Chinese firms need to be enriched methodologically.

In the present study, we consider text mining as a potential approach to analyzing emotions and attitudes in media discourse since text mining techniques emerging in the social sciences (Ignatow & Mihalcea, 2018), such as sentiment analysis, are able to obtain valuable emotions and semantic information from massive texts, with the advantage of breaking through the limitations of traditional frequency-based analysis, avoiding bias in the interpretation process, and enabling uniform quantitative standards for different studies. This study intends to explore Huawei's image in global English media reports since its launch of 5G networks and products in 2018 in two steps: (1) using a data-driven sentiment mining method to comprehensively analyze news reports from major regions around the world to reveal their emotions and stances; (2) based on different stances, uncovering the constructed Huawei images according to the DHA and interpreting them in socio-political context.

## Methodology

### Sentiment Analysis

Sentiment analysis, also called opinion mining, is the field of study that analyzes people's opinions, sentiments, appraisals, attitudes, and emotions towards products, services, organizations, individuals, events, issues, or topics, and their attributes expressed in written texts (Liu, 2020). Normally, it employs algorithms and computer technologies to systematically detect, extract, and classify these subjective information and affective states expressed in a text (Lei & Liu, 2021). Among those different domains that sentiment analysis has been applied in, it has been noted that sentiment analysis has been used most widely in the fields of business, politics, healthcare and movies (Feldman, 2013; Zunic et al., 2020)

In sentiment analysis, sentiments often appear in polarity terms, such as *positive* vs *negative*, although neutral sentiment is also a possible option. Therefore, sentiment analysis, essentially, is the process of detecting and extracting subjective polarity words to identify the sentiments and their strengths in sentences and texts (Taboada et al., 2011, p. 268). Emotion analysis is often regarded as a more specialized subcategory of sentiment analysis, due to the fact that emotion analysis involves evaluation of various specific emotions, such as *anger*, *anxiety*, *disgust*, *fear*, *joy* and *sadness* (Giuntini et al., 2020; Ren & Quan, 2012). In the present study, both sentiment polarity analysis and emotion analysis were included.

The lexicon-based method, the use of a sentiment lexicon as the main tool for sentiment identification and classification, is one of the major methods for sentiment analysis. A sentiment lexicon is a word list that contains sentiment words coded as positive, negative, or neutral, or words coded with different emotions, together with their respective levels of strength or intensity (Lei & Liu, 2021). When such a method is used, classification algorithms directly assess the target document, using a sentiment lexicon to calculate the sentiment scores of the document according to the number and weighting of the sentiment words tagged in the document (Lei & Liu, 2021). Sentiment lexicons can be domain-specific or cross-domain, so the choice should be guided by the research questions in specific studies.

In terms of granularity, sentiment analysis can be performed at three levels: document level, sentence level and aspect level (Feldman, 2013; Liu, 2020). Aspect-level analysis is mainly carried out for entities having many aspects or attributes, useful for analysis of consumer products, therefore of little relevance for the present study. As for the former two, they are quite self-explanatory: document-level analysis evaluates the sentiment of a whole document, while sentence-level analysis assesses the sentiment of a sentence. Document-level analysis is often considered too coarse for practical applications (Liu, 2020) in comparison with sentence-level analysis which offers more fine-grained information.

Since the news data collected in the present study were not restricted to specific domains or fields, the lexicons we used are for general purpose. The sentiment lexicon applied in the present study is NRC (Mohammad & Turney, 2013), which has been widely used in discourse analysis, including news reports (e.g., Khoo & Johnkhan, 2018), due to its large vocabulary for sentiment polarity and emotion analysis. The NRC lexicon consists of 1,4182 words. In this study, we

first used NRC lexicon for sentence-level sentiment polarity analysis, during which process other sentiment lexicons including Bing (Liu et al., 2005) and Syuzhet (Jockers, 2017a) which have also been widely tested and applied in sentiment research in social sciences, were used as reference standards to further ensure the objectivity and reliability of the results.

We then used NRC lexicon for sentence-level emotion analysis, since in addition to positive and negative sentiments, NRC lexicon also contains eight emotions, namely *anger*, *anticipation*, *disgust*, *fear*, *joy*, *sadness*, *surprise*, and *trust*, which are considered as the most basic and typical emotions (Plutchik, 1980) and complex emotions can be seen as a combination of these basic emotions. The number and percentage of the eight types of emotion words in the NRC lexicon are shown in Table 1. As a follow-up of the previous sentiment polarity analysis, we still focused on positive and negative stances in news media reports in the emotion analysis, so the neutral emotions, *anticipation* and *surprise*, were not analyzed.

Commonly used programming languages such as R and Python currently are loaded with packages for sentiment analysis. Given the convenience and efficiency of programming languages, this study used the Syuzhet (Jockers, 2017b) package in R language for sentence-level sentiment analysis.

Table 1

*Emotion Words in NRC Lexicon*

Emotion	Anger	Anticipation	Disgust	Fear	Joy	Sadness	Surprise	Trust
Word count	1247	839	1058	1476	689	1191	534	1231
Percentage (%)	15.09	10.15	12.80	17.86	8.34	14.41	6.46	13.89

After the clear definition of sentiment analysis, we further detail the research questions in the current study as follows:

1. Which sentiment is more salient in news reports about Huawei in mainstream English media in different regions (countries) of the world since 2018?

2. How different emotions are expressed in news reports of different regions (countries)?
3. Do these regions (countries) show different attitudes and stances in their reports? If so, what specific images of Huawei are portrayed by news of different stances? how to interpret them in socio-political context?

**Research Data and Analytical Procedure**

The news for this study was collected from the online news repository LexisNexis. January 1, 2018 was used as the starting point for news data collection, not only because Huawei's 5G technology and products started to catch wide public attention in 2018, but also because there has been a surge in the coverage of Huawei since 2018 in the database, in stark contrast to before. Global media coverage in LexisNexis database can be grouped into eight broad regions: Europe, Asia, North America, Australia & Oceania, Africa, Middle East, South America, and Central America & Caribbean. Among them, we found there were almost no English reports about Huawei in Central America & Caribbean, and only three English reports in South America. Therefore, we collected reports from the remaining six regions in this study. In addition, because American newspapers are not included in the North American media, and because the United States and China are closely involved in Huawei's international trade, we collected US and Chinese news separately, taking them as reference corpora. Eventually, a total of eight corpora were built, consisting of news from six regions and two countries.

The time period for news retrieval is from January 1, 2018 to July 22, 2021 (the data collection date of this study). We set the language as English, the publication type as newspapers and the word count as above 500 words. To ensure the high relevance of the extracted news, we used "Huawei" as the search term, and only chose news with "Huawei" in the title (referring to Wright & Brookes, 2019). Then, the top 150 news items in order of relevance were extracted from the above six regions and two countries respectively to ensure a balanced

Table 2

*Huawei News Corpora*

Region/Country	Number of articles	Number of sentences	Number of tokens	Region/Country	Number of articles	Number of sentences	Number of tokens
Europe	142	7529	173735	Africa	150	4529	109088
Asia	150	5003	118763	Middle East	148	4430	111546
North America	128	5492	130102	US	146	6584	158327
Australia & Oceania	150	5431	126553	China	145	4643	119767

number of news items in all corpora. We also examined each corpus and deleted highly duplicate news manually. The final composition of each corpus is shown in Table 2, with a total of 1,159 news articles and a total word count of 1,047,881.

Text mining normally extracts structured data from large amounts of unstructured data and then performs statistical analysis (Ignatow & Mihalcea, 2018). While large numbers of texts provide valuable assets for text mining, they also create difficulties in data processing. The data must be processed scientifically and rigorously to achieve desired results. The data analysis steps in this study are shown in Table 3.

Table 3

News Data Analytical Procedure

Steps	Specific operation
1	The targeted news items about Huawei in six regions and two countries were retrieved from LexisNexis database, and saved as .DOCX files. Duplicate news was deleted manually.
2	Different types of metadata were removed and then .DOCX files were saved as .TXT files.
3	Sentence-level sentiment polarity analysis of eight Huawei news corpora was carried out based on the NRC, Bing, and Syuzhet lexicons in the Syuzhet R package.
4	Sentence-level emotion analysis of eight Huawei news corpora was carried out based on the NRC lexicon.
5	The results of emotion analysis were visualized, and K-means clustering about them was performed to reveal different attitudes and stances.
6	According to different stances, sentence examples with high emotion scores were extracted and analyzed in context to reveal the images of Huawei. In the qualitative interpretation of Huawei's images, we took a critical approach (the DHA).

Sentiment Polarity Analysis of Reports on Huawei

Using the NRC, Bing, and Syuzhet lexicons, we performed a sentence-level positive and negative sentiment analysis of eight Huawei news corpora. The percentages of positive and negative sentences were calculated as a way of normalization so that the sentiment scores of different corpora were comparable (see Table 4).

Table 4

Sentiment Scores Based on NRC, Bing, and Syuzhet Lexicons

Region/Country	NRC positive (%)	NRC negative (%)	Bing positive (%)	Bing negative (%)	Syuzhet positive (%)	Syuzhet negative (%)
Europe	42.064	22.473	28.968	26.139	48.771	33.271
Asia	61.443	9.454	53.748	9.055	76.114	10.594
North America	45.776	21.249	26.803	26.566	48.216	34.031
Australia & Oceania	41.852	23.053	25.539	27.895	46.916	37.967
Africa	53.235	16.759	38.176	20.490	60.808	26.363
Middle East	67.765	7.427	61.151	6.682	83.183	6.795
US	44.942	23.056	25.304	29.891	47.312	37.652
China	54.103	15.486	34.073	21.430	62.610	24.553

The sentiment scores for six regions and two countries were visualized in Figure 1. It can be seen that in terms of positive sentiment, on average the scores based on Syuzhet lexicon are the highest while Bing lexicon brings the lowest scores.

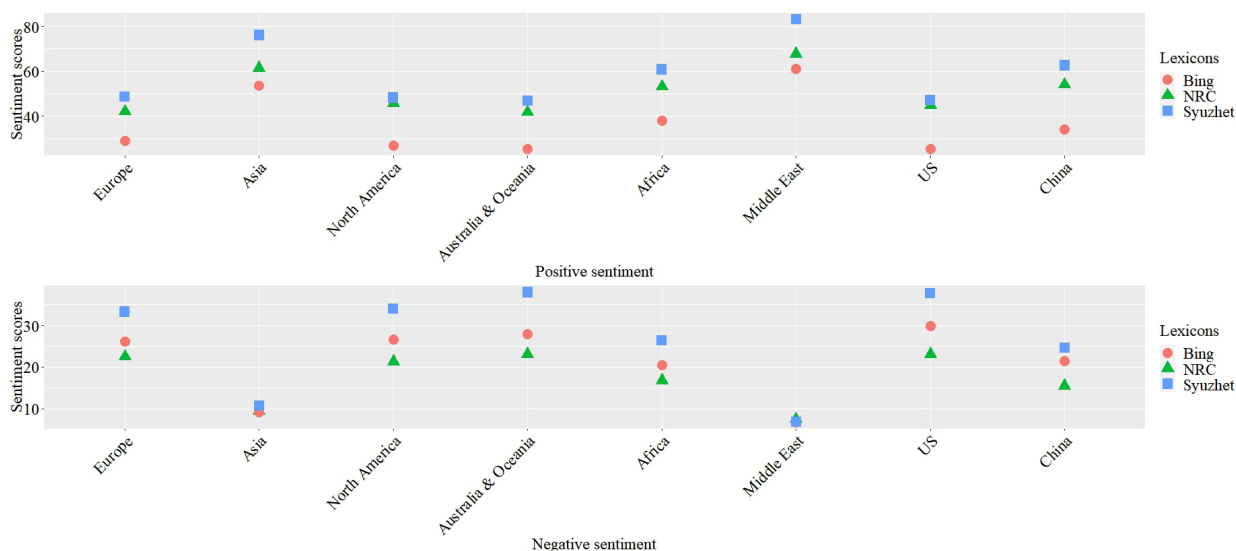


Figure 1. Sentiment Scores Based on NRC, Bing and Syuzhet Lexicons

In most cases, Syuzhet lexicon generates the highest negative scores while NRC lexicon is on the opposite. The differences in absolute scores among the three lexicons are apparently due to the specific composition and size of each lexicon. But the overall trends of the scores by three sentiment lexicons remain consistent, thus verifying the validity of the results.

Therefore, we are confident to indicate that reports by the Middle East, Asia, Africa, and China have higher positive scores and lower negative scores, portraying Huawei more positively; on the contrary, news by Europe, North America, Australia & Oceania, and the United States has lower positive scores and higher negative scores, constructing a more negative image of Huawei. Besides, it is apparent that the Middle East and Asia have the highest positive scores in their coverage whereas reports from Australia & Oceania and the United States are the most pronounced in negative sentiment. This mainly answers the first research question.

### Emotion Analysis of Reports on Huawei

In order to further explore dimensions of the sentiments expressed in the news reports on Huawei, we analyzed six emotions (*anger*, *disgust*, *fear*, *joy*, *sadness* and *trust*) conveyed in eight news corpora based on NRC lexicon. If a word of certain emotion appeared once in a sentence, one point for that emotion was recorded, and multiple occurrences were accumulated; if it did not appear, zero point was recorded. After totaling scores of each emotion in a corpus, as a way of normalization the proportion of each emotion's total score to the total score of all emotions in the corpus was calculated so that the emotion scores (in percentages) of different corpora were comparable (see Table 5).

Table 5

*Emotion Scores Based on NRC Lexicon*

Region/Country	Anger (%)	Disgust (%)	Fear (%)	Joy (%)	Sadness (%)	Trust (%)
Europe	9.676	3.828	15.674	8.624	8.127	27.690
Asia	6.570	2.506	9.115	13.391	5.121	34.221
North America	10.944	4.184	18.112	7.812	7.682	28.035
Australia & Oceania	9.687	4.543	18.100	7.540	7.397	27.100
Africa	8.175	3.267	12.899	10.724	6.422	31.591
Middle East	5.818	2.306	8.229	14.007	4.645	35.637
US	11.005	4.129	17.895	7.003	7.328	29.663
China	7.509	3.269	13.629	9.333	6.859	32.921
Mean	8.680	3.516	14.379	9.596	6.750	30.976

The results are summarized as follows. In general, when comparing the mean values with the values of the six emotions in the NRC lexicon (Table 1), it was found that the mean values of positive emotions are higher, especially the score of *trust* (30.976 %) which is the highest, while the mean values of negative emotions are relatively lower, all of which indicates that in the media reports about Huawei by these regions and countries positive emotions are more prominent.

In terms of positive emotions, news from the Middle East shows the highest scores in *trust* and *joy*, 35.637 % and 14.007 % respectively. Asian news ranks second in both emotions (34.221% and 13.391%). The third highest score for *trust* comes from Chinese news (32.921%) and that for *joy* is from African news (10.724%). As is shown, these results further validate and enrich the sentiment polarity analysis in the previous section. As for negative emotions, US news ranks first in the emotion of *anger* (11.005%), followed by

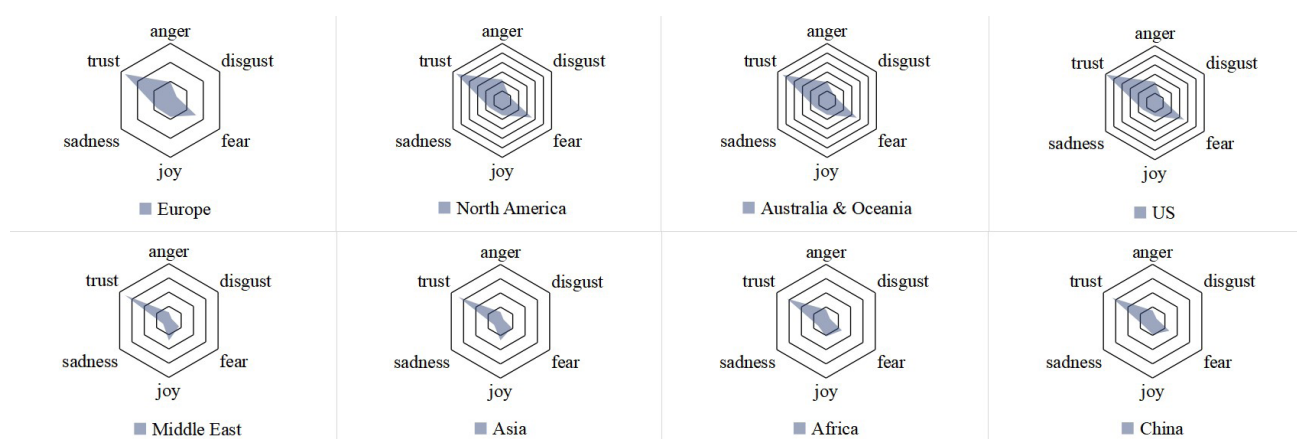


Figure 2. Emotion Patterns of Huawei Reports

North American news (10.944%); Australian & Oceanian reports rank first in the emotion of *disgust* (4.543%), followed by North American reports (4.184%); North American and Australian & Oceanian reports are more pronounced in the emotion of *fear* (18.112% and 18.100%); the top two for the emotion of *sadness* are news by Europe (8.127%) and North America (7.682%) respectively. News coverage by these places all displays higher scores above the mean in four negative emotions, which is also consistent with the results of the previous sentiment polarity analysis, where negative sentiment in these places is significant.

As is shown, the emotion analysis revealed in detail attitudes expressed in the reports about Huawei. We then visualized the outcomes in emotion analysis by employing radar charts (see Figure 2) to uncover the different stances. It is apparent that there are two distinct emotion patterns: charts about Europe, North America, Australia & Oceania, and the United States display a very similar pattern, while charts about the Middle East, Asia, Africa, and China can be grouped as a different one.

Meanwhile, we identified their stances through K-means clustering of the six emotion scores. When the value of K is 2, emotion scores from Europe, North America, Australia & Oceania, and the United States are grouped as one cluster, while scores from the Middle East, Asia, Africa, and China are clustered as another. Therefore, based on the radar charts and K-means clustering result, it can be concluded that news from the Middle East, Asia, Africa, and China demonstrates a similar stance towards Huawei, portraying a more positive image of the company, while the news reports from Europe, North America, Australia & Oceania, and the United States present a relatively more negative image of Huawei.

### Media Representations of Huawei Based on Different Stances

Results in the last section mainly respond to our second research question and part of the third. In this section, we will identify the specific images of Huawei portrayed by news of different stances. According to their stances, news from the Middle East, Asia, and Africa was aggregated into a positive corpus (corpus I), while news from Europe, North America, and Australia & Oceania was grouped into a negative corpus (corpus II). News from China and the United States was used as two reference corpora. In order to further explore the causes of emotions and to reveal the connotations of the constructed

Huawei images in news reports of different places, we extracted sentence examples with higher emotion scores by using Syuzhet package, and interpreted their representations of Huawei in specific context qualitatively. In collecting sentences with higher emotion scores, the sentence scores of each emotion in the reports of each region or country were first arranged in a descending order, and then chosen from high to low scores. The extraction thresholds were: *anger* > 2; *disgust* > 1; *fear* > 2; *joy* > 2; *sadness* > 2; *trust* > 5. The number of extracted sentences in each corpus is listed in Table 6.

Table 6  
*Sentence Examples in Four Corpora*

	Corpus I			Corpus II		Reference corpora		
	Middle East	Asia	Africa	Europe	North America	Australia & Oceania	China	US
	62	81	72	75	80	69	91	70

The content of a newspaper and the extent and frequency of coverage are decided based on the editorial policy or agenda of the newspaper (Gabrielatos & Baker, 2008), which underlies why we integrated sentiment analysis with a critical view to interpret the media representations of Huawei. Though we did not put critical discourse analysis at the core of our research, we thought it would be necessary to note what a critical analysis is and why we adopted it in understanding the media images of Huawei. A critical analysis explains what linguistic elements and processes exist in a text and why the producers of the text have made specific linguistic choices among several other options. This justifies our integration of a critical analysis in the descriptive, data-driven approach.

The critical component of our study is based on the discursive strategies proposed in the Discourse-Historical Approach: Nomination, Predication, Argumentation, Perspectivization, Intensification or Mitigation (Reisigl & Wodak, 2016). According to their theory, a discursive strategy generally means “a more or less intentional plan of practices (including discursive practices) adopted to achieve a particular social, political, psychological or linguistic goal” (p. 33). And these discursive strategies are employed across various levels of linguistic organization and complexity (p. 33), and are typically combined and intermingled with one another in a given text.

### Media Representations of Huawei on a Positive Stance

Through reading the examples with high positive emotions

in corpus I, we found that they focus on the discourse of *Huawei as a socially responsible enterprise*. As is depicted in this corpus, Huawei, renowned for its quality products and high technologies, cooperates and communicates with local governments and universities to implement IT poverty alleviation, help train IT talents, and promote local employment. As we can see in Example 1, the Nigerian National Ministry of Communications praised Huawei for strengthening cooperation with Nigerian universities and giving students the opportunities to participate in competitions. The topos of numbers, “more than 55 MoUs” and “more than 13,000 opportunities,” is used to verify the contribution by Huawei to local development.

*Example 1*

... had recently applauded Huawei Technologies for an increased partnership with universities and colleges across Nigeria in the last twelve months which has resulted to “more than 55 MoUs signed with partners to be Huawei ICT Academies and giving more than 13,000 students opportunities to participate in the recently concluded Huawei 2018-2019 ICT Competition.” (African news; Trust = 6)

Contrary to common sense, the results of the sentiment analysis indicated that Chinese reports about Huawei do not have the highest positive sentiment scores, which, to some extent, reflects the objectivity of the reports. The main discourse derived from the positive examples in the Chinese corpus is that of *Huawei as an inspiring example*, forging ahead in spite of pressure and setbacks. This can be illustrated by Example 2, where resorting to the strategy of Perspectivization, i.e., from the perspective of an information expert, the news pictures Huawei as working hard to strengthen its self-development capabilities for long-term growth in the face of ban orders by the US government.

*Example 2*

Huawei still needs to work with its US counterparts for the supply of some components, but it has been working very hard in strengthening self-reliance in core chipsets and components for long-term growth, Xiang Ligang, director-general of the Beijing-based Information Consumption Alliance, told the Global Times Thursday. (Chinese news; Trust = 6)

In corpus I, the examples with negative emotions revolve around the discourse of *Huawei as a global tech giant facing*

*challenges*. These examples focus on the trade and technology conflicts between China and the United States in which Huawei plays a pivotal part. In the reporting, this trade war has negatively impacted the global supply chain, traumatized international relations, and seriously affected the development in the technology sector, therefore unavoidably taking a heavy toll on Huawei, the world’s largest telecom equipment supplier. If Huawei went bankrupt in this trade war, this would have a tremendous impact on the global supply chain, a concern for many countries. Example 3 is a typical case of this claim, and again the topos of numbers, “US\$122 billion firm” and “170 countries,” reinforces the idea that Huawei is a critical player in the telecommunications industry and that its failure would have significant ramifications for the global economy and international relations.

*Example 3*

... the new rules sparked frantic discussions about whether the move would deliver a fatal blow to the US\$122 billion firm, how quickly Huawei might fold, and what the collapse of the world’s largest telecom equipment provider would mean for networks in the 170 countries that run on its hardware. (Asian news; Fear = 3 & Disgust = 2)

The main discourse underlies the negative examples from Chinese reports is that of *Huawei as a victim*. The coverage focuses on the unsubstantiated allegations by US politicians against Huawei regarding national security, who accused Huawei of disrupting the supply chain, undermining global cooperation, and dragging China and the United States into a prolonged cold war in the technology sector against the backdrop of the pandemic. In the view of Chinese media, the US-led crackdown and restrictions on Huawei are quite irrational, since they are causing costly damage not only to China but also to the United States, certainly affecting countries with related interests around the world. The case of Micron in Example 4 proves this point. Example 5 portrays the US government as acting aggressively and unfairly towards China using a series of metaphors. The metaphor of “blame game” implies a lack of responsibility on the part of the United States and “a war of words” and “strangling” suggest aggressive and harmful actions. The metaphor of “a political virus” indicates that the US government is not only acting aggressively towards China but also undermining important economic values and principles.



*Example 4*

After cutting off supply to Huawei, Micron is estimated to lose 10 percent of its revenue, or \$2 billion, every year ... (Chinese news; Disgust = 2)

*Example 5*

From the blame game led by US foreign policy hawks over the coronavirus pandemic to a war of words against China and strangling Chinese companies like Huawei through all possible means, the US government spares no effort in smearing both the Chinese government and the Chinese companies, sparking outrage on Chinese social media platforms, and now a top-down political virus inside Washington is biting the foundation of the market economy, going against the spirit of innovation and cooperation, analysts said. (Chinese news; Anger = 4 & Disgust = 2)

### Media Representations of Huawei on a Negative Stance

In corpus II, the examples with high positive emotions of *trust* and *joy* from Europe and North America revolve around one main discourse of *Huawei as a possible danger*. In the reports there is ambivalence towards Huawei's products and technologies, especially the case in the UK. On the one hand, if their governments cooperated with Huawei they could use the advanced 5G technology at a relatively preferential price, which may explain the positive emotions. On the other hand, there is concern that if the company cooperated with Chinese government's intelligence services, the application of Huawei's 5G equipment might cause damage to their national security and they might also be cut off from intelligence sharing by the United States. This is particularly prominent in the reports from Australia & Oceania, which show a firmer stand regarding restricting Huawei. As is shown in Example 6, using the strategy of Perspectivization (i.e., a cyber expert), the reporting intends to persuade readers to believe that China is a country with strong authoritarian tendencies, where the government's power could supersede individual liberties and privacy, thus implying that there are risks of working with Huawei.

*Example 6*

... Australian Strategic Policy Institute cyber expert Dannielle Cave said China passed its National Intelligence Law last year, which obliged citizens and organizations to cooperate with and collaborate with China's intelligence services if required. (Australian &

Oceanian news; Trust = 6)

The US examples with positive emotions center on the discourse of *Huawei as a threat to US security*, therefore legitimizing the restrictions and crackdown on Huawei to protect US interests. As we can see in Example 7, the phrase "do what it takes" implies a willingness of US government to take extreme measures in order to achieve the stated goals, which can be interpreted as a justification for its policies or actions that may harm other countries or organizations in the name of national security. This declarative sentence gives the impression that what is asserted about foreign adversaries is factual and objective, but no evidence is given for this assumption.

*Example 7*

... his administration will do what it takes to keep America safe and prosperous and to protect America from foreign adversaries targeting vulnerabilities in American communications infrastructure ... (US news; Joy = 3)

The discourse of *Huawei as a threat to national security* was also revealed in the negative examples in corpus II. In consequence, the restrictions on Huawei's technologies and products seem to be justified. In example 8, the use of the phrase "blocked on national security grounds" can create the impression that Huawei is a security threat and the use of phrases such as "circumvent US sanctions against Iran" and "committing bank fraud" frames Huawei's actions as illegal and unethical. All of these claims create a negative impression of Huawei, yet without providing any supporting evidence.

*Example 8*

Having already been blocked on national security grounds by the federal government from participating in any part of Australia's 5G telecommunications infrastructure and National Broadband Network, Huawei's reputation took another hit last week when the US government accused it of trying to circumvent US sanctions against Iran, of committing bank fraud and of rewarding employees for the theft of competitors' secrets. (Australian & Oceanian news; Anger = 5)

We also found that North American coverage scores higher consistently in negative emotions of *anger*, *disgust*, *fear* and *sadness*, which can be explained not only by its focus on restrictions on Huawei's technologies, but also by the fact that

there is a significant amount of reporting about the detention of Meng Wanzhou by the Canadian side, centering on the discourse of *Huawei as a leverage of Chinese government*. Her detention is justified by the reporting that China carried out retaliatory moves to arrest Canadian nationals without legitimate charges.

The crackdown on Huawei is more explicit in the negative examples of the United States, which once again center on the discourse of *Huawei as an extremely dangerous threat*. However, some reports have also pointed out that the US initiative has had limited success and some warn that the United States is adopting an extremely paranoid rhetoric which could lead to a new red panic, therefore challenging the validity of this representation of Huawei.

### Discussion

In this section we continue to answer the third research question, trying to interpret these representations of Huawei in socio-political context. As is shown in the previous sections, sentiment analysis shows that news about Huawei from the United States, Europe, North America, and Australia & Oceania is salient in negative emotions, which could be explained, to a large extent, by the representations constructed in their reports about Huawei, among which representing the company as *a threat or danger to their national security* is a predominant one. This should be unsurprising, considering the world leader in 5G technology as a flash point in the trade war between the United States and China. This negative media representation by US news largely conforms to the political interests of the country. Since 2018, the US administration has led an extensive global campaign against Huawei, claiming that Huawei's technologies pose a national security threat to the United States, and more broadly to other liberal democracies, which has been intensified by the subsequent orders of banning Huawei from providing services for US businesses and buying components and equipment from US companies. In the process of constructing Huawei as a threat to national security and interests, US news emphasizes the political background of its 5G technology. The US media's selective construction of Huawei is highly consistent with the US government's strategic goals for China's science and technology, with the aim of convincing the international community that the United States is a more respectable partner in science and technology. The US media can be characterized as a subordinate of power, and the US government, therefore,

controls the release of information and achieves the goal of influencing public opinions.

The negative media coverage from Europe, North America, and Australia & Oceania indicates the power of US economic and foreign policies as well as media over other Western countries. This seems to echo the fact that the neoliberal expansion of US mass media is a major vehicle to build, maintain, and exercise imperialistic national power (Boyd-Barrett, 2015; Schiller, 1976). To curb the global expansion of Huawei's 5G technology, the United States has spared no efforts to mobilize and urge its allies to boycott Huawei. However, the slight differences in their attitudes toward Huawei in the media reports of US allies, like the ambivalence in British news and the hard line taken by Australian news, also reflect the fact that each country's strategies towards Huawei seem to be first influenced by domestic factors, such as the stability of the ruling party, then by its foreign policy and economic interests.

However, when putting the representation of *Huawei as a threat or danger* in textual context, we hardly found solid evidence in the news that could prove this is valid. When considering the larger socio-political context, *this representation* can also be a fallacy, since there is no grounded evidence about Huawei's so-called misconduct or illegal actions that could lead to naming a single company an extreme threat to the United States and its allies, the most powerful alliance in this world. In the operation of the Huawei Cyber Security Evaluation Centre based in the UK, British inspectors said that they had never found a backdoor for eight years. Huawei pointed out that "its equipment has survived repeated and intrusive checks by one of the most capable electronic-intelligence agencies in the West" (Economist, 2019). In terms of intellectual property disputes, Huawei claimed to have a better record than Apple and Samsung. According to public records from 2009 to 2019, Apple was involved in 596 intellectual property lawsuits and Samsung in 519, whereas Huawei was involved in 209 (Huawei, 2020).

Therefore, this fallacy of *Huawei as a threat* seems to result from the fact that Huawei starts to play the role of a telecom technological pacesetter, leading the race to develop 5G technology as a key part of national infrastructure in the near future. If China rules the 5G age, Adam Segal (2018, p. 10) claims, China will secure "the economic, diplomatic, national security, and intelligence benefits that once flowed to Washington" and will try "remaking cyberspace in its own image." The United States is therefore worried that in that case, China will replace America as the world's top

intelligence power and perhaps even deny America access to the networks (Zhang, 2021).

Although the US-led Western media pictures Huawei as negative, we found that the news from Africa, the Middle East, and Asia describes Huawei as *a leading tech giant* and *responsible enterprise*, enthusiastic at charities in poverty-stricken areas. This first corresponds to Huawei's global expansion to a large extent. Huawei bases its international frontlines primarily in developing areas such as Africa, seeking opportunities and using these underdeveloped regions as entry points into the global market (Tang, 2020). Its efforts and investment in building infrastructure for remote regions have won it the good reputation that media in these areas presents. From a large geopolitical perspective, the positive image of Huawei in African media may be built on the positive image of China there, which supports the general conclusion advanced by some scholars (e.g., De Beer & Schreiner, 2009) that China's presence in South Africa is a comprehensive strategic partner rather than an exploitative colonialist.

In Chinese media reports, Huawei is put in a much more positive light and depicted as *a victim in the trade war* and *an inspiring example* that continues to do well with hope and confidence in the face of adversity. Broadly speaking, this is in accordance with China's telecom development strategy and geopolitical goals. The *13th Five Year Plan* (State Council, 2016) states that 5G is a key technology for information network with strategic importance. Huawei's expansion across the 5G supply chain not only signifies a rising giant in the global information industry but also corresponds to China's desire to lead the next-generation technology (Tang, 2020). At the same time, Huawei, by building telecom infrastructure and providing services in developing countries, also serves China's geopolitical goals.

### Conclusion

This paper presents a methodological contribution to analyzing media discourse on corporate image by showing the value of a mixed approach of data-driven sentiment analysis and qualitative interpretation based on the DHA. First of all, the sentiment mining method can quickly reveal unknown sentiments and emotions in a large amount of news, overcoming the possible shortcomings of traditional corpus methods in uncovering the attitudes in media discourse. This enables the comparison of attitudes in the news of different regions and countries under a unified standard, therefore providing an objective basis for analyzing the representations

of Huawei in media discourse. What's more, this data-driven quantitative method generates representative sentence examples for subsequent qualitative interpretation as a practical way of downsampling. Then applying discursive strategies in the DHA grants us a critical stance, which we find indispensable in analyzing representations in media discourse. This study highlights the strengths of this analytical model, which we hope can offer effective reference for scholars in the field of media discourse analysis. In terms of practical significance, the research results can provide a practical basis for Chinese enterprises' international communication strategies and empirical experience for further strengthening Chinese enterprises' international communication capabilities.

However, it is necessary to acknowledge several limitations of this study. First, the current study just focused on the images of Huawei in more recent media reports. Future research could consider a much longer time span, since diachronic studies might uncover the evolution of Huawei's media images in different periods of its growth and expansion in global market. Second, research on other Chinese multinational corporations could be carried out to present a holistic picture of Chinese companies in global media.

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