

Evaluating A Company's Corporate Reputation from the Perspective of Its Employees by Analyzing Sentiment in Online Reviews

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Abstract:

A comprehensive evaluation of an organization's performance throughout its existence is known as its corporate reputation (Kircova & Esen, 2018). Businesses with a good corporate reputation have a greater chance of influencing the attitudes and actions of their customers, giving them a competitive edge (Kircova, 2018). Because there are so many comments and opinions on the internet that are easily available to non-specialists, the evaluation of company reputation is becoming a more relevant topic in the field of business studies (Shayaa, 2018). In the past, surveys, sample groups, and qualitative interviews were considered reliable methods for assessing a company's reputation (Smith, 2010). Newburry and Fombrun & Fonzy have already brought attention to a novel approach to assessing a company's reputation. The invention of a reputation-measuring tool and a predictive model that shows how corporate reputation affects stakeholder outcomes were the main goals of Fombrun's most recent research (Fombrun, Fonzy, Newburry, 2015). Sentiment analysis using internet reviews as a means of assessing corporate reputation has not received much attention up to this point. In order to assess the reputation of the company, this study uses sentiment analysis as a suitable tool to look at the opinions that employees have about their firms. With our tool, businesses can respond to stakeholder requests and market changes in an efficient manner. Additionally, it might serve as a means of informing companies that are unaware of unfavorable internet reviews.

Keywords: Sentiment Analysis; Semantic Search; Natural Language Processing; Corporate Reputation.

1. Introduction:

A company's corporate reputation is a thorough evaluation of how well it has performed throughout its lifetime (Kircova & Esen, 2018). Businesses with a good corporate reputation have a greater chance of influencing the attitudes and actions of their customers, giving them a competitive edge (Kircova, 2018). According to recent research, qualitative methods including focus groups, questionnaires, and interviews are frequently used to assess a company's reputation (Smith, 2010). The purpose of this study is to assess an organization's reputation through the examination of publicly accessible internet reviews. According to recent research, sentiment analysis may serve as a useful method for evaluating the general attitude of the public (Shayaa, 2018). The article highlights a company's motivation for collecting stakeholder data and applying sentiment analysis: to raise the caliber of its output (Shayaa, 2018). Nevertheless, it is also stated that it is utilized to obtain a more comprehensive understanding of worker or public opinion, which is relevant to our goal. "How can corporate reputation be evaluated from the employee's perspective using

online reviews and sentiment analysis?" is the main research topic posed in this study. Section 2 of this report will include a literature review, and Section 3 will include primary research to address the inquiry.

2. Litterature Review

A large amount of study has focused on the assessment of company reputation (Fombrun, 1996). The majority of the research that has been done so far has been qualitative in nature, using methods including focus groups, questionnaires, and interviews (Smith, 2010). From a socioeconomic perspective, evaluating a company's reputation is crucial. Thus, in order to safeguard a brand's reputation, the analysis of this study's results should help evaluate the issue of companies failing to identify a bad corporate reputation (Lange, 2011). Organizations can successfully reroute positive communication while eliminating negative feedback by proactively identifying and eliminating unfavorable evaluations.

2.1 Defining corporate reputation

A significant amount of scholars elucidate the concept of business reputation. While there are many ways to interpret reputation, most people believe that it is an intangible commodity that can give an organization a competitive edge, according to Bronn (2015). An organization may be able to gain a competitive advantage from having a positive reputation (Bronn, 2015). This is due to the fact that a positive reputation is expensive, rare, and irreplaceable (Bronn, 2015). Conversely, Kircova (2018) defines corporate reputation as the comprehensive evaluation of an organization's accomplishments by its stakeholders. The statement by Kircova (2018) that was previously cited demonstrates how many stakeholders view the organization's effectiveness. Companies with a fantastic reputation have an advantage over their competitors and have more control over the attitudes and actions of their clientele (Kircova, 2018).

According to Smitha, brand connections have an impact on an organization's corporate image and collectively shape its reputation. Positive brand perceptions have the ability to impact consumer loyalty, increase consumer trust in a business, and impact consumer decision-making. Companies maintain their brand image carefully since it is an important asset (Smitha, Smith & Wang 2010). It is well acknowledged that an organization's reputation is based on the intangible asset that gives it a competitive edge and is extremely important to its stakeholders. Given its valued position as an asset, unfavorable evaluations that hurt the company could do a great deal of harm.

2.2 Stakeholder Tracking and Analysis: The RepTrak System for measuring corporate reputation

The RepTrak System makes clear how crucial it is to use a prototype system designed especially for assessing a company's reputation. The aforementioned analytical tool is utilized to monitor stakeholder viewpoints on businesses (Fombrun, 2015). Due to a divergence from other studies, Fombrun (2015) provides a seven-dimensional framework that clarifies the best method for managing stakeholders. Using information from freely available web assessments, it is possible to ascertain which components are covered.

They consist of seven of the following dimensions:

1. The idea of goods and services refers to the idea that an organization's reputation may be impacted by the caliber of its goods. When a business provides excellent goods and services, the public's perception of it is usually favorable (Fombrun, 2015). A company's brand name serves two crucial purposes, according to Smith and Wang (2010): it expresses the identity of the business and offers reassurance about the nature and caliber of its goods and services. A company's demise may be determined by how

its customers view its brand (Smith, 2010). Positive brand perceptions have the ability to impact consumer loyalty, increase consumer trust in a business, and impact consumer decision-making. Customers have a propensity to disseminate online reviews that are exclusive to a particular good or service (Smith, 2010). For the purposes of this study, no customer investigations were carried out. While customer comments are not investigated, the accuracy of staff opinions stated in internet reviews regarding the focal organization's goods and services is verified.

2. The notion of innovation signifies that a progressive entity endeavors to institute novel protocols within the firm and augments its corporate image (Fombrun, 2015). Courtright distinguishes two fundamental stances on innovation. An organization defines innovation as its ability to develop new and enhanced goods and services (Courtright & Smudde, 2009). From the perspective of the market, innovation is the process by which companies incorporate improved and new elements into the socioeconomic frameworks within which they operate. The aim is to promote staff involvement in the innovation process and include it as a discussion point in online assessments. Courtright and Smudde (2009) discovered that a plethora of internal and external communications are sent to employees. Furthermore, the authors contend that, whether or not they are associated with innovation, negative feelings that are coming from the company can be kept from leaking out through efficient corporate communication.
3. The majority of stakeholders prefer and hold organizations that promote employee well-being and maintain healthy work environments in high regard; this sentiment extends beyond the organization's walls (Fombrun, 2015). Nolan (2013) states that an employer's brand image is the culmination of the material, financial, and emotional advantages associated with the company that offers jobs. A person's personal opinions about the nature of their job at a corporate organization are a topic of controversy (Nolan, 2013). Organizations that maintain healthy work environments are preferred and respected by most stakeholders, according to Fombrun (2015). According to both research, a favorable opinion of the workplace may improve the brand's image, whereas a poor opinion of the workplace may have the opposite effect. Furthermore, as Nolan (2013) noted, contented workers are more likely to demonstrate a consistent level of commitment, serve as brand ambassadors for the company, and provide positive feedback about their employer. Examining the online reviews that were acquired with the intention of conducting this research requires careful consideration of this.
4. In terms of ethics and transparency, governance is seen as a crucial component of reputation management; companies with strong corporate governance are more likely to win over stakeholders' trust and confidence (Fombrun, 2015). According to Davis (2005), corporate governance is the arrangement of structures, procedures, and institutions inside and outside of businesses that give participants power and control over resources. Online evaluations may also examine these institutions, procedures, and policies in detail.
5. The importance of citizenship in reputation management comes from the fact that companies can have a competitive edge by supporting a deserving cause, for example, which is consistent with the positive reputation that these companies have (Fombrun, 2015). A qualitative study found that stakeholders are usually quite proud of a company and aware of its good activities. Giving health benefits, care plans, and other supplemental benefits are a few examples of charitable initiatives that might result in a positive company evaluation (Orlitzky, 2012).
6. One's reputation is enhanced by modeling behavior. A skilled leader draws favorable attention from the media and increases the likelihood of securing support for the organization's projects. As to the

findings of Fombrun's (2015) study, a proficient manager has the capacity to encourage and inspire staff members to foster a harmonious work environment. Reviews invariably touch on the subject of effective leadership because of its enormous impact on workers (Fombrun, 2015).

7. Performance serves as a metric that impacts how stakeholders evaluate organizations. A company's credibility is positively impacted by its strong financial performance (Fombrun, 2015).

These seven factors are essential for managing and satisfying stakeholders since they have an impact on an organization's reputation.

2.3 Risk governance, structures, culture, and behavior: A view from the inside

Implementing survey administration is an other method of assessing a company's reputation. Sheedy and Griffin (2018) propose that employee questionnaires disseminated throughout various business entities might be used to assess reputation and internal corporate governance. Sheedy (2018) asserts that workers typically give positive evaluations of supervisors, frameworks, and training initiatives. On the other hand, pay evaluations were generally lower (Sheedy, 2018). According to one of the findings, leaders are essential to the formation of culture (Sheedy, 2018). Nonetheless, the report suggests that the overrepresentation of men in the surveys led to the manifestation of biases. Even though this study concentrated on the banking industry, surveys were still thought to as a simple yet useful method for assessing reputation.

We use corporate assessments in our strategy to lessen the possibility that managers would influence workers' inclination to give favorable feedback. However, Sheedy's research raises the possibility of a self-selection bias and notes that access to the poll was difficult to get.

2.4 Sentiment Analysis of Big Data: Methods, Applications, and Open Challenges

In addition to discussing the non-technical difficulties that arise in the use of sentiment analysis, Shayaa, Jaafar, Bahri, Sulaiman, Seuk Wai Chung, Piprani, and Al-Garadi (2018) offer a thorough examination of the evolution of sentiment methodologies. One constant tendency that can be seen on the internet is the abundance of opinions and remarks that are available to those who are not experts (Shayaa, 2018). The internet's ability to gather massive volumes of data has made text mining—a text analysis technique—possible (Shayaa, 2018). Text mining is the process of applying data mining, knowledge management, machine learning, and natural language processing methods to documents (Shayaa, 2018). Text mining and analytics are initially carried out with two main objectives in mind. The main objective is to assess public opinion regarding a certain topic or incident (Shayaa, 2018). Consequently, sentiment analysis examines large amounts of data in order to ascertain people's attitudes, ideas, feelings, and views concerning a certain subject (Shayaa, 2018).

The gathering of user or user group input regarding the perception of a topic, product, person, event, or organization is the second goal. Similar to sentiment analysis, opinion mining is the application of algorithmic methods in natural language processing to identify and classify information as neutral, positive, or negative based on the opinions expressed (Sheedy, 2018).

These studies demonstrate how a company can enhance the caliber of its output by gathering data about its stakeholders and applying sentiment analysis. It is theorized, therefore, that other variables might have an effect on how well the general public's emotion or employee viewpoints are understood. Potential factors could include rivals and economic growth. This demonstrates the usefulness of sentiment analysis

in gauging public opinion as well as the ability of sentiment-driven applications to help enterprises identify public opinion.

2.5 Journal of Business Research: The role of emotions and conflicting online reviews on consumers' purchase intentions.

An example of the importance placed on the substance of these kinds of reviews comes from a recent study on internet reviews. It is underlined how important it is to encourage users to provide feedback that is more thorough, accurate, and illuminating rather than only using the site to vent their emotions (Ruiz-Mafea, 2018). This method improves the content and perceived usefulness of online reviews (RuizMafea, 2018). It also emphasizes the fact that a large percentage of assessments are typically meaningless and may contain false information, both of which can be detrimental to the company. Additionally, the research indicates that the incorporation of photographs into online reviews enhances customers' perceptions of the reviews' dependability and usefulness; however, this benefit is dependent on the existence of both textual and visual features (Ruiz-Mafea, 2018). The following elements were thought to be crucial for determining the quality of internet reviews:

1. The notion of online review credibility pertains to the general impression that customers have of the review, specifically concerning its accuracy and reliability.
2. Online reviews' instructive quality included the review's timeliness, thoroughness, and relevancy.
3. Evaluation of the Usefulness of Online Reviews: find out whether customers were not prompted to ask further questions by the online reviews.
4. An analysis of how the claims made in internet reviews affect customer perceptions and purchase behavior.
5. Empathy: the degree to which the customers' feelings or concerns were evoked by the review
6. Emotions: RuizMafea (2018) classified these in a number of ways, including boredom/entertainment, anger/satisfaction, and so on.

This study makes it easier to comprehend the qualities of assessments that encourage wise decision-making, and this holds true for both employees and managers inside a company. In addition, a Bright Local Survey (Murphy, 2019) found that 82% of potential employees examine online firm ratings on employer review sites. It is reasonable to speculate that this event affects the standing of the business. For instance, Muse suggests that a disgruntled employee is more likely than a satisfied employee to post a negative review and express his dissatisfaction (Wolf, 2019). A happy worker is more likely to tell three close friends about their great experience at their company. On the other hand, a worker who is unhappy with their employer can feel compelled to tell more others about a bad experience (Wolf, 2019). Therefore, this could suggest that the majority of unfavorable reviews that are published are done so with malice (Wolf, 2019).

2.6 Conclusion

In conclusion, the literature has examined a variety of approaches for evaluating and identifying corporate reputation. While the aforementioned articles employ research procedures that differ from our own, these approaches might offer a fundamental framework for identifying patterns and limitations in current research. It is generally accepted that surveys can be used to assess reputation, and scholars have done so on many occasions. Nonetheless, among other things, online assessments can be used to evaluate leadership, workplace, and governance (Fombrun, 2015). This creative approach to assessing company

reputation may be seen as a progressive way to alert companies to the possible negative effects that unfavorable assessments may have. Notably, further research indicates that the absence of certain elements from online evaluations jeopardizes the organization's perceived trustworthiness and dependability in the eyes of its consumers.

3. Research Methodology

Specifically designed for this study, the program helps firms identify negative ratings and has the ability to generate alerts. Companies who provide an application that can analyze sentiment from online evaluations will be able to quickly adjust to shifts in the market. This section describes the research process, including the strategy used, the techniques used, and the primary data gathering.

3.1 Research Approach

Text analysis is used in this study. Text analysis is an applied research methodology that combines qualitative and quantitative research methods to find patterns within texts.

To better comprehend certain ideas, opinions, or experiences, qualitative research collects and analyzes non-quantitative data (Bhandari, 2020). This study examines the review text for Fombrun's dimensions, demonstrating the use of qualitative content analysis. Through the use of terminology related to these dimensions, one can begin to comprehend the topics that workers are struggling with when producing written work. Sentiment analysis can then be applied after that.

In quantitative research, numerical data is collected and analyzed with the goal of performing statistical analysis (Bhandari, 2020). The investigation employed quantitative research methodologies to ascertain the frequency of word usage in reviews, evaluate the sentiment of reviews that are sourced from a specific company, and analyze the process of collecting online reviews. With so little previous research on the topic, the main goal of this exploratory study is to assess corporate reputation by means of online review analysis.

Although the application's main goal is to provide enterprises with guidance, it has the potential to undergo further technological developments.

3.2 Primary Data Collection

Web scraping, which entails gathering primary data, has been used to evaluate the reputation of the company. The process of automatically extracting, interpreting, and classifying data from a website is known as web scraping (Broucke & Baesens, 2018, pp. 1-2). For data scientists in particular, web scraping offers an unprocessed and unaltered source of information (Broucke, 2018). Nonetheless, organizing data can be a significant challenge (Broucke, 2018). APIs are widely used by data scientists for data scraping purposes (Broucke, 2018). According to Broucke (2018), an API is a tool that makes it easier to access structured data.

The company has the authority to impose restrictions on API access, including caps on the number of calls or requests, and it keeps a close eye on usage to ensure compliance (Indeed, 2020). It should be mentioned that websites like Indeed do not offer free APIs. To obtain an Indeed API, you must successfully navigate the editor qualifying process. Web crawling has been used as a result.

Because of its wide audience and abundance of business reviews, Indeed has been named the center of interest. We did not include alternative websites, like Glassdoor.com, in our research design because they did not fit inside its parameters. Information that has been gathered especially for this study is known as

primary data. For example, researchers commonly use stolen data to perform natural language processing, build deep learning models, and conduct competitor analysis (Broucke, 2018).

In this work, natural language processing is used. It is the technological foundation that helps computers understand human language, according to Garbade (2018).

Given the potential legal and ethical ramifications of online scraping, particularly when it is used for commercial purposes, ethical authorization was secured before the study began.

In addition, the process of web scraping started with a preliminary examination of the assessments. I achieved this by thoroughly examining the HTML page and creating a Python tool called a spider that is designed to extract data from Indeed.nl.

The web scanning process was carried out using the Python framework Scrapy. Because of its ease of use and accessibility, engineers frequently choose this framework for extensive web crawling (Rizvi, 2017). There are also additional scraping tools available, like Python Requests, MechanicalSoup, BeautifulSoup, and Lxml. These are similar tools to Scrapy. Scrapy and BeautifulSoup is often preferred by developers (Choudhury, 2020).

Given their prior expertise with the application, the researcher's choice to use Scrapy seemed apparent. There are many benefits to using Scrapy:

1. The use of an open-source framework is advised.
2. An interactive shell console makes it simple to explore with data scraping using Xpath expressions and CSS. following the extraction of the necessary data from the webpage and the addition of selectors to the arachnid
3. It was clear that the person had used Scrapy before.
4. The developer community here is thriving.

One of the main reasons developers prefer Scrapy in a Conda environment is its user-friendly nature. Docker was used for this particular project to ensure a very effective and portable virtual environment. In order to ensure that the software will function consistently regardless of the development environment, the researcher deployed Docker (Anderson, 2016). This was the outcome of using many Docker containers.

The built prototype serves as a web crawler intended to extract data from Indeed.nl, as was previously described. Data collecting requires this prototype.

A total of 893 assessments were gathered in order to conduct analysis.

It was possible to convert the JSON data format into a CSV file by using the Python package Pandas. Since it was thought to be more advantageous to work with a CSV format, I used a Python code to make the data conversion process easier.

Numerous factors were included in the reviews, including the rating, date, review content, author, and title. These variables were all easily accessed and put into columns of structured data.

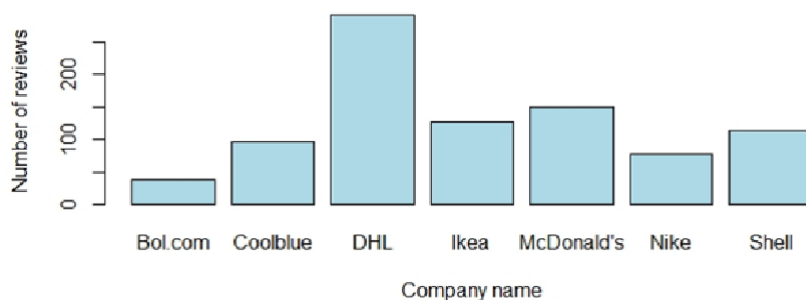


Figure 1. Number of reviews from indeed per organization.

In sum, the online assessments of seven organizations were stolen, as Figure 1 shows. Random selection was used to choose these companies. Every company operates in a particular industry. Of the reviews that were received, McDonald's received 150, Coolblue received 96, DHL received 291; Bol.com received 37; Nike received 78; Ikea received 127; and Shell received 114.

The assessments were gathered in April 2020.

3.3 Research Methods

As the first step in the data analysis process, the data was originally kept in a relational database. Managing massive amounts of data effectively requires the storage of data in a database. According to a source, local file storage should be avoided when trying to repeat this study on a bigger scale (BBC, 2020). Ensuring accessibility from a database is crucial for this process.

A Docker container was set up to easily interface with PGAdmin and PostgreSQL to make using Scrapy easier.

Given the limited size of the dataset, the information is handled using a local CSV file. Queries were created to determine the dimensions detailed in Fombrun's business evaluations once the data had been loaded into a relational database (Fombrun, 2015). Specific terms are associated with the subsequent dimensions (Fombrun, 2015):

- Workplace: A nice and pleasurable experience is largely influenced by coworkers, the atmosphere, and the work environment.
- Moreover, the atmosphere that the entire setup and structure promotes helps boost output and happiness among staff members.
- Ethics, which calls for honest, open, and equitable corporate practices, serves as our guiding concept for governance.
- Our offers include of shipping, products, and services. The process of embracing innovation involves exploring new ideas, implementing process improvements, implementing necessary changes, and coming up with creative solutions.
- Understanding citizenship requires delving into the intricacies of policies, staff, laws, and rules. Those in positions of authority who oversee and manage a group or department are considered to be leaders.
- Performance in terms of staff, finances, revenue production, and pay.

Semantic search is the technique of locating potentially important words and phrases in corporate evaluations. Understanding data and finding relationships between data elements are the goals of semantic search (Bast & Bocchuld 2016). Semantic search is a commonly used technique in natural language processing to extract meaning from long texts (Bast, 2016).

There are two important things to think about when it comes to search content. The correlation between a document and a keyword query is the first step. The second element is the categorization of the relevant papers (Bast, 2016). The prototype made use of PostgreSQL's TSQuery and TSvector functions to efficiently carry out matching and ranking operations on search terms. A wide variety of data types are available in PostgreSQL, which was designed specifically to enable comprehensive full-text searches (Patterson, 2019). Targeted word association questions were used to determine the subjects of employee assessments. I looked up words and phrases related to Fombrun's measurements in Dutch.

It was vital to look for familiarity before delving into the various aspects of sentiment analysis. A thorough review of the dataset was done to find any missing data before the study got started. The Python method utilized regular expressions from the re module to organize the data in a way that ensured

sentiment analysis would be feasible. To make the data easier to obtain for analysis, regular expressions were needed. Furthermore, the Pandas library served as an essential part of performing numerous tasks related to the data arrangement. For example, Pandas was used to load and save the data in a column. After this process, text analysis was carried out using SpaCy. Due to its user-friendly design and extensive support for Natural Language Processing features, SpaCy has seen a sharp increase in popularity (Broucke, 2018). An excellent free and open-source Python natural language processing package is called SpaCy. Its main objective is to make it easier to create apps that can handle large amounts of textual data (Broucke, 2018).

Python was deployed in order to run SpaCy, which was likewise configured inside of a Docker container. This is put into place to provide a more uniform procedure.

The following tasks were assigned to SpaCy: - Language recognition revealed that the majority of the evaluations were written in Dutch, with a small percentage also being written in French and English. -Removing stop words makes it easier to eliminate unnecessary words, which is a crucial stage in text analysis.

Tokenization is the method used to divide the evaluations into discrete words. It is important to highlight that the use of SpaCy in natural language processing resulted in much more accurate sentiment analysis results. The utilization of lemmatization and tokenization methodologies significantly improved sentiment analysis's accuracy.

After using SpaCY to process the text, we used the Pattern library to analyze the sentiment of the evaluations. Polarity and subjectivity emerged as the two important measures from this investigation. An information security analyst can use Pattern's sentiment object to determine the text's subjectivity and polarity (positive or negative) (Malik, 2020). The emotion score, which ranges from 1 to -1, is based on whether adjectives are positive or negative. An additional measure of subjectivity is a scale from zero to one. Subjective viewpoints and objective facts are prone to disintegrating in the information provided in this work (Malik, 2020).

Understanding both subjectivity and polarity is helpful since assessments often reflect subjective opinions rather than objective truth (Ruiz-Mafea, 2018).

Additionally, the tests were run through the LangDetect Python module to identify the various programming languages that were being used. For example, Pattern works with several different programming languages. Therefore, understanding the text is crucial. The assessments were written in three different languages: Dutch, English, and French. LangDetect was able to accurately identify each language. It is important to highlight that, despite possible implementation, additional languages were not identified in our dataset during the processing stage. SpaCy's language detecting features and Pattern were used to calculate the sentiment. Pattern was utilized to calculate the sentiment after SpaCy and language detection.

Three prototypes were made as a result of our research.

"Prototype development for a webcrawler."

The goal is to build a prototype that allows for comprehensive text searches using data stored in a relational database—PostgreSQL in this example.

A working prototype with text and sentiment analysis capabilities.

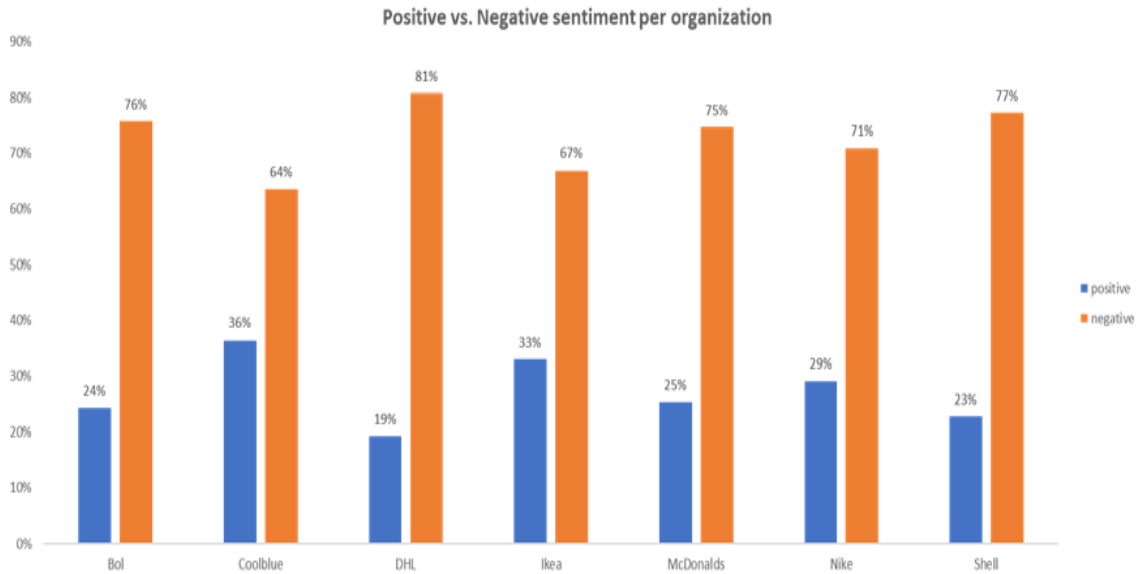


Figure 2. Averaged relative overall sentiment after full text search on relevant corporate reputation words per dimension per organization.

Figure 2 shows the distribution of favorable and unfavorable reviews for a range of organizations. It is essential to recognize that a direct comparison is impossible due to the operational divisions and branches of these businesses. This graph can be used to make the general observation that most organizations receive bad reviews. According to Muse, unhappy workers are more likely than happy workers to voice their displeasure verbally and through unfavorable reviews (Wolf, 2019). If an employee is happy with their experience, they are more likely to tell three of their closest peers about it. On the other hand, a disgruntled employee can feel compelled to report a bad experience to others in the company (Wolf, 2019). Therefore, it can be inferred that negative reviews are often released with the specific intent of discrediting the organization and harming its reputation (Wolf, 2019).

The data presented in the graph indicates that DHL has received the lowest ratings when compared to the other companies included in our case study. Eighty-one percent of the evaluations are negative, which is the majority when it comes to DHL. Despite the negative content of 64% of the reviews, Coolblue is widely recognized as the top company, contrary to popular belief.

4. Conclusion

Based on the results of our study, sentiment analysis could be a useful method for assessing a company's reputation.

According to our data, a significant percentage of the evaluations were provided with unfavorable information. One possible explanation for this finding is that workers might be more inclined to share their thoughts and firsthand accounts after coming across a negative circumstance at work (Wolf, 2019). Considering the aforementioned, it is recommended that companies utilize our tool proactively to identify unfavorable reviews.

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