

Stakeholder relationship management on Facebook

The communication strategies of fifteen Fortune Global 500 companies

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Abstract

Social media play an increasingly large role in corporate communication and stakeholder relationship management. Whereas previous research has focused on different communication strategies used by Fortune 500 companies on Facebook, none have analysed and mapped stakeholder engagement and response within a social network. This study used a mixed method approach to find out how fifteen Fortune Global 500 companies communicate on Facebook and in what ways stakeholders engage with corporate Facebook posts. First, a qualitative content analysis was conducted to determine how fifteen Fortune Global 500 companies use the information dissemination and interactivity strategy and message frames to engage their Facebook fans. Stakeholder engagement and response types were measured to find out which strategies and frames were most effective in terms of generating activity from stakeholders. The results showed that stakeholders interact most with social and interactive posts, and posts that contain various media types including photos, videos and links. Posts that invited stakeholders to participate in contests and games were consistently popular, as well as the product promotion message frame. For the second part of the study, a network analysis was conducted in order to find out how users interact with corporate Facebook messages and how information flows within page networks. This showed that user communities based on one-time interactions form around the most popular posts within the network. However, communities consisting of multiple interactions did not form around particular communication strategies, but rather around certain topics and hashtags. This type of community formation can be useful for companies, as it helps information to spread faster within and outside the network. Overall, companies were using Facebook's features to engage their fans. However, only a few companies were using the social network to its fullest extent to manage stakeholder relationships, by posting interactive and social messages, and including hashtags and key words in posts.

Key words: stakeholder relationship management, corporate communication, Facebook, Fortune 500 companies.

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1. Introduction

The increasing role of social network sites has had a tremendous influence on the way organisations engage and build relationships with their stakeholders. The development of media platforms like Twitter and Facebook has transformed communication from a one-way to a two-way process (Grunig, 2009; Lewis, 2010). Whereas traditional communication tools allow organisations only to talk to their stakeholders, social media platforms have made dialogues between the two possible. This means that organisations have less control over what is being said about the company, as the relationship between companies and their publics has become an interactive process.

Although some organisations did not see the potential of adopting online platforms into their communication practices from the beginning, the relevance for relationship maintenance was clear to public relations practitioners in an early stage (Ki & Hon, 2006). Communication through social media platforms can improve the relationship between individuals and organisations (Pan & Xu, 2009; McCorkindale, 2010). With the growing use of social media, more and more organisations are adopting various strategies to get the right messages across to the right audience. Several studies on Fortune 500 companies have shown that these businesses are increasingly implementing online communication strategies to enhance stakeholder relationships (Ki & Hon, 2006; Lee, Hwang & Lee, 2006; McCorkindale, 2010; Rybalko & Seltzer, 2010). Fortune 500 companies are considered world leaders in business and should be leaders in the field of communication, as they have all resources to adapt their communication to their business goals. Social media platforms provide opportunities to build strong relationships with their stakeholders, as these channels can impact online relationship development positively (Kent & Taylor, 1998; Kent et al., 2003; McCorkindale, 2010). Implementing effective communication strategies can help organisations improve the relationships with their stakeholders (Waters et al., 2009). Also, a successful online presence is an advantage for corporations and helps them survive in a competitive market (Pan & Xu, 2009; McCorkindale, 2010).

Facebook is used by an increasing number of organisations, and has helped them to build and maintain relationships with various stakeholder groups (Shin et al., 2013). While some organisations manage to employ effective strategies to reach different stakeholder groups on Facebook, others struggle finding the right approach

to talking with and to their stakeholders via social media. This means that these organisations miss out on the potential that these social network sites offers for communication (Jo & Kim, 2003; Ki & Hon, 2006, Cho & Huh, 2007; McCorkindale, 2010; Shin et al., 2013). This does not necessarily mean that organisations do not have the resources to communicate online, but rather that more work has to be done regarding the strategies (Solis, 2008). In the current market, it is necessary for organisations to know how to communicate through social network sites to reach different stakeholder groups. As the field of PR has adopted social media as a communication tool, it is required for organisations to understand which strategies are most effective to reach particular goals, as well as how and when to engage in dialogues with their stakeholders (Vorvoreanu, 2009).

Despite previous research interest in the communication strategies used by Fortune 500 companies on Facebook (McCorkindale, 2010; Shin et al., 2013), these studies are merely descriptive and leave out stakeholder responses. This study contributes to previous theory as it focuses on two communication strategies and message frames used by fifteen Fortune Global 500 companies, and on how organisations can use the platform effectively to evoke desired stakeholder engagement and responses. As this study includes fifteen companies from six different industries, the findings can possibly be implemented across different fields. Fortune 500 companies are considered leaders in business and may be an example to other companies when it comes to communication.

For this study, the Facebook pages of fifteen Fortune Global 500 companies (Fortune, 2014) have been selected, a method used in previous research (Lee et al., 2006; Ki & Hon, 2006; McCorkindale, 2010; Rybalko & Seltzer, 2010). The study uses a mixed method approach and is divided into two stages: first, a qualitative content analysis will be conducted on Facebook posts of the fifteen selected companies. The focus will be on the use of two communication strategies, information dissemination and interactivity, and message frames. After a categorisation of these posts as one or both communication strategies and one message frame, the engagement levels that resulted from these categories will be studied and compared. This will give insight in which strategy is most effective in terms of generating engagement. In order to collect data, the Facebook analysis application Netvizz was used. The methods section will thoroughly explain this tool as well as justify the decision of using digital research methods for this study. In the

second study, the collected data from Netvizz will be imported to Gephi, a data visualisation tool, in order to analyse the company posts, the engagement they evoke and the stakeholder communities they collect around them. This will reveal relationships between strategies used and types of messages sent out by the company and the type of interaction and communities they attracted.

This study aims to identify patterns and/or structures in different communication strategies, types of posts, and the responses organisations get from different stakeholder communities. Therefore, the following research questions have been formulated:

RQ1: How are Fortune Global 500 companies using different communication strategies on Facebook to manage stakeholder relationships?

RQ2: How do stakeholders respond to Fortune Global 500 companies' use of the information dissemination and interactivity strategy and message frames on Facebook?

This study will start with a theoretical framework on this topic, discussing previous research on public relations, online relationship management and stakeholder engagement. The information dissemination, interactivity strategy and message frames will be explained in depth, using previous research and results to show why these strategies are relevant for this particular study. The methodology section is divided in two parts: first, the methodology used for study 1 will be discussed, followed by the results of study 1. After, the methodology and results of study 2 will be elaborated on, followed by the discussion and conclusion. This section will place the results in the existing theoretical framework and compare them to results found in earlier studies. A new conceptual model will be created based on the results of study 1 and 2. Also, suggestions for further research will be made and the limitations of this study will be discussed.

2. Theory and previous research

This theoretical framework will discuss the different variables that are measured in this study, using previous academic theory. Two propositions will be formulated and the conceptual model will be presented at the end of this section. The conceptual model offers a visual relationship between the different variables.

2.1. Public relations and online relationship management

With the gradual shift from a product-centric to a customer-centric organisation, managing customer relationships has become increasingly important for companies (Verhoef et al., 2010). For many of them, it has even become a top priority. The potential of the Internet for public relations practices was recognised early by Johnson (1997) and Kent and Taylor (1998), who argued that online communication is an opportunity for organisations to build and maintain relationships with their stakeholders. In this context, the term public relations is referred to as the practice of establishing and building relationships among groups of people, or between organisations and their key audience (Botan, 1992; Kent & Taylor, 1998). Stakeholders are defined as people or a group of people who are connected to an organisation in any way, because the actions of the organisation and the stakeholder are consequential to each other (Grunig & Repper, 1992; Carroll, 1998). More precisely, a stakeholder is “any individual or group who can affect or is affected by the actions, decisions, policies, practices, or goals of the organisation” (Freeman, 1984, p. 24).

Stakeholders do not always have an active role within the company, but creating these roles is valuable for organisations. Grunig and Repper (1992) argue that there is a difference between stakeholders and publics, as individuals who are part of a public respond actively to public relations strategies, whereas stakeholders in general do not. The goal for organisation is to identify their key publics and implement the right strategy where it is needed, so that stakeholders become part of a public. In this way, different stakeholder groups are addressed by different communication strategies, which supports the goal of these strategies to their best effect (Grunig & Repper, 1992). Giving stakeholders an active role that is connected to the organisation can be encouraged by well-tailored public relations strategies. However, companies are still learning what strategies work best and how they can be applied to the right audience. Whereas relationship management and cultivations are

widely accepted as the essence of public relations, little research has focused on when certain relationship management strategies work best, and for which stakeholder groups (Vorvoreanu, 2009).

The two-way model of communication the Internet allows for an interactive relational process, and is an interesting space when looking at relationships between organisations and their stakeholders. Kent and Taylor (1998) argue that these relationships consist of dialogues between organisations and the public. However, with the exponential growth of platforms and functions, it can be argued that all interaction between stakeholders and organisations online are part of these relationships. The development of the Internet as a communication channel and its dynamic and fast-changing nature calls for an understanding of how to use it to its best effect in the field of public relations (Kent & Taylor, 1998, 2002; Kelleher, 2006; Ki & Hon, 2006; Waters et al., 2009; McCorkindale, 2010; Shin et al., 2013). With the exponential growth of social media networks in the past years, businesses are pressured to adopt new ways of communication and relationship management where their customers are active rather than passive (Baird & Parasnis, 2011).

Social media platforms are built on the connections between people and organisations, and therefore offer excellent opportunities for businesses to connect and stay connected to their key stakeholders. Whereas having a fan base on social media does not necessarily mean all stakeholders are evenly positive about the company, building positive customer relationships can help increase a company's revenue (Baird & Parasnis, 2011; Stephen & Galak, 2012). Besides, by getting to know their key audience, companies can increase efficiency and reduce costs, as a closer connection to stakeholders means that it is easier for companies to learn what they are interested in.

Baird and Parasnis (2011) argue that companies need to understand and practice what they call "social customer relationship management, which recognizes that instead of managing customers, the role of the business is to facilitate collaborative experiences and dialogue that customers value" (p. 30). This means that rather than telling customers, companies need to engage customers in online conversations that matter to them. In this way, companies will find out what kind of information or interactions will trigger their target group to communicate with and about the company in a positive way. On the other hand, companies will also learn what communication strategies do not work to reach their goal. Communicating

through social platforms is a highly dynamic practice, which means that companies can see quick results of the strategies they are using to engage their customers. However, the interactive nature of the networks also challenges companies to communicate with their stakeholders on a more equal level; they are no longer in control of what is said about them, which can interrupt their planned marketing and communication efforts.

In the past years, companies have been struggling to adapt to the fast changing online platforms and interfaces and to communicate with their stakeholders effectively, but some improvements have been made. In a previous study of Fortune 500 companies conducted in 2007, only thirty-seven out of 500 companies appeared to have a corporate blog or website (Cho & Huh). Those who did communicate online mostly used one-way communication strategies. This was also concluded in a similar study on Fortune 500 companies in 2006, which showed that networking and sharing incentives were mostly absent (Ki & Hon, 2006). In 2010, a comparable study was conducted of how Fortune 500 companies use Facebook and what kind of messages they post (McCorkindale, 2010). Only twenty-five per cent of the companies appeared to be active on Facebook, and most information found on the company's corporate websites was not posted on the social media site. Also, most pages were mainly used by (former) employees as a reconnection tool. By 2011, roughly 83% of Fortune 500 companies had implemented some form of social media in their communication practice. Also, these companies are increasingly making use of Facebook, as a 2013 study on showed that more than half were active and on the platform (Shin et al., 2013).

2.2. Corporate communication strategies on Facebook

Three communication strategies have repeatedly been found helpful when it comes to relationship management (Waters et al., 2009; Haigh & Brubaker, 2012; Shin et al., 2013). The first part of this study will focus on which of the communication strategies listed below are most effective in terms of evoking positive reactions from stakeholders on Facebook.

Disclosure

Disclosure, the first strategy, involves the openness and transparency of organisational communication. In the current market environment, organisations feel

the need not only to make their messages stand out from the rest, but also to send out messages that are legitimate and coherent to the public (Christensen, 2002). This helps stakeholders to perceive the organisation as genuine, and increases organisational-public relationships. In disclosure, it is recommended that organisations 1) provide a detailed organisational description and historical background of the company, 2) the use hyperlinks to the corporate website, 3) logos and images to confirm the connection to the organisation and 4) list the individuals responsible for the page maintenance (Berman et al., 2007). A study on the use of Facebook by non-profit organisations showed that the disclosure strategy is used most by companies, but not all components were sufficiently present (Waters et al., 2009). However, organisations are progressively implementing the disclosure strategy on their Facebook pages, as a 2013 study showed that logo (94%), URL (94%), history (54%) and description (52%) were commonly found on the Facebook pages of fifty Fortune 500 companies (Shin et al., 2013). On Facebook, the disclosure strategy can be found mostly in sections stakeholders cannot respond to, such as the company description and the “about” section. The disclosure strategy has been found important to corporate communication through social media, and a lack of disclosure has been found harmful to organizational-public relationships within several relationship management strategies (Sweetser, 2010). However, as stakeholder response cannot be measured for this strategy in most cases and previous research already provided insight in how the strategy is used by companies on Facebook, it will not be included in this study.

Information dissemination

The second strategy is information dissemination, which focuses on the type of information that organisations communicate. As spreading information is one of the main reasons for organisations to use social networks (Crespo, 2007), it is extremely important for companies to understand what kind of messages evoke different wanted or unwanted responses. On Facebook, the most common forms of information dissemination used by Fortune 500 companies are photos (90%), videos (72%), whereas links to external sources (30%) were found not very often (Shin et al., 2013). Like disclosure, the information dissemination strategy is increasingly common on corporate Facebook pages. In 2008, more than three quarters of Fortune 500 companies studied did not have recent posts or updates (McCorkindale, 2010).

In 2013, more than half of the Fortune 500 companies included in the study were making use of the information dissemination as well as the disclosure strategy (Shin et al., 2013). However, for both strategies, organisations are still struggling to use Facebook to its fullest potential, as some of the website's key features are often neglected.

Interactivity

Finally, interactivity is another important component of online organisational communication, as it was found essential in organisation-public relationship building (Jo & Kim, 2003; Waters et al., 2009; Shin et al., 2013). An interactive communication strategy encourages a symmetrical dialogue between stakeholders and the organisation (Morsing & Schultz, 2006). Both parties get the opportunity to start this dialogue and persuade the other to change. This is important for companies, as this is how they can learn what their stakeholders want to change, which is essential in tailoring services according to the customer's needs. Interactivity can be created through the provision of a corporate e-mail address, phone number, a calendar of upcoming events and other activities, like contests, games and polls. Despite interactive communications being a key practice for relationship building, it was found to be missing or not sufficiently present on Fortune 500 official Facebook pages (Shin et al., 2013). Some characteristics of the interactivity strategy, such as providing a phone number and e-mail address, are unlikely to be found in messages published by the companies, as they are often included in description sections, which stakeholders cannot respond to. Others, however, are used often, and stakeholders tend to respond positively on interactive communications by organisations. This is why it is assumed that this strategy may evoke the most positive reactions and engagement from different stakeholder groups. However, as companies are most likely to use Facebook to communicate news to stakeholders, it is expected that the information dissemination strategy is used in messages more often than the interactivity strategy. However, the interactivity strategy invites stakeholders to participate and can be a good way to start a conversation. Therefore, the first proposition has been formulated as follows:

Proposition 1: The implementation of the interactivity strategy by organisations on Facebook will evoke more positive reactions and engagement from different stakeholder groups than the information dissemination strategy.

To find out whether the two propositions apply, the effects of the two communication strategies (information dissemination and interactivity) on responses of different stakeholder groups will be analysed. This will lead to an understanding of which strategy is most effective when it comes to stakeholder relationship management.

2.3. Message frames on Facebook

Information dissemination and interactivity can provoke different reactions from stakeholders. However, these strategies do not provide any information on the content of the message, which means that no explanation can be given about different stakeholder responses when these frameworks are used. Shin et al. distinguished several message frames, including product/brand promotion, event promotion, news, and public service announcements (2013). In 2013, Shin et al. found that product promotion is the most used frame (45,6%), which indicates that companies are using Facebook mostly to promote their brand and services. News and event promotion were used for one fifth of the posts. Whereas these frames were used to analyse what communication methods were used by companies, they did not include stakeholder reactions to these different categories. However, when analysing stakeholder responses, some categories can be left out and others can be added. As public service announcement only took up 3% of the messages published by the included Fortune 500 companies, this category has been left out in this study.

Looking at different messages and their purposes on Facebook, the following dominant categories can be addressed, including product/brand promotion, event promotion, news, corporate social responsibility (CSR), and other. Shin et al. (2013) defined product/brand promotion as “information about incentives, contests and other activities”, event promotion as “information about sponsorships, conferences and other events”, and news as “information about awards, financial situations, or other general information” (p.70). Only CSR has been added, as CSR is a distinct and effective communication topic and should therefore be distinguished as a separate and relevant category when it comes to generating stakeholder responses and

analysing them. CSR has been defined as “a commitment to improve community well-being through discretionary business practices and contributions of corporate resources” (Kotler & Lee, 2004, p. 3). Communication about CSR activities has been an evidential important way to attract different stakeholder groups (Smith, 2003; Berger, Cunningham and Drumwright, 2007; Bhattacharya, Sen & Khorschun, 2008). McCorkindale (2010) used social responsibility as part of the information dissemination strategy, and found that only 21,8% of the selected organisations published posts that contained social responsibility activities. In this study, CSR is considered a message frame and not part of the information dissemination strategy, as the message frames say more about content and not about the type of information that is presented, like the information dissemination strategy. A 2012 study on the effect of CSR posts by companies on Facebook for relationship building showed that stakeholders’ perception of a company was bolstered after interacting with the corporate Facebook page (Haigh & Brubaker, 2012). This is why it is expected that CSR messages evoke more positive stakeholder responses and engagement than the other categories. Therefore, the second proposition has been formulated as follows:

Proposition 2: Organisational messages coded in the CSR category evoke the most positive responses and engagement from different stakeholder groups.

To find out whether different message categories evoke different responses from stakeholder groups, posts will also be coded as product/brand promotion, event promotion, news, and CSR.

2.4. Stakeholder engagement and response

Engaging in interactive communication with stakeholders online has become an important aspect of corporate communications (Waters & Lemanski, 2009). By becoming active online, companies strive to enhance user engagement by trying to create stakeholder interaction with certain messages (Bonsón & Ratkai, 2013). For social media, stakeholder engagement can be defined as the extent to which stakeholders respond to a particular message. Bonsón and Ratkai (2013) made an attempt to provide a set of Facebook metrics that can be used to measure engagement: popularity, commitment and virality. Popularity is measured by likes,

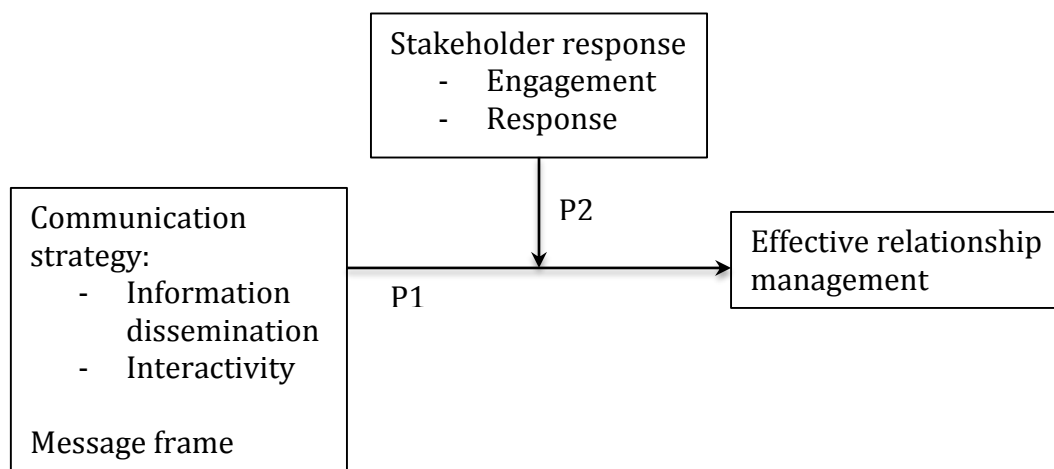
commitment by comments and virality depends on the amount of shares a company post receives. In this way, the level of engagement on Facebook is translated into the amount of likes, comments and shares a company receives from users.

Little research has been done on the extent to which this type of engagement can be related to the effectiveness of particular communication strategies. Whereas the level of engagement can be seen as the sum of the amount of likes, comments and shares, a high engagement level does not necessarily mean all stakeholders feel positive about a post. For example, stakeholders often comment to express negative feelings they hold towards the company. As Bonsón and Ratkai (2013) argue, a qualitative analysis of stakeholder response is required to find out about stakeholder attitudes towards a topic or company. However, theory suggest that reaching an agreement with the audience is not a top priority for companies, as positive organizational-public relationships are the result of open communication and discussion (Kent & Taylor, 1998; Heath et al., 2006; Kelleher, 2007; Bonsón & Ratkai, 2013). In this way, receiving positive and negative responses from stakeholders on Facebook is an opportunity for companies to learn what their audience wants and to improve their services according to this knowledge.

Mini-connections of likes, comments and shares between organisations and their public on social networks can have a positive influence on how stakeholders evaluate the company, as well as purchase intentions (Walker Naylor, Lambertum & West, 2012). On top of this, a high level of stakeholder engagement on Facebook means that companies increase their page visibility, as posts friends like, share or comment on appear in other people's news feeds. The company's awareness of communication strategies or content that generate a high level of engagement from their fans, is likely to result in a higher page visibility and a larger fan base. Whereas stakeholder's transactional behaviour is still one of the main resources of a company's revenue, non-transactional behaviour around organisations is becoming more important (Verhoef et al., 2010). Verhoef et al. (2010) argue that this is due to the fact that communication between people and organisations has become easier and faster. However, the visibility and accessibility of information play an important role, as they can impact stakeholder attitude towards a brand or company, and their decision to buy a company's services or not. This can work out both positively as negatively for companies that are active online, as negative situations can blow up and even harm the company's reputation.

When businesses reach out to their online audience through social media networks, it is essential they do not place their own desires above their customers' motivations to engage (Baird & Parasnis, 2011). Whereas most businesses think user engagement on social media means a growth in advocacy, a survey among 1000 customers worldwide showed that over 60% of the customers believes that a strong positive feeling towards the brand or business is a condition for engagement (Baird & Parasnis, 2011). This indicates that companies should not solely focus on generating short-term engagement, but on grasping the audience's attention and engagement for the long run, by building relationships. Measuring levels of engagement as a result of particular communication strategies gives an indication of the effectiveness of these strategies. Whereas not all users engage to the same level and companies tend to target fans that will engage, social media offer an opportunity to reach user groups that are not yet engaging with the company (Ki & Hon, 2006).

2.5. Conceptual model



The first stage of this study will focus on the information dissemination and interactivity strategies and message frames used by Fortune Global 500 companies on Facebook. The company posts included in this study will be analysed qualitatively to find out whether the two propositions apply to the communication strategies and stakeholder responses included in this study. The first proposition suggests that the implementation of the interactivity strategy by organisations on Facebook will evoke more positive reactions and engagement from different stakeholder groups than the

information dissemination strategy. The second proposition stipulates that organisational messages coded in the CSR category evoke the most positive responses and engagement from different stakeholder groups.

The effectiveness of a particular communication strategy or message frame is determined by the level of engagement and reactions evoked from stakeholders. Therefore, the type of stakeholder response can be seen as a direct influence on the effectiveness of the used communication strategy or message frame. The second stage of this study will measure and map stakeholder interactions through social network analysis. In this way, patterns in the way stakeholders respond to certain messages may be revealed.

3. Methods: research design and sample

To meet the research goals discussed below, to answer the research questions posed in the previous section and to find out whether the two propositions apply, this study uses a mixed methods approach to study the official Facebook pages of fifteen Fortune Global 500 companies. First, the research design and sample will be discussed, explaining what methods will be used and why. As this study contains a qualitative analysis (study 1) as well as a data analysis (study 2), the procedure and measures will be explained separately for each study. The procedure and measures section of study 1 will be followed by the results section of this study, and the same structure applies for study 2.

3.1. Goals study 1 and 2

The communication strategies used by companies on Facebook have been researched and addressed in some previous academic work (McCorkindale, 2010; Shin et al., 2013). However, companies are constantly progressing and changing the way they engage their stakeholders on the social network sites. Interactivity has proven to be effective in terms of generating engagement, but in previous studies, the strategy was not used to its fullest extent (McCorkindale, 2010; Shin et al., 2013). However, with more experience in communicating through Facebook, companies are expected to use the strategy more often and more effectively, resulting in a higher engagement level and positive responses from stakeholders. Also, the use of a variety of message frames can help companies to make their communication more diverse and appealing to stakeholders. It is important that the reputation of the companies is bolstered through these posts. CSR has been argued a valuable activity to do so, and is expected to evoke engagement and positive responses. These can indicate a positive attitude of stakeholders towards a company, and can be used as an indication of effective communication.

Study 2 focuses on the stakeholder networks on corporate Facebook pages and around single Facebook posts. These networks are valuable for companies, as they consist of key stakeholder individuals and groups. The communication strategies and message frames may be more effective for different stakeholder groups, and this information may help companies to target their audience more specifically. By combining a qualitative study of communication strategies with a

network study, the aim of this study is to show how companies can communicate most effectively to their target groups in a networked environment.

3.2. Research design

For the first part of this study, corporate Facebook pages have been analysed on the organisation's use of the information dissemination and interactivity strategy. Next, posts published by the organisations will be put in message categories, including product/brand promotion, event promotion, news, CSR and other. This will be done through a qualitative content analysis, providing an answer to the first research question.

A qualitative content analysis has been chosen for the first stage of this study because the ultimate goal is to measure stakeholder response to particular content. Qualitative research allows for an in-depth analysis of this content, testing the chosen theoretical framework but also leaving space for any additional or unexpected findings. As a theoretical framework has already been established and concepts are based on previous research, this method can also be referred to as a *directed content analysis* (Hsieh & Shannon, 2005).

In order to crawl organisational Facebook pages extract data and to organise and visualise it, the use of a network analysis tool is required. Network analysis makes it possible for researchers to access big data, which means that a huge amount of data can be studied and understood. This data can give valuable insights into practises and responses of users and behavioural patterns online. As user behaviour is recorded on the Web, using a network analysis tool means that what people do is studied, and not what people say they do (Rieder, 2013). When studying social networks, it is important to note that these platforms are shaped by the interactions between people and pages (Thelwall, 2013). That is why every element of the network has to be included in order to study the network successfully, and to find patterns in the behaviour of people, communities and organisations.

The second part of the study will focus on the relationship between the selected communication strategies and stakeholders, and aims to answer the second research question: how do stakeholders respond to Fortune Global 500 companies' use of the information dissemination and interactivity strategy and message frames on Facebook?

3.3. Sample

This study examines fifteen Fortune Global 500 Facebook pages and includes the most recent hundred posts on each page. The fifteen companies were selected through stratified random sampling and cover six industries, including the oil industry (Royal Dutch Shell, BP and Statoil), the retailing and consumer industry (Wal Mart), the car and motor industry (Toyota, Volkswagen, General Motors, Ford Motor, Honda and Nissan), the product and service industry (HP, Verizon), the pharmaceutical industry (CVS) and the electronics and technology industry (Philips, General Electric). The different industries are self-assigned by the companies. This information can be found on the corporate Facebook pages of these companies as well as their corporate website.

In total, 1500 posts were analysed using a multi method approach. In this way, a variety of companies and their communication practices were analysed thoroughly, as well as the user comments and likes the posts generate. The sample used in this study is similar to previous research conducted (e.g. Lee et al., 2006; Ki & Hon, 2006; McCorkindale, 2010; Rybalko and Seltzer, 2010;). Global 500 companies are ranked by revenue and are considered leaders in their varying professional fields. Therefore, the ways they manage stakeholder relationships on social media can be expected to be effective in terms of relationship building, and to serve as an example to other organisations. Fortune Global 500 companies are selected as following:

Companies are ranked by total revenues for their respective fiscal years ended on or before March 31, 2013. All companies on the list must publish financial data and report part or all of their figures to a government agency. Figures are as reported, and comparisons are with the prior year's figures as originally reported for that year. Fortune does not restate the prior year's figures for changes in accounting (Fortune, 2014)

As Facebook use by organisations has increased during the past years, official Global 500 company's pages provide a rich source of analysis of different communication strategies, present or missing. Facebook pages "are for businesses, organizations and brands to share their stories and connect with people" and can be customized by "adding apps, posting stories, hosting events and more" (Facebook,

2013). Messages on Facebook do not have a word limit, like Twitter's 140, and posts can contain various multimedia that are immediately visible on the page's "wall". This is why the platform provides interesting content for qualitative research. This study looks at "official" corporate Facebook pages only, as these are verified by Facebook and have received a blue check mark next to the company's name. This rules out the chance that a fan owned page is included in the study. Facebook pages mainly consist of an information section, a separate section where fans can post and the timeline, which includes all the messages posted by the company in a chronological order, unless a post has been promoted, in that case it appears at the top of the page. Facebook can give personalised results depending on what account is being used. However, the Facebook analysis tool used for this study, Netvizz, automatically collects all messages that were posted, depending on the number of messages the researcher asks for. In this way, bias caused by personalisation on Facebook is irrelevant to this study.

4. Methods study 1: the use of communication strategies and message frames

4.1. Procedure: using Netvizz

In order to analyse the corporate Facebook pages included in this study on communication strategies and message frames, the companies have to be “liked” on the social network site. This was done on the author’s Facebook account, giving full access to all content posted publicly by the company. Data files for this study were collected by the Facebook application Netvizz, an analysis tool developed by Bernhard Rieder (2011), which allows the extraction of large data amounts from the social network site. After running Netvizz on a selected Facebook page, a GDF file (including connections between the page and users, for network analysis), a TSV stat file (post characteristics, for qualitative or quantitative content analysis) and a TSV comments file (company and/or user comments, for qualitative content analysis) are created. The files include all most recent company posts published on a corporate Facebook page, up to an amount of 999 posts. Netvizz does not give personalised results, but simply collects all available data, which means that the results are unbiased. Also, Netvizz changes user names into untraceable numbers, which rules out the issue of privacy violation. The files can be exported to an external application such as Excel, SPSS, Gephi, and Rapidminer. These applications offer the possibility to order, explore and visualise large amounts of data. In this way, insight is provided into who the most active users on a page are, as well as what posts evoked the highest amount of engagement from stakeholders (Rieder, 2013). Both users and posts are nodes in the network, and when any interaction takes place, a direct connection, or edge, is established between the two. Using Netvizz, the “larger social spaces emerging from groups and pages” can be made visible (Rieder, 2013, p. 6). Information can be collected and visualised about users, user groups and their connections with each other, the density of the networks and the friend networks on pages. In these visualisations, clusters of various user groups may become visible, as well as the relations between types of posts and the kind of responses they get from stakeholders (e.g. photos get more likes than comments) (Rieder, 2013).

For the qualitative analysis of communication strategies and message frames, the TSV stat files of the fifteen selected Fortune Global 500 companies were used. The data was exported to Excel and analysed qualitatively. Different tabs were used to separate the companies, so the data could be compared easily.

4.2. Measures: qualitative content analysis

Facebook posts published by the selected Fortune Global 500 companies were classified under the information dissemination strategy or the interactivity strategy. If a message contained elements of both strategies, the message was classified under both. The conditions to determine the presence of each strategy are listed in Table 1. In Excel, the following most relevant post characteristics were explored: type of post (photo, video, status or link), post message (original post text), picture, link to the original post, publishing date, total amount of likes, comments and shares, and the overall level of engagement generated by a post. The type of post can indicate the presence of the information dissemination strategy, as it shows the type of content published by the company. For example, when a post is classified as a video by Netvizz, the post can be coded as information dissemination. All posts were read to make sure that information dissemination posts coded in the first phase were coded correctly, and to code the interactivity strategy if found present. Next, the posts were analysed on the presence of message frames. After all company posts were coded, the posts were sorted on their amount of likes, comments and shares, and the overall level of engagement. In this way, any patterns in the used communication strategy or message frame by the companies or by a particular industry can become visible. Also, the relations between a particular strategy or frame and the type and level of engagement can be revealed.

The information dissemination strategy, which includes the type of information that is published, is found present if a message contains information about the company, the way it operates and the services a company offers. The information dissemination strategy is used in several forms, including photos, videos, audio files and links to external websites. An example of this strategy would be: *"We will strive to decrease our carbon footprint in 2014. Read how: [link]"*. This message would classify as a wall announcement as well as a link to an external source. Messages are classified under the interactivity strategy if it invites stakeholders to interact with the company. This can be done through the provision of a phone number, e-mail address, or by inviting stakeholders to take part in events and activities. Other forms of interactivity can be organised contests, invitations to share opinions and ideas through polls or other tools and games. An example of the interactivity strategy would be: *"Join our contest to win a BMW! [link]"*. This message would classify as a contest,

but also includes a link to an external source. In this way, messages can belong to both the information dissemination as the interactivity strategy.

The message frames chosen for this study include product/brand promotion, event promotion, news and CSR. These frames are based on a framework used in previous research and include the main categories that Facebook messages posted by companies can be placed in. Coding message frames, the most dominant message frame was selected in order to get the clearest results. Posts could be put in multiple categories, but this would make the results unorganised and complicated. Examples of different message frames are elaborated in Table 2.

To ensure the intercoder agreement of the coding scheme (appendix 1), a second rater coded 150 posts of each qualitative analysis. This included a sample 10% for both the communication strategies and the message frames, which is the minimum percentage to ensure coder reliability (Lombard, Snyder-Duch & Bracken, 2002). The measure of agreement between the two coders was measured with a Cohen's Kappa (Cohen, 1968) test in SPSS. Lombard et al. (2002) argue that qualitative content analysis is fundamental to mass communication research. In these studies in particular, it is necessary to test the intercoder agreement to ensure the reliability of the coding scheme. The Kappa test is used to calculate the agreement between two raters when working with categories of categorical data (Lombard et al., 2002; Landis & Koch, 1977). For the information dissemination and interactivity strategy, the measure of agreement was 0,832. For the message frames, the measure of agreement was 0,786. The strength of agreement of a Kappa statistic between 0,61 - 0,80 is considered substantial, and an outcome of 0,81 – 1,00 is considered almost perfect (Landis & Koch, 1977). This shows that the intercoder reliability of both the communication strategy as the message frame analysis is relatively high.

Table 1.

Conditions to determine the presence of a strategy

Information dissemination	Interactivity
Messages inform stakeholders	Organisational e-mail address
Presence of news links to corporate website or external web pages	Phone number of the company
Photos and videos related to the operations of the company	Calendar of events and activities connected to the company
Announcements on Facebook wall by company	Stakeholders are invited to participate in contests/games
Use of Boxes to informative sections within Facebook page	E-commerce store

Table 2.

Examples of message frames

Message frame	Example
Product/brand promotion	<i>There is no need to waste good food thanks to Knorr [link]</i>
Event promotion	<i>Join the live chat with our CEO this Saturday at 8pm!</i>
News	<i>Third quarter results 2013 announced: [link]</i>
CSR	<i>Thanks to our education project in Bangladesh, these girls can now go to school [photo] [link]</i>

5. Results study 1

This section will elaborate on the results found in the analysis of communication strategies and message frames used by the selected Fortune Global 500 companies on Facebook. RQ1, on how the 15 Fortune Global companies use different communication strategies to manage stakeholder relationships online, will be answered. RQ2, on how stakeholders respond to Fortune Global 500 companies' use of the information dissemination and interactivity strategy and message frames on Facebook, will partly be explained by the different engagement levels found in reaction to company posts. The response of different stakeholder groups or communities will be elaborated in the results section of study 2.

The hundred most recent posts from the fifteen selected companies were collected using Netvizz on the 10th of March 2014. Netvizz provided a TSV stat file for each company, which included information such as the post type, text, link, date, amount of likes, comments and shares and the overall level of engagement. The files were exported to Excel where all posts were read, analysed qualitatively, and coded according to the communication strategies and message frames explained in the sections above.

No single timeframe can be given for the period in which the posts were published, as the posting frequencies of the different companies differ. In table 3, basic information on each company is provided, including the amount of likes the corporate Facebook page has, the highest level of engagement found in the selected posts, the average engagement level and the timeframe in which the hundred most recent posts of a company were published. Engagement levels are the sum of all likes, comments and shares that users gave to a post. Based on the average engagement levels found for each company, a distinction between low (0-1000), medium (1000-2000) and high (2000 and over) engagement levels can be made. The qualitative analysis on communication strategies and message frames will show whether these can be related to different engagement levels. If a strategy shows to evoke higher engagement than others, companies can use this strategy for purposes such as increasing their page visibility and attracting external networks.

Table 3

Basic data of 15 Fortune Global 500 company Facebook pages

Company	Likes	Eng. max	Eng. Avg.	Timeframe	
Verizon	6,8mln	67551	7913,28	01/11/13	09/03/14
HP	2,9mln	2572	818,25	03/01/14	09/03/14
Walmart	34,5mln	6532	1098,85	18/02/14	09/03/14
Nissan	9,3mln	1773	386,74	08/07/13	10/03/14
Honda	3,2mln	44712	1865,24	15/07/13	12/02/14
Ford MC	2,2mln	38543	3899,67	13/01/14	10/03/14
General M	523k	6786	1027,19	29/10/13	06/03/14
Volkswagen	1,3mln	7305	1491,93	27/10/13	09/03/14
Toyota	1,9mln	5401	1564,29	28/01/14	10/03/14
Statoil	14k	1419	111,88	12/11/12	07/03/14
BP	97k	397	125,54	08/11/13	08/03/14
Shell	5mln	26753	1782,73	03/12/13	07/03/14
GE	1,2mln	11714	953,57	19/12/13	08/03/14
Philips	4,4mln	5614	1621,08	21/05/13	07/03/14
CVS	1,3mln	573083	7463,98	03/12/13	07/03/14

As shown in table 3, the amount of likes differs per company. It would seem logical that the most popular companies receive the highest engagement levels, as their posts are visible to the highest amount of Facebook users. However, when these numbers were compared to the engagement level each page received, this was not always the case. For example, Walmart is the company with most fans (34,5mln). However, Walmart has a medium engagement level compared to the other companies. Nissan has most fans (9,3) of the companies selected from the automotive industry and has second most fans after Walmart, but appears in the bottom when it comes to engagement levels. On the other hand, CVS “only” has 1,2mln fans but got the highest engagement levels. Whether this is because the company posted a few very popular posts that reached a broad network or because the company has a lot of loyal fans will become clear in study 2, where the networks

of the pages and particular posts will be analysed. These differences between the amount of fans and high and low levels of engagement suggest that the use of particular communication strategies and message frames, the content of messages and/or external influential factors such as brand reputation may influence stakeholder response to company posts.

5.1. Information dissemination and Interactivity

After the basic characteristics of the posts were analysed, the posts were coded on the presence of the information dissemination strategy, interactivity strategy, or both. The information dissemination strategy was found for nearly all posts on all company pages, as all companies post photos, links and videos are coded as such. A post can contain more characteristics aside from the type of media, and therefore it can be coded as information dissemination as well as interactivity. In case a post only contained a status update and no links or other media, the post could still be coded interactive. Compared to the amount of photos and links, videos and status updates were found rarely. When it came to the type of information published, announcements and press releases were found most often.

Looking at engagement levels, status updates were the least popular among stakeholders to interact with, unless the post was classified as the interactivity strategy. Overall, photos and links seemed to generate the most engagement, but also the lowest engagement. This can be explained by the fact that nearly all posts by all fifteen companies contain a photo and a link, which suggests that content may play a role in the level of engagement found.

Interactivity posts that invite stakeholders to participate, e.g. in conversations, quizzes or guessing games evoked the highest level of engagement. Examples are: *“What foods does your family put cheese on? A. Chili B. Salad C. Just about everything”* (Walmart, 2014), or interactive e-commerce posts: *“JUST LAUNCHED! Introducing the Intel powered HP Chromebox. A pretty little #PC you can hook up to almost ANY screen in your house <http://bit.ly/1nX2mvs>”* (HP, 2014). With all companies who actively use these forms of interactivity (Walmart, HP, Volkswagen, CVS), these strategies were found most effective in terms of generating engagement.

When these posts were found, information dissemination posts always generated a lower engagement level. Also popular were interactive posts that appeared in a series of posts about the same topic, grouped together with a hashtag.

Examples of these hashtags are #NearlyDouble (Ford) and #WhosGonnaWin (Verizon). In all cases, the posts that included hashtags were part of a product promotion or marketing campaign. The high engagement levels of these posts suggest that these posts were effective as part of a marketing campaign, suggesting that companies can use hashtags to make a topic or campaign recognisable to the public. This is surprising for Facebook in particular, as hashtags are not as widely used on this platform as on other social platforms such as Twitter.

Whereas the interactivity strategy is most effective when stakeholder participation and e-commerce are included, other forms of the interactivity strategy are much less effective. Not one of the calendar of events post published by one of the companies evoked high stakeholder engagement. Only once, a company offered a corporate telephone number in a crisis case, which means that from this single case, no conclusions can be drawn.

It was anticipated (proposition 1) that the implementation of the interactivity strategy by organisations on Facebook will evoke more positive reactions and engagement from different stakeholder groups than the information dissemination strategy. Given the results, this only counts for e-commerce posts and interactivity posts that actively seek to engage stakeholders by asking questions or inviting them to participate. In other cases, the information dissemination strategy evoked higher engagement levels. The companies that used the interactivity strategy most are Verizon, HP, Walmart, Volkswagen and CVS. For these companies, the amount of information dissemination posts and interactivity posts was about equal. Looking at the ten most engaging posts on these company pages, interactivity posts appeared to be the most common. Out of these fifty posts, thirty-three posts were interactive: thirty-one belonged to the e-commerce or stakeholder participation strategy, whereas only one post was coded in the calendar of events category. Most posts were also classified as information dissemination posts, as they included a photo, video or link to an external source. However, posts that were only information dissemination always generated lower engagement levels.

In contrast to what was expected (proposition 2), the other forms of the interactivity strategy were not found to evoke more positive reactions and engagement than the information dissemination strategy. This includes the provision of an organisational e-mail address, the phone number of the company and a calendar of events and activities. This means that companies can use the e-

commerce and stakeholder participation strategies to engage their Facebook fans. Doing this, companies can increase their page visibility, attract new stakeholders and gain information about their key publics.

These goals depend on the type of stakeholders engagement. Stakeholders can engage through likes, comments and shares, which each have different potential for companies. This will be discussed in a later section, which focuses on which communication strategies and message frames evoke these particular types of engagement. Understanding which posts evoke which engagement type can help companies to adapt their communication to the goal they want to reach.

5.2. Message frames

After the analysis of the information dissemination and interactivity strategies used by the Fortune Global 500 companies, message frames were coded. All message frames were found present, including product promotion, event promotion, news, CSR and other.

Nearly all companies used their corporate Facebook page mostly for product promotion. Statoil was the only exception and uses the corporate page mainly as a news outlet. For the other companies, the amount of news and event promotion was similar, but these posts formed a clear minority compared to product promotion posts. The amount of CSR posts was different for every company, but all companies made use of the frame, except General Electric. Some companies only posted a few CSR posts in the studied timeframe, while others seemed to be aware of the potential of CSR as a relationship management tool. These companies used CSR widely, promoting company activities and campaigns that contribute positively to society (Verizon, CVS, Shell, Honda, Philips). As mentioned in the previous section on communication strategies, product promotion posts evoked high levels of engagement if combined with an interactivity strategy. Compared to the other companies, Verizon, CVS, Shell, Honda and Philips disseminated a significant amount of CSR messages (more than 5 out of 100). In all cases except one (Honda), at least two CSR messages are in the top five of posts that generate most engagement. One CSR message by CVS got the highest engagement level of all coded posts, even though all other CVS posts did not receive extremely high engagement levels compared to the other companies. Therefore, the post can be seen as an exception to all posts that were analysed:

“Today we’ve announced that we are ending the sales of tobacco in all 7600 CVS/pharmacy stores by October 1. As a health care company it’s time for us to take a stand and to put our customers, colleagues and patients on a path to better health. Share this if you stand with us in our commitment to go tobacco-free. Learn more: <http://bit.ly/1IAcT0Y>” (CVS, 2014).

This CVS post was coded as a company announcement as well as a CSR message, and states an important change in the company’s service and operations. Looking at the amount of CSR posts and their content, it becomes clear that not all of these posts can contain news this big. Most CSR posts covered smaller projects, helping communities or individuals, and did not relate to an entire population like the CVS post does. This suggests that the content and timing of the message may be an important factor when such posts are published. This is also strengthened by the fact that whereas CSR posts did receive high levels of engagement, the results were not consistent. Some CSR posts evoked an extremely high number of likes, comments and shares, whereas others did not stand out. However, it is noticeable that despite the low number of CSR posts, these posts often evoked high engagement levels compared to other posts. It was suggested (proposition 2) that organisational messages coded in the CSR category evoke the most positive responses and engagement from different stakeholder groups. Given the results found in study 1, this was only found with a relatively small amount of CSR posts.

Posts that were classified as “other” in the analysis of message frames generated the lowest levels of engagement (Verizon, Nissan, Ford, General Motors, Volkswagen, Toyota, Statoil, Shell, GE, Philips). Posts that got the event promotion frame seem to be unpopular with stakeholders, as they always generated the least engagement when found present (Walmart, Honda, General Motors, Toyota). News messages, like event promotion messages, were found least present in all company communication, as most companies focused on product promotion. Overall, news messages evoked low engagement levels, in particular when they were combined with the information dissemination strategy, which was often the case. Statoil used the news frame for nearly all messages, which could be a reason why users did not engage with the company’s corporate Facebook page that much.

Whereas the posts classified as “other” generated the lowest engagement levels, they also included the most popular posts. Analysing communication strategies and message frames, a category was found that consistently produced the highest engagement levels if found present. This means that neither one of the communication strategies or the message frames evoked the highest stakeholder engagement. The type of post that stakeholders interacted most with were “social” company posts, which will be discussed in the next section.

5.3. Social posts

Looking at engagement levels and stakeholder response, social posts generated more likes, comments and shares than any communication strategy or message frame in all cases but one (CVS). The posts classified as social posts have a conversational tone and usually do not necessarily promote the publishing company. Examples of social posts are “*#HBD Facebook! Thanks for 10 years of status updates selfies and overshares*” (Verizon, 2014) and “*Dear Beliebers, welcome to our neighbourhood at our Fornebu office in Oslo. We look forward to seeing you again when you have finished your science studies. <http://bit.ly/17iicG1>*” (Statoil, 2013). The companies that included social posts in stakeholder relationship management were from various industries (Verizon, Volkswagen, Statoil, GE, and CVS). This shows that there is no difference between industries when it comes to the popularity of these posts.

It is noticeable that these social posts generate high amounts of likes and shares, but lower amounts of comments. Likes and shares are good ways for companies to increase their page visibility and attract new fans. The analysis on message frames showed that most companies use their Facebook channel mainly for product promotion. The social posts were found in the communication of only five companies. This suggests that not all companies are aware of the potential of social posts for relationship management, whereas they have shown to be highly effective in terms of generating stakeholder engagement and positive response. The social posts found in the sample were used in combination with various communication strategies and message frames. The consistent popularity of these posts show that no matter which strategy is used, these posts always evoke high engagement levels. For example, Statoil mainly published news announcements, which received extremely low engagement levels. However, the social post mentioned above was

highly popular with Facebook users and generated almost three times the engagement of the most popular news announcement (1419 compared to 494). This means that companies should implement social posts to bolster the company's reputation and stakeholder relationships, no matter what purposes they use Facebook for.

5.4. Differences across industries

This study has included companies from different sectors in order to find out if there are differences in the communication strategies across industries. These differences may indicate what goals companies want to reach with their communication, and what audience they target, if any. The six industries included the product and service industry (HP, Verizon), the oil industry (Royal Dutch Shell, BP, Statoil), the retailing and consumer industry (Walmart), the car and motor industry (Toyota, Volkswagen, General Motors, Ford Motor, Honda, Nissan), the pharmaceutical industry (CVS) and the electronics and technology industry (Philips, GE). The communication strategies of the companies within these different industries were analysed and some differences and similarities were revealed.

Companies of the product and service industry both used the interactivity strategy more than the information dissemination strategy. Verizon and HP both did more e-commerce than they invited stakeholders to participate. This may be due to the fact that these companies are very business to consumer oriented, so they use Facebook mostly to sell and promote their products. This also counts for Walmart and CVS, two companies that also used the interactivity e-commerce strategy most extensively. The highest level of engagement with HP stakeholders was found where the company uses the interactivity strategy to invite stakeholders to participate or give their opinion. This also counted for posts published by Walmart, which used the interactivity strategy next to the information dissemination of photos and links.

In contrast to the interactive communication of Verizon, HP, Walmart and CVS, some of the Fortune Global 500 companies focused on the dissemination of information. This strategy was most prominently present in the oil industry with Statoil, BP and Shell, which published few interactive posts. Statoil and BP received extremely low levels of engagement compared to other companies, with the amount of page fans taken into account. However, Shell posts generated a considerable engagement level. This can partly be explained by the fact that the company page

had more fans, which means that Shell's posts reach a wider audience. Looking at the content published by these companies, BP and Statoil mostly announced news about the company and did not include stakeholders. Shell on the contrary, mostly directed messages to stakeholders, even though these posts could not be coded interactive. Looking at message frames used by the oil companies, Statoil almost solely had news posts, and BP had a high amount of news and product/brand promotion posts. Also, many of the BP posts were classified as "other", as they did not answer to the criteria of any of the message frames. Whereas the "other" message frame has shown to generate low levels of engagement compared to the other frames, it cannot be assumed that this result depends solely on the communication strategies used by these companies. Instead, questions about the published content and external factors that may influence the activity on the corporate Facebook pages of Statoil and BP should be asked. A company's reputation may have been damaged in the past, which may be a direct influence on the engagement levels found on the company's Facebook page. For example for BP, the Gulf Coast Oil Spill in 2010 may affect the way stakeholders perceive and interact with the company now. Whereas this study does not address these issues in depth, it would be an interesting topic for further research.

Philips and GE both used the information dissemination strategy most, in combination with the product promotion message frame. The interactivity strategy was found less often. Whereas Philips used a lot of CSR, showing what the companies does for society in pictures, GE mostly posted photos that show what products and technologies the company develops. Whereas the communication strategies of the two companies were highly similar, the levels of engagement and the amount of fans were different. This suggests that like the oil industry, these numbers may have been influenced by overall reputation and external factors that may affect the way stakeholders interact with the company online.

In the automotive industry, all companies (Nissan, Honda, Ford Motor Company, Toyota) except Volkswagen used the information dissemination strategy in combination with the product promotion message frame. Volkswagen used the interactivity strategy most, usually in combination with either photos or links, so utilising the information dissemination strategy as well. When the interactivity strategy was used, stakeholders were often invited to give their opinion or to take part in games (*To which #Volkswagen model does this cockpit belong?*). It is noticeable that

these interactive posts received the most comments of all posts, whereas information dissemination posts generated the highest amount of likes. This difference will be elaborated on further in the next section. Another interesting finding is that Honda was the only automotive company that used the CSR message frame to a large extent. Whereas these posts did not all evoke high engagement levels, Honda's overall engagement was high, which indicates the company's stakeholder relationship management through communication on their corporate Facebook page was effective. Whether the company's use of CSR as relationship management strategy affected this cannot be confirmed. Companies' use of CSR messages in communication and its effect on stakeholder relationships would be an interesting topic for future research.

5.5. Likes, comments and shares

The communication strategies and message frames that are used by companies may influence the way stakeholders interact online. Companies can adapt their strategies to the type of engagement they want from stakeholders, for goals such as increasing page visibility or start conversations. Likes and shares are the best ways for companies to make content visible to a wider audience. Likes are the easiest for stakeholders to give, as it is quick and not visible on the user's profile. Sharing brings the content outside of the page network, and is a good way to attract networks that are not directly connected to that of the page. Comments require most effort, and may be considered most valuable, as they can help companies to learn more about their stakeholders' needs and interests. In order to find out what types of engagement were evoked by which communication strategies, the posts with the highest numbers of likes, comments and shares were analysed.

The posts that evoked the most engagement from a company's audience were usually the same for the amount of likes, comments or shares. However, their order was different, which can say something about the communication strategy that is used by a company and the likelihood that this strategy evokes a certain form of engagement. The amount of likes was often an indication of which posts had the highest engagement overall. This included information dissemination posts, mostly including photos, links and videos. It is noticeable that despite the low amount of videos on each company page analysed, these posts either do well in terms of engagement, or barely evoke any. However, if a company posted one or multiple

videos, there was always one among the posts with the highest engagement levels. If the interactivity strategy was found, either e-commerce or invitations to participate, these posts received more likes than any other communication strategy.

It was clear that the posts most commented on were interactive posts that asked users to participate in games, quizzes or simply to answer questions. If this strategy was found present, it always got the most comments out of all posts, even if the same post received less likes or shares than other posts. This indicates that using this form of the interactivity strategy is the best way for companies to start conversations with their stakeholders, or to find out what stakeholders want or need. CSR posts were among the most shared company posts, whereas they were not always the most liked or most commented on. This indicates that posting about a corporate social responsibility activity can help a company to spread a positive message across the internet, as sharing makes a post the most visible across a network.

6. Methods study 2: a network analysis of stakeholder engagement and response

6.1. Procedure: using Gephi

For study 2, which focuses on stakeholder networks and groups on corporate Facebook pages and around posts, the data visualisation tool Gephi (version 0.8.1. beta) was used. Study 1 has shown the communication strategies that were used most by the selected companies, and the engagement levels corporate Facebook posts evoked. Study 2 complements study 1 by revealing user networks and communities around these messages. By identifying connections between users, posts and communities, more information can be gained about the user groups that engage with particular strategies or topics. This gives an understanding of the directions information spreads within a network and the key influencers that lead and promote this process. Network analysis covers networks as a whole, so that the results are a record of user actions in relation to other users and posts within the network. Gephi is an open source software that was designed to help “data analysts to intuitively reveal patterns and trends, highlight outliers and tells stories with their data” (Gephi, 2014). The programme is managed by the Gephi Consortium, which is responsible for changes to the programme and recruiting funds.

As explained in the procedure section of study 1, Netvizz produces GDF files, which contain the connections between users and the crawled Facebook page. GDF files can be exported and explored in Gephi, by zooming in on nodes in a network visualisation. Also, posts and users can be viewed and selected in Gephi’s data laboratory, which makes it easier to connect the two. The networks of each selected company were visualised using the layout Force Atlas 2, which was designed especially to get a clear view of large networks (>100,000 nodes). Force Atlas 2 separates the most significant hubs (usually posts) and places the connected nodes (users) around the hubs in clusters. Before analysing the company page networks with Gephi, a test was performed using the GDF files of three corporate Facebook pages that are not included in this study. For this test, the fifty most recent company posts were included. This was to ensure the programme worked accordingly and to guarantee that the software could be used to obtain the required results for this study.

When the networks were visualised, the modularity of each network was calculated. Modularity is the extent to which a network can be divided into communities. This means that the nodes, which are connected more closely to each other than to other nodes in the network, form communities. These different communities, or user groups found in the network, can be given different colours to distinct each community to another. In this way, the differences between groups, the size of the groups that engage with particular posts and the connections between these posts and users becomes visible. When the communities were detected, the largest communities and the posts they engaged with were selected and examined in the data laboratory. Next, the communication strategy and message frame of each post found in study 1 was linked to the selected post. Doing this, the goal was to find out whether the different communication strategies and message frame evoke engagement from different stakeholder groups. One stakeholder community may engage with information dissemination and product promotion posts only, whereas an interactive post may be connected to a variety of communities.

Apart from these measures, Gephi offers a few other options including calculating the graph density, average path length and betweenness centrality. The graph density is a useful measure to find out how interconnected a network is, or how easily information can be transmitted to each node in the network. If a network is fully interconnected, the graph density is 1, meaning that all nodes are directly connected to each other. The average path length is the average distance between any two random nodes in the network. This gives the betweenness centrality, which is the number of times a node appears on the shortest path between these two nodes in the network. The betweenness centrality gives the influence of a node, as one active user may connect different nodes and node clusters (communities). The most influential nodes may be targets for a company, as they play a significant role in spreading information. Gephi also offers the option to apply filters, for example in the degree (the amount of connections a node has) or modularity class.

6.2. Measures: network analysis

When all networks were visualised in Gephi, the basic characteristics of each network were put in a table. By doing this, an easy comparison between the networks could be made, for instance between the amount of nodes and edges and the number of communities. A network is considered large if the amount of nodes

exceeds 100,000 (Gephi, 2011), which means that the amount of edges is even larger, as there are always more connections than users. Gephi measures modularity on a scale of 0 to 1, 1 meaning that a network is completely divided in separate communities. Depending on the outcome of the measures, the amount of communities found in each network will be regarded low, average or high. The same counts for the average degree and the visibility of nodes and edges when the degree filter is applied. This is to view the results in relation to each other, and not make early assumptions that may influence how the networks and the patterns found in these networks are perceived.

When the modularity measure shows different communities, the largest communities can be viewed separately using a modularity filter. The clusters that form a community are formed around the most influential hubs, which are the company posts in this case. These hubs were identified and connected to the communication strategy and message frame they were coded as in study 1. A qualitative analysis was performed on these posts, to find out whether the communication strategies and message frames evoke engagement from different user groups. This information can be useful to companies, as it can help them target these groups more effectively, using a variety of communication strategies.

7. Results study 2

Study 1 has shown that Fortune Global 500 companies used communication strategies and message frames differently, and that some evoked high or low engagement levels. These engagement levels indicated how positive stakeholders respond to a post, but do not say anything about the response of different stakeholder communities.

Therefore, this second study seeks to obtain insight into the most prominent communities and the structure of the networks found in the selected company pages. In order to do so, the user communities that engage with particular posts will be revealed, as well as the connections between these communities and posts. Through the identification of user communities and key influencers, much can be said about the ways information is spread within a network. Network analysis gives an exact record of what users do online, and how user groups move around particular content. This is not only promising for research, but also for practice, as companies can use this information to target their audience more effectively. The results may indicate that a particular communication strategy or message frame evokes response from one community, whereas another evokes response from many different communities. Also, a difference can be made between company pages that constantly attract new engaging users and company pages that have a more loyal fan base in terms of engagement. Companies can use different communication strategies, depending on their goals (e.g. attracting new stakeholders, or building long lasting relationships).

The GDF files of the hundred most recent posts published by the selected Fortune Global 500 companies were collected on the 10th of March, 2014, together with the TSV stat files analysed in study 1. This was to make sure that the networks analysed in Gephi related directly to the communication strategies, message frames and engagement found in study 1. The GDF files were opened in Gephi one by one, so that each visualised network was the network of one company that could be analysed separately. The higher the amount of nodes and edges, the harder it becomes to visualise the network and to obtain the desired results. Gephi has a memory constraint and cannot calculate results when a network is too large. This is one of the main limitations to the methodology used in this study, and will be further elaborated on in the discussion and conclusion section.

7.1. Visualisation and basic network characteristics

Each company network was visualised using the Force Atlas 2 layout, so that the most significant hubs were pushed apart and the nodes connected to these hubs were clustered around them. Other layouts were tested, but Force Atlas 2 gave the clearest results and was used consistently for each network. When the networks were visualised, the modularity measure was calculated for each network, revealing the different communities in each network. After calculating modularity class, the communities that were found were given separate colours, so that each community could easily be separated from another. Using filters, the different communities could be viewed separately in Gephi's overview section, where the networks were visualised. The hubs that were surrounded by the largest communities were examined more closely in the data laboratory in Gephi, and connected to the communication strategies and message frames coded in study 1.

Next, the graph density and average path length, including betweenness centrality, were calculated. However, the networks studied were too large for Gephi to handle the average path length option, as most networks had more than 100,000 edges and the software ran out of memory calculating all possible routes. This means that the betweenness centrality could not be calculated using the options in Gephi. Gephi is an open source software, and like the majority of digital research methods programmes it is uncompleted. Whereas this is a limitation of the method used for this study, the programme can be used to obtain other results than average path length and betweenness centrality. Betweenness centrality not only indicates which nodes are most influential, but also adjusts the size of these nodes so that nodes with many connections are larger. This makes the network clearer, as the most significant nodes are the most visible. However, not being able to use the betweenness centrality function was not a big issue, as the same results can easily be obtained using the filter degree. The filter degree gives the option to filter out nodes that are or are not connected up to a certain degree. The maximum degree is determined by the maximum number of edges found connected to a node in the network.

When the degree filter is applied, the visibility of nodes in the network changes: all nodes within the network, that are at least connected to one other node (degree = 1) to only nodes that have 2 or more connections (degree = ≥ 2). What remains is the network of nodes, or users, that have interacted with the page more

than once. For this study, this left a network of users that are more likely to follow the page and interact with multiple posts. In all company networks, the percentage of users with degree = ≥ 2 was much smaller than the percentage of users that only interacted once. The more interaction, the smaller the user group got, but each network had a few users that play an influential role in spreading messages. This shows that most networks have a few users that engage with around half of all selected company posts, connecting different stakeholder groups. These active users can be important to companies, as they often link separate communities and user groups to each other, spreading information in an effective way and increasing the post and page visibility.

Table 4 shows the main characteristics of each of the networks of the fifteen Fortune Global 500 companies. This includes the amount of users and posts (nodes) in the network and the amount of connections between these nodes (edges). Modularity, the degree to which a network is divided in communities, is also shown. A high modularity means that the nodes within the different communities found in the network have strong connections with each other, but have weak connections with nodes outside their own community. The amount of communities is Gephi detected in each network are given, as well as the average degree. The average degree is the average amount of connections that one node has with another in a network. This can mean that a user has eight connections with a company post through liking, commenting or sharing, and that the same user has two friends within the network. This would mean that the node degree is 10, and that the user would be relatively active compared to other users in each analysed network.

The table shows that the number of connections that nodes have within the networks differed for every company page. The average degree for BP was the highest, showing that each node in the network had a connection with three to four other nodes within the network. Company pages that have a higher average degree have a higher likelihood that users have Facebook friends within the network. It would seem that companies with a relatively high number of fans also have a higher average degree. However, the table shows that this is not always the case (e.g. Walmart has 35mln fans but an average degree of 2,0).

Table 4

Main network characteristics of 15 Fortune Global 500 company Facebook pages

Company	Nodes	Edges	Modularity	Communities	Avg. degree
Verizon	444054	705381	0,62	30	1,6
HP	24542	70220	0,38	14	2,9
Walmart	47083	94206	0,39	21	2,0
Nissan	12972	33853	0,43	10	2,6
Honda	133244	199374	0,67	14	1,5
Ford MC	138876	325800	0,45	11	2,3
General Motors	27213	83100	0,45	12	3,1
Volkswagen	41362	134939	0,32	19	3,3
Toyota	39300	1138564	0,32	10	3,6
Statoil	4114	9418	0,46	15	1,5
BP	2830	10523	0,31	10	3,7
Shell	99843	156574	0,65	9	1,6
GE	32135	78104	0,43	14	2,4
Philips	99827	151596	0,66	35	1,5
CVS	433231	511760	0,41	4	1,2

The graph density was extremely low for each page network (either 0,000 or 0,001), and was so consistent across the networks that the results are not included in the table. The results show that the networks are barely or not interconnected. A high graph density means that information can be transmitted to all nodes easily. However, with a large amount of nodes, it is more likely to have a low graph density as the nodes may all be connected to one hub (company post) but not to each other. In other words, the likelihood that users in the network are friends with all nodes in the network is extremely low, if not impossible. The results of graph density calculated for each network confirm this, as well as the average degree. Given the amount of nodes and edges in each network, the average degree is only a small percentage of this amount, which also shows that there are not enough connections to get a high network density outcome. Because the network density was so low, it is more important for companies to learn how they can transmit their information to a

large public. They can do this by addressing communities and key influencers, which can make the distribution of information within a network easier.

7.2. Single post communities and loyal fans

In order to find out around which posts networks were formed, the modularity filter was applied to the network visualisations. This filtered out single communities, so that the posts within these communities could be studied separately. The users that interacted were also zoomed in on, as there may be a difference between users that interacted once or users that interacted multiple times. The outcome of this analysis may show which communities attract one time interaction, and which posts attract the more “loyal” fans.

Posts that evoke a high engagement level can attract such large user clusters around them that these clusters are considered communities on their own. These communities are separated from the rest of the network when none or very few of the interacting users have connections to other nodes within the network. It is important to note that the majority of the users engaging with these posts do this once. All company networks showed that this type of “single post community” was dominantly present, which means that the majority of all users connected to a page interact only once. Each network also had a centre of “commoners”, or users that interacted more often with messages published by the company. This will be elaborated on further when the structures of the networks are explained.

The high popularity of single posts can be explained by the fact that it is liked, commented on and shared by page fans, and simultaneously spread across Facebook. This means that the visibility of these posts constantly increases, as they are automatically shared with friends and friends of friends. Two examples of such posts, which received a high level of engagement from a large group that only interacted with the page once are “*#HBD Facebook! Thanks for 10 years of status updates selfies and overshares*” from Verizon (figure 3) and “*Dear Beliebers, welcome to our neighbourhood at our Fornebu office in Oslo. We look forward to seeing you again when you have finished your science studies. <http://bit.ly/17iicG1>*” (Statoil, 2013). Figure 1 shows the cluster of the above Statoil post, which is the largest node in this network. The visualisation of the cluster shows that the nodes that collected around the post are one-time interactions, as they do not have any

other links within the network. When these nodes are filtered out, the Statoil post is connected to only a small number of nodes in the core of the network.

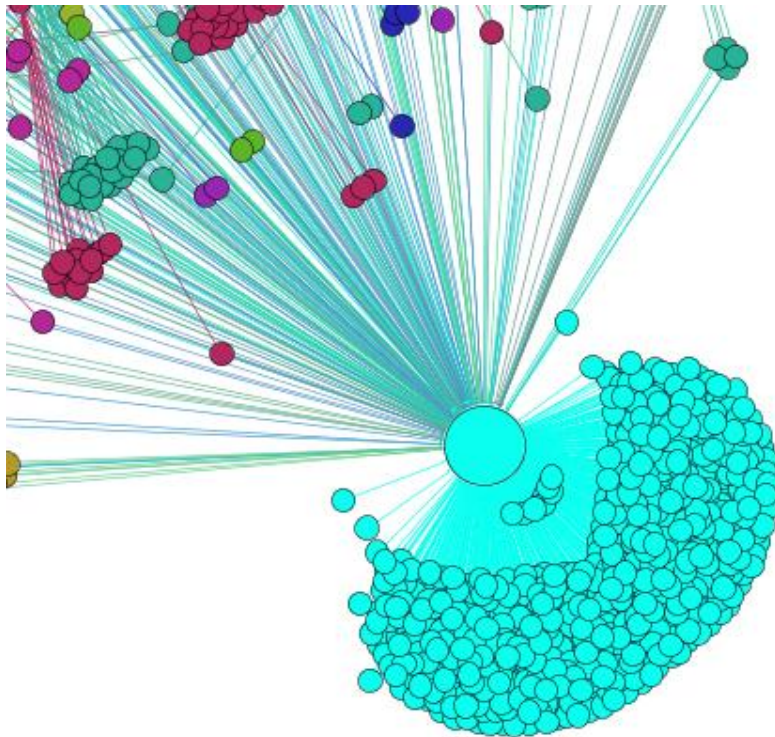


Figure 1. Largest community in Statoil network

As explained in the results section of study 1, social posts and interactive e-commerce and stakeholder invitation posts receive the highest engagement overall. The user communities connected to these posts, an example shown in Figure 1, show that these types of messages function as ways to attract users that have not interacted with the page before. As page visibility is increased by a post that users tend to engage with quickly, these posts can be regarded bait for new page fans and customers.

The nodes that are connected to only one other node in the network can be filtered out, so that the single page communities disappear in the graph. In this way, the network of more “loyal” users remains. This network contains the nodes that engaged with the page more than once in the given timeframe. Figure 2 and 3 show the difference between the non-filtered and a filtered network of 100 Statoil posts. In figure 2, no filter is applied, whereas figure 3 only shows nodes with 2 to 996 connections. This was the maximum amount of connections found in the Statoil

network. Figure 2 shows many communities that are formed around one or multiple posts. In figure 3, no communities can be identified, which means that users that interact multiple times are not part of the same community. Rather, these users are all part of different communities: most of them are the minority in a community of one-time interacting nodes. The structure of the Statoil network shown in the figures is highly similar to that of all other companies. Most communities were formed around single posts and were based on one-time interactions. The core of the networks consisted of commoners who interacted with the page more than once, but these users were usually not connected to each other.

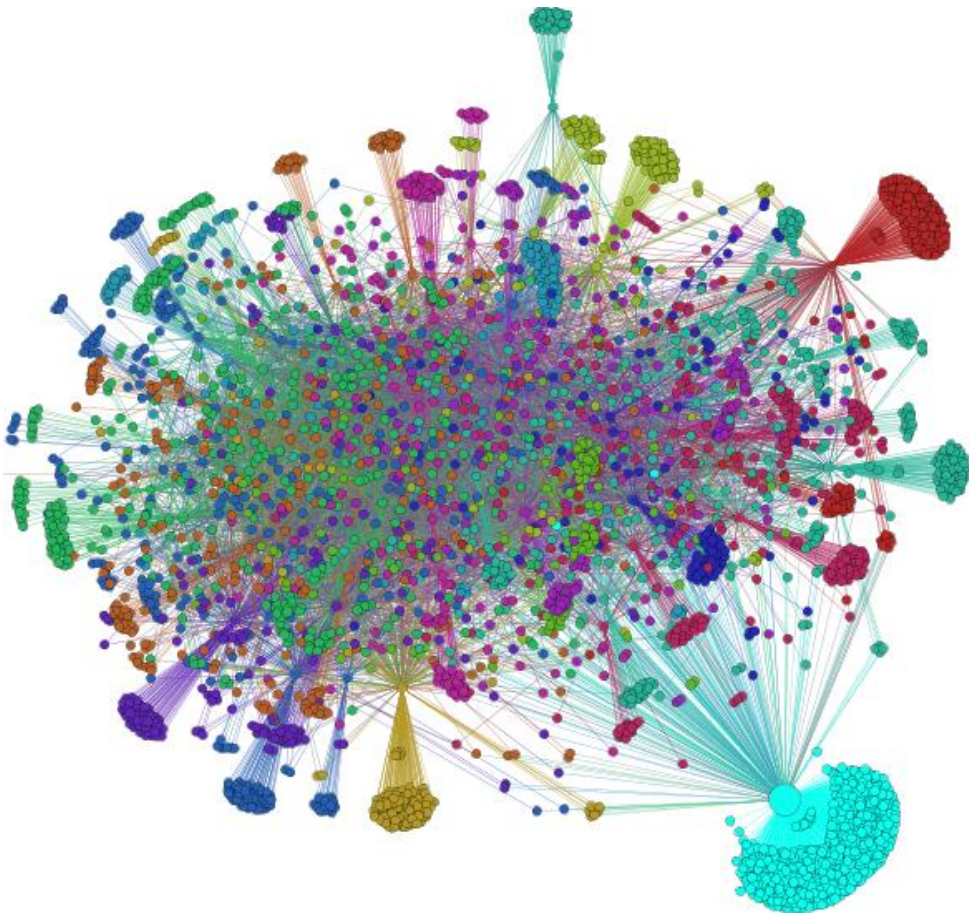


Figure 2. Statoil network with no degree filter (100% visible)

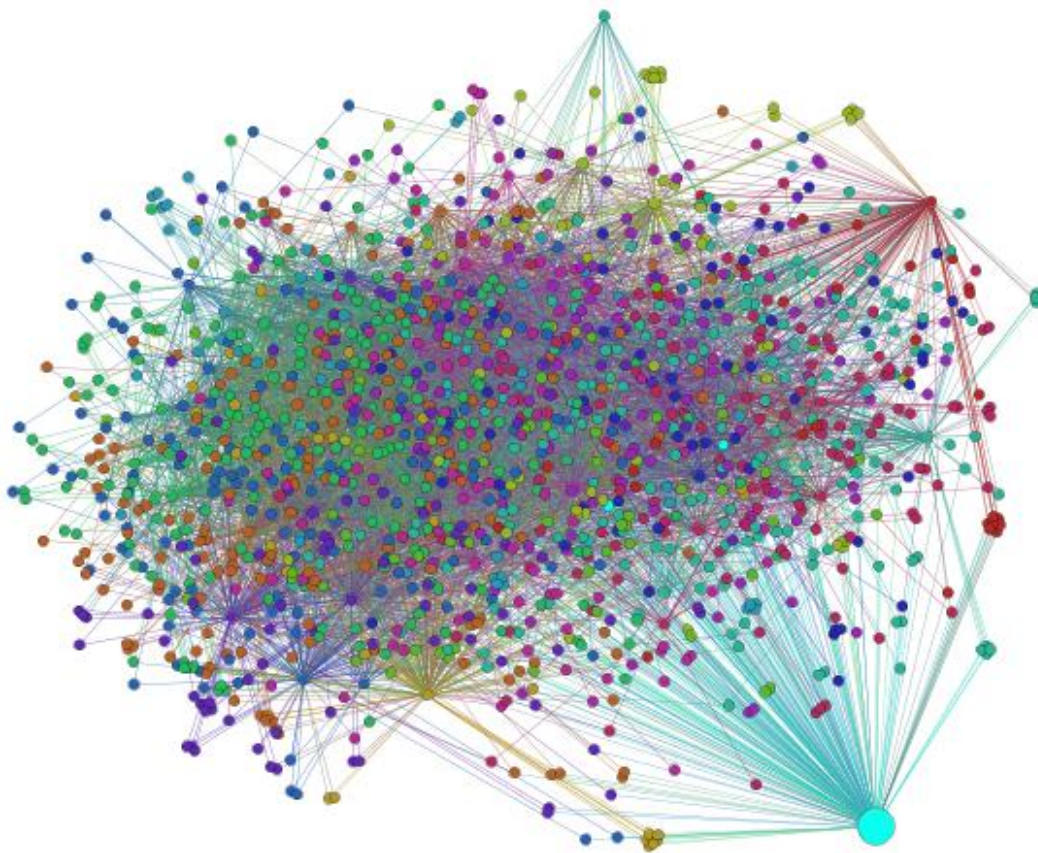


Figure 3. Statoil network with degree filter 2-996 (34,9% visible)

The degree filter can be applied filtering out up to the maximum amount of edges found in the network, or the maximum amount of connections found in the network. However, an understanding of the core community of the networks can be obtained when the degree is set to 2 and over. Table 5 shows what percentage of each network remained after the degree filter (≥ 2). This means that for the Statoil network, figure 1 shows 100% of the network, whereas figure 2 only shows 34,9% of the network. As explained above, the majority of users that interacted with each company page did this only once in the timeframes used. The higher the degree filter was set, the lower the percentage of the network that was still visible in Gephi's overview. The nodes that interacted more than once formed a core of commoners in each network, but in none of the networks this core formed a community on its own. Therefore, it is difficult to say who these users were, and what they had in common. However, identifying these common users would be useful for companies as they are

the top influencers in the network. They are the channels through which posts reach other users, within and outside the network. Also, these users are the company's most loyal fans on Facebook, and companies can learn about their needs and interests by starting a dialogue with them.

Table 5

Visibility nodes and edges when degree ≥ 2

Company	Nodes	Edges
Verizon	24,2%	52,3%
HP	35,5%	77,5%
Walmart	24,9%	62,4%
Nissan	38,6%	76,5%
Honda	18,7%	45,7%
Ford MC	28,9%	69,71%
General Motors	39,1%	80,0%
Volkswagen	45,8%	83,4%
Toyota	20,6%	70,3%
Statoil	34,9%	71,6%
BP	46,3%	85,6%
Shell	16,9%	47,0%
GE	29,7%	71,1%
Philips	23%	49,3%
CVS	8,4%	22,4%

7.3 Communication strategies and message frames for different communities

After all basic characteristics of each network were calculated in Gephi, the largest communities were selected and viewed in the data lab. This showed which posts users clustered around, which could indicate that certain communities are more prone to engage with one communication strategy than with another. Whereas some communities only consisted of a cluster formed around one company post, as explained in the previous section, other communities included a large amount of

posts. These communities are the most interesting, as the users may engage with posts that have similar communication strategies.

However, when these communities, communication strategies and message frames were analysed, most communities were not formed around particular post characteristics. Most communities were formed because the users interacted with multiple company posts that were published right after one another. This means that users interacted with, for example, two posts on the same day or multiple posts published in the same week. These results were found for most communities that included a significant amount of posts. For example, the three largest communities in the BP network (18,7%, 16% and 14,2% of all nodes) are formed around a number of posts that were published in the same week. The same results were found for the networks of the other selected company Facebook pages. Only the Shell network showed different results, as the four major communities consisted of single posts. In none of the networks, a pattern in the used communication strategies or message frames could be found.

This result indicates that users that interact with a page more than once interact within a certain timeframe. Users may engage with a post they find interesting and click on the company page, where they engage with multiple posts. As most of these posts are directly visible as Facebook places recent posts next to each other, it is easy to engage with more than one in the same visit. However, these are only speculations and the result can only be explained by studying user behaviour around company pages.

7.4. Topics and hashtags

Because no significant results were found that show that different communication strategies and message frames evoke engagement from different user communities, the posts that created these communities were read and qualitatively analysed on content. The results showed that instead of communication strategies, particular topics, hashtags and promotional campaigns are an influence in forming communities.

On the Facebook page of Ford, the third largest community (12,91%) was formed around two videos covering the same topic: these posts are both part of an event promotion strategy and include the hashtag #nearlydouble, a reference to the Superbowl 2014. Although the largest amount of nodes interacted with one of the

posts once, the community was formed because a considerable amount of the nodes liked, shared, and/or commented on both videos. In this case, there was a week between the first and second post. Whereas Ford posted two more videos with the same topic and hashtag, these were not connected enough to be part of the same community. The second and fourth largest communities on the Ford page were also clustered around posts of the same topic, but these posts were also published in the same timeframe, in the same week or even on the same day. In that case, it is difficult to say whether the communities were attracted by the topic, or simply visited the page and engaged with multiple posts.

The same result of a community formed in consequence of a topic or hashtag was found on the Facebook page of Honda, when #bestyourself was used to promote the new model Honda Civic Si. The community found was created by two posts: "Actor director writer artist entrepreneur philanthropist Nick Cannon tells us what it means to #BestYourself. <http://honda.us/194smQW>" and "Nick Cannon talks about what it means to #BestYourself in the 2013 Honda Civic Si <http://honda.us/194smQW>". In this particular case, the second post was published ten days after the first.

These results show that marketing campaigns and posts about particular projects are effective in terms of attracting user communities. Users who interact with these posts are likely to be interested in the topic. For companies, it is useful to identify these communities and find out who the users are. This will help them to find out if they are targeting the right people, and if the marketing campaign is effective in terms of reaching its goals.

8. Discussion and conclusion

This study focused on the communication strategies and message frames used by Fortune Global 500 companies on Facebook, and the engagement levels and responses these strategies received from different stakeholder communities. Insight is provided in how these companies communicate on Facebook, and which strategies and frames were most effective in terms of generating likes, comments and shares. By analysing user communities around corporate posts through a network analysis, the effects of these strategies on user behaviour were clarified.

Companies are increasingly using social media platforms to bolster stakeholder relationships. However, previous research showed that companies are not using these platforms to their fullest extent, as they leave out communication strategies that have shown to be effective in terms of relationship management.

RQ1, on how Fortune Global 500 companies use different communication strategies on Facebook to manage stakeholder relationships was answered with the results of study 1. The results indicated that the information dissemination strategy was used most, as most companies posted photos, links, and videos or announcements. Only five of the selected companies used the interactivity strategy extensively, linking to their online store or inviting stakeholders to participate activities such as games, contests and discussions. Most companies used Facebook for promotion purposes, as the product promotion message frame was used most by all companies.

The interactive posts that include e-commerce or invite stakeholders to participate always went hand in hand with high engagement levels, and got the most comments in almost all cases. It is important to note that the e-commerce posts are usually categorised as the product/brand promotion frame. The results suggest that the interactivity strategy can be used to evoke engagement from stakeholders, and in particular, to start conversations with them. As likes, comments and shares do not stay within the company's network, evoking interaction is a good way to attract new stakeholders. If this interactivity strategy was present, the information dissemination strategy rarely evoked as much engagement.

It was expected (proposition 1) that the implementation of the interactivity strategy by organisations on Facebook will evoke more positive reactions and engagement from different stakeholder groups than the information dissemination strategy. This was only found when looking at the e-commerce and stakeholder

participation strategy, and not for other interactivity strategies. Study 1 indicates that the interactivity strategy is effective in terms of generating engagement. However, social posts were found to be most effective in terms of generating engagement. These posts often neither belonged to the information dissemination or interactivity strategy. Only five of the fifteen selected companies used social posts to bolster stakeholder relationships. The high popularity of social posts may be explained by the conversational tone used, and their topics. Social posts often related to topics that all stakeholders could relate to, such as “Happy New Year” posts and posts that thank users for being a customer.

Looking at message frames, the product promotion frame evoked the highest engagement levels, as this frame is also part of the interactivity strategy and was used most. The news and event promotion frames did not give any significant results. Whereas companies are still using Facebook mainly for product promotion, there has been an increase in the amount of CSR posts. In 2010, only 21,3% of the Fortune 500 companies used CSR in their communication on Facebook (McCorkindale et al.). This suggests that companies have become more aware of the benefits of informing stakeholders about their CSR practices. The CSR frame was used by all companies but one (GE), and this frame often evoked higher engagement levels than the other frames. However, the stakeholder response to CSR depended on the content and timing of the CSR post, as not all CSR frames were evenly engaged with. Proposition 2 stipulates that organisational messages coded in the CSR category evoke the most positive responses and engagement from different stakeholder groups. However, this response was not found in all CSR posts. These results partly answer RQ2, which focuses on how stakeholders respond to Fortune Global 500 companies’ use of the information dissemination and interactivity strategy and message frames on Facebook.

Study 2 aimed to give a more detailed answer to the ways stakeholder communities respond to the analysed communication strategies and message frames. The page networks and communities that formed around company posts were analysed. This was done in order to find out if there are patterns in the networks of posts, the communication strategies and the communities that formed around them. In study 2, no patterns of communication strategies were found in the different networks that these posts created. The communities that were studied were not formed based on the communication strategies or message frames that were used

by the companies. In other words, typical stakeholder group or community responses to one or more communication strategy were not found.

However, the results showed that communities formed around posts that are published within a certain timeframe. This can be explained by the ways in which users viewed and interacted with a page, or by the time they spent online. For example, users may visit a corporate Facebook page and interact with multiple posts, instead of liking a company post every time it appears in their news feed. The results also showed that users clustered around posts that have the same topic or contain hashtags. This suggests that these features may be more relevant for community formation than the communication strategies and message frames analysed in this study. The network analysis also showed that most interactions were one-time, but that all networks had a core of common users who interacted with the page more than once. Posts that evoked the most one-time interactions often had the highest engagement levels. This may be explained by the high post visibility across the network, as every interaction is shared on Facebook and visible to users that are not a fan of the page. However, a network analysis that focuses on this matter is required to provide an answer to this question.

8.1 Theoretical implications

This study contributes to theory in various ways. First, the mixed methods approach of a qualitative analysis and network analysis to study communication strategies and message frames by Fortune Global 500 companies and stakeholder response on Facebook has not been used before. Network analysis makes it possible to study networks as a whole instead of single components of these networks. This resulted in a clear map of how the fifteen selected Facebook networks were structured and how information was transferred from one node to another. For this study, this meant that the effect of corporate posts on stakeholder response could be studied. Stakeholder response to the information dissemination and interactivity strategies had been studied once before (Shin et al., 2013), but the results were limited to the presence or absence of interactions. These interactions are key to social networks, which offer companies to communicate symmetrically with their stakeholders. In contrast to corporate communication through offline media, companies can use these interactions to learn about their key stakeholders and

evaluate the effectiveness of their communication strategy. At the same time, stakeholders have more power to demand changes in the products and services of a company. On Facebook, all of this happens in a space where constant interaction takes place between companies and large user groups. Studying these interactions as part of a network therefore gives an exact record of what stakeholders do in response to corporate messages, giving companies insight in their key audience.

The most engaging communication strategies and frames in the theoretical framework were identified through the qualitative analysis of communication strategies and message frames. This analysis led to some new findings that show the relevance of other categories and the irrelevance of some communication strategy criteria used in previous research (Waters et al., 2009; McCorkindale, 2010; Shin et al., 2013). For instance, whereas previous research has focused on the information dissemination and interactivity strategy, no study found social posts as the most effective messages when it comes to engaging stakeholders. This could be due to the methods used, as previous research mainly focused on a set of variables for quantitative analysis. The qualitative analysis conducted in this study was inductive, and thus left space to explore unexpected results. The highest engagement levels were not evoked by the interactivity or the information dissemination strategy. In order to explain this outcome, the posts that evoked the highest engagement numbers were analysed qualitatively, which resulted in this new category. Also, previous research has focused on the presence of the information dissemination and interactivity strategy, but not on user engagement. However, this data was gathered easily through the digital tool Netvizz, an application that offers many new possibilities for Facebook research.

Social posts were highly popular among stakeholders, and can be used as a separate communication strategy when analysing corporate Facebook pages. On the other hand, some forms of the interactivity strategy, such as the provision of a corporate e-mail address and telephone number, were not found and can thus be left out when a similar study on Fortune Global 500 or comparable companies is conducted.

Study 1 has given insight in how the communication of Fortune Global 500 companies on Facebook has developed in the past years. This study found that most companies are still communicating with their stakeholders one-way, confirming earlier studies by Cho and Huh (2007) and Ki and Hon (2006). The network was

mainly used by companies as an information outlet and to promote their services and brand. This finding is in line with previous findings on corporate communication by Waters et al. (2009) and Shin et al. (2013), who state that Fortune 500 companies mainly use Facebook for product promotion. Whereas the interactivity strategy was found on all corporate Facebook pages, companies still do not seem to be using the social network to its fullest extent to interact symmetrically with their stakeholders. However, there have been some swift changes in the way these companies use the social network. The amount of posts published by these companies has increased tremendously, as more than three quarters of the companies did not have an updated page in 2010 (McCorkindale). In the timeframe of this study, all companies but one (Statoil) published at least one post a day. Also, the amount of photos, videos and links was larger compared to previous years, as all types of media were found present on the pages of the selected Fortune Global 500 companies. In 2013, this was 90% for photos, 72% for videos and only 30% for links to external sources (Shin et al.). These types of content have shown to evoke higher engagement levels than status updates, and companies may use it to enhance further engagement from stakeholders, such as visiting the corporate website.

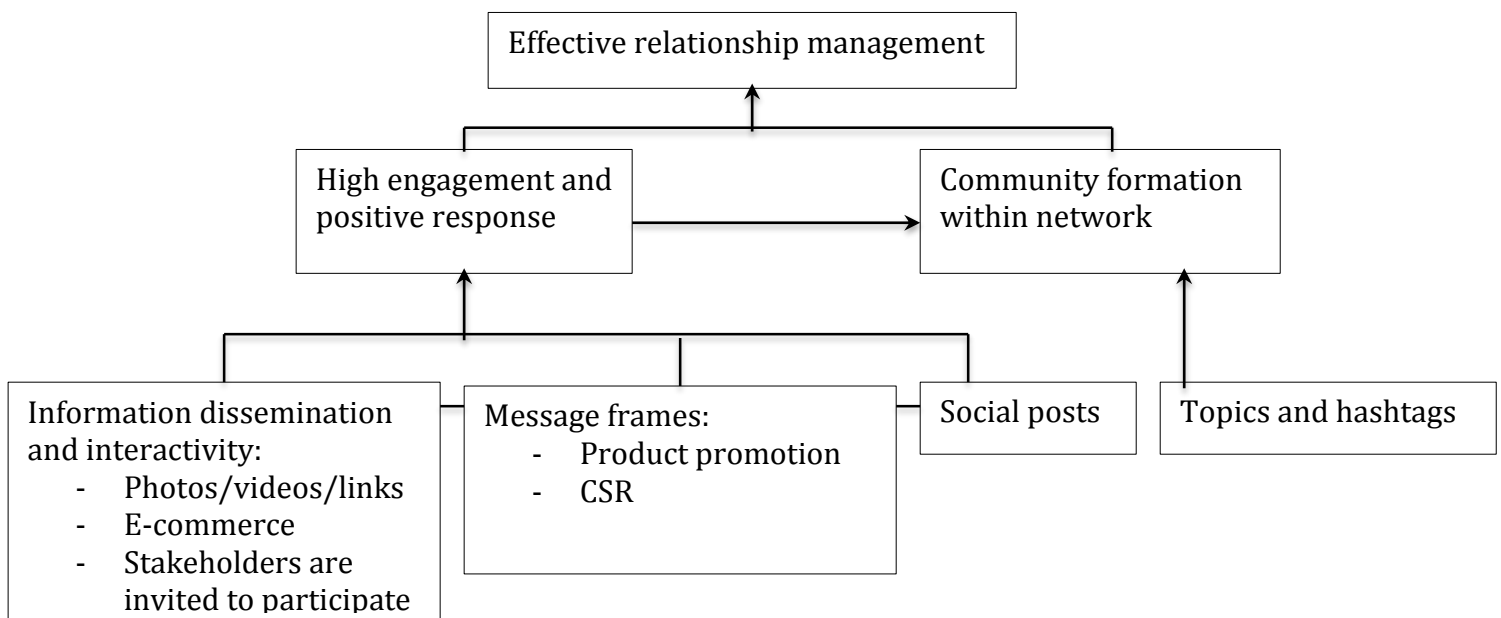
Many studies on this topic concluded that companies are not using Facebook to its fullest extent to manage stakeholder relationships (Jo & Kim, 2003; Ki & Hon, 2006; Cho & Huh, 2007; McCorkindale, 2010; Shin et al., 2013). As an improvement, it was often suggested that the interactivity strategy should be used more by companies to evoke engagement from stakeholders (Waters et al., 2009; McCorkindale, 2010; Shin et al., 2013). However, this study has indicated that social posts are more effective to evoke interactivity than interactivity posts. Whereas not all stakeholders engage evenly (Ki & Hon, 2006), both strategies can be used on social platforms to increase interactions between companies and their stakeholders.

Study 2 provided insight in the user communities that formed around different corporate Facebook posts, and the ways they interacted with these posts. The digital methods used for this study allowed the collection of a large data set, containing full networks instead of single users or posts. This means that the results were drawn from networks as a whole, giving insight in user and community behaviour around corporate posts. Network analysis reveals a lot about what users do, and how information is spread within and outside a network. Collecting data through digital tools provides an exact record of these actions. This means that no data is deleted or

changed during the study, a limitation encountered in previous studies (McCorkindale, 2010; Shin et al., 2013;).

Combining network analysis with a qualitative analysis led to the finding that users engage within a certain timeframe or with posts that contain the same topics or hashtags. This contributes to previous findings by Shin et al. (2013), who found that the corporate Facebook pages of Fortune 500 companies receive responses from stakeholders, but did not clarify what type of response was given when, to what kind of post, or the amount of responses. This study suggests that the focus should be on post topics and hashtags when analysing communities in a Facebook network, as the communication strategies appeared to be irrelevant to community formation. However, many communities were formed by one-time interactions with a singular, highly engaging post.

8.2. Conceptual model



With these results, a new conceptual model could be created. Starting at the bottom, companies can use different communication strategies depending on their communication goals. The highest engagement was found with information dissemination (photo, video and link) posts, or a combination of this with the interactivity strategy (e-commerce and stakeholder participation). This combination was most common for highly engaging posts, as there were barely any posts without a link to an external source or a photo or video included. The product promotion and

CSR frames evoked the highest engagement of all message frames, but the social posts lead when it came to generating engagement and positive response. Therefore, this study suggests that these strategies can be seen as drivers for effective relationship management. The topics and hashtags found in the network analysis directly related to community formation within these networks. These communities were formed around the most popular posts, but it is unclear how the community influenced the engagement levels. However, information spreads faster and more smoothly through communities and key influencers within a network.

8.3. Practical implications

From the results found in study 1 and 2, some implications to practice have emerged. By implementing these results into their communication practices, companies can adjust their communication on Facebook to the goals they have set. Examples of such goals informing stakeholders, promoting products, but also increasing page visibility, attracting new stakeholders, or a combination. The strategies companies use to communicate with their stakeholders can change the way these users interact and have an influence on organisational-public relationships. Study 1 showed that users engage differently with the communication strategies and message frames studied. Whereas social posts evoke most engagement and can be used to increase page visibility and attract new stakeholders, the interactivity strategy receives the most comments. By publishing interactive posts, companies can gain more information about stakeholder interests and needs. These effects in terms of engagement indicate which posts are most popular among stakeholder groups, but this does not mean that companies should solely focus on one of the strategies. Whereas companies should not put their own desires before their stakeholders' wishes (Baird & Parasnis, 2011), they should keep in mind their own communication goals. This can result in a mix of communication strategies that fits the company as well as their key stakeholders.

Study 2 indicated that stakeholders engage with posts that share the same topic or hashtag. This suggests that some users are more likely to engage with particular product promotions or marketing strategies. Companies can push the formation of communities by using hashtags and mentioning specific key words in multiple posts. Identifying these communities, studying their networks and learning

who its members are can present companies with new opportunities to target and address their key stakeholder groups to the best effect. Whereas this effect of hashtags and topics was found in product promotion only, this strategy could also be used to promote other company services or activities. By implementing the above results to the overall communication strategy of the company and combining engaging strategies, companies may create even more stakeholder interaction.

This study showed that the CSR message frame received considerable numbers of engagement, depending on the timing and content of these posts. This means that companies can manage stakeholder relationships effectively using this strategy, but should keep in mind that showering stakeholders with single CSR activities may not be the best way to do so. As the results of this study suggest, a single CSR post can be highly popular among stakeholders. However, if companies want to promote several CSR activities, posts can be grouped with hashtags or key words, making them recognisable for stakeholders.

8.4. Limitations and further research

This study has several limitations. First, the sample consisted of top performing companies in their industries. Whereas these companies are considered leaders in business as well as in communication, there might be differences in the way smaller companies communicate with their stakeholders. Also, stakeholder engagement and responses may vary. Another limitation is that there were some differences in the timeframes of the hundred most recent posts published by each company. This may have caused some differences in the types of communication strategies that were found. The qualitative content analysis used in this study has given insight in how Fortune Global 500 companies communicate on Facebook, but do not reveal any motivations of why particular strategies were used. Also, user motivations for engagement could not be addressed using the chosen methods.

This study focused on what communication strategy is most effective for stakeholder relationship management in terms of engagement. This is an indication of the popularity, commitment and virality tied to a post (Bonsón & Ratkai, 2013). People may interact because they like the brand, but also because they strongly oppose the company's practices. In order to find out why and what stakeholders communicate on the corporate Facebook pages of companies, further research

including surveys or interviews are required. Also, this study focused on the two communication strategies and message frames, and did not deepen out the user communities that responded to particular topics or hashtags. However, these communities were present and would be an interesting topic for future research. A network analysis of the stakeholder communities and their members can give companies more information about their online public and the way they interact online. Identifying these communities, their key influencers and the topics they cluster around will give insight in the user profiles that interact with particular product promotions or marketing strategies. These methods form new opportunities in international business, but also in other fields such as politics, where information about voters' preferences can be gained. Also, key influencers can be targeted which can lead to a smoother distribution of information to users and communities within or outside the network.

Whereas digital tools have a lot of benefits and offer new possibilities for academic research, such as the collection of big data and researching networks as a whole, the software bring some challenges as well. As most tools are relatively new and exist on the basis of donations, they are often open source and beta versions that still need a lot of improvement. These problems were encountered using Gephi, which did not allow the calculation of the average path length and betweenness centrality. The programme was the best option to visualise and explore the amount of data used in this study, but was not capable to do so in some cases. However, future research may benefit from these digital tools as they are constantly updated and offer new ways to research networks.

9. Conclusion

Overall, the majority of the selected Fortune Global 500 companies still do not use Facebook to its fullest extent. However, some companies have implemented communication strategies that both inform stakeholders and create interaction, leading to various forms of engagement. This study has shown that publishing social posts is the most effective strategy to increase user engagement and attract new stakeholders. Interactive posts can be used to start a dialogue with stakeholders, whereas the information dissemination strategy is still most useful if companies want to inform stakeholders about corporate operations. There was no relation found between the communication strategies and the formation of communities, except with single posts that evoked high engagement levels. These posts were either social, interactive or information dissemination in combination with CSR. The network analysis showed that communities on Facebook form around topics (key words) and hashtags. Identifying these communities and users offers new opportunities in communication for organisations, which will help them target these communities more effectively.

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Appendix 1. Coding scheme study 1

Communication strategies

Indicating the presence (=1) or absence (=0) of a strategy. A combination of the information dissemination and interactivity strategy is possible.

Information dissemination

Messages to inform stakeholders

News links to the corporate website or other external web pages

Photos and videos related to the operations of the company

Announcements on Facebook wall by company

Use of boxes to informative sections within the Facebook page

Interactivity

Organisational e-mail address

Phone number of the company

Calendar of events and activities connected to the company

Stakeholders are invited to participate in contests/games

E-commerce store

Message frames

Indicating the presence (=1) or absence (=0) of a message frame. A combination of message frames is not possible.

Product/brand promotion

The message promotes a the company or product developed by the company

Event promotion

The message promotes an event connected to or organised by the company

News

The message contains news about the company

CSR

The message contains information about a corporate social responsibility activity organised or initiated by the company

Other

The message does not contain any of the above criteria