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"Twitter, social corporate responsibility and economic performance: how multinational companies exploit social media"

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Introduction

Defining what are the purposes of a business or company and its role in society has always been controversial. What is and what should be the objective of businesses to the public eye: to have success and gain profits, or to be committed to the civil society through implementing social values? Can a company do both? These conflicting goals are profoundly rooted in the human species and, of course, it is a crucial question when it comes to businessmen and entrepreneurs. This work presents the case that we are amidst a significant change in perspective in our comprehension of the motivation behind the business and that this new arrangement holds a lot of guarantees for the business being a critical power for a better world.

Instances of what business entrepreneurs are saying and what their companies are doing and why they are doing it will be given. What we are seeing is the development of a perspective on the firm as a socially dependable political entertainer in the worldwide economy and as an establishment that can create material abundance as well as abundance that sustains the full scope of human requirements, what some call otherworldly capital.

Business, then again, has another goal: to deliver labour and products at a sensible cost while returning on speculation. The business has gained huge headway not just in the amount of labour and products accessible but also in the addition of personal satisfaction. Many contend for a more extensive part with the end goal of business than essentially making benefit: the main business reason isn't just to make a benefit, yet rather that business is a local area of people, and that this local area can encourage the improvement of society just as individuals.

A significant number of the companies, particularly the multinational ones, seems to be interested in some charitable activities at a corporate level, ultimately aimed at producing a favourable image of the company itself and therefore consumer goodwill. But has it always been the case? Certainly, it is undeniable that there has always been a current of thought giving priority to shareholders.

This thesis research will be focused on examining the relationship between Corporate Social Responsibility (CSR) and companies' performance.

In order to conduct this study, I have selected ten companies ranked from Fortune 500 list (2021 update). More precisely, these corporations represent the "Best Large Workplaces in Technology"; this title concession was given due to the fact that all these

companies emerged thanks to their commitment to taking care of their people against COVID challenges. The decision of focusing precisely on tech companies is not a coincidence, since I truly believe these types of corporations are the ones that have the best economic potential in future years.

I am confident in saying this since it is a matter of sustainable competitive advantage. Competitive advantage is a key aspect for every successful business, but there is a huge difference between competitive advantage and a sustainable competitive advantage. The former could be defined as a process through which you can better perform with respect to your competitors. But, by definition, it is unsustainable since it will make the company better off just for a limited period of time, more precisely, till another competitor will be able to imitate your company strategy, or product, or even worse, will be able to create a more efficient product to be launched on the market. On the other hand, the latter is something that hypothetically will last forever in the future. Warren Buffet itself, the greatest investor of all time (nicknamed "The Oracle of Omaha"), once declared that one of his methods in order to choose the right company to invest in was precisely the strategy of picking companies that have developed or have the potential to develop in the future a sustainable competitive advantage. Multinational companies are a perfect mix of realities that embed the crucial issue of sustainable competitive advantage thanks to, for example, big data gathering powered by cloud technology, online tracking and analytics tools to monitor user experience or the possibility of automating processes like back-office functions (Lipovich, 2021).

All this was said in order to explain the final aim of this thesis research.

Multinational tech companies are the best candidates, due to their general business model characteristics and sustainable competitive advantage in order to produce research about the possible correlation between CSR and tech companies' performances. Since company achievements are a broad theme that is not so easy to be precisely gathered, the best choice for objectively understanding it will be to analyze their financial performance.

The sample is composed of ten companies that were selected from the ranking of the "Fortune 500". More precisely, I will base my entire research on the "Best Large Workplaces in Technology" (ranking 2021). All these companies emerged thanks to their commitment to taking care of their people against COVID challenges.

My approach to examining the relationship between CSR and financial performance?

Nowadays, social media platforms are core tools in communication and marketing areas. Consequently, the best practice would be to analyze the Twitter activities of these companies, both the company account itself (if available) and especially how company executives communicate CSR issues on their profile. The main thesis would be that there will be a positive correlation between some particular social responsibility issues and company stock price variation, which will represent the financial performance of the company itself and will be gathered through one of the most reliable financial market websites which is "www.YahooFinance.com". (Mujahid & Abdullah, 2014).

Chapter 1 will be about the definition of Corporate Social Responsibility. This theme has had a very interesting evolution during the years, and I thought that understanding its history, is a necessary starting point to be able to fully appreciate the following work. Furthermore, we will deepen Corporate Social Responsibility in modern times with a specific focus on how it is communicated by corporations. We will also delve into social media, which represents one of the most used tools to communicate corporates' initiatives. The last part of Chapter 1 is concerned about companies' financial performance, how we could measure it, and what are the correlations between what is published on social media and the stock market consequences.

Within Chapter 2 I will introduce the role of social media nowadays with a specific focus on Twitter, one of the most famous social media which represents the starting point of my thesis research. More precisely, an analysis of the Twitter communication system will be performed. The following paragraph is dedicated to the empirical work; I will analyze both Companies' tweets and also personal companies' executive tweets. Furthermore, I will explain the "data methodology" and the data section which will be very peculiar since I will not only analyze tweets substance but also the level of interactions with the overall Twitter community.

The following step will be explained in Chapter 3 which is about companies' profiles. Every company business model canvas will be analyzed in order to catch which building block could be able to affect the Corporate Social Responsibility of the company itself. Furthermore, also key financial results will be explained but just for a general company's comparison. One last but fundamental step will be trying to correlate companies' tweets, scandals or other events that could have the "power" of influencing the stock market performance.

Corporate Social Responsibility is, at the same time, an old and modern topic, and having the possibility to understand if it really has the possibility to modify stock prices is what we are going to comprehend within this thesis research.

Chapter 1: CORPORATE SOCIAL RESPONSIBILITY

1. Corporate social responsibility: Its history and development

There is a long and fluctuated history related to the development of the idea of Corporate Social Responsibility. The point of this paragraph is to discover which have been the primary elements or potentially occasions that have affected the developmental cycle of CSR and how they have formed the comprehension of the nowadays idea. The time frame after World War II and the 1950s can be considered as a period of transformation and changing perspectives towards the discussions on corporate social duty. Corporate social responsibility, or CSR, as a new field of management studies, began to emerge in the early 1950s and took on added importance in the 1990s. CSR is difficult to outline accurately as a concept, but in general, it can be seen as the behaviour of business that pursues social and moral values over profit. Indeed, these businesses try to resolve social problems that would not ordinarily be addressed in the pursuit of profits (Scherer and Palazzo, 2007). Scherer and Palazzo (2007) capture this complexity of CSR by calling it an "umbrella term" which are comprised all the arguments about the effective role and responsibilities of businesses within the society. In this chapter, I will present how CSR developed historically, by studying the behaviour of entrepreneurs and how they cope with the challenge of integrating social ideals into their business. The linkage between economic and social values and their reconciliation it's a major challenge. First of all, it is important to make a preliminary remark: CSR implies that it is conceivable to have a fruitful business and integrate the social values into the strategic plan of the business or corporate. A virtuous example is represented by John Mackey, CEO of Whole Foods, a company that try to conjugate profits and sustainability by promoting social values for employees, customers, the environment and of course, the society as a whole. (Mackey and Sisodia, 2013).

The first researcher to claim what was in question when speaking about CSR was Howard Rothman Bowen in his book "Social Responsibilities of the Businessman" (Bowen, 1953). Bowen argues that since large businesses have a major power and impact in society, there is also a related responsibility toward society and entrepreneurs should be accountable for it (Bowen, 1953). Bowen puts forward characterizing a particular arrangement of standards for organizations to satisfy their social duties. As far as he might be concerned, the businessman's choices and activities influence their partners, workers, and clients

straightforwardly affecting the personal satisfaction of society overall. Considering this, Bowen characterized the social duties of business chiefs as "the commitments of financial specialists to seek after those approaches, to settle on those choices, or to follow those lines of activity which are alluring as far as the goals and upsides of our general public" (Bowen, 1953). It is worth exploring how the term "Corporate Social Responsibility evolved over time. Between 1950-1960, those "responsibilities" were first addressed in the literature; this may be considered the start of the present definition of CSR. At the same time, few business initiatives went beyond philanthropic efforts, for which Bowen is the spokesperson (Lee, 2008). The low level of confidence in the business sector was reached during the 1970s as a result of a fundamental and catastrophic event: a major oil spill off the coast of Santa Barbara, California (1969), which sparked nationwide protests and eventually led to the establishment of the first Earth Day in 1970. As a result, companies are subjected to a greater number of laws and regulations. The Reagan and Thatcher administrations, on the other hand, introduced a new way of thinking in the 1980s. Reagan's main economic goals were to reduce regulations on the private sector while also lowering taxes (Feldstein, 2013), as he was a strong advocate of "free market doctrine," which means as little government intervention as possible (Pillay 2015). As a result, CSR behaviours were directed at an operational level, reacting to groups including shareholders, employees, and consumers, and the word stakeholder became popular during this time period (Wankel et al., 2008). The 1990s were marked by yet another shift in direction. There was a growing interest in CSR, and it was during this decade that the notion received international traction, possibly as a result of the international approach to sustainable development at the time, as well as the globalization process. Many multinational firms realized that being socially responsible may be a safe approach to balancing the problems and opportunities of the globalization process they were going through, and as a result, CSR became more institutionalized (Carroll, 2015). Finally, during the 2000s, CSR took the role of a strategic approach, and, thereby, it was fully incorporated within the business activities of multinational companies. Some authors such as Carroll (2008) clarified that it appears to be that Bowen was somewhat radical for his new way to deal with the executives which pointed toward further developing the business reaction to its social effect and by his commitments to the meaning of corporate social duty. Besides, the pertinence of Bowen's methodology depends on the way that this was the primary scholastic work zeroed in explicitly on the convention of social

obligation, making Bowen the "Father of Corporate Social Responsibility" (Carroll, 1999). With regard to Carroll, he was a very important author and his contribution to the theory of CSR influenced many other authors and researchers. In the second paragraph, I will go over his theory of the "Pyramid of Corporate Social Responsibility" which continues to be very significant also nowadays.

Another important author in the field was Theodore Kreps (1962) who focused on the concept of "social audit": he argued that the audit should measure the success and progress of a business also considering some standard social responsibility criteria (Pigman, 2007).

These first scholars conducted their analysis on the role of business in society and its potential impact on it by observing the conduct of the leader of these companies. The majority of these leaders are characterized by a strong charism and creative thought in order to maximize their profit. They are usually not particularly willing to take into consideration their social responsibility. One noteworthy exception in this regard was Frank W. Abrams, a talented leader of Standard Oil of New Jersey (now called Exxon) who outlined what he considered crucial issues for business. These issues are education for business leaders; corporate citizenship; the license to operate; the creation of value for all stakeholders; the fundamental role of trust; CSR; and sustainability (Edelman, 2021). Several other authors followed the lead of Abrams and here I will briefly mention these scholars and how they contributed to the development of the concept of CSR.

Keith Davis (1973) formulated what he called the Iron Law of Responsibility. His main argument was that those who detain power and do not use it a responsible way toward the wider society would lose its powers (Friedman, 1970). Social power, according to Davis, corresponds to social responsibility. Nowadays if a corporation wants to be perceived as legitimate by the public opinion, it is no longer sufficient for the corporation to just produce goods at a fair price; the corporations are expected to lend resources and capital for social projects (William, 2014).

Another important author is Clarence Walton who wrote a significant book in 1967 titled "Corporate Social Responsibilities" in which he promotes the idea that a corporation is as much "a social and political entity as an economic unit" (William, 2014). His opinion of business, specifically big business, was that it "is consciously placing public interest on a level with self-interest and possibly above it" (William, 2014). According to him, these

businesses should support higher education, job training and environmental issues. These claims are those which nowadays arise from corporate citizenship or sustainability.

Many of Walton's ideas have reverberated in a document issued by the Committee for Economic Development (CED) (Friedman, 1970). This document designated a three-level framework for Corporate Social Responsibility: a broader one concerning economic activities and functions, an intermediate one about new social values while carrying forward the economic function and the more external circle concerning the activities in which business should be involved in order to promote the social environment in the wider society (Friedman, 1970). CED's document is clearly dedicated to social responsibility, but still concentrated on a self-interest view: indeed, businesses can continue to gain profits and prosper if also society thrives. During the 60's it can be observed a new kind of activism that try to protect consumers rights, anti-war, anti-poverty and so on. In 1979 the CED issued a new paper in which it was outlined a different philosophy. The paper was named Redefining Government's Role in the Market System and, as the name suggests, it tried to invert the traditional thought that market efficiency was the finest way to accomplish social progress (Friedman, 1970). The "nonmarket orientation" and the reference to social responsibility present in 1971's document was absent in 1979 one. However, this step backwards was evidence that the concept of CSR was not totally developed and it signalled that there was not a consensus among business leaders about how improvements in society should be accomplished.

As mentioned above, Carroll's theory of the "Pyramid of Corporate Social Responsibility" has paved the way for other theories. For example, Donna J. Wood (1991), relying on the model of Carroll, make a model of Corporate Social Performance (CSP). Wood (1991) characterized three components of CSP: first, the standards of Corporate Social Responsibility, which incorporate authenticity (institutional level), public obligation (hierarchical level), and administrative carefulness (singular level). Second, she characterized the cycles of corporate social responsiveness as ecological appraisal, partner the executives, and issues the board. Third, she determined the results of corporate conduct as friendly effects, social projects, and social strategies (Wood, 1991). The most outstanding illustration of the regulation of CSR was the establishment in 1992 of the affiliation Business for Social Responsibility (BSR) which at first included 51 organizations with the vision of turning into a "force for positive social change - a force that would preserve and restore natural resources, ensure human dignity and fairness,

and operate transparently" (Agudelo et al., 2019). The European Commission (EC) likewise assumed a significant part in empowering the execution of CSR and started advancing it as ahead of schedule as 1995 when 20 business pioneers embraced the European Business Declaration against Social Exclusion in light of the European Commission's call to battle social avoidance and joblessness (CSR Europe n.d.). This came about 1 year after the fact, in the dispatch of the European Business Network for Social Cohesion (later renamed CSR Europe) which assembled business pioneers determined to improve CSR inside their associations (www.csreurope.org).

In addition, Burke and Logsdon (1996) distinguished five essential elements of CSR: 1) centrality, which addresses how close or fit is CSR to the organization's main goal and targets; 2) specificity, which addresses the capacity to acquire explicit advantages for the firm; 3) proactivity, as far as having the option to make approaches fully expecting social patterns; 4) voluntarism, clarified as the optional dynamic interaction that isn't impacted by outer consistence prerequisites, and; 5) visibility, which alludes to the pertinence of the discernible and unmistakable CSR for interior and outside partners (Burke et al., 1996). The time of the 2000s is isolated in two segments because of the measure of significant occasions around CSR. The primary area is centered around the acknowledgement and extension of CSR and its execution, while the subsequent segment is centered around the essential way to deal with CSR given by the scholarly distributions of the time.

Nonetheless, it was not until 1999 that CSR acquired worldwide consideration with the milestone discourse of then Secretary-General of the United Nations, Kofi Annan, who at the World Economic Forum said: "I propose that you, the business leaders gathered in Davos, and we, the United Nations, initiate a global compact of shared values and principles, which will give a human face to the global market" (www.unglobalcompact.org). In the year 2000, the United Nations received the Millennium Declaration with its eight Millennium Development Goals (MDGs). The advancement of CSR as an unmistakable European system started 1 year after the reception of the MDGs then the EC introduced a Green Paper called "Promoting a European structure for Corporate Social Responsibility" (2001) which got from the new friendly assumptions and worries of the time, including the developing worry about the ecological effect of financial exercises (Commission of the European Communities, 2001). Prominently, the Green Paper introduced a European way to deal with CSR that planned

to reflect and be coordinated in the more extensive setting of worldwide drives like the UNGC. From that point forward, the EC has driven a progression of lobbies for elevating the European way to deal with CSR which gets from the agreement that CSR is: "the obligation of undertakings for their effects on society and blueprints how an endeavour should deal with meet that duty". In 2011, the European Commission distributed the reestablished European Union (EU) technique for CSR for the years 2011–2014 followed by a public discussion in 2014 with respect to its accomplishments, deficiencies, and future difficulties. The 2014 meeting showed that 83% of the respondents accepted that the EC should keep taking part in CSR strategy and 80% idea that CSR assumed a significant part for the maintainability of the EU economy.

In 2015, CSR Europe dispatched the Enterprise 2020 Manifesto which intended to set the bearing of organizations in Europe and assume the main part in fostering a comprehensive maintainable economy and can be perceived as a reaction to the EU Strategy on CSR just as to the United Nations Sustainable Development Goals. The Manifesto centers around the age of significant worth on five key regions: cultural effect through the advancement of mindful and manageable strategic policies; enrollment commitment and fulfilment which is intended to ensure the congruity in crafted by CSR Europe to accomplish its main goal and cultural effect; monetary security; worker commitment zeroed in on the venture of individual advancement just as an authoritative limit, and; ecological effect appraisal to decide spaces of progress (Agudelo et al., 2019). The year 2015 is a turning point in the field of CSR; indeed, with there was the adoption of seventeen Sustainable Development Goals (SDGs), which address a "shared vision of humanity and a social contract between the world's leaders and the people" (Ban, 2015). In any case, when the SDGs don't address any responsibilities for the private area, the nations that receive them should make explicit approaches and guidelines that will convert into pressure for firms to carry out new strategic policies or to work on their present ones. Taking into account that the SDGs don't address any responsibilities for the private area, it is relevant to specify that the EU law, through the Directive 2014/95/EU, requires big organizations of public interest (recorded organizations, banks, insurance companies, and different organizations assigned by national authorities as open revenue elements) to unveil non-monetary and variety data starting on their 2018 reports and onwards. The Directive is important since it gets from the European Parliament's affirmation of the crucial part of the divulgation of non-monetary data inside the EC's

advancement of CSR and thus can be required to affect the extension of CSR detailing inside the EU just as with the Global Reporting Initiative (GRI) (Agudelo et al., 2019).

This context presents a chance for CSR to continue growing in terms of conceptualization and execution, fundamentally in light of the fact that organizations can embrace it as an essential system to create shared value (Porter & Kramer, 2006). The development of the concept of CSR can be seen in institutions, and of course also in the prominent scholastic writing where it is feasible to see that since 2010 the quantity of scholarly distributions around CSR has expanded extensively.   In this work, I won't list every scholar's contribution, but in the following table, we can clearly observe the increase in the number of publications.

Year	Number of publications		
	Science Direct	Pro Quest	Web of Science
2010	1097	5735	479
2011	1448	6230	577
2012	1995	6911	605
2013	2002	7360	730
2014	2813	7418	770
2015	3321	8182	1394
2016	2753	8188	1632
2017	2845	5670	1816

Table 1. A literature review of the history and evolution of corporate social responsibility. Source: own representation

2. Corporate Social Responsibility in modern times and its relationship with social media

Corporate social responsibility (CSR) denotes all the types of initiatives that corporations implement as part of their corporate governance to ensure that their activities are ethical and bring benefits to society. CSR is a very broad argument that contains different categories. We could summarize these responsibilities into four main categories.

The first one is about Human rights responsibilities, which comprehends all initiatives aimed at providing fair labour practices (e.g., equal pay for equal work, no gender discrimination, and the fight against child labour). Second, philanthropic responsibility is concerned with donations to causes such as educational programs, supporting health initiatives and so on. The third category belongs to economic responsibility which we could briefly explain as the act of trying to improve the operational efficiency of the company itself while using sustainable practices (e.g., investment in new types of machinery which will minimize the company wastage). Furthermore, we have also the environmental responsibility aimed at, for example, reducing gas emissions, using more sustainable resources, and reducing the overall company pollution (www. CorporateFinanceInstitute.com).

We clearly could catch the fact that all these categories of CSR are related one to the other; but what does it mean? Basically, the overall CSR machine should be exploited by companies in its entirety and not just by focusing on one single aspect, even if, obviously, reaching also just one responsibility out of four will be better than reaching none of them.

2.1. A Contemporary approach to Corporate Social Responsibility

We could also state that Corporate Social Responsibility, from a business corporation point of view, could have the facet of a sort of "giving back to society".
To better understand how this concept is actually applied in real situations I truly believe the following examples will be very useful.
The media streaming Netflix is rewarding its workers by further developing their organisational work strategies. In 2015, Netflix employees were given 52 weeks of paid parental leave as a component of their business bundle. This advantage gives representatives the adaptability to return to work and resume leave as it suits them. Moreover, the organization likewise offers limitless excursion time to their labourers.

These Netflix strategy changes depending on the idea that happy employees are better, more persuaded, and less inclined to leave the group for work somewhere else (Environmental Stewardship Policy, 2016).

Another great example is the one regarding Pfizer which engages in charitable donations. Global drug enterprise, Pfizer, upholds a few magnanimous associations. They persistently bring issues to light of irresistible and non-irresistible illnesses while giving life-saving prescriptions to individuals who battle to get satisfactory medical care. In 2015, Pfizer declared an extreme decrease in the per-portion cost of Prevenar 13, a pneumococcal vaccine. This vaccine final aim was to guarantee that people (particularly adolescents) in the most far off districts on the planet approach life-saving vaccination (ThomasNet Staff Writer, 2019).

Further top companies' social responsibility behaviour also comprehends Coca-Cola which changes Corporate Policies to Benefit the Environment. Coca-Cola, the world's biggest drink organization, has ordered an organization strategy to lessen its carbon impression by 25% constantly in 2020. Some portion of their methodology is to diminish the fossil fuel byproducts of their appropriation shipping armada, which contributed an expected 2.2 million metric huge loads of ozone-depleting substance in 2016. To accomplish this, Coca-Cola is step by step adding conveyance trucks that sudden spike in demand for a blend of elective powers, like power, gaseous petrol, diesel-electric, and biodiesel (ThomasNet Staff Writer, 2019).

These models are some examples of how organizations are carrying out CSR to work on the personal satisfaction of the networks they influence each day. Other large name enterprises, for example, Wells Fargo, Lego, The Walt Disney Company, and Starbucks have likewise coordinated CSR into their business tasks trying to reward society (ThomasNet Staff Writer, 2019).

The last example I would like to analyze is the Celgene one, about the inclusivity theme.

The worldwide biopharmaceutical organization, Celgene, was perceived as the Best Place to Work for LGBTQ community and accomplished a Corporate Equality Index (CEI) of 100% for 2019. Celgene's ideal CEI rating reflects drives, for example, the Celgene Pride Alliance which incorporates mentorship, chipping in, and representative consideration bunches for LGBTQ workers and partners. Furthermore, ladies established 53% of the organization's labour force and got 53% of all advancements (2017) (ThomasNet Staff Writer, 2019). These endeavours better-off employees work-life balance, maintenance,

and cultivate a comprehensive work environment where associates are perceived and regarded as an individual human beings (ThomasNet Staff Writer, 2019).

All the examples above-mentioned were aimed at analyzing and comprehending all the different ways in which companies can contribute through Corporate social Responsibility actions to share and create real value for society.

Of course, it is important to highlight the fact that these are the consequences of many years of Corporate Social Responsibility development.

Before proceeding I believe it is appropriate to open parenthesis in order to give credit to the board creator and educator at the University of Georgia Archie B. Carroll, which in 1991, distributed his article named "The Pyramid of Corporate Social Responsibility". In his paper, Carroll developed regions he accepted were urgent while carrying out CSR in an association. As I mentioned in the first paragraph of this chapter, the greater part of what is viewed as present-day CSR is established in an idea known as the Pyramid of Corporate Social Responsibility. Within the 1991 article titled "The Pyramid of Corporate Social Responsibility", the renowned Dr. Archie B. Carroll, the executive's creator and teacher at the University of Georgia, laid out the four regions he recognized as fundamental in an organization's corporate social obligation. The pyramid is a straightforward system that assists associations with arguing how and why they could and should meet their social obligations. It endeavours to adjust the personal circumstances of organizations (benefit) with its more extensive, more moral objective of being socially mindful. Carroll features four fundamental responsibilities of an association's CSR program: Economic, Legal, Ethical, and Philanthropic (Carroll, 2016).

The first (monetary) and most crucial level of the pyramid is an organization's financial duties. As a crucial condition for its reality, an organization should be profitable. If this necessity isn't met, the business can't endure, and accordingly, the organization won't continue onward to different levels of the pyramid.

After fulfilling their financial obligations, organizations should guarantee that their business activities are inside the bounds of the law. At this level, associations should satisfy their lawful necessities. Like the financial necessities, if lawful prerequisites are not met the organization's endurance might be in question, keeping them from continuing forward to different levels of the pyramid. These lawful necessities incorporate, however, are not restricted to, business, rivalry, wellbeing and security laws.

A higher level of the pyramid is the organization's moral duties. In this stage, the organization goes past lawful prerequisites by acting ethically and morally. All in all, the organization settles on a conscious choice to "make the best choice." For instance, trying to diminish waste, some coffeehouses have begun offering discounts to clients who bring their own eco-friendly cups.

Once the monetary, lawful, and moral establishments of the pyramid have been fabricated, the organization can continue forward to the last level of the pyramid — generous obligations (charitable). At this level, the organization goes past its ethical obligations by effectively offering in return and having a constructive outcome on society.

Fig 1. Carroll's pyramid of CSR

Source: Carroll (2016), International Journal of Corporate Social Responsibility

For instance, the financial institution Wells Fargo gives 1.5% of its income to different lodging, catastrophe help, and military-centred foundations.

After right around thirty years since its presentation, the Pyramid of Corporate Social Responsibility remains profoundly pertinent. It keeps on being referred to, discussed, adjusted, and censured by scholastics, experts, and legislators. The pyramid's significance and life span are credited primarily to its oversimplified at this point key structure which can be received by practically any organization (Carroll, 2016).

In the first paragraph, Carroll was mentioned for his critics of Bowen theories, but nothing was said about Carroll's theory on the pyramid of CSR. Since his model was used as a reference point for the development of other CSR theories, he should be perceived differently from the previous literature review since, again, his study turned out to be sufficiently flexible and applicable also to the nowadays society.

But how companies nowadays can efficiently communicate their Corporate Social Responsibility behaviours? Certainly, social media play a fundamental role within this context. Social media include Twitter, Facebook, and Instagram. They are all online platforms started with an entertainment goal but rapidly developed in the real and actual business opportunities. More and more people are able to work with social media nowadays. So why company should do something different? Actually, they do not. Corporations have job applications focused on social media marketing, communication precisely because they understood the power of social media. Since this research thesis, as explained before is focused on understanding how companies use Twitter in order to manifest their Corporate Social Responsibility behaviour and their possible consequences on the companies' financial return, firstly we should spend some word on this specific social media.

Twitter was designed by Jack Dorsey, Noah Glass, Biz Stone, and Evan Williams in March 2006 and launched in July of that year. By 2012, more than 100 million clients posted 340 million tweets a day. In 2013, it was one of the ten most-visited sites and has been portrayed as "the SMS of the Internet". Twitter is an American microblogging (given that by far most of the tweets are composed by a small fraction of users) and long-range informal communication administration on which users post and interact with messages known as "tweets". Registered clients can post, as, and retweet tweets, however, unregistered clients can just read them. Tweets were initially confined to 140 characters, but later on, this number was multiplied to 280. Furthermore, audio and video tweets are restricted to 140 seconds. We could easily catch the versatility of this social media and it is the versatility itself the key characteristic which makes it one of the most popular social media worldwide (Porter & Nhotsavang, 2015).

2.2. Corporate Disclosure on Twitter

Twitter was the subject of numerous researches in the past years: among them, there is an interesting study that analyses CEO commitment on the platform.

The study was based on 2011 Fortune 500 and Inc. 500 corporations which were taken from Fortune magazine and Inc. magazine sites. Within the Fortune 500 organization list, there were the names of the current CEOs. First of all, the research on Twitter was conducted utilizing every CEO's name as a keyword to discover whether a Twitter account existed through the search function. When the name was not linked to an account or the search did not produce results, a Google search was directed to check for a Twitter account utilizing these keywords that incorporated the CEO's name and the word "Twitter" (Porter & Nhotsavang, 2015). This ended up being an efficient way to implement the searches on Twitter, indeed a few extra accounts were recognized through this strategy. The following data were gathered for CEOs who had Twitter accounts: number of followers, number of total tweets, and the contents of tweets from January through March of 2012. The number and frequency of the tweets were recorded to decide the degree of CEO commitment on Twitter. Subsequently, they were classified into five categories:

(1) extremely dynamic: one tweet per day;

(2) dynamic: one tweet per week;

(3) fairly dynamic: no less than one tweet each month;

(4) once in a while dynamic: one to three tweets among January and March;

(5) inactive: no tweets between January and March.

Every CEO was then located in one of the five categories to analyse the correlations and differences between Fortune 500 and Inc. 500 CEO commitment levels.
In order to analyze and compare content and trends patterns between Fortune 500 and Inc. 500 CEOs, qualitative research was conducted: each original tweet was analyzed

utilizing a manual coding system. Moreover, a tweet was considered original as it does not contain a Twitter handle in its content (@twitterhandle) and if there were no retweets. Of course, the number of retweets was taken into consideration, but not their content.

However, there was not an effective method to verify if those tweets had been posted personally by these CEOs, but for the purpose of the research, the assumption was that the owners of the accounts – and consequently the tweet writers – were the CEOs. This assumption led to a further consideration: as owners of the Twitter account, any posting should be authorized and controlled by the leader of the corporation. Indeed, when a CEO makes public statements, the latter is considered as representative of the voice of the entire corporation and similarly, each tweet was thought to reflect not only the personal voice of the author – the CEO – but that of the whole company.

Just 3.2 % of Fortune 500 CEOs have a Twitter account compared to 17 % of Inc. 500 CEOs with Twitter accounts. It was not unexpected to track down a bigger number of Inc. 500 CEOs who have Twitter accounts, given the differentiating levels of size, assets, and exposure with Fortune 500 CEOs (Kapok, 2016).

While more Inc. 500 CEOs have Twitter accounts, 30 out of the 87 with accounts (34.5 %) didn't tweet among January and March. Indeed, a higher level of Inc. 500 CEOs didn't tweet at all inside the three-month time span contrasted with the level of the individuals who tweeted basically one time each day (34.5 versus 23%). This may show that numerous Inc. 500 CEOs were early adopters of Twitter, however, didn't keep up with their commitment on Twitter. Of the Inc. 500 CEOs who didn't tweet between the predefined time, the greater part (66.7 %) has not tweeted since 2011, two have not tweeted since 2010, two since 2009, and two have not conveyed a solitary tweet. The movement levels of Fortune 500 CEOs were more highly contrasting, which means they were either extremely dynamic or idle. Almost 38% of Fortune 500 CEOs tweeted essentially one time each day while 31.25 % didn't tweet among January and March (Social CEOs report, 2012).

Excluding the CEOs of the two categories who didn't tweet among January and March, 73% of Fortune 500 CEOs versus 50% of Inc. 500 CEOs focused a larger part of tweets on company news and mentions. While tweeting about their organizations, Fortune 500 CEOs kept tweet contents at an elevated level, for example, posting about the company history, posting direct links to the company website to create traffic, and acknowledging employees for extraordinary work. Inc. 500 CEO tweets about their organizations

changed including financial news publicizing development achievement, general estimations about the company, and open company in the tweets (Porter & Nhotsavang, 2015).

Undoubtedly, Fortune 500 and Inc. 500 CEOs are different in the contents of their tweet, but also in the type of language they chose to use. Still, both groups had a larger number of CEOs that concentrated on corporate content and a likewise big number of CEOs that tweeted their ideas/comments. Furthermore, the more dynamically involved CEOs were on Twitter, the more followers they tended to have. This implies that several investors are interested in getting insights from the CEOs of the companies. Though there did not seem to be clear tactics in terms of balancing content across a broad range, there appeared to be tactical uses of tweets in order to foster engagement such as hashtags links and mentions. Yet, few CEOs seemed excessively self-promotional or clearly focused on advertising and brand messages.

Consequently, the validity of Twitter, Facebook and web journals improve to become essentially equivalent to that of everyday media.

The proof that corporate executives use, some more and some less, Twitter in order to promote and communicate corporate news brings also a dark side. This could be explained as a direct consequence of the social media behaviours above-mentioned. More precisely, social media platforms have become virtual trading clubs for garnering trade ideas, swapping tips, and hyping stocks. In this turbulent environment, new participants (occasional traders) are chasing rewards without appreciating the underlying risks, and some are getting caught on the wrong side of their bets, losing lots of money.

Social media forum "WallStreetBets (WSB)" stimulated retail traders to exchange stocks like Blackberry, AMC and GameStop in January 2021. According to Bloomberg, 50 so-called "Meme Stocks" (e.g., stocks with a very volatile price) added $276 billion in value from the end of 2020 to the first 2021 months (Levine, 2021).

Social media-fueled trading is a phenomenon that has changed the market dynamics, affecting both small and large traders, brokerage firms, and clearinghouses. The market infrastructure needs to be shocked tested against the trading volume surges and the overall mechanism adjusted to guarantee robust, efficient market operations.

The facts and figures are distorted as a result of the asymmetric information flow, making success appear more likely than it is. Individuals execute their trading decisions without adequately assessing the risk-reward tradeoffs (Khan, 2021).

Also, non-professional investors or brokers know that the trading environment is a risky place to enter. Social media-based trading must be seen as gambling rather than investing.

2.3. Public figures & social media activity

It is undeniable that, nowadays, social media, and particularly Twitter, has a huge influencing power on the stock market, and, generally speaking, on companies' financial performance. Of course, not every single person with a social account has the ability to affect stock prices; the only ones are the so-called VIPs. Within this category, we find music stars, sports celebrities, models (e.g., the American model and influencer Kylie Jenner) and of course also some popular entrepreneurs like Elon Musk.

Related to these two well-known characters there are some extreme examples of how social media is such a powerful tool within this historic period. More precisely, Kylie Jenner on February 21, 2018, did not appreciate the social media Snapchat redesign. Consequently, being one of the most followed celebrities on the social media (Twitter included) she decided to tweet: "Sooo does anyone else not open Snapchat anymore? Or is it just me...ugh this is so sad". Apparently, we could perceive it as a common tweet, but not the financial market; that day Snapchat stocks (SNAP) closed down by 6% with an overall loss of $1.3 billion of the company's market value (Yurieff, 2018).

This was not the only stock downfall due to celebrities' tweets, also the famous South African entrepreneur, and third richest man of the world, Elon Musk, was a victim or the architect, depending on the point of view, of a similar situation. In September 2018, he was a guest of the famous "Joe Rogan Experience #1169" and during the talk, which last more than 2 hours and a half, the host Joe Rogan offered the entrepreneur some Marijuana to be smoked. Musk accepted with the following premise: "I'm not a regular smoker of weed". Facebook, Instagram and especially Twitter was invaded with tweets about that bizarre event. The first direct consequence of this unexpected situation was that Tesla stock plunged 9% on that fateful Friday (Eisenstein, 2018).

These two extreme examples represent clear proof about the hypothesis under which we are assuming a direct correlation between social media and the stock market (White & Boatwright, 2020).

Furthermore, in May 2020, Musk again tweeted "Tesla's stock cost is too high IMO." That day Tesla's stock cost shut 10% lower than the other day (Peters, 2020). The SEC said the

tweet was liable to audit since it was aimed at manipulating the organization's monetary condition. Tesla replied it wasn't since it was a "sincere belief."

The issue isn't whether Musk's tweets disregarded the protections laws, however regardless of whether they abused the previous SEC settlement with Musk, as indicated by Tulane University business teacher Ann Lipton, who represents considerable authority in protections and corporate cases (Lipton, 2020).

Numerous things influence an organization's stock cost, but for sure an organization's author and CEO tweeting out significant data about the organization certainly moves the value more than it should.

Of course, Elon Musk did not use Twitter to express personal opinions only on its most famous company, Tesla. He tweeted also on other themes, and also many others like him. The very rich person's tweets have moved costs of bitcoin and dogecoin, financial products that aren't controlled by the SEC or some other organization, and for this reason, Musk and other relevant investors were less pressured by the fear of breaking SEC market conditions or general financial conduct rules.

2.4. Reputational risk

Scenarios like the ones above-mentioned could and must be strictly related to another concept, which is the so-called "reputational risk".

Reputational risk refers to the possibility of damaging publicity, which can affect public perception. It refers also to unpredictable events that can have a negative impact on a company's reputation, thus affecting its income (Sickler, 2019).

Reputational risk can in a completely unpredictable way, change the corporate landscape, sometimes in an irreversible way. Moreover, it can instil a negative narrative through the search results, and this may influence customer opinions resulting in low revenues, of course. There are innumerable statistics about the online reputation that support this conclusion. A study conducted by Forrester Consulting found out what executives at large brands think about search engine optimization (SEO) and reputation: 43% of executives think that eliminating negative and unwanted search results would increase sales. 43% of brands think refining search results would also increase conversion rates and another 42% of them believe search results are inevitably linked to lead generation. 38% of brands think diminishing critical search results would improve close rates and lastly, 54% of executives believe decreasing negative search results would lead to revenue growth.

Unfortunately, reputational risk is occasionally confused with other types of organizational risk. Understanding how they all relate to one another is fundamental. Strategic risk is specific, measurable, and predictable. Therefore, it is controllable.

Reputation risk, instead, is largely unpredictable. Moreover, it can be linked to situations that aren't related to the company's fault. In any case, the opinions of consumers, shareholders, business partners and the general public can have a significant influence on your firm's revenue. As a direct consequence, it's essential to be aware of exposures that could result in a reputational cost to a business (Hillenbrand & Money, 2007).

There are various sorts of risks to prepare for, including outside unfavorable events, asymmetric communication of information, product recalls, unfavourable financial statements, and CEO status issues. We should observe the scenarios that pose the most dangerous situation.

If your CEO has a negative reputation, then this will automatically be transferred to the company as a whole. And that, eventually, affects revenue, investments, and shareholder value. That's because a CEO's reputation cannot be detached from that of the company, and vice versa.

- top managers attribute 45% of their company's reputation to the CEO's reputation

- 25% of a corporation's market value is straightforwardly attributable to its reputation

Even if a "bad" CEO leaves the company, his or her reputation may continue to damage the brand. That can make it problematic and expensive to find a replacement and could further feed the negative media reporting cycle.

Company executives aren't the only source of reputational risk; any company worker could be the cause of a public embarrassment. Try to imagine the effects for each of the following scenarios: a branch supervisor calls the police for racially moved reasons, one of your portfolio managers declines to serve a gay couple, or an administrator at your VC firm is accused of sexual abuse.

Any of those circumstances could cause a viral news cycle that results in boycotts, a customer dropping out, and meaningful revenue loss for several years.

Company layoffs, claims, humiliations, and regulatory sentences can impact revenue for years if the company does not act fast in order to delete those articles from its Google search results. Whether brought on by unsettled employee disputes, customer complaints or regulation violations, negative and controversial media attention can decrease profits for international banks, financial services corporations, and other types of firms.

According to a new study by Forrester Consulting, 42% of brands believe that decreasing negative search results would better-off lead generation. Additionally, 54% of top managers believe improving search results would increase business economic performance.

Social media can be both a trigger and a catalyzer for an unfavourable reputation. Once company executives post provocative comments online, their statements affect the company as a whole, not just the top manager's prestige.

Additionally, unsolicited brand mentions by influential political figures or celebrities can also lead to social media backlash, as examined in the previous examples. Even if a business may have been randomly mentioned, the public will tend to produce a mutual endorsement.

Furthermore, social networks can intensify undesirable publicity that may otherwise have gone unseen (Sickler, 2019).

Chapter 2: Twitter analysis and data methodology

1. **Twitter rise and development**

The first part of the following chapter will focus on the history and development of the Twitter social media platform.

Twitter is an online microblogging platform that allows its users to send quick messages to groups of people through computers or mobile phones. It combines features of social networking sites like Myspace and Facebook with instant messaging technologies to build networks of users who may connect throughout the day with short messages named "tweets." (Thurau et all; 2012). Users of Twitter can write tweets on their mobile phone or computer and the Twitter platform spreads it to all Twitter's users that follow the person who 'tweeted'. Users can also choose to track specific topics, which creates a sort of discussion and pushes the number of followers in a Twitter feed in the range of millions. Tweets can be about anything, from news, to personal life, entertainment, politics, but they must be under 140 characters long.

Ruby on Rails, a specific Web-application framework for the Ruby programming language, was used to create Twitter. Its user interface is flexible and enables easy integration with other web services. Evan Williams and Biz Stone, who both worked at Google before leaving to start the podcasting company "Odeo", launched the service in 2006. Williams, who had previously invented the popular Web publishing tool "Blogger", began experimenting with one of Odeo's side projects at the time, "Twitter", a short message service (SMS). Williams bought Odeo and formed "Obvious Corp." to further develop the product because he saw a future for it (Carlson, 2011).

The engineer Jack Dorsey, who will also be the CEO of the company till November 2021, joined the management team, and the completed version of Twitter debuted at a music congress in Texas, in March 2007.

Thanks to an infusion of venture financing, Twitter Inc. was formed the following month as a corporate entity. The platform has been a free SMS with a social networking component since its inception. As a result, it lacked the distinct revenue stream that can be found on sites that make money from banner ads or membership fees. With a 1,300 per cent increase in unique visits in 2009, it was clear that Twitter was more than just a passing fad. However, it was unclear whether Twitter could attain financial independence from its venture capital investors.

Twitter announced, "Promoted Tweets"—advertisements shown in search results—as its principal revenue source in April 2010. When the actor Ashton Kutcher beat CNN to become the first Twitterer to reach a million followers in April 2009, Twitter's social networking roots were evident. While celebrity "e-watching" remained a major draw to the service, businesses began putting out tweets about promotions and events, and political campaigns realized the utility of Twitter as a communication tool. For example, Barack Obama outperformed his opponent, John McCain, in the social media realm during the 2008 US presidential race, garnering nearly four times as many Myspace friends and more than 20 times as many Twitter followers. This breakthrough almost insured that future candidates' communication plans would include a social networking presence. However, the most notable development in Twitter's history was its expanded use as a tool for amateur journalists. Twitter went from being considered as a frivolous pastime in an increasingly connected world to a real-time news source that cut across political lines (Hayes, 2008).

Janis Krums, a commuter ferry rider, broke the story of US Airways Flight 1549's successful water landing on the Hudson River in New York City on January 15, 2009. A quickly captured camera phone image of passengers disembarking the half-submerged plane was uploaded to Twitpic.com, a photo-hosting service for Twitter users; the site crashed shortly after as thousands of Twitter users attempted to view it at the same time (Shedden, 2015).

Furthermore, during the events surrounding the Iranian presidential election in June 2009, Twitter fully established itself as an emergent channel for the sharing of information. As state media declared that President Mahmoud Ahmadinejad had won handily, followers of opposition candidate Mir Hossein Mousavi rushed to the streets in a series of protests that led to a government crackdown in which several demonstrators were hurt or killed. As Mousavi supporters organized rallies and provided live updates from the Iranian capital, the hashtag "#IranElection" became one of the most popular on Twitter. At the request of the US State Department, Twitter postponed a 90-minute maintenance session on June 15, three days after the election, postponing it for 1:30 AM Tehran time so as not to disrupt the flow of information within and out of Iran. Foreign journalists were barred from covering opposition protests the next day, and Twitter and other social networking platforms stepped in to fill the hole created by the traditional media. Government security personnel attempted to stifle information flow by barring

particular Twitter users, while opposition sympathizers urged "#IranElection" supporters to alter their profile settings to the Tehran time zone in order to bypass government filters. Even though the protests did not result in a change in the election results or a fresh election, de facto journalists' tweets demonstrated the power of nontraditional media to bypass official censorship. Twitter grabbed the attention of those who would like to see some information censored after demonstrating its adaptability as a high-tech newswire (Keller, 2010).

Heading back to Twitter history and development, it is crucial to understand that it has grown to become one of the most well-known and important social media sites on the planet. But what events brought it to that point?

The events that led to this can appear to be excruciatingly simple. Dorsey created the platform, which proved to be a success, and he rose to his appropriate position as CEO through time and expertise. However, with a company like Twitter, which has had three CEOs in less than two years, the truth may be darker than the cheery bluebird suggests. The fact may be that its development was the result of tensions played out in boardroom battles and backroom meetings, all the while the site's true value became more obvious to its founders and everybody else (Meyer, 2020).

Despite Twitter's sudden rise in popularity, again, it was harassed by a question for years after its debut: "How would it generate money?" It was able to get finance without difficulty, but its revenue remained constant year after year at $0. (Meyer, 2020)

Twitter's first foray into revenue came in 2009, when it sold the rights to have its tweets shown on Bing and Google's search engines for $10 and $15 million, respectively.

This, on the other hand, did not provide a paradigm for long-term profitability. The actual difficulty was how to bring advertising to users without being too intrusive. All of the founders were categorical about not trying to copy anything as openly commercial as Facebook and promoted tweets were the answer in 2010. This still accounts for around 85% of Twitter's revenue, and it involves a firm paying for a tweet, account, or trend (such as a specific hashtag "#") to appear in people's feeds, with money paid out each click and per retweet. This approach brought in roughly $400 million in income in 2015. (Hayes, 2008).

Within the controversial past of Twitter success, there is another relevant and fundamental theme: the political field. Evan Williams and Biz Stone, two of Twitter's

founders, had a strong concept for the company's political position when it was created; the Twitter platform should have been apolitical. They envisioned an uncompromisingly impartial platform where anyone could write anything without fear of censorship.

But, even while these two founders were in charge, this goal did not always seem to stay true. During the 2009 Iranian election demonstrations, many saw Twitter's decision to postpone scheduled server maintenance as influenced by an email from the US State Department, and therefore as an example of the company taking a political stance. Whatever objections there were about Twitter's political tendencies during Evan Williams' tenure only intensified under Jack Dorsey's leadership, a founder who, at least in its early years, never expressed an explicitly apolitical perspective of the firm as his peers did. Dorsey accepted the job of the moderator at a White House Twitter town hall with President Barack Obama shortly after Williams and Stone left their normal roles at Twitter. With increasing reports of online harassment and concerns about governments and other organizations using Twitter as a tool of political manipulation, the pressure on Twitter to take a stand has reached a fever pitch. To deal with complaints, several tools and policies have been implemented, and more effort than ever has gone into expediting the process by which users can submit tweets so that workers can assess whether what's been reported is acceptable under the company's policy. (Wagner, 2021).

Despite this, many people have complained about prejudice in Twitter's implementation of its regulations, and others have protested that the existence of any policy at all indicates that Twitter is taking on a political role that is contrary to its founding ethos. There isn't a day that goes by now that Twitter isn't mentioned in the news. This, of course, is originated from the platform's use by President Donald Trump. His Twitter behaviour has prompted debate on both sides of the political aisle. Some argue that his tweets fall into the categories of abuse listed in Twitter's policy as punishable infractions, while others argue that they are an exercise of free speech that should be protected. (Wagner, 2021).

Notwithstanding others' claims that the line has already been crossed, Jack Dorsey has stayed remarkably impartial on the matter, maintaining a narrative of staunch belief in both the company's anti-harassment measures and the president's continued ability to tweet within these confines.

In 2017, a Twitter employee cancelled the president's Twitter account on his last day of work. The staffer had made a mistake and had inadvertently deleted the president's

account for 11 minutes. Despite the fact that the president remained silent after returning to the site, Dorsey has apologized for the incident, calling it a significant blunder.

As could be expected, Twitter was not simply in the news in the United States. Its role has been scrutinized more and more around the world.

In Europe, where some of the harshest regulations against the spread of hate speech, violent content, and misinformation exist, Twitter has struggled to strike a balance between its corporate policies and the laws of the nations in which it operates. According to the New York Times, Twitter received over 500,000 complaints in 2018 over content that breached German hate speech regulations. Ten per cent of the flagged postings were removed, however, it's unclear whether this was due to a Twitter rule infringement or a country rule violation. Countries such as Australia, on the other hand, have gone a step further. Following the televised murder of 50 people at a mosque in New Zealand, the country threatened Twitter and its executives with fines and jail time if they did not remove the video from their website. Following this, the business said that it will test techniques to remove tweet replies from users' feeds (Timberg et al., 2019).

Furthermore, China is another region where the platform has undergone some difficulties since the site is officially blocked in the country. Despite this, many Chinese government critics use the platform to communicate notwithstanding the country's firewalls, frequently at great risk. Interrogation, lengthy stays in prison institutions, and forced deleting of tweets and accounts have all been imposed on those caught using Twitter. While Twitter has remained largely silent on China, other than to express its disappointment at not being able to access the country, the company recently sparked outrage by deactivating the accounts of over 100 Chinese political commentators just days before the Tiananmen Square protest anniversary. Twitter apologized for the incident, explaining that it was caused by an error in their anti-spam and anti-inauthentic behaviour software. Chinese protesters were apprehensive of the country's increased censoring methods in the run-up to the anniversary (Kim, 2018).

Twitter has had its ups and downs over the years, but it appears that the firm is on the patch for the time being. On June 13, 2018, the company's stock dropped 4.3 per cent after the analyst Michael Nathanson reiterated his critiques of the company's "stretched" valuation and lack of funding for its online security development. However, a combination of new user engagement activities, sustained revenue growth, increasingly transparent

user analytics, and competitive advantages over its tech peers - who are valued higher - imply the company's future could still be bright (Kim, 2018).

A considerable proof of this is Twitter's stock, which is now trading at roughly $50 per share as of this writing (data based on an average stock price per share of November 2021 - www.finance.yahoo.com).

2. Corporation's engagement with stakeholders through Twitter

Now that we made a generic overview of the Twitter history and of its main relevant event which characterize its background, we will focus our attention on how some of the world's largest corporations are using the famous microblogging site to communicate and engage with their stakeholders. It is implicit to state that traditional communication assumptions over decades have been transformed by the digital world and today we should speak of the so-called Web 2.0 era. An entirely new approach to understanding the world through social media has emerged in recent years and today challenges in the field of communication are mainly related to social media; only the fact that Twitter has an average of 517 million users should be sufficient to prove its leading role in the digital transformation process.

Leading countries based on number of Twitter users as of October 2021 (in millions)
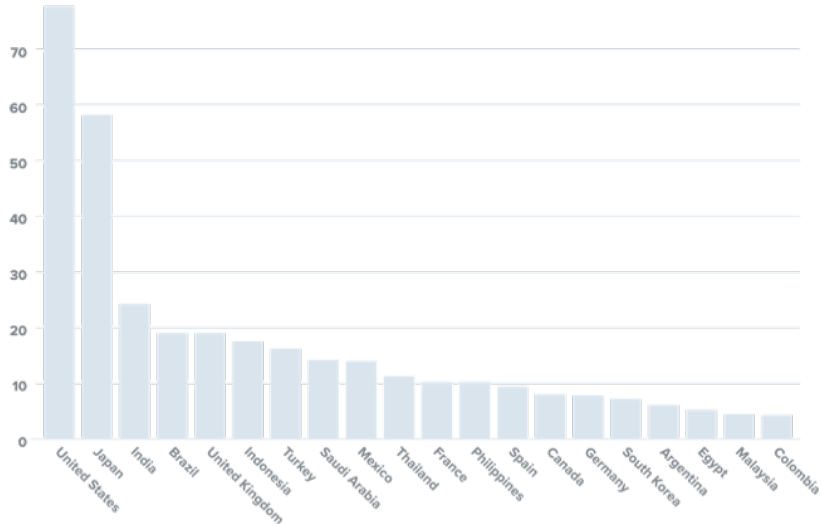
Source: www.Statista.com

Web 2.0 is built on the principles of interactivity and cooperation. These features, as well as the technological advancements that enabled them, have transformed our way of being and existing in the world, particularly in terms of how we relate to one another, as individuals and as a community. Various studies have looked at how government agencies, corporations, and non-governmental organizations (NGOs) use social media and the way social media users can get involved with organizations, including collaborating to achieve participative goals, sharing personal experiences and ideas to develop proximity between brands and stakeholders, and empowering people to express their thoughts and expectations (Méndiz et al., 2013). These encounters are increasingly crucial to any long-term engagement between businesses and the general public. Consumer behaviour has become progressively conditional and dependent on user-generated real-time information exchange, which can take place anywhere and at any time (Thurau et al., 2010).

People can learn about a new product through social media, read different evaluations from real customers, and express various comments, questions, and experiences concerning firms and brands. As a result, businesses must concentrate on both their social media presence and, more importantly, their online communication tactics and strategies. Being audience-focused may truly help firms build a network of followers with whom they can keep in touch in real-time and form long-term creating a supportive relationship based on a sort of loyalty of the consumer. By allowing inputs and answers to happen simultaneously, social media enhances the two-way and synchronized communication potential of interaction leading to a major change in communication. Wikis, blogs, social networking sites, and video-sharing platforms represent a substantial shift in an organization's communication capacity for engaging with its audiences. Twitter is part of this greater technological trend; additionally, it has consolidated as the most popular microblogging service, and as mentioned before, its site traffic has increased significantly over time. Indeed, Twitter said in February 2011 that people sent 140 million tweets each day on average; and, according to Malhotra (2012), 27 per cent of Twitter users log in every day, while 25% indicate they follow a company and receive marketing messages from that business.

Marketers and experts can gain access to a large set of customers using this social networking platform. Larger firms with several businesses and brands are at risk of losing

a personal connection, and social networking sites are a key avenue for enterprises to communicate with customers on a regular basis and humanize the company.

Everything that has been described emphasizes how businesses are leveraging the interactivity of online social networking sites to reach their target audiences. As a result, it's crucial to understand how huge organizations are acting in this situation.

2.1. The communicative use of social media

Are businesses interested in growing their online communities? What strategies do they use to control their follower-follower behaviour? Are they also taking advantage of the networking site's communication tools? Do they communicate with stakeholders at least once a day, if not more frequently? Within this context, studying interactivity should provide a critical opportunity to promote stakeholder engagement by gaining a deeper understanding of how organizations employ networking communication tools.

As was previously explained, one of the pillars of Web 2.0 is the new social media platforms. There is not a clear and decisive definition of the different typologies of social media, in line with Fischer and Reuber (2011), but it is widespread the distinction between social bookmarking (e.g. Digg, Delicious) to categorize web content: video sharing (e.g. YouTube) and picture sharing (e.g. Flickr) are mainly used for entertainment; there is LinkedIn for professional networking and lastly, social microblogging and networking (e.g. Twitter and Facebook) are used for relational and interactive reasons. Each platform refers to a wide range of exchanges across a variety of situations and goals, but they all share openness and interactivity as defining traits. Social media are two-way communication platforms that allow companies and users, as well as consumers and users, to communicate with one another.

Moreover, several researchers have looked into the use of social media as a tool for interpersonal communication. Scholars have also focused on Twitter's ability to act as a platform for opinion formation and information dissemination, as well as the creation of discussion. These studies all agree that social media is a place where people communicate about their daily lives, update their status, and seek out or share information, allowing them to interact with one another on issues of common interest. Furthermore, users not only contribute personal information but also real-time updates on current events.

Prior research has demonstrated the communicative potential of these platforms in emergencies and crises, for example, in connecting people, promoting efforts, and providing various sources of information (Smith, 2010).

As a result, social media's utility extends beyond interpersonal, self-centred interactions. People progress from being passive recipients of knowledge to become active sources of information.

Social media allows for new means of engaging with the public at the organizational level. Stakeholders can talk to real people inside brands, and businesses can not only see what people are saying about their brands in real time but also respond directly to their customers; this phenomenon is also known as "electronic word-of-mouth".

For sure, communication can affect commercial business, particularly in terms of brand reputation and consumer involvement. As a result, incorporating social media as part of a company's overall marketing strategy is becoming increasingly important. Networking sites aid public relations efforts by providing instant communication with multiple stakeholders at the same time, as well as complementing the mainstream media. Organizations must make use of the relationship-building possibilities that these platforms provide in order to reach their target audiences. Developing a dialogic approach in web-based communication, according to Yang and Lim leads to increased interactivity, which again leads to a mutually beneficial relationship because a dialogic approach influences a specific behavioural outcome, that is, the degree of support that a collective audience may provide to a corporation (Yang & Lim, 2009).

As a result, ongoing contacts and communication are crucial for establishing and maintaining any long-term, satisfying relationship.

Therefore, in order to foster their relationships with stakeholders, corporations have to stimulate dialogue that includes key public member input, interaction and participation, but also proactively develops their online presence; the frequency with which a company puts out tweets is used to determine its level of activity.

To summarize, social media's utility extends beyond interpersonal, self-centred interactions. Scholars have shown how social media improves interactivity and empowers consumers to share their thoughts and expectations about companies and products. Organizations that use a dialogic approach and solicit input from stakeholders encourage reciprocal and frequent interactions with their audiences, which appears to strengthen a sense of community. When establishing an online communication strategy

aimed at increasing stakeholder participation, public relations practitioners should keep the above-mentioned components in mind.

2.2. The phenomenon of Twitter

Twitter is one of the greatest social media for empowering firms to engage with customers, also according to Zhang because micro-messages are simple to make and consume. Microblogging is a type of communication in which individuals can express their present situation in short updates delivered by instant messaging, mobile phone, email, or the web (Zhang et al., 2011).

Interactivity is seen as a process involving people, media, and messages, with an emphasis on how messages relate to one another, from a contingency standpoint (Sundar et al., 2003). The use of the '@' character on Twitter is a useful tool for creating logical dialogues. Furthermore, one can follow other people - become one of their followers - to get their tweets or be followed by others – followings -. This reciprocal and mutual relationship between Twitter users might be enabled by this friending behaviour of being followed and followed. As a result, the platform appears to be a valuable medium via which organizations can initiate discourse, as Twitter allows users to respond to one another and swap communication roles. Consequently, there are several communication capabilities unique to this microblogging program that improve engagement and can aid in business communication and public relations research.

On the one hand, companies can promote a feeling of community by connecting with stakeholders in a more casual, direct, and open manner via public messages (PMs) and retweets (RTs). Users can ask questions and make comments to organizations via PMs and anticipate a response. Although private communications are possible, it is more common to send out public messages. Because the message may be seen by everyone, these communications promote an open dialogue between the company and the user. When a user retweets another user's tweet, it is known as retweeting (RTs).

Companies send out RTs to share information from other Twitter accounts, which is typically interpreted by Twitter users as a sign that the company isn't primarily focused on itself but is willing to listen to and engage with others (Waters, R.D. & Williams, J.M., 2011). Furthermore, examining the RTs that users generated from a company's tweets

are a piece of critical information since it tells whether or not the company is producing content that users find interesting enough to share with others.

Additionally, there are several unique features that allow users to enhance the information given in their tweets. Twitter offers a variety of techniques for businesses to get around the 140-character limit, including hyperlinks, URL shorteners, hashtags, videos, and images. The researcher Lovejoy looked at how the largest non-educational non-profit organizations in the United States use these communication tools but fail to build discussion because they largely use the site to send one-way information. (Lovejoy et al., 2012). As a result, Twitter's brief and real-time updates provide a wealth of interaction opportunities.

Dell, a computer manufacturer, announced that customers who followed its links to make purchases had helped the business earn $3 million since 2007. According to a McKinsey Group study, a new form of the firm is on the horizon: one that makes extensive use of interactive technologies (McKinsey report, 2009). More than half of the 1,700 global organizations polled in the research intend to raise their investments in Web 2.0 technology, while a quarter intends to keep their investments at present levels, citing concrete benefits.

As previously said, Twitter has a lot of advantages when it comes to managing strategic internet communication. The site's ability to reach a large number of individuals, as well as the speed with which information is disseminated, are two of the most intriguing features. Furthermore, sending out tweets is really inexpensive. As a result, Twitter is a compelling dissemination medium with significant potential for brand building and stakeholder engagement. Scholars have demonstrated how social media enhance relationships, and various studies have demonstrated how reciprocal and ongoing exchanges encourage dialogue, which leads to support and, consequently, a sense of community.

Without any doubt, the Twitter platform offers great benefits for businesses to reach out to a large number of people.

Although setting up friending behaviour seems crucial when strategically using social media for brand awareness, corporate reputation, and stakeholder engagement, the following–followers phenomenon appears to agree with the general findings of

organizations having increasingly more followers than followings. Creating reciprocal ties with followers is one method for businesses to at least appear to be interested in forming a Twitter community.

This "non-written rule" support what suggested Arroyo when examining the various uses of social media by advertising agencies, which vary depending on the advertiser's sector, arguing that companies whose products and services are essentially closer to the customers appear to use more social media. Surprisingly, it was revealed that (generally speaking) financial services businesses, whose services are close to clients, were among those that received fewer RTs from other users and issued fewer PMs (Arroyo et al., 2013). It appears that using social media more frequently does not imply more interactions or verbal exchanges. As a result, corporations that communicate more tweets are not the same as companies that communicated more RTs or PMs. Another crucial behaviour is related to the frequency with which the corporations put out tweets to see how active they were on Twitter; we must agree with Lovejoy (2012) that a company must post at least three tweets per week to be considered active, though Rybalko and Seltzer (2010) argue that companies that want to keep visitors interested in following their Twitter feed and reflect their commitment to ongoing communication must post new tweets within 24 hours of the profile being accessed. The aforementioned researchers looked at Fortune 500 company Twitter profiles and discovered that 41.2 per cent of them sent at least two tweets every day. Furthermore, 35 per cent of social media marketers post more than one update every day. However, as we've seen, more tweets do not necessarily imply more RTs, Impact-RTs, or PMs. This finding emphasizes that businesses are using social media as a one-way communication tool, ignoring the site's interaction potential for stakeholder participation. Although keeping an active online presence and sending regular messages are regarded as effective practices for fostering relationships between businesses and their stakeholders, these do not appear to be sufficient to increase interactivity between businesses and Twitter users. Retweeting, sharing information from others with your own Twitter followers, and connecting directly with individuals through private messaging can all assist to develop a social network community. Furthermore, RT shows how engaged firms are in what their stakeholders have to say, whereas Impact-RT shows whether organizations are providing the material that people want to share with others. According to Waters and Williams (2011), having organizations sharing content from other Twitter accounts is an indication to Twitter

users that the organization isn't entirely focused on itself but is willing to listen and engage with others.

Anyway, it is undeniable that Twitter is the largest and most popular of these social media sites. Consequently, companies must actively participate in the social media arena in light of the rising digitally empowered world of communicators, which involves not only sending regular messages but also maintaining listening behaviour by monitoring what people are saying on the web. This duty necessitates organizations' efforts in internet communication to be duplicated. Organizations that engage in a discussion should develop relationships with a wider range of stakeholders. Following interesting users, retweeting their content, and participating in specific conversations are some of the ways to do so, but following interesting users, retweeting their content, and getting involved in specific conversations provide also the opportunity to build an online community of supporters that goes beyond the broadcasting of information. Companies are leveraging Twitter's features to supplement information - particularly hyperlinks and hashtags - as we've seen, but greater interactive participation, utilizing the dialogic capabilities to their full extent, is required to enhance relationship growth. Microblogging communication should be a part of a proactive marketing strategy because it is a social communication channel that affects brand awareness and image and having an active presence on social networks means increasing company profits, avoiding corporate image crises, and building stakeholder trust. Companies can use new media to reach out to customers and track their communication, browsing, and purchasing habits (Hennig-Thurau et al., 2010). Anyway, despite the fact that, generally, the large corporations have expanded their investment in social media in line with the worldwide trend, there is still a lack of a social media strategy that takes advantage of the interaction potential of these platforms.

2.2.1. Legitimacy limits

Before moving to the following paragraph, it is necessary to take into consideration some limits of Twitter and in general social media as tools of communication. More precisely, there have been situations in which CSR communication through social media was utilized opportunistically to gain legitimacy and heal reputational damage rather than as a tool to comprehend stakeholders' issues (and to respond to them appropriately). Indeed,

legitimacy can be viewed as a critical resource to a company's survival, and as something that the company can influence or manage (Woodward et al., 2001).

For these reasons, corporations are likely to leverage social networks for legitimacy purposes. This involves highlighting their humanitarian side to try to rebuild and retain their credibility, especially when negative news about the company is presented. This expectation is in accordance with past study findings which show that when organizations disclose financial information on Twitter, they prefer to minimize the negative information and accentuate the good (Yang & Liu, 2017).

Furthermore, also those individuals with a huge audience (i.e., followers) could potentially exploit at their will their social media power. A worldwide known example is the case of the revolutionary and eccentric billionaire Elon Musk. More precisely, the Securities and Exchange Commission in 2018 published a press release telling the public that the entrepreneur, who is both CEO and Chairman of Tesla Inc. – indeed, an insider of the company - had been charged with Securities Fraud for a series of deceptive tweets sent on a single day (US Securities and Exchange Commission, 2018).

2.3. How does the industry use social networking sites?

According to the findings, organizations have integrated Social Networking Sites (SNS) uses and use them in a variety of ways depending on the characteristics and goals supplied by each SNS.

Academics and public relations practitioners have paid close attention to such organizations' virtual communications strategies to improve their interactions with important stakeholders and the general public. For example, Twitter users have recently affected significant political rallies and elections and so, dialogic tactics, social networking sites (SNSs) such as Twitter are appropriate.

"Blogs and social media are more personal, and they bypass traditional mass media to reach audiences and spark debate," according to an SNS, and "social media allows companies to swiftly discover what the public and consumers are saying about their products and services" (Wright et al., 2009).

In the new media environment, interactivity can be operationalized in three ways:

• active control, which describes a user's ability to voluntarily participate in and instrumentally influence a communication;

- two-way communications (reciprocity), which describes the bi-directional flow of information;

- synchronicity, which refers to the interaction's speed.

YouTube and LinkedIn usage were quite low when compared to Facebook and Twitter. Furthermore, financial firms were more active on LinkedIn (40.7 per cent) than other industries. In a week, retailers received the most wall comments from SNS users, followed by transportation and communications industries, financial firms, and manufacturers.

First, the findings reveal that many businesses utilize Facebook and Twitter as their principal social media platforms and have integrated their use of these platforms.

When a firm uses social media, it frequently controls many social networking sites (SNSs) (e.g., Facebook, Twitter, YouTube, and LinkedIn). The findings back up the assumption that businesses try to make use of the intrinsically distinct characteristics of each social media platform, such as Twitter's ability to disseminate information, Facebook's ability to communicate with the public, and YouTube's ability to share videos (McCorkindale, 2010).

SNSs are the best tool for both providing helpful information to customers and receiving direct feedback (e.g., product and service evaluations or complaints) from customers.

2.4. Twitter Analysis – the update culture

How has Twitter microblogging technology influenced the way modern humans communicate? Twitter has undeniably become more integrated into daily life as a communication platform, regardless of the individual user's physical location. We can find proof of this within the estimated 500 million people who use the service daily, and which post a total of 58 million tweets; not to mention the 135,000 new people that join the network every day.

Detractors may point out that while these figures are outstanding, they still represent a fraction of the world's overall population. This is true since one's ability to participate is still limited by personal affluence and access to the Internet, smartphones, or personal computers, but simultaneously, the socio-cultural impact is becoming more and more apparent.

When Pope Francis declared that he would provide indulgences to his Twitter followers, The Guardian noted that the Vatican had "married one of its oldest traditions to the realm

of modern media" (Kington, 2013). Seven years ago, this would have been unthinkable, and a decade ago, it would have been inconceivable.

While it appears that this online social network has accomplished so much in such a short period of time, the greater challenge for academia is to comprehend why, how, when, and with what instruments we, as a society, communicate, and to whom.

Twitter provides academics with a once-in-a-lifetime opportunity to re-examine communication and its impact on culture on a more fundamental level.

Essentially, we can state that modern communication is both individualistic and community at the same time.

In order to deeply catch these changes, we should analyze Twitter from two different angles. The former examines how mass communication theories have been utilized in a more practical research term. The latter subject, focuses on actual instances from the recent past, analyzing how Twitter has influenced everything from journalism and disaster response to social activism and health issues. All the socio-cultural changes that arisen from the Twitter birth demonstrates how technology allows individuals to express their individual thoughts while yet participating in a communal activity.

Historical analogies are utilized to underline that what may be deemed a new media form isn't all that new when it comes to how technology organizes today's social life in comparison to the past. Perhaps we could state that the major point is that communication is as natural as breathing, regardless of the tool via which thoughts, concepts, or information are exchanged.

For sure, personal and professional boundaries blur in this technological environment.

It is undeniable that the digital arena in which what one discloses and the privacy that follows take on new connotations. These definitions are also important for understanding not just the function of these technologies, but also how new, yet-to-be-invented communication platforms should be described and evaluated in the historical framework. When it comes to theorizing the Twitter phenomenon, we should accurately raise an essential question: how is this tool different from past technologies in any significant way? Based on seminal studies by Elihu Katz and other mass communication scholars, the resulting response is negative: there is no significant difference. Today's opinion leaders operate in the same way as they did in the past. The Twitter platform on which they share news and information is the only thing that has changed (Katz & Lazarsfeld, 1955),

The real attraction of Twitter is the belief that its users have the potential to make major contributions to an event: this is the real "game-changer". However, we should also point out that within the cacophony of postings during any given event, regardless of the profundity with which one writes, there is no guarantee that the tweets would be read.

But is this the same to say that the larger the occurrence, the more likely it is that critical commentary in the form of a tweet will be missed? Two clear and relevant examples can be provided. The former refers to the acquittal of George Zimmerman, the Florida neighbourhood vigilante who killed Trayvon Martin in 2012, in July is a case in point. Within the first 26 hours of the jury's decision, the Pew Research Center estimated roughly 5 million tweets about the not-guilty verdict; 39% of all tweets were intended to deliver news rather than express personal opinion (Jurkowitz & Vogt, 2013). With so many tweets sent out, how many of them were actually read? It's a stark reminder that in order to have influence, any platform needs an audience.

The latter is related to the January 2009 disaster of United Airlines Flight 1549 into the Hudson River as one of the earliest examples of how citizen journalism and Twitter have transformed news reporting. Anyone with a smartphone may take a picture, upload it to the internet, and "report" an incident. Consequently, this free access with regard to information publishment can eventually bring some difficulties for the news industry in terms of sharing information, or misinformation, with no accuracy.

Going back to our analysis, we could now refer to this social phenomenon of publishing news through Twitter as an "update culture" among social media users. Twitter has become the go-to place for the most up-to-date information, whether it's about a hurricane, flood, earthquake, or tornado. Because real-life events can change rapidly, even while television broadcasters provide viewers with the most up-to-date information, in any case, social media has become an increasingly vital source of information. However, it is necessary to investigate further the real causes behind the act of publishing news, since in several circumstances it could be seen just as the action "to publish something"; spreading the news is not the focus, the publishing act ends in itself without a real interest for the published information.

An example could be what happened during the 2010 floods in Pakistan, the number of people updating their posts dropped substantially, with tens of thousands publishing a single tweet but less than 10,000 returning to Twitter to post an update; the number of people who posted multiple times during the flood was insignificant.

This should indicate that the real "update culture" is only common among a limited number of Twitter users. Furthermore, this trend is also confirmed by the researchers Katz and Lazarsfeld (1955) who, within their observations, also added that opinion leaders play a role in influencing people.

More precisely, these findings should emphasize that Twitter cannot really expand the number of voices that can penetrate through the societal noise loud enough to gain broad attention. Instead, it appears that, like with other information platforms, just a small number of users are shaping public opinion, with much of this power based on their number of followers and, to a lesser extent, the topics they discuss.

Concluding, we now could state that, regardless of all the beneficial effects that this social media platform has, it is also true that in some situations, Twitter is just an attempt to start the conversation rather than to end it.

2.4.1. Twitter's new language extraction

Text mining is a technique for extracting relevant information patterns from unstructured data in the smallest amount of time. Most individuals in today's society utilize social networking sites to keep in touch with one another on a regular basis, making them an excellent form of communication. It has been normal practice to avoid using proper language and spelling while writing a sentence. This technique can lead to a variety of doubts, including lexical, syntactic, and semantic ambiguities, making it difficult to determine the true data order. Facebook and Twitter, the world's two most popular social media platforms, have made it simple to communicate with friends and family without exerting any effort (Baumer et al., 2010).

People that share similar values become closer by sharing their thoughts, interests, and knowledge. It is now quite easy for anyone to meet people who share their interests in order to learn and share valuable information.

The world has shrunk as a result of technological advancements, distances appear to be shorter, and sharing information appears to be easier. People can simply and confidently communicate their opinions, on a variety of global concerns by posting posts, text comments, and blogs to these social networks. According to Tsytsarau, M., & Palpanas, T. past research study (2012), social media, such as Google Apps, makes it easier for people to learn, cooperate, and exchange ideas with one another.

Fundamentally, the basic issue refers to the phenomenon in which people dislike using structured phrases, accurate language, and spellings in any situation (Sorensen, 2009). It does not matter if they are looking for something on the site, leaving a comment, or engaging with others through various discussion areas. To transmit their messages, people use a variety of data structures. They appear to be short on time but actually, extrapolating the right and regular data patterns is difficult. Text is the most frequent form of communication among users on various social networking platforms.

People contribute to their knowledge and information by writing in their own languages on blogs, articles, and chat rooms. The primary goal of text mining technologies is to make the text more understandable so that anyone may write or search in the most appropriate way.

Because people type words or sentences as they were talking to their peers, the text mining approach is used to allow users to write or search with good grammar and structured sentences (Michael, 2004). When we compare online searching to text mining, we can see how dissimilar the two words are. If we are talking about web searching, we already know what we are looking for. However, in the case of text mining, the main goal is to extract the most relevant data from the written text, regardless of whether it is structured or not. This method just requires a specific alphabet to extract the data, which is then turned into various suggestions and expectations. Text mining appears to be able to handle all aspects of automatic natural language processing. Data-driven initiatives, which comprehends the exploration of linking structures, references in academic writing, and hyperlinks in Web writing, have been regarded as the optimal blueprint for business growth. After all, wouldn't it be beneficial for a firm to obtain a sense of how its products are perceived in the market without having to rely on individual reviews from everyone? Isn't it better if they could determine which political candidate is best for their public image without having to evaluate each one separately? This is why market research and analysis are currently among the most heavily funded fields on the planet. For these reasons, social networking sites like Twitter represent such a fundamental source. People's posts or communications shared simply friends on these sites enable corporations to collect public sentiment on themes that they want to discuss with a big group of individuals.

The goal of interconnected fields like subjectivity analysis, opinion mining, and sentiment analysis is to process surveys and public perceptions using specifically developed

computing algorithms. Text mining goal is to develop problem-solving procedures or methodologies for defining structure and precedence, as well as for summarizing opinionated messages for specific themes, situations, or products. These methods might, for example, be used to evaluate support for specific events or items, or to determine thumbs up or thumbs down votes/feedbacks for specific socio-cultural events (Robinson, 2012).

Without any doubt, text mining makes it simple to extract meaningful and structured data from unstructured data patterns (Grimes, 2008). Computers have a difficult time understanding unstructured data and converting it to structured data. Due to the availability of several linguistic strategies, humans can complete this activity with minimal effort. Humans, on the other hand, have limitations in terms of speed and space when compared to computers. Consequently, computers are far superior to humans at performing these activities and because the majority of existing data in any business is represented in text format, text mining is more essential than data mining (Fan et al., 2005). However, because text mining is used to structure unstructured text data, it will require a more difficult process than data mining. In general, data from social media sites is not collected for research purposes, but it is necessary to alter the structure of data obtained from social media. Only 20% of the available text on the web is structured, whereas 80% is unstructured (Zhang et al., 2010).

Web Text

20%
Structured Text

80%
Unstructured Text
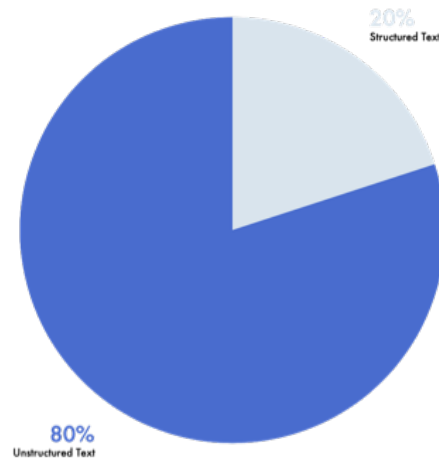
There is no single standardized technique accessible for putting comments on any post on various social networking sites, which poses challenges in the direct use of the data. Text-based data is far more valuable, which is why text mining is creating a lot of economic value. It is more complex than data mining, according to some previous research, because it deals with irregular and unstructured data patterns, whereas data mining deals with structured data sets (Akilan, 2015). Text mining is similar to an intelligence system in that it extracts proper words or sentences from incorrect ones and then transforms them into specific suggestions. It can be defined as a relatively young field that focuses on data recovery, machine learning, data mining, and computational linguistics. Because of important contributions in the field of technology, the importance of text mining has grown. It takes a lot of work to communicate relevant information and knowledge from irregular forms of data using powerful handling and mining methods. Structured data has lost favour in this era, whereas unstructured data has risen in prominence. The most useful goal that these sites have accomplished is that it has become much easier for people to comprehend a certain person based on his or her activities. Over the previous few years, Twitter data analysis has taken up a large amount of research. The purpose of the study is to demonstrate the effectiveness of automatic classification by demonstrating how abuse patterns overtime may be studied using classification data. As a result, it's been

discovered that social media can be a valuable source of medication for misleading information, and the research suggests that natural language processing and supervised classification are the automatic approaches with the most potential for future monitoring and intervention assignments. The clustering technique, as well as the execution of correlation and association analysis on social media, were explored in another research (Mosley Jr, 2012). To examine the situation, an analysis of insurance Twitter posts was conducted. As a result, detecting hypotheses and keywords in social media data has become a simple task, making information gathering and application easier for insurers. Sentiment analysis using social media has sparked a lot of interest among academics in recent years. Because of advancements in the social media field, the way people communicate with one another has drastically altered. Modernization can now be observed everywhere, and as a result, information output is reaching new heights. At the moment, new businesses are making strides toward actively participating in the transformation of communication methods (Wu et al., 2013).

Different firms might benefit from the specialization of keywords and phrases in order to define their future.

At this point, if on one hand, Twitter is an amazing platform for communication which can be exploited non only by individual users but also by corporations in order to spread the news about their own product, ideas, events and also social corporate responsibility initiatives; on the other hand, if not used carefully, it could become a misleading tool. More precisely, there is a very high risk of losing parts of the overall message expressed on Twitter. Hundreds of thousands of tweets per day could end up not being so easily understandable if the goal is, for example, to promote a company opinion over a corporate social responsibility issue. For this reason, a supplementary tool is needed which is text mining and as stated in the studies abovementioned, the quality of such communications, such as Tweet content, may have an impact on CSR results when combined with social media presence.

2.4.2 Twitter and reputational risk

We will now have a deep look at the impact of social media which drives public pressure on corporate social responsibility (CSR) and includes strict expectations of openness and accountability, as well as public participation and evaluation.

The principal topic to evaluate is that firms with Twitter accounts outperform industry counterparts in terms of CSR rating. When a firm makes some within-firm changes in CSR this is translated into a businesses' CSR rating improvement in the first years after establishing a Twitter account, whereas no difference emerges in identical comparisons with peers prior to the establishment of the Twitter account. Furthermore, it is relevant to the explanation to highlight that having a corporate Twitter presence promotes CSR performance, yet CSR outcomes do not drive firms to have a social media presence on Twitter. Finally, companies with more Twitter experience, i.e. number of years, and those with more followers, tweets, or Twitter accounts have better CSR outcomes. (Carroll, 1991).

Corporate social responsibility (CSR), defined as a voluntary act made by corporations to improve society beyond narrow economic requirements and minimum legal obligations, has gotten a lot of press in the business world (Maon et al., 2009). Firms are judged not only on financial performance but also on various CSR dimensions, such as product/service quality, employee treatment, progress toward sustainable and environmentally friendly goals, and contributions to communities at large, as stakeholders become more knowledgeable and sensitive to CSR initiatives. Communicating with stakeholders plays a key role in linking a company's CSR initiatives and enhancing corporate/brand reputation. While a variety of communication platforms, including sustainability reports, TV advertising campaigns, and the Internet, are widely used, social media is rapidly gaining traction as the preferred communication medium for CSR data sharing.

CSR-related messages on the internet and social media, according to recent studies, have a significant public impact because they encourage multi-way and interactive communications with diverse groups of stakeholders, which is an important consideration for corporations seeking multiple perspectives and knowledge about CSR demands (Saxton et al., 2019).

Unlike other studies that look at CSR communication methods on social media, we would like to go back to the beginning of social media development to look at a fundamental yet unresolved question: does a corporation's social media presence contribute to better CSR performance? To put it another way, do early social media adopters (corporations) have better long-term CSR performance than others? If so, what's the reasoning behind it? It can be said that there are at least two reasons why social media affects CSR corporate

practices, based on two theories and qualitative interviews with senior CSR executives. First, social media necessitates firm transparency and accountability, as well as public participation and evaluation. Establishing a corporate social media presence necessitates the company's commitment to open communication with a variety of stakeholders, including investors, customers, suppliers, community, and employees. These organizations may have a particular interest in keeping track of the company's CSR initiatives and/or disciplining its irresponsible behaviour. A company's exposure increases when it has an official presence on social media platforms; as a result, it is more likely to improve its image and reputation through CSR efforts. If a company does not engage on social media, it will not be able to maximize the impact of its CSR initiatives or gain the benefits of relationship management (Etter, 2014).

Second, social media's widespread vigilance and scrutiny are likely to push companies with a social media presence to monitor and review their CSR agenda than those without one more actively. Lyon and Montgomery (2013), for example, propose a set of theoretical assertions about the impact of social media on corporate decisions about greenwashing or environmental communication channels. When stakeholders negatively perceive CSR actions, firms with social media profiles incur additional reputational risk. Loss of control or activism on social media may cause CSR campaigns to be hijacked or steered toward unfavourable consequences.

Companies having a social media presence should embrace greater openness, responsibility, and readiness to connect with the public and society to minimize such risks. Companies with more years of Twitter experience, more followers, or a higher number of tweets beat their rivals on CSR performance who have less or no social media exposure.

In order to have a full explanation, we should go back in time and analyze what are the historical elements that act as pillars. In the CSR domain, Stohl (2007) consider first, second, and third-generation corporate archetypes. First-generation CSR is defined by an emphasis on what not to do (e.g., not to exploit or cheat stakeholders). In other words, the company's CSR efforts are limited to self-serving, risk-avoidance activities. Second-generation CSR, on the other hand, refers to companies that accept duties to some - but not all - stakeholders. Corporations, for example, may go above and beyond self-serving behaviour by providing enough compensation and reasonable working conditions for their employees (i.e., committing to the employees' right to a living wage). As a result, not

all stakeholder groups may be aware of or interested in CSR efforts. Finally, third-generation CSR comprises an enlightened corporate philosophy that embraces a proactive, broad, and positive vision of CSR that is addressed at all varied groups of stakeholders, which is very relevant for the study below examined.

Through business contacts, stakeholders such as investors, suppliers, and customers, as well as employees, can directly affect corporate behaviour. Communities, the media, environmentalists, and special interest groups are all examples of CSR stakeholders. According to Dawkins (2004), the ability to reconcile the CSR agenda with stakeholder expectations is contingent on the ability to interact with various stakeholders and the support received from audiences. Furthermore, social media platforms enable users to share comments on nearly anything with anyone who is connected, a trait of openness and diverse reach that is compatible with the third-generation CSR orientation. To put it another way, the scope of such a CSR perspective encompasses a broader set of duties and stakeholders, all while promoting global connectedness, aspirational rhetoric, and collaborations among corporate, non-governmental, and governmental groups. As a result, one of the major tenets of this theory is that social media has become increasingly powerful in shaping daily public debate.

Neuman and other researchers, for example, looked into the idea that social media sets the agenda for traditional media (Neuman et al., 2014). Scholars agree that social media has rapidly changed, matured, and adapted, exhibiting a significant ability to command trust and, as a result, confirming its authoritative impact on and proximity to the general public. For our purposes, a crucial CSR conclusion of these findings is that companies must be particularly sensitive to social media influence when crafting policies that ensure desired outcomes. First, social media's dialogic nature represents a change away from traditional media's desire to govern audiences and toward establishing genuine multi-way relationships. Second, social media's uncontrollable nature enables unrestricted inputs and dialogues among various users, ensuring that the public's collective view cannot be converted or manipulated by a single external organization. Finally, social media delivers results that appear to be coordinated from an uncoordinated activity. This is made feasible by the fact that the complete conversation content has been digitized, searchable, and traceable for further investigation and debate, allowing for a unique ability to quickly recognize responsible behaviour and document ethical deficiencies. These considerations suggest that, whereas corporations have traditionally relied on

traditional media to disseminate their CSR agenda through publicity or news releases, the social media era offers richer avenues to engage with the public directly, proactively, continuously, and effectively about their CSR agenda in a way that may even bypass traditional media (Benkler, 2006).

Although there are some similarities between social media and conventional media, there are some differences as well. From a CSR standpoint, businesses should embrace the transparency and responsibility expected by social media, as well as its influence on the CSR agenda. The thesis of the "three generations of CSR" attests to the role of CSR's continuous and historic progression toward the ideal of just a society that is open and fair to all. Such development necessitates more corporate transparency and accountability for all of its actions, including CSR outcomes. The "inter-media agenda-setting hypothesis", on the other hand, emphasizes the importance of social media in defining the agenda for public conversation. To express it in an easier and more direct way, the dominance of social media may even overtake traditional media. Corporations have no choice but to participate in social media because of their dominant position. Nonetheless, increasing sensitivity and respect for social media results from such participation. The parallelism between the two ideologies is clear here because corporate respect for social media necessitates corporate acceptance of social media's demands for transparency and accountability. When combined with demands for increased transparency, accountability, sensitivity, and respect for social media, a corporation's vulnerability (with respect to risk) and appreciation (with respect to rewards) from social media presence is likely to deliver enhanced CSR outcomes. Indeed, companies with a social media presence will encourage more deliberate, introspective, and self-regulatory behaviours, which will boost CSR outcomes and corporate image.

Saxton and his colleagues (Saxton et al., 2019) represent a fundamental Twitter analysis since, in a certain way, we could state that lays the foundation of this research thesis. Based on Twitter account data from the 200 largest corporations in the 2012 Fortune 500 index, it has emerged that some CSR themes, such as the environment and education, attract more retweets than others. Organizations with higher CSR activity have more good word of mouth and less negative word of mouth.

CSR-related tweets receive a larger percentage of responses than non-CSR-related tweets and specialized CSR Twitter accounts have a higher level of interactivity for CSR-related

tweets than generic Twitter accounts. Furthermore, companies and brands who tweet more regularly about CSR have:

- higher levels of content dissemination and endorsement;

- and consumer mistrust decreases when a Twitter-based CSR campaign has a larger number of followers. (Araujo & Kollat, 2018).

Consequently, we should not be surprised that Fortune 500 companies with higher CSR ratings are more likely to use Twitter and create an online presence sooner.

Finally, Lyon and Montgomery (2013) propose a so-called "causal direction": does the presence of social media motivate companies to do better CSR in the first place, or do companies that do better CSR adopt social media earlier than others? It's crucial to understand the causality here because the former direction implies that social media plays a positive role in promoting CSR, whereas the latter indicates a self-selection process in which firms with already high CSR ratings are more likely to engage in CSR activities via social media.

To address the causality issue, all the attention must be concentrated on the corporate use of social media (the peak is around 2009 after Twitter was founded in 2006). Individuals use social media to join social networks, read blogs, and offer reviews to shopping sites at this time, while businesses basically enter the social media field primarily for marketing purposes or to keep up with industry peers in terms of new communication technology (Whiting & Williams, 2013). Most corporations, it is safe to assume, did not approach social media with the intention of promoting CSR development. In order to address the issue, in this work, it will be reported the qualitative study conducted by the authors Siva K. Balasubramanian, Yiwei Fang and Zihao Yang. They directed a series of interviews to get answers to the following questions: what motivates a firm to establish a social media presence? What motivates a corporation to establish a social media presence? Are there any factors that influence a company's CSR outcomes once it has a social media presence? (Balasubramanian et al., 2020).

Six seasoned US-based senior CSR executives, 3 males and 3 females, with extensive competence in CSR and social media domains were interviewed in semi-structured phone interviews. Their titles included CEO, Executive Director, and Senior Director, and their CSR/social media work experience ranged from 5 to 11 years (average = 7.5 years).

Finally, representatives from the insurance, information technology, software, and pharmaceutical businesses were present.

The survey results show that the way organizations handle reputation management and how they manage social media are comparable, according to practitioners. Every company is concerned about its image and how it is managed, because reputation management measures precede social media, they are likely to influence how businesses approach and use it (Balasubramanian et al., 2020). Aspects of social media and reputation management are similarly comparable. Reputation indicators and other stakeholder-specific data (such as Glassdoor ratings for employees' perceptions of their employers) give a company the opportunity to respond to negative reviews, just like social media. Corporations need high-quality personnel to survive and expand, so they are laser-focused on monitoring and improving Glassdoor ratings; similarly, with social media like Twitter, corporations not only have the option to respond to public comments, but they can also use it to improve CSR.

In the sustainability field, companies have discovered the impact of Global Reporting Initiatives - to a general audience - and Sustainability Accountant Standard Board - to the investing community - measures on how they are viewed. Similarly, they recognize the value of using social media measures to boost the perceived positive impact of their CSR efforts. Online communities have emerged as a crucial means of business communication and engagement, thanks to the phenomenal rise of social media platforms like Facebook and Twitter. Consequently, it is shown that engagement in corporate social media improves CSR results. Furthermore, the three themes as well as the two theories above-mentioned, support this causal orientation.

2.5 Conclusions of the first part of the second chapter

To conclude, firms with Twitter accounts have higher CSR ratings than their industry rivals who do not have Twitter accounts. However, before the advent of these Twitter accounts, corporations' CSR ratings were identical to those of their peers.

Furthermore, the qualitative study's feedback from CSR executives provides practical insights into corporate social media communication. For example, from the above-mentioned survey, emerged some comments on how organizations manage reputation metrics (e.g., Glassdoor evaluations, GRI, SASB) and social media analytics (e.g., Twitter); more precisely, corporations use reputation metrics to control stakeholder perceptions

and track them. They also manage and respond to social media metrics in ways that improve public views of CSR results. Furthermore, Twitter adoption is the critical initial step that leads to significant increases in CSR outcomes. According to this viewpoint, the formation of a Twitter presence may result in an improvement in CSR, particularly as a result of the permanent change "into a culture of increased accountability" generated by such presence.

Moreover, Twitter adoption encourages internal corporate debate about the activities that must be taken to continuously evaluate and enhance CSR. A different perspective, proposed by a reviewer, sees a fundamental corporate motivation to move toward open community/stakeholder orientation as the primary cause of CSR improvements, with the adoption of a social media platform like Twitter serving as merely a means or vehicle, or even a side-effect, on the path to such improvements.

Finally, we could without any doubt state that social media plays a critical role in reaffirming the basic assumptions of inter-media agenda-setting theory and the "third-generation" of CSR model. That is, social media platforms like Twitter serve as important and strong channels for public engagement in CSR, which businesses should take advantage of and manage properly. The third-generation CSR model, in a similar way, provides a comprehensive framework for business emulation.

The causal relationship between social media and CSR outcomes is crucial for policymakers since opposite causality would suggest that enterprises with superior CSR ratings are more likely to create a Twitter presence early, which is a conclusion with no implications for societal welfare. Essentially, using social media to increase corporate transparency and accountability is a viable option. Social media has the potential to increase corporate CSR awareness and alter business thinking about CSR communications. Policymakers should encourage more businesses to create social media accounts in order to increase openness and accountability. Finally, from the perspective of corporate management, social media is a new language for companies to engage with a wide range of stakeholders. The implications of a corporate experience with social media are essential for the management team in terms of understanding the CSR implications. Not only is social media a kind of marketing, but it is also a unique component of CSR policy development and communication.

Concluding, firms may be able to co-create CSR programs with interested stakeholders as they learn more from their CSR communication on social media.

The following section will be focused on analyzing in-depth the empirical method that was used in order to study the possible relationship between Corporate Social Responsibility tweets and Stock prices.

Before starting, I would like to briefly summarize the aim of this research thesis.

Within the context of Corporate Social Responsibility, a sample of companies that were selected from the 2021 ranking of the "Fortune 500" were identified.

More precisely, these companies were acknowledged as "Best Large Workplaces in Technology" (ranking 2021), thanks to their commitment to taking care of their people against COVID challenges.

These corporations, and also their CEOs as well, share the characteristic of having a huge social activity on the social media platform called Twitter.

Consequently, the overall research goal is to analyze all the tweets made by the selected Twitter accounts, both corporate accounts and their respective CEOs accounts, in order to understand if exist a correlation between CSR tweets and share prices. Ultimately, if those tweets influence their own stock prices.

3. Data Selection

Two typologies of data are required in order to perform the above-mentioned study.

The former is represented by the Tweets themselves, while the latter coincides with the share prices.

Every account tweet was downloaded using Python, which is a programming language that allows to categorize every single tweet in multiple excel files. Every file corresponds to an account, and within that file, the downloaded data were organized in a very structured and useful way. All columns represent a sub-category per tweet, while the rows represent the tweets in chronological order, from the most recent to the oldest ones. More precisely the tweets timeline analyzed comprehends the last two years, from 2021-12-31 to 2020-01-01 (www.Twitter.com).

Following is reported an example how a data looks like after they were downloaded:

- Column A represents the "account id"
- Column B represents the "author_id"

- Column C represents the "author_name"
- Column D represents the number of followers of that account
- Column E represents the "account_creation_date"
- Column F represents the "day and hour at which that tweet was posted/created"
- Column G represents the number of retweets of that post
- Column H represents the number of likes of that post
- Column I represent the number of replies of that post
- Column J represents the text/message of that post

Particularly relevant was the choice of taking into consideration also the number of account's followers and every single personnel tweet's number of likes, replies and retweets since the overall research aim is not only to understand if Corporate Social Responsibility tweets can influence the company stock prices, but also if those tweets with a higher number of likes or replies (higher number of interactions) could have an "heavier" effect on the stock market.

Regarding Stock Prices, "YahooFinance.com" was the website chosen in order to download the historical data prices belonging to the analyzed companies.

"YahooFinance.com" is one of the most well-known websites regarding finance information. Indeed, it is a multimedia property belonging to the "Yahoo!" network; it efficiently provides financial news, data, comments about stock exchange listings, press releases, financial relations, and some more general original financial contents. (www.YahooFinance.com).

Within the websites, it was necessary to select the name of the company under analysis, open the "Historical Data" section and filter for the relevant timeline (for consistency issues, the timeline was the same as the tweets' ones: 2021-12-31 to 2020-01-01). The last step consisted in requesting the website to show "Historical Prices" with a daily frequency. After having completed this procedure, the data were ready to be downloaded in an excel file and to be categorized.

The data classification was structured in the following way:
- Column A represents the "date"
- Column B represents the "open price" at the beginning of that day

- Column C represents the "highest price" that was reached by the stock during that day
- Column D represents the "lowest price" that was reached by the stock during that day
- Column E represents the "close price" at the end of that day
- Column F represents the "adjusted close price" of that day. The adjusted close price implies that it is, again, adjusted for splits and dividend and/or capital gain distributions
- Column G represents the daily financial return with respect to the previous day, which was calculated using the following formula:

<u>financial return at time "t"</u> $= \frac{[Pt-P(t-1)]}{P(t-1)}$ where Pt represent the current price of that day, and P(t-1) represent the share price of the previous day.

Furthermore, in order to obtain more accurate daily financial returns, the adjusted close price was used within the already mentioned formula.

3.1. Tweet Analysis

After the collection of every account tweet within excel files, all those tweets were read in order to identify the ones which actually deal with Social Corporate Responsibility topics. This was the first and the most relevant step, since, after that, it resulted in having a list of CSR tweets, both from companies accounts and CEOs personnel accounts, with the exact date and hours in which they were produced. This "filtered" sample of CSR tweets was fundamental in order to produce the analysis which results will be analyzed in the next sections.

Moreover, a further analysis within the list of CSR Tweets was performed, since we could state that, nowadays, the CSR topic has a proper alphabet. More precisely, it is possible to identify some key words which are the most used ones within the CSR field (Paola Nicoletti, 2017). These words are the following ones:

- Environment
- Balance
- Dialogue
- Ethic
- Training
- Governance
- Health
- Protection

- Quality
- Reputation
- Sustainability
- Transparency
- Corporate Social Responsibility
- Corporate values
- Welfare
- Emissions

In turn, since most of the time these arguments are combined within the same tweet, five main categories of CSR tweets were created. Indeed, environmental, health, equality, communication, and society issues seem to be the most tweeted topics with respect to the studied corporations.

Consequently, thanks to the application of the above-mentioned method, it was possible to categorize every single CSR tweet. These additional categories of CSR tweets will be particularly useful in the next sections in order to understand both if there are some topics which are more discussed, and also if, for example, some CSR topics have a "heavier impact" on the stock market with respect to others.

3.2. Data Methodology

The following subparagraph will focus on the empirical methods that were used in order to elaborate the collected data.

More precisely, in order to clearly understand if a correlation between CSR tweets and stock prices really exist, two different types of analysis were applied.

Within the first analysis, CSR tweets were categorized with regards to their creation date, in order to evaluate if, in the related date, a relevant stock price variation was registered within one day after the tweet was posted.

It is relevant to emphasize that, within this section, just the companies' tweets were analyzed, while in the following one, CEOs tweet will take place. Furthermore, based on the average stock's historical performances, 5 percent was chosen as a significant share price variation.

For a better understanding the Cisco company will be used as an example.

Consequently, assuming that @Cisco, on the 25 of January 2020, tweeted, for example, about the company behavior in order to reduce CO_2 emission (this could be a pattern of CSR tweet), if within the timeline 25-26 January 2020 the data show a significant stock price variation ($\geq$ or $\leq 5\%$), this will imply a correlation between that tweet and its own company stock return. This procedure was repeated for every company account.

The second method main subjects, as was mentioned before, are the companies' CEOs and their tweets. Regressions were performed in order to study the correlation between CEOs'

tweets and stock price variation. Those regression were based on the so-called "panel data", since the overall study is based on multiple companies which, for each one, have a specific period of time (2 years). The Generalize Least Square estimator was used to estimate a random-effects model. A total of two models were investigated. Model 1 assumes that tweets posted on day t affect the stock price on the same day (t), whereas Model 2 assumes that tweets sent on day t affect the stock price the next day (t+1).

Since the analysis is aimed at explaining the stock prices behavior in relation with their respective CEOs' tweets, stock prices were classified as dependent variables, while, on the other hand, the independent variables were identified with:

- number of tweets posted by CEO on day t (Max_tweet_count)
- number of CSR related tweets posted by CEO on day t (CSR_tweets_num),
- number of followers of the CEO
- number of retweets the post received
- number of likes the post received
- number of replies the post received

Both regressions and excel analysis results will be reported within the next chapter.

CHAPTER 3: COMPANIES' DESCRIPTION AND DATA REPORTING

This chapter is divided into three different sections. Companies' profiles are the subject under analysis within the first paragraph, and particularly, after a brief description of what is their core business, I concentrated my examination on their value proposition and, mainly, on their Corporate Social Responsibility culture and behaviour. Furthermore, I performed also a "ratio-analysis" in order to understand the companies' financial situation over the years and to be able to make some comparisons among them.

Within the subsequent section, all the results will be reported. Neutrality and objectiveness are the predominant attributes of this section.

The last paragraph will discuss the result taking also into consideration the theory that was extensively analyzed within the first and second chapter, in order to really catch the relation between CSR communication through Twitter and its effect on companies' financial performance.

For the production of the first part of this chapter, there have been used the various websites of the several companies examined, but also reports, articles about initiatives or interviews of company's CEO or other leading figures in which are stated company's aims.

1. CISCO

1.1. Company overview

Cisco Systems, located in San Jose, California, in the heart of Silicon Valley, develops, manufactures, and sells networking gear, telecommunications equipment, and other high-tech services and products. Cisco is specialized in the tech areas, such as the Internet of Things (IoT), domain security, and energy management, through its several acquired companies, such as OpenDNS, WebEx, Jabber, and Jasper. It develops and sells a variety of products, offers services, and delivers integrated solutions to help companies build and connect networks all over the world. The firm's strength lies in its ability to build an "environment" that draws customers to its website and develop a system that makes pricing and specification matching easier (Business Model Navigator).

Particularly relevant is Cisco's I-Prize to implement crowdsourcing at the corporation. Cisco's I-Prize program encourages businesses throughout the world to submit breakthrough technology and business ideas so that Cisco can fund their development (Carpenter, 2016).

The Cisco Customer Journey Platform is structured in order to allow dynamic forecasts for each customer's needs and matches them with the right agent to address that need, boosting performance, sales, and the customer experience. The corporation can do so using data from many contact centre systems and predictive analytics. Furthermore, Cisco accomplishes this by providing comprehensive solutions for a variety of business kinds, industries, and themes. Both software and hardware components are included in the solutions (Vizologi.com).

Cisco has been in the sector for more than three decades and has long been one of the world's most valuable corporations. There are a few factors that have contributed to the company's current success. Providing services to various consumer segments is a key factor. Customers from several client categories can purchase products from the company. As a result, it can sell products to all these consumers in order to help them manage their businesses.

Cisco, unlike many other companies of this scale, has only a few revenue streams. It makes the majority of its money in two ways, which are product sales of high-quality hardware and fees for subscriptions. Thousands of organizations use Cisco's services all over the world. For these reasons, it is the world's largest networking firm (Zeen, 2020).

1.2. Cisco's Corporate Social Responsibility

The world is being influenced by the growing capabilities of information technology, which have the ability to generate possibilities but also deepen disparities. Cisco's mission is to ensure that everyone has an equal chance at success. The company feels as it has a responsibility to assist in this endeavour (CISCO CSR Report, 2021).

Cisco is dedicated to harnessing technology for social good, from improving access to skills needed to flourish in a digital economy to assisting the most vulnerable in times of distress. The mission extends beyond profit to include the well-being of their employees, communities and the environment. The corporation has always been motivated to share its efforts in making a more inclusive future a reality for everyone (CISCO CSR Report, 2021).

2020 has been unlike any other year everybody might have predicted. COVID-19's subsequent fights, the consequent economic recession and job losses, concerns of systemic racism and inequity, natural disasters, and a slew of other variables serve as reminders of the challenges we confront as a society. Businesses from throughout the world recognize that now, more than ever, every company has a much bigger role to play in helping to tackle some of these problems. Running a great company and delivering for customers, partners, workers, and shareholders is vital, but Cisco believes also that it has the potential, and the obligation, to do more. "We believe in the power of technology and what it can accomplish at Cisco" (CISCO CSR Report, 2021). Technology has helped everyone reimagine their lives, become a critical lifeline for businesses, and connect the world, ensuring that children continue to learn, people have access to healthcare, businesses can operate, and loved ones can stay close even if they are physically separated, throughout this pandemic. Cisco is at the heart of many of these connections, ensuring the safety, security, and productivity of their customers, partners, and employees in this new world. Now more than ever, technology can be utilized for good to give opportunities for everybody, make a meaningful difference, and usher in a future that is better and brighter than the one we have now. Cisco's board of directors started out to revolutionize the way the world works, lives, plays and learns many years ago (Swartz, 2019). They accomplished this by constructing networks that shaped the Internet as we know it today. The company's responsibilities, however, do not stop with technology. Cisco declared a new purpose in early 2020 to fuel an "Inclusive Future" for all (Nakagawa, 2021). They will use the developed technology, their scale and expanded ecosystem, their

commitment to corporate social responsibility and social justice, their people, and the support they provide to their communities to help bridge unfairness and exclusion around the world. Throughout this exceptional year, the company's purpose has guided all these activities, driving it to address disparities both inside and outside the firm, not only to help healthcare workers and vulnerable communities with technology but also to address inequities within and beyond the company itself. "It is only through these actions that the future we imagine will become a reality", these are the words used by Cisco's executives (CISCO CSR Report, 2021).

The company's efforts are in line with the United Nations Global Compact's Ten Principles, which Cisco ratified in 2001 and continues to support. Operating an ethical and trustworthy organization, building a conscious culture, conserving the environment, sourcing responsibly, and more are all areas of importance. Cisco feels like it is at a pivotal point in the U.S.A.'s and the world's history. The corporation really thinks that there is so much they can do to seize this opportunity and work together to build a more inclusive and sustainable world. All the company's employees are enthusiastic about the future, and they believe that by working together, they can continue to create change and leave a lasting legacy for future generations.

More precisely, they think that by working together, they can build a more equal and inclusive future for everyone.

To do so, they must seek methods to improve the environment on a regular basis, focus on the attributes that define who they are as a corporation, and provide pleasant experiences for everyone at Cisco. For this reason, they purposefully create an environment that encourages all employees to innovate and succeed. "A Conscious Culture is what we call it". (CISCO.com). It is because of this culture that the personnel are able to take on the most difficult problems and opportunities. It fosters an environment in which they can develop cutting-edge solutions for customers and can assist them in overcoming the most difficult challenges. It allows the company to develop and profit while also distinguishing itself from its competitors. It means that each of the company's employees is conscious of and concerned about their impact on others. It's about recognizing, accepting, and valuing all kinds of diversity by building bonds with individuals who are different from one to another. In 2020 the company started a journey to convert Human Resources from a traditional department focused on maximizing

internal resources to an organization that considers the broad impact on internal and external communities, looking at people, business, and society equally.

People & Communities is the name with which now it is called (Enderle, 2020).

This was a significant shift, and the timing couldn't have been better as the world dealt with a worldwide epidemic, social inequalities, and rapid adaptation to so many unknowns.

The company's duty is to hold themselves, as well as their customers, partners, and suppliers, responsible for servicing global communities and ensuring everyone's safety. More than ever, they can demonstrate the role that technology can play in addressing some of the world's most pressing issues. The corporation belief is that an Inclusive Future is not only achievable, but also desirable, and it is Cisco's mission to help bring it to reality through their technology, ecosystem, and dedication. Cisco's mission is simple: to enable an Inclusive Future for everyone. The company is around establishing and maintaining connections, both of which are crucial to inclusivity. Cisco's founders recognized the power of technology to achieve great effects on a global scale from the beginning. However, they have learned over time that even the most disruptive technology is worthless if people do not have access to it or do not know how to utilize it. For this reason, Cisco's meaningful corporate social responsibility (CSR) began with a clear grasp of what their technologies made possible, especially when combined with education and skill development. The commitment to CSR now begins at the top, with the Board of Directors and senior management, and extends throughout the organization (CISCO CSR Report, 2021).

Cisco's actions are guided by the so-called "Conscious Culture", which encourages and rewards trustworthiness and ethical behaviour among workers, suppliers, and business partners (ibid.).

Cisco's strategic approach to CSR, including social investment initiatives and environmental sustainability, is stewarded by Corporate Affairs, which is part of Cisco's People and Communities organization. Their promises to CSR performance and transparency are also monitored by this organization (ibid.)

Obviously, COVID-19 has had an impact on the entire world population. Throughout this crisis, Cisco has responded in the only way they know how: by enabling the world's networks to withstand the sudden rise in work-from-home activity, as well as by

delivering collaboration technologies that have brought people together virtually throughout this period (Cisco.com).

Cisco has been seen as a crucial firm delivering critical infrastructure since the beginning of the epidemic. They met the continuously changing needs of healthcare institutions by prioritizing requests from first responders and key services. Simultaneously, they have and continue to supply solutions to assist communities, customers, suppliers, and partners throughout the world in operating effectively in virtual settings.

All the company efforts have not gone unnoticed; consequently, they were awarded multiple times. Following there is the list of the company's awards.

Source: CISCO CSR Report, 2021

2. SALESFORCE

2.1. Company's overview

Salesforce is a significant provider of cloud computing solutions for businesses, with a focus on customer relationship management, or Customer relationship Management (CRM). They launched the initial CRM system in February 2000, and since then, they have added new editions, solutions, features, and platform capabilities to their service offerings (Salesforce.com, 2021). An add-on sale is an additional item sold to a consumer of a primary product or service. Add-on sales can create significant revenue and profits for a company, depending on the industry. When a consumer decides to buy a core product or service, a salesperson at an automobile dealership will frequently offer an add-on sale. The pattern is used to determine the cost of new software applications, which is based on access to new features, the number of users, and other factors (MBA Skool Team, 2015). Because of the high cost of acquiring a new client, economies of scale are essential for gaining a significant wallet share. Customer relationship management is a technique for managing a company's interactions with current and potential customers that aims to analyze data about customers' interactions with the company in order to improve business relationships with customers, with a focus on retention, and ultimately to drive sales growth.

Salesforce offers also the benchmarking service, which is a data analytics technique for measuring performance and getting insights. It can be used to do internal research on your company or to compare it to other companies in order to improve business processes and performance metrics by implementing best practices. Quality, time, and money are usually the three dimensions that are measured. They can assess the targets' performance and, more importantly, the business processes that contribute to the success of these businesses in this way (Salesforce.com, 2021). A flurry of data analysis-focused software companies has sprung up as a result of the digital transformation era.

The company's economy is made of on-demand services, which is defined as economic activity generated by digital marketplaces that respond to customer demand for products and services by providing quick access to supply. The supply chain is controlled by a highly efficient, user-friendly digital network that is created on top of existing infrastructure networks. The on-demand economy is changing the way people shop in

cities all around the world. Businesses in this new economy are the result of years of technological advancement and shifts in client behaviour (Salesforce.com, 2021). Salesforce's primary revenue-generating strategy is based on a cloud subscription service. Salesforce generates around 92 per cent of its revenue from four types of cloud CRM services, ranging from sales through marketing. Professional services account for the majority of the remaining revenue. The fact that service offerings can be deployed quickly, configured easily and linked with other platforms and enterprise applications, or apps, is the key to Salesforce value added (FourWeekMBA.com). This may seem little today, but it was not in the 2000s. CRM services are frequently associated with high upfront prices as well as costly, difficult-to-run and-maintain services. All of that changed because of Salesforce.

The company's strength comes from its sales of cloud products. These services can be divided down into the following categories. Salesforce's first product, Sales Cloud, is still the largest contributor to total subscription and support income. This is a desktop and mobile solution that allows businesses to save data, track leads and progress, anticipate prospects, acquire insights through relationship intelligence, and collaborate around any sale.

The second-largest contributor to total subscription and support revenues is the Service Cloud. It enables businesses to provide customers with better, faster, and more personalized service and support (Salesforce.com, 2021).

2.2.   Salesforce's Corporate Social Responsibility

The essence of a company's ultimate objective is understanding the ways through which the company can positively contribute to society. The concept of businesses "doing good," which first appeared in America in the second half of the twentieth century, has evolved dramatically in just a few decades (Salesforce.com). Corporations, conscience, and culture are flowing together like three tributaries of a river these days. As a result of this convergence, a new business imperative has emerged: raise the do-to-say ratio in relation to social good in order to get better long-term results. This comprises a more powerful brand purpose, a more powerful corporate culture, a product innovation that addresses the most pressing societal issues, and healthy, long-term business growth (Serafeim, 2020). Salesforce is identified as a society that is very committed to corporate social responsibility issues. Why is "doing good" becoming more popular? It all started in 1999

when the company created the 1-1-1 model, in which they donated 1% of product, 1% of the stock, and 1% of employee time to charitable organizations (Farquhar, 2014). That was really easy for the company at the time because they had no workers, no earnings, and no stock. After all, they were a startup with less than 100 people at the time. They understood that their goodwill had produced a "good problem" by 2015 when they had over 16,000 employees. The company's culture has become centred on volunteerism and donating. It was one of the factors that drew people to Salesforce. It was also one of the reasons why people chose to stay. Their philanthropic principles had been successfully integrated into their employee experience (Philantropy/Salesforce.com). For Salesforce's founders, it was a huge achievement, but the manual method that supported the effort was far from ideal. They didn't have a system in place to provide matching gifts. They were having trouble keeping track of everything in a logical and understandable manner. They were also having the urge to solve as the #1 CRM supplier, known for helping businesses of all sizes boost productivity and grow. As a result, they launched the Philanthropy Cloud and reinvented the whole workflow surrounding employee volunteerism and donating (ibid.).

Employees were glad since they didn't have to spend as much time looking for and logging volunteer opportunities as they used to. Employee engagement continued to grow, and management now had a clear grasp of their cultural bearers, as well as useful metrics for internal and external use. Thanks to Philanthropy Cloud, they have nowadays access to a greater amount and richer data.

Salesforce intends to fuel this movement by making corporate giving simple while also increasing awareness for "doing good" within a company. Colleagues feed off each other's passion and triumphs, resulting in a healthy culture of employee engagement. It also provides real-time data to CEOs, CFOs, CMOs, and HR and CSR heads, allowing them to track and optimize their initiatives and make their business culture tangible (Salesforce.com). In 2020, Salesforce registered 800,000 volunteer hours, a year in which many of the typical ways of giving back were substantially hampered. It's also working for Kellogg's, AAA, and Gillette, among others (Vomo, 2020).

According to Stephanie Slingerland, Kellogg Company's worldwide charity and a social impact head. According to Gillette, the average gift per employee has increased by 20%. These findings are also reinforcing company cultures, allowing these businesses to attract the best people available. When businesses give employees the ability to give back at their

fingertips, the businesses they work for becoming engines for inspiring large amounts of social good. It turns out that the power of a thousand keywords is not so powerful in the corporate world. It is in each person who works for these organizations who is inspired to speak out and give back in whatever way they can.

3. NVIDIA

3.1. Company's overview

NVIDIA is a graphics processing unit (GPU) design business that creates and distributes enterprise processors for a variety of industries, including gaming, data centres, professional visualizations, and self-driving cars. NVIDIA's corporate customers are large corporations, and the company has a platform strategy that blends hardware with software tools to increase the capabilities of its GPUs (Nvidia.com). Initially, the GPU was mostly used for gaming. Over time, it became more important to run AI/ML algorithms that required a lot of processing power. As a result, GPU has become the foundation for several of this decade's most promising businesses, including AI, autonomous driving, robotics, AR/VR, and more (FourWeekMBA.com).

Despite the fact that NVIDIA is a GPU design firm, it has pursued a platform strategy. In brief, it has combined hardware and software (with its stack of algorithms and libraries) to service a variety of businesses, as well as a few prospective future industries. The company's mission is to "address the world's visual computing difficulties," as the company puts it (Nvidia.com).

In addition, they state: "In businesses ranging from gaming to scientific inquiry, we provide distinctive contributions to tackling some of the world's most intriguing technical problems." (CSR NVIDIA report). NVIDIA supports a wide range of corporate industries, and as a result, it offers a variety of value propositions based on the customer profile and industry. Large corporations and huge IT companies are the main customers in some of the areas NVIDIA supports. Small and medium-sized firms are another possibility, while the underlying technology for all of the use cases is the same. Each of those consumers will necessitate unique industry-specific upgrades (Nvidia.news, 2020).

Furthermore, the increased demand for gaming and data centre services from individuals staying at home due to the COVID-19 epidemic has contributed to driving up demand for Nvidia's goods over the last year. They provided investors with a look into Nvidia's

transparency and dedication to diversity, inclusiveness, and social responsibility as part of their effort to raise awareness about the value of diversity in the workplace (Ibid.).

3.2. NVIDIA's Corporate Social Responsibility

As stated by the company itself, Nvidia wants to "make people their first priority, empowered by technology that makes a positive impact on humanity and the world". These are the values that the company defines as their guiding lines throughout the company's existence. This graph, there are shown the other priorities of the company analyzed according to the impact these priorities have on the company and the stakeholder's concerns (CSR NVIDIA report).

Source: CSR NVIDIA report

Stakeholder engagement

The company believed that engaging their different stakeholders on significant issues is critical to their success (CSR NVIDIA report). Stakeholders are entities or individuals who may be impacted by NVIDIA and whose actions may have an impact on the firm. They rely on their yearly priority issue assessment to help themselves understand the topics that are most important to them, so, in this way, they can focus their engagement and respond to their concerns in a transparent manner. Members of the CSR Committee are assigned to each stakeholder request based on their subject-matter knowledge to determine what form of response is appropriate.

Last year, racial and social justice was the most often expressed concern across many stakeholders. The company's CEO, Jensen Huang, addressed the racial imbalances that exist in the United States in June 2020 and pledged to increase the urgency of boosting the Black population at every level of the firm (Maidenberg, 2020). They received stakeholder requests to reveal their EEO statistics and commitments to diversity and inclusion in their workforce in the second half of FY21.

COVID-19: NVIDIA's response for people

The core values of the company, briefly introduced previously, have taken on a new meaning during the Covid-19 crisis. NVIDIA closed their offices and retooled the company to be a global remote workforce at the very begging of the pandemic to safeguard employees' safety. They ensured the financial security of their family by deferring raises for six months and committing to pay their hourly contract workers. In March 2020, they closed all but essential employees in approximately 60 workplaces throughout the world in reaction to the COVID-19 epidemic. They set frequent disinfection, temperature taking, and social distancing standards for crucial labs and offices that remained open. They also improved their employees' health coverage and reimbursed them for certain work-from-home expenses, pushed up the annual performance evaluation to give them raises sooner, and continue to support them in making their health and the health of their families a key priority (NVIDIA.com). Additionally, the corporation's HR and IT departments put together several resources for employees:

-       A comprehensive website with information on work policies, IT assistance, perks, and how to participate in the company's charitable objective of supporting local charities, neighbours, and small businesses;

-       A resource library and weekly webinars for employees and supervisors who are transitioning to working and leading remotely.

-       A series of mental health webinars on coping with life's obstacles during the pandemic;

-       Employees' children's educational materials.

Climate Change Threat

NVIDIA undertook an early climate risk scenario analysis in FY21 to examine how resilient their business plan is in the face of rising temperatures, as they recognize the consequences of climate change for their business and the increased significance of climate risk to their investors. They put together a cross-functional stakeholder group with the help of a consultancy partner to oversee the scenario analysis. They designated their global data centre and lab sites as being of critical strategic importance to the firm and evaluated the probable implications under two warming scenarios, RCP 4.5 and RCP 8.5. They discovered that, compared to the 1986-2005 baseline, the extent to which comfort cooling will be required in their current data centres and labs will be 60% greater by 2030 and 100% higher by 2050 under a lower 2°C warming scenario (RCP 4.5). Under the RCP 8.5 scenario, increases in comfort cooling needs are even higher (Hope, 2022).

While this may result in higher energy consumption to effectively cool their facilities, for data centres in particular, a number of variables reduce the chance of system or server failure for NVIDIA. These reasons include their teams' attempts to address expected future climatic circumstances when designing new data centres, the data centre infrastructure's rather broad temperature ranges, and the redundancy incorporated into current data centre cooling systems. This information is useful in planning, designing, and operating their workplaces for future employee comfort, as well as signalling prospective increases in cooling-related energy consumption and cost. To offset the operational and capital cost risks of a warmer environment, NVIDIA is using the outcomes of this scenario study in its strategic planning decisions (Hope, 2022).

NVIDIA'S priority: employee safety and health

The ability of NVIDIA's employees to complete their tasks properly is dependent on their physical and mental health, as well as their safety and security. These basic needs are actively supported by the company's integrated programs. The corporation encourages its employees to put their health and the health of their families first by providing programs throughout the year to promote their personal wellbeings, such as health analysis, skin cancer screening, and hereditary cancer screening.

This was clear during the COVID-19 pandemic, when there were introduced stringently prevention measures, including regular disinfection, stringent access control (restricted to essential onsite workers only), temperature taking, and strong social distancing restrictions, for essential labs and offices that remained open (NVIDIA.com).

4. ADOBE

4.1. Company's overview

Adobe Inc., formerly Adobe Systems Incorporated (1982–2018), is an American software company that specializes in printing, publishing, and graphics. Through the launch of their PostScript printer language, Adobe played a key role in the development of the desktop publishing business. The company's headquarters are in San Jose, California (Adobe.com). Moreover, Adobe Inc. is a software company that creates, manages, delivers, measures, optimizes, and engages with compelling content and experiences across multiple operating systems, devices, and media. Its products and services are used by professionals, marketers, knowledge workers, application developers, enterprises, and consumers for the same aims and purposes. The Creative Cloud of the company provides to the demands of creative workers. Its original goods, including video, animation, mobile, and advertising material, are utilized to create printed and online information that people see, read, and interact with on a daily basis (Anand, 2020). The company is mostly known for its multimedia and creativity software, with a venture into digital marketing software more recently. (landing/Adobe.com). Adobe is best recognized for its Adobe Flash web software ecosystem, Photoshop image editing software, Adobe Illustrator vector graphics editor, Acrobat Reader, PDF, and Adobe Creative Suite, as well as its successor Adobe Creative Cloud. The current Adobe Systems logo is a red backdrop with the letter "A"

written in white. The emblem is based on the original design, which included "Adobe Systems Incorporated" on a bluish-grey background (Abramovich, 2020).

"To advance the Web forward while also delivering Web designers and developers the best tools and services in the world," says Adobe's mission statement. (Adobe.com) This statement demonstrates Adobe's commitment to technological niche transformation and development through its products. Accessibility, innovation, and brand/status are three of Adobe's major value propositions. By providing a wide range of options, the organization promotes accessibility. Customers can use the program on PCs, tablets, cellphones, and televisions.

Since its inception, the company has prioritized innovation. For a long time, PostScript was the only page description language that could be used in multi-computer situations like corporate office networks. As a result of its success, the business has developed a strong brand. It is one of the world's largest software companies, with $4.8 billion in revenue in 2015, and advertises itself as the world's leading provider of digital marketing and media solutions. Through its software-as-a-service solutions, it processes over forty trillion data transactions each year. Finally, it has received numerous awards, including inclusion on CR Magazine's "100 Best Corporate Citizens" list (2015) and the FTSE4Good Index (2015) (News/Adobe.com).

Their transformation from a licensed software company to an entirely cloud-based company was one of their most significant moves. This was a very expensive and time-consuming procedure, and it's practically hard for a company to get right the first time, but Adobe achieved it, securing a permanent position in a rapidly changing sector. And that's just the most recent example of Adobe's ability to make difficult and forward-thinking decisions in order to help the firm succeed (landing/Adobe.com).

Over the last 35 years, Adobe has made a number of difficult product decisions, restructured and reorganized its business, and maintained a dedicated core audience. The corporation is concentrating on improving and expanding its current products. The corporation, on the other hand, is substantially investing in and planning for the future. Adobe aims to assist companies in unifying their data sources so that website users around the world may have better, more tailored experiences (Abramovich, 2020). The company's growth strategy focuses on doubling its target market to $128 billion by 2022, partly by capitalizing on the shift to digital business and experiences (News/Adobe.com).

There are some interesting narrative twists on the way to this $128 billion total addressable market. Adobe's CEO said the company's growth goal is to "unleash creativity, accelerate document productivity, and power digital enterprises" at an investor meeting (AP.com). The majority of Adobe's growth is predicted to come from the digital business and customer experience market.

4.2. Adobe's Corporate Social Responsibility

The company consider as their responsibility to be forward-thinking for the consumers. By celebrating their employees, empowering every voice, boosting their communities, and constructing a sustainable future, they are committed to leveraging the power of creativity to transform the world (CSR Report Adobe). Adobe's vision can be summarized in the proposition "Change the World Through Digital Experiences" for nearly four decades, and it's even more important in these unusual times (Contentsquare.com).
Indeed, the terrible impact of COVID-19, obviously, affected every area of people life and work, as we knew it. Consequently, the company is dedicated to ensuring the safety and well-being of employees, their families, customers, and communities. During the pandemic crisis, technology has become increasingly important as the primary means of communication, learning, contributing, purchasing, and selling. For Adobe's clients, the company's Creative Cloud, Document Cloud, and Experience Cloud have become even more mission-crucial, and they were coming up with new ways to inspire, engage, and enable their productivity (AdobeBlog.com). They supplied in-home Adobe Creative Cloud licenses to students and free distance learning resources to educators when schools transitioned online. They gave free trials and training for Magento Commerce and Market to help small businesses. Businesses, organizations and government agencies used their software, consulting services, and upgraded programs like Adobe Sign trial to keep their operations running and power important services (HelpxAdobe.com). Adobe has donated $4.5 million to reputable organizations such as the Silicon Valley Community Foundation and the International Federation of Red Cross and Red Crescent Societies to support their communities locally and globally (CSR Report Adobe). Adobe also devolved $3 million in donations to Black, Hispanic universities (Lake, 2021). The company is also very proud of its employees since they virtually volunteered to support relief efforts.

Moreover, the company is committed to reducing the negative impact on the environment focusing on using more green energy. "We don't only want to reduce our carbon footprint; we want to completely transform it" Adobe itself declared (AdobeBlog.com).

In each process and work stage, Adobe look for new methods to conserve natural resources, and they have seen significant benefits for the company itself, but also for their customers, employees, and communities. They have been working for years to achieve their objective of 100 per cent renewable energy. Adobe joined RE100 early and joined the Science-Based Targets project with verified goals, and in 2020, they committed to raising the ambition of saving money and resources in energy consumption intensity across Adobe workspaces from their FY17 targets. They push for legislation at the municipal, regional, and federal levels to decarbonize and upgrade their grids, allowing renewable energy to be used by everyone, not just by Adobe itself (Impakter Index).

Above all, they intend to achieve their target without using unbundled renewable energy certificates or carbon offsets. Through the usage of Adobe products, they also assist their clients in practising sustainability. Adobe's Resource Saver Calculator, created in collaboration with the Environmental Paper Network, shows customers how much natural resources they can save, as well as the emissions and costs they can avoid, by utilizing Adobe Document Cloud and Adobe Sign (Acrobatusers.com).

Opportunity parity

Adobe announced a new program named *opportunity parity* in early 2019 to look into promotion fairness and horizontal movement across demographic groups. In September 2019, they published their preliminary findings on opportunity parity and promotion rates. They updated their data at the conclusion of FY2019, showing that their promotion rates for global males and females, as well as U.S. race/ethnicity (white vs. non-white), differed by less than 1% (Adobe.com).

Guided by sustainable development goals

The United Nations Sustainable Development Goals (SDGs) were created in 2015 with the goal of encouraging long-term, equitable, and universal growth. All relevant stakeholders, including governments, civil society, and companies, should use the 17 goals to drive their actions. Adobe has identified five priorities that best connect with their core business and

expertise in order to contribute with their part. Adobe will contribute to the achievement of the SDGs' goals through ongoing and new initiatives (AdobeBlog.com).

- Gender education: ensure that all students receive a high-quality education that is inclusive and equitable, and that lifelong learning opportunities are available to all;
- Gender equality: ensure that all women and girls are empowered through achieving gender equality;
- Decent work and economic growth: encourage inclusive and long-term economic growth, job creation, and good work for all;
- Responsible consumption and production: ensure that consumption and production trends are sustainable;
- Climate action: take immediate action to address climate change and its consequences.

5. RED HAT

5.1. Company's overview

Red Hat is a leading global provider of open source software solutions, developing and offering dependable and high-performing operating systems, virtualization, management, middleware, cloud, mobile, and storage technologies through a community-powered approach (Vizology.com).

When a company wants to bring a product to market, it must first develop a compelling product and then put together a workforce that can manufacture it at a competitive price. Neither duty is easy to complete effectively; significant managerial effort and academic research have gone into these difficulties. However, offering a service entails another consideration: managing clients, who are both consumers and contributors to the service's production. The company embeds the concept of radical transparency since the company believes that the characteristic of transparency has the potential to boost organizational performance significantly. This is especially true for new, fast-growing companies that are under pressure to meet aggressive sales targets while also pleasing their investors. Radical transparency refers to activities and strategies that greatly improve organizational processes and data openness in government, politics, software design, and business (Vizology.com).

Red Hat Linux, a software package based on the Linux operating system, is the company's principal product. The current version, Red Hat Linux 7, contains over 800 unique packages, nearly all of which were created as open-source projects. For a more practical solution, Red Hat now provides the Red Hat Linux 7 Standard Edition, which costs around $30 and includes documentation, an installation guide, and 60 days of web-based support. Red Hat also provides more expensive versions of the software (the most expensive is $2500) that are tailored to certain platforms or applications, such as servers or workstations (RedHat.com)

However, the product only accounts for half of what Red Hat sells. Because Linux and the systems it runs are so complicated, Red Hat can sell the software for a low price and then charge customers for the technical support and training needed to keep the system running. Technical support levels range from modest telephone or web-based support included with (commercial) packages to emergency technical support available 24 hours a day, seven days a week for large businesses. Red Hat also offers classes that teach professionals and developers how to use Linux to its maximum potential.

As a result, Red Hat's economic model differs significantly from that of a typical software corporation. Rather than building software and selling it for a high price - as most software businesses do -, Red Hat collects the labour of thousands of programmers from across the world and bundles and sells the resulting product under the Red Hat trademark Red Hat cannot claim intellectual property rights on Linux because it is an open-source initiative (Stanford). Consequently, anyone can download Red Hat Linux for free and legally edit, copy, and redistribute it. Red Hat, on the other hand, seeks to attract clients by offering a convenient and polished product that includes documentation and technical assistance. "If we do a good job of producing and supporting a consistently high-quality product, we have a fantastic opportunity to develop a brand that Linux OS consumers simply choose," said Red Hat CEO Robert Young (Robert Young, 1994). Red Hat is dedicated to the open-source community in addition to selling its products. The Red Hat Package Manager (RMP), the de-facto standard for handling the installation of new programs on UNIX systems, is one of the open-source projects to which Red Hat has contributed. The company also employs 14 full-time software developers who work on improving and expanding the Linux kernel (Red Hat.com)

But, is their business model viable? Is it feasible to make a profit by selling something that can be obtained for free? The solution is currently ambiguous. However, a year and a half

ago, Red Hat's prospects appeared to be fairly promising. Red Hat's stock rise steeply from $14 to $52 on the first day of trading when it went public on August 11th, 1999, with 6,000,000 shares. In December of that year, it hit a high of around $151. Red Hat was thought to be on the verge of overtaking Microsoft by several investors. Regrettably, this fantasy was short-lived. As the Internet startup enthusiasm faded, Red Hat's stock, like all others, plunged. Their stock had already fallen below $25 by March 2000: Red Hat's future appears gloomy in light of this slump (Vizology.com).

However, the stock price of a firm is not the only indicator of its performance. The company typically exceeds its quarterly sales targets, and, at the same time, it is growing into new sectors, including embedded systems and hand-held devices, in order to guarantee a more consistent cash source. The Red Hat Network, a secure Internet service that promises to aid in the deployment and maintenance of Internet platforms, was launched recently by the company (RedHat.com)

The tech corporation will almost certainly survive, if only because it is the open-source community's darling and has a large number of ardent followers. It remains to be seen whether it will succeed, relying solely on open-source software has not yet shown to be profitable.

5.2. Red Hat's Corporate Social Responsibility

Red Hat's open-source ideology pervades all aspects of the company, including Red Hat Cares, their corporate responsibility program. The way they chose and manage their donations to charity organizations, the structure of their matching gifts program, and the focus of their work, both in the education outreach sector and in their global volunteer programs, were all developed and driven by associate feedback (Red Hat CSR Report, 2020).

The company concentrates their efforts on issues that are important to Red Hatters, such as initiatives that provide fundamental human needs, STEM education, and health research and advocacy (Ibid.)

Regional committees of colleagues that volunteer to analyze applications from charitable organizations make decisions about their corporate donations. Associates are also encouraged to recommend their favourite charities, those where they volunteer, for example, for corporate assistance in order to develop long-term relationships with

charitable organizations. Here there are some examples of how the company is pursuing Corporate Social Responsibility issues (Activategood.com).

- Donated more than US$2.2 million to philanthropic and educational causes in the fiscal year 2020;

- Donated more than US$600,000 to over 1,400 charities, nearly doubling the amount of money matched from the previous year (US$316,000);

- A fundraiser for the American Cancer Society, in which Red Hatters raised and donated over US$25,000 through the sale of hats and "Recognition Grams," little tokens of gratitude delivered to their coworkers;

- A series of "stitch-ins," in which Red Hatters knit and crocheted over 245 red baby hats for the "Little Hats, Big Hearts" project;

- A benefit performance for Club Rainbow, a non-profit organization that helps children with chronic illnesses. The Singapore Red Hatters hosted the event, which featured the Kids' Philharmonic Orchestra;

- A 9/11 Day of Service was held in North Carolina when more than 125 Red Hatters helped with sixteen charity organizations.

Response to the Hurricane Dorian

Four Red Hatters were dispatched to the Bahamas in September 2019 to assist in the restoration of IT infrastructure after Hurricane Dorian slammed over the islands, displacing over 70,000 people and causing more than $7 billion in damage (Red Hat CSR Report, 2020).

The company's staff, which was based on Grand Bahama Island and Great Abaco, collaborated with the ITDRC to restore access to hospitals and medical clinics by installing internet modems and other networking equipment. Because the mobile network, which was sometimes the only source of internet connectivity, was frequently unreliable, the government's primary goal for hospitals, airports, and other facilities was to restore steady internet connectivity. Again, Red Hat's people assisted in the restoration of the Bahamas' airports' Flight Aware service, which gives real-time information about flight positions and allows air traffic controllers to safely route flights. Prior to the restoration of this service, airports were unaware of the condition of inbound planes until they had landed. This was not only a big worldwide disaster relief project, but it also acted as a pilot for future cooperation with the Information Technology Disaster Resource Center

(ITDRC), an organization that specializes in bringing the US Federal Emergency Management Agency (FEMA) and tech businesses together to aid in disaster recovery. This partnership allows Red Hat to send volunteers with technical skills to locations where they are most needed, while also ensuring the safety of their employees with an experienced disaster response organization (Red Hat CSR Report, 2020).

Environmental sustainability: collaborating to lessen our influence on the environment

Since the corporation cares for the planet, they prioritize the well-being of all of their communities, which is why Red Hat works to reduce its environmental footprint through programs that integrate sustainability into all of the company's business activities. They continue to think creatively to find new methods to integrate business and environmental responsibility together, with programs and associate participation focused on decreasing waste and power usage, minimizing travel, composting, and recycling (Raleigh, 2021).

They clearly understand that running a business has a negative influence on the environment. As a result, Red Hat wants to use its offices to set an example of what a sustainable work environment may look like. For example, they lowered the amount of power consumed by each Red Hat employee in the office.

In comparison to 2018, they saw a 10% reduction in power consumption per Red Hat associate in 2019. This improvement is attributable to the implementation of strategic programs, which have been tracked on a monthly and global basis (RedHat.com):

- Timers have been put in the company's larger buildings, with options to turn lights on and off automatically, to lessen the impact that offices lightning have on the environment;

- The heating and cooling systems are only turned on during work hours;

- All desktop monitors are set to go to standby when not in use and LED lighting, which is notably less polluting, is installed in offices across the United States.

Diversity and inclusion

The internal policy Red Hat strives to be a diverse and inclusive meritocracy, understanding that the company needs the contribution of employees' best ideas in order to succeed. Collaboration with people from various origins and cultures broadens their perspectives, improves the overall work, and drives innovation. With their work in the

open-source communities and the technology sector as a whole, they strive to encourage diversity and inclusion beyond Red Hat.

"Outreachy", an initiative of the Software Freedom Conservancy that gives open source project internships to persons from underrepresented groups in open source communities, is a program that Red Hat sponsors and mentors interns (Opensource.com). The annual Grace Hopper Celebration, the world's largest conference for women in technology, and the Open-Source Day humanitarian hackathon, which is part of the conference, are both sponsored by Red Hat. Finally, the corporation also funds various hackathons, conferences, and charitable organizations including TechTogether, Lesbians Who Tech, and ChickTech to help underrepresented groups in the technology field (Red Hat CSR Report, 2020).

6. SAP

6.1. Company's overview

SAP SE (SAP) is a company that sells software and services. The business is specialized in enterprise application software. The corporation is divided into two segments: on the one hand, there are applications, technology, and services; on the other hand, SAP Business Network. The Applications, Technology & Services Segment sells software licenses, cloud application subscriptions, and other associated services (primarily support services and various professional services, as well as implementation services of its software products and education services on the use of its products) (Sap.com).

The SAP Business Network Segment covers SAP's cloud-based collaborative business networks as well as SAP Business Network-related services (including cloud applications, professional services, and education services). SAP Ariba, SAP Fieldglass, and Concur are among the cloud services marketed and sold by the SAP Business Network Segment (Vizologi.com).

As regards the objectives to be achieved, Innovation and brand status are SAP's two main value propositions. From its pioneering ERP software to its recently introduced SAP HANA in-memory platform, SAP has a long history of releasing innovative projects. In addition to this backdrop, it has three primary programs committed to innovation (ReferenceForBusiness.com)

1)   SAP Labs: these are research and development centres dedicated to improving core SAP products and developing new cutting-edge SAP HANA capabilities. The company has 16 labs in high-tech clusters in 13 countries throughout the world and has worked on projects for 98 of the top 100 global brands.

2)   Innovation Center Network: this program tries to blend a startup's agility and inventiveness with a large corporation's resources. It finds and links diverse teams (including product specialists, engineers, designers, and business developers) so they may work on a range of projects. They create unconventional concepts with the purpose of expanding SAP's market share; examples include smart traffic solutions and personalized cancer therapy.

3)   The SAP Co-Innovation Lab (COIL) Network: it is a global network of SAP co-innovation labs. Through a network of global experience and innovative technology, this program strives to increase SAP's customer and partner ecosystem's capabilities. It allows members to participate in creative project-based efforts in particular. COIL events, facilities, and the SAP Community Network showcase the final products.

SAP has a well-known brand. This is due to its extensive history, which includes numerous firsts. Because of its success, it is highly valued. In terms of income from software and related services, the company leads the enterprise applications industry. Based on market value, it is also the third-largest independent software producer.

6.2.   SAP's Corporate Social Responsibility

With the support of the company's expertise, technology, and strategic alliances, SAP provides a powerful opportunity for all people through digital inclusion (SAP.com).

SAP and UNICEF announced a three-year, multi-million-dollar relationship in 2019 with the goal of equipping young people with the skills and opportunities they need to grow and flourish in an ever-changing world. The cooperation will assist the Generation Unlimited program, with a focus on disadvantaged youth in India, Turkey, and Vietnam at first (UNICEF.org).

Education digitization has always been at the heart of their collaboration, and it will be more vital than ever in 2020. While keeping with the virtual world, the collaboration has assisted in the digitization content and communication modules on life skills and social

innovation, for example in India, which will now be distributed to young people in collaboration with government organizations. With the help of SAP India workers, an online state career guidance portal is now effective and operating. They assisted in the establishment of two design and skills laboratories in Turkey, and we held co-creation workshops on digital learning with students in Vietnam (*Ibid.*)

Helping non-profits and social enterprises run more effectively

In the following ten years, more than 251 million people might be struggling with extreme poverty, pushing the overall number of poor people to one billion by 2030. The pandemic, according to the World Bank, has "neutralized all achievements made to relieve poverty since 2017." (Wordbank.org)

While governments are in charge of setting the necessary environment and regulations to combat growing inequality, companies like SAP are in a unique position to contribute.

SAP has been inspiring, accelerating, and scaling the work of social entrepreneurs for more than a decade. As the globe works together to solve COVID-19 recovery and inequalities, the company assured that it will continue to invest in social entrepreneurship (ibid.).

They are strongly convinced that through innovation, businesses, particularly social enterprises and organizations, can help change the narrative, solve social problems, and ignite systemic change. CSR programs will support 1,567 organizations in 80 countries by 2020. This social entrepreneurship ecosystem as a whole reach over 1 billion people all over the world. (SAP.com). Strategic partners, small charities, and social entrepreneurs working on the front lines were ready to continue helping local communities in crisis as part of SAPXCSR's COVID-19 response strategy. With the problems of COVID-19 and the reinvigorated battle for social justice, 2020 offered a unique opportunity to test new ideas and make significant modifications to existing programs in order to rebuild better. SAP has joined the World Economic Forum and the Schwab Foundation's COVID-19 Response Alliance for Social Entrepreneurs as a founding member. Members of the association will band together to provide complete support to social entrepreneurs working on the front lines of the COVID issue (SapNews.com).

The company also enthusiastically supports social entrepreneurs that have the ability to approach any topic, including social justice, with a novel perspective.

SAP became a founding donor of the "Youth to The Front Fund" (YTTFF) of the We Are Family Foundation, taking a position against social inequity and removing financial hurdles for young leaders under the age of 30. The first YTTFF "Frontliner" grantees come from seven states in the United States and ten nations across four continents. Furthermore, SAP expanded its pro bono portfolio, establishing a new product, Pro Bono for Economic Equity, based on its experience and learnings from the SAP Social Sabbatical. This is another step in SAP's commitment to racial justice (SAP CSR's Report, 2020).

Throughout 2021, teams of SAP workers will provide pro-free advisory services to Black-owned businesses and social enterprises as part of the program. The world is finally recognizing and demanding that the centuries-old pandemic of institutionalized and systemic racism, inequality, and injustice be removed, and the new generations will be at the forefront of discovering a treatment. Globally, an estimated $150 billion is spent on sustainable development, compared to $12 trillion spent on B2B transactions, $3 trillion of which is exchanged on SAP's Ariba procurement platform (Millio, 2020). Consider the social impact possibility if a portion of that procurement spend goes to social entrepreneurs who provide high-quality goods and services while also contributing to making the world a better place. SAP's technology and global ecosystem could truly scale the social sector sustainably. SAP promotes social procurement in collaboration with Social Enterprise in the United Kingdom, as well as Social Traders in Australia and Buy Social Canada, as of 2020. (Canada). These collaborations aim to assist and grow the social sector while also making it easier for businesses to buy social. SAP announced its 5&5 by 2025 social procurement effort in October, with the goal of directing 5% of SAP's addressable procurement expenditure to social enterprises and 5% to diverse businesses by 2025 (SAP News, 2020).

The launch of 5&5 by 2025, in collaboration with social and inclusive procurement organizations like as WeConnect, Moving Worlds, and others, is only the next step in SAP's long-term support of social procurement. Basically, they want to create wealth by spending wisely to benefit people and the environment. For this reason, SAP became a launch partner for Moving Worlds S-GRID (Sustainable Growth of Revenues for International Development) to deliver the capacity building in the Powering Opportunity program. Furthermore, the corporation's involvement aids social enterprises in growing, accelerating impact, and creating jobs that benefit the world, all while integrating sustainability into a more equitable and regenerative economy (Sap.com). At SAP, they

encourage their employees to take action on issues that are important to them and to make a positive difference in their communities throughout the year. They accomplish this through two sorts of volunteerism (Chowdhury, 2020):

- They use their employees' experience and leadership to promote the flagship initiatives and relationships through pro-bono and skills-based volunteering (e.g., Code Unnati, SAP Social Sabbatical).

- They help employees connect to their purpose through traditional and skills-based volunteering, and they encourage them to volunteer in an area that is meaningful to them. We could state that they considerably extended cross-border virtual volunteering for employees as a response to the COVID-19 epidemic in 2020, in order to further engage and support nonprofit partner organizations. They not only brought together people from all over the world who share similar hobbies, experiences, and leadership abilities, but they also created a new place for collaboration to address the pandemic's and other important global concerns, despite the volunteers' geographical distance.

Emergency response with employee participation

The SAP Labs site opened its kitchen to provide 406,000+ cooked meals in collaboration with The National Association of Software and Service Companies (NASSCOM) Foundation and Indian government entities (SAP News, 2015). In Bangalore and Gurgaon, they welcomed daily wage migrant labourers in need for 26 days. With the help of NASSCOM and HelpAge India, the project expanded to distribute meals and ration kits to families, the elderly, and youngsters in need in the slums and underserved areas of Bangalore, Dharavi, Kamathipura, and Gurgaon. SAP donated supplies to public hospitals, police officers, and the Corona Warriors, a group of SAP volunteers, in collaboration with the United Nations Development Programme (UNDP). In Europe, Restcent, a program that allows SAP employees in Germany to donate the two digits following the comma on their net monthly pay sheet, has given more than 750,000 Euro to 60 non-profit projects since 2009. All SAP workers in Germany have the opportunity to submit and vote for proposals that they believe will have a positive influence on the lives of many people in their communities once a year. Around 39% of all German employees, or 9000 persons, are presently enrolled, much exceeding the usual participation rate of 20 per cent to 25 per cent for equivalent programs at other organizations (Chowdhury, 2020).

Hackathon #WirVsVirus

In March of this year, more than 43,000 German citizens responded to a request for assistance through "We versus Virus," the German government's hackathon. Within 48 hours, more than 100 highly motivated SAP employees showed their support and collaborated in teams to assist caregivers and hospital administrators throughout the crisis, as well as develop solutions for issues such as crisis communications and a system to track bed capacity across Germany. 'Track YourBed' was prototyped throughout a weekend, leading to the development of a proactive web-based solution that reveals hospital bed availability in real-time (SAP Blog, 2020).

Code the Curve

"Code the Curve" was created by UNESCO, International Business Machines (IBM), and SAP to encourage young people to respond to the world crisis. Students, educators, academics, and data scientists collaborated in April to contribute solutions to three pandemic challenges: ensuring continuous learning, information and data management, and social and health issues. A total of 40 projects were selected for the second phase, followed by 9 teams for the finals, thanks to the help of 15 partners and 80 IBM and SAP trained volunteers. The judges awarded VRoam from Canada for 'Ensuring Continued Learning,' CovidImpact from Canada, Mexico, and Bangladesh for 'Information and Data Management,' and X-COV from Spain for 'Social and Health Issues,' as well as the overall CodeTheCurve winner,' after a rigorous selection process (UNESCO.org).

7. ATLASSIAN

7.1. Company's Overview

Scott Farquhar and Mike Cannon-Brookes launched Atlassian in Australia in 2001. They met while on the same co-op program at the University of New South Wales in Sydney, and they used a $10,000 credit card debt to fund their new business. The founders determined from the start that they would not invest income in a sales crew, instead of depending on word-of-mouth and other marketing channels. Over the course of the next five years, the two devised their now-famous 5 principles (GreatPlaceToWork.com):

1. It's an open company with no-nonsense.

2. Play as a team

3. Build with heart and balance

4. Make the world a better place by being the change you wish to see

5. Don't give the customer a #@!%

JIRA, their first piece of software, was published in April 2002 (Atlassian.com). Atlassian's first year's revenue was $1 million, but it swiftly climbed to nearly $15 million in 2005-2006 (NirgaBlog.com). In that year, they were selected Ernst & Young's Australian Entrepreneurs of the Year. In the same year, the firm opened its first US office, in San Francisco's Mission District. After turning down numerous offers from potential investors and buyers in its early years, the company received its first external venture investment from Accel Partners in July 2010, for a total of $60 million (Ibid.) The company restructured in 2014, establishing a group holding company, Atlassian Corporation Plc, in the United Kingdom with a registered address in London; nevertheless, operations continued to be run from the Sydney headquarters. Atlassian specializes in high-volume, low-cost enterprise software with a quick turnaround. These products are cross-compatible, so consumers can add functionality as needed (CNN.com).

Customization, Price, Cost Reduction, Risk Reduction, and Convenience are all value propositions offered by Atlassian (Gupta, 2020). Here can be further analyzed the previously mentioned aims:

- Customization: Atlassian understands that each organization has unique needs, therefore it gives them the opportunity to choose which of their products they want in whatever combination they choose. This integrated nature of the products allows broader flexibility. The Atlassian Marketplace, where over 1,700 add-ons for the core products may be purchased to add extra functionality, adds to the flexibility of customization;

- Cost: Atlassian operates on a low-cost, high-volume approach. It spends significantly less on sales and marketing than its competitors, selling straight to customers through its website. As a result, it may charge significantly less for the same service;

- Cost and Risk Reduction: by allowing managers to control and further simplify their workflows, Atlassian saves its clients' money by reducing the amount of time they spend on administrative chores. Similarly, the capacity to govern workflows decreases the risk of management errors or oversight;

- Convenience: Atlassian makes life easier by providing an integrated solution.

7.2. Atlassian's Corporate Social Responsibility

In everything Atlassian does, it strives for social and environmental advancement. Atlassian is built on the principles of openness, inclusion, fairness, and justice. They use those values also when they are faced with difficult questions involving ethics, people, or the environment. It's all about being human, whether you call it corporate social responsibility, corporate citizenship, or sustainability. The company's CSR efforts are concentrated around three main macro-categories: planet, people, customers, and community.

PLANET | A future that is net-zero

Humans actions are to blame for climate change, and unless fast action is taken, it will severely destroy the environment, society, and economy. The commercial sector, government, and citizens must work together as a team and take assertive actions. Atlassian has met its objective of running its operations on 100 per cent renewable electricity starting in the fiscal year 2020, as part of its commitment to fight climate change. they have also established science-based goals for limiting global warming to 1.5°C and achieving net-zero emissions by 2050 (Sustainability/Atlassian.com). Finally, they want to motivate Atlassians and other businesses to follow their lead to take action. Atlassian continues to use Energy Attribute Certificates to obtain 100 per cent renewable electricity for all of their global operations. Their new Sydney headquarters has lofty environmental goals, including a 50% reduction in embodied and operational carbon (Ibid.). To attain net-zero emissions, the remaining emissions must be addressed. As they reach their first SBT milestones in the fiscal year 2025, they for sure will continue to reduce emissions and involve suppliers. In parallel, as they work toward net-zero, they will do due diligence to understand the potential social and environmental trade-offs of various offset programs. Furthermore, every energy solution has the potential to have a detrimental impact on the environment and society. Applying an environmental justice lens to renewable energy solutions can aid in a more holistic understanding of these effects and how to mitigate them (ATLASSIAN CSR Report, 2021).

PEOPLE | Atlassian team's potential

Atlassian is a tool that can be used by anyone. They believe in the strength of difference. They strive for nothing less than equity for every Atlassian and a genuine culture of inclusion. The company's goal is to integrate this into all they do, resulting in the structural changes required to unlock the potential of their own team, deliver on their promise of openness to the customers, and create the world they want to live in (ATLASS Blog).

Atlassian developed a diversity, equity, and inclusion (DEI) strategy with a defined roadmap, milestones, and increased funding and leadership investment, aligning their goals with actual responsibility and transformation methods.

Atlassian conducted equity design evaluations with Paradigm, a consulting firm specializing in bias reduction, to improve equal outcomes across their performance assessment and rewards programs. Moreover, they redesigned each program to incorporate anti-biasing measures, including in management training on the programs Brought in consulting company Trusaic to conduct a demographic audit at the end of the fiscal year 2021 performance assessment cycle (ATLASSIAN CSR Report, 2021).

The corporation also pursues the improvement of recruiting efficiency as an essential milestone to be reached. With improved data and more inclusive demographics, they can build the infrastructure to increase employment rates for underrepresented groups over time. Furthermore, they are working with Trusaic, an outside consulting firm, to look for gaps in their performance assessment and compensation systems across demographic lines (Buckley, 2021).

The other two relevant issues that Atlassian is really concerned about are:

- the fact that through investments in companies founded by underrepresented groups, the tech and finance industries are committing to racial fairness. In these efforts, the market is searching for more innovation.

- Internal and external stakeholders are drawing attention to the disconnect between DEI branding and internal company procedures in the hopes of increasing public accountability and resulting in significant change.

CUSTOMERS | Setting the standard for security and privacy

Because Atlassian believes that privacy is a basic human right, they build their products with security and privacy in mind. This idea also implies that they must earn and maintain the clients' trust, which necessitates transparency. They want to be transparent about both their customers' privacy and security options as well as their practices. For this reason, they release a Transparency Report on a regular basis, detailing law enforcement requests for consumer information, where permissible, as well as whether and how they comply (Atlas Movement.com).

Management of human rights issues

There are three types of threats that they have prioritized (ATLASSIAN CSR Report, 2021):

1. The right to privacy in relation to customers and employees' data, which is managed by Atlassian's risk, privacy, trust, security, and research and development teams.

2. Ethical product usage, as it relates to potentially harmful content stored in their goods or the use of their products in ways that may cause harm to others. Their Anti-Abuse, Trust and Security departments are in charge of this.

3. Discrimination and systemic bias as it relates to their employees, which is managed by their People, DEI, and Legal teams; and as it relates to the accessibility of their products for customers and users, which is managed by their Accessibility team. Atlassian Privacy is committed to safeguarding human rights.

To boost openness around privacy compliance, data transfers, and controls, they launched cloud privacy readiness, adopted new customer and supplier contracts, and updated their privacy pages for their customers. Atlassian also concentrated on assuring secure work-from-home access to data and safe office re-entry for its employees.

COMMUNITY | Corporate philanthropy in a new light

Founders Mike Cannon-Brookers and Scott Farquhar built giving back into Atlassian's operations long before they had a stock ticker symbol, and even before they have formally declared the company principles, with the notion that both business and education can act as forces for good and have a positive impact in the world (ATLASSIAN CSR Report, 2021).

They give 1% of their profits, employee time, stock, and goods to social-impact organizations through the Atlassian Foundation. Atlassian's contributions benefit their local communities as well as far-flung locations throughout the world. Furthermore, in the fiscal year 2021, about 4,000 Atlassians collaborated with their partners to improve the education environment, donating USD$752,400 to their global education portfolio (Atlassian.com).

They were able to form the Don't Stop Learning Partnership with Teach for All, UNICEF, and others to support locally-led educational innovation. They also worked with The Education Commission to create the Save Our Future alliance, which is dedicated to reinventing education in the aftermath of a pandemic (Fore&Kopp, 2021).
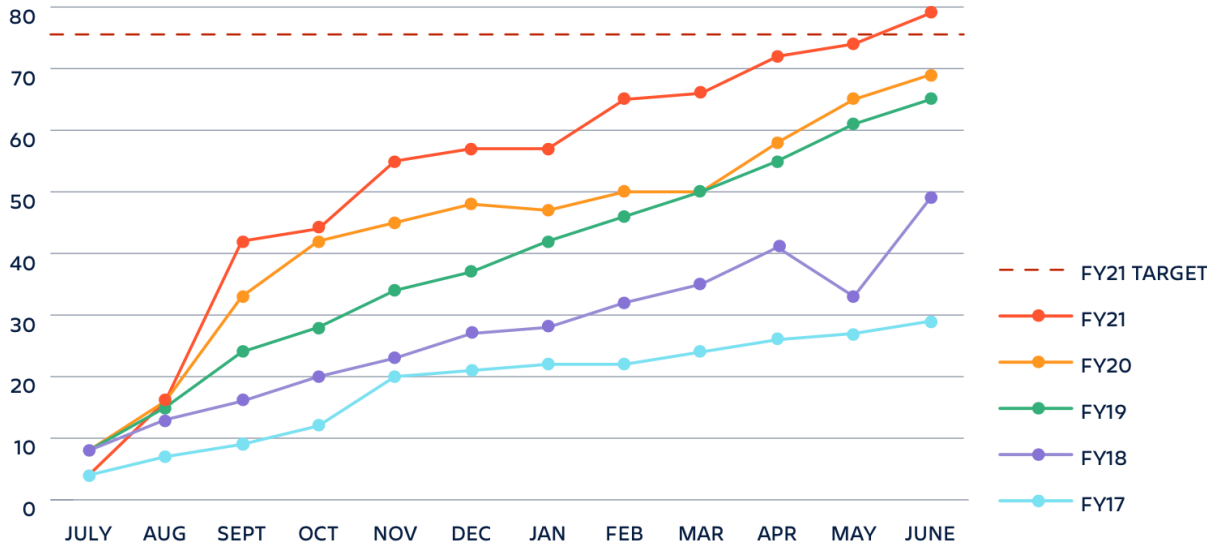
Source: ATLASSIAN CSR Report, 2021

8. SPLUNK INC.

8.1. Company's overview

Splunk is a platform that bridges the gap between data and action, enabling observability, IT, and security teams to keep their businesses safe, resilient, and inventive.

Splunk is a global company that offers an open, extensible data platform that supports shared data across any environment so that all teams in an organization can get end-to-end visibility, with context, for every interaction and business process. Founded in 2003, Splunk is a global company with over 7,500 employees, 850 patents, and availability in 21 regions around the world; its main goal, again, is to help you lay a solid data foundation (Spunk.com).

The basic idea underlying company's action is that since now we live in a world where every day thousands of human decisions and interactions take place, organizations, in order to be productive and efficient, must collect and evaluate this data (Spunk.com). Splunk, for example, is a big data company that specializes in "machine data." Machine data refers to data generated by a company's IT equipment, such as employee computers, payment processing terminals, or industrial machines equipped with an internet connection.

Much of the data gathered by corporations stay unstructured and underused. Splunk's software assists companies in sorting, organizing, monitoring, and gaining insight into their data. This capability can aid an organization in increasing operational efficiency, seeing what's going on in real-time, and monitoring potential business threats (Rossolillo, 2022).

8.2. Splunk's Corporate Social Responsibility

The company seeks to assist its customers by bringing data to every inquiry, decision, and action as the Data-to-Everything Platform. Their ESG initiatives, which stands for Environmental, Societal and Governance, are also driven by this strategy (Morgan, 2020). During the last years, they collaborated with "qb. Consulting" to lead a thorough assessment of the ESG problems that are most important to Splunk's stakeholders and core business strategy. This evaluation had placed between October 2019 and February 2020 (SPLUNK CSR REPORT, 2020).

Internal and external stakeholder groups, including Splunk's workers, Board of Directors, consumers, investors, NGOs, business trade associations, and ESG thought leaders, were interviewed as part of this effort. The company's materiality assessment was used to provide this ESG update and will be used to inform the content of a full report, which will

be published in fiscal 2022, as part of Splunk's commitment to ongoing, thoughtful engagement on ESG topics with key stakeholders (Ibid.)

ESG Pillars

We could link Splunk's 21 ESG problems to three major areas based on their materiality assessment (SPLUNK CSR REPORT, 2020):

- Data Privacy and Security. They understand the value of strong data privacy and security procedures in every successful organization. That is why, in order to preserve the data entrusted to everyone, they invest in governance and technology.
- Inclusive and Ethical Growth. They recognize that their accountability extends to all of the corporation's stakeholders. Today's business environment necessitates going beyond compliance, and consequently, they are committed to developing and maintaining a culture of inclusivity and ethical responsibility as they grow.
- Societal Impact. They are more convinced than ever before that data is critical to addressing the world's most complicated and serious social and environmental issues. For this reason, they will keep putting their technology and people to work to develop solutions to these problems (Splunk.com).

These themes piqued the interest of their stakeholders, and they also reflect the areas in which the company believes it can make the most progress.

Their robust corporate governance standards are the bedrock of their ESG pillars. Good corporate governance, promotes their stockholders' long-term interests, increases their Board and management responsibility, and leads to improved business performance. As a result, they are devoted to solid corporate governance based on high standards of honest and ethical business conduct as well as adherence to all applicable laws, rules, and regulations.

For sure, in the years running up to Splunk's full ESG report in fiscal 2022, they will continue to develop ESG strategy. Through the publishment of the report, of course, the company will detail how they are working to address Splunk's most pressing concerns and better satisfy the long-term needs of all the stakeholders. The ultimate purpose is to

bring their company's vision to life: to break down barriers between data and action so that everyone can prosper in the Data Age.

Actions toward covid-19 pandemic

Regarding the battle against COVID-19, the company introduced new worldwide benefits and tools to help its employees' health and well-being, including reimbursement for certain remote-working expenditures and 30 days of pay for any absence caused by the pandemic or a natural disaster. Furthermore, in March 2021, they created a publicly available interactive Splunk Dashboard tailored for COVID-19, understanding the need for better and more accessible data during a global epidemic.

Through COVID-19 testing, their products and teams are assisting public officials in their attempts to save lives, reopen public areas, and repair devastated economies. The new COVID-19 Testing and Data Response Platform, designed by a coalition of business, public, and non-profit partners, including Splunk, was launched in May in Tarrant County, Texas. The platform provides free assistance to public health professionals in communities across the United States in addressing critical difficulties connected with large-scale testing.

Splunk's mission is to assist leaders in incorporating data into every possible reaction in order to best protect public safety (White Paper/Splunk.com).

They believe the ESG issues identified in their materiality assessment are critical to their long-term success, and they are overseen by Splunk's Board of Directors both directly and through its three standing committees.

The Nominating and Corporate Governance Committee are in charge of general oversight of ESG strategy and reporting. ESG problems related to their particular areas of responsibility are overseen by the other Board committees, as well as the full Board.

The Audit Committee, for example, is in charge of overseeing Splunk's enterprise risk management framework, as well as cybersecurity and other information technology concerns.

The Compensation Committee is responsible for overseeing a variety of human management tasks, including talent management and development, talent acquisition, employee engagement, diversity, equity, and inclusion.

In any case, for meaningful ESG outcomes and impact, day-to-day program management and resources are essential. In order to progress over time, the corporation itself is committed to developing systems and processes to improve its ESG management accountability, transparency, and reporting. Again, they used the SASB and the Global Reporting Initiative (GRI) frameworks as references to set the bar and inform their disclosure.

Concluding, what is important according to the personal point of view of the author of this work, is the commitment of the company to always be looking for new ways to improve their ESG strategy (SPLUNK CSR REPORT, 2020).

9. Financial analysis

In the part that follows, for every company are reported the most relevant financial ratios of 2021. All the data are categorized in order of being able to make the comparison not only among the analyzed corporations but also with respect to their industry. More precisely, every corporate ratio, which is identified with the acronym "TTM", which stands for Trailing Twelve Months, is compared to the 5-Year Average (5YA) of the related industry.

Even if the financial analysis is not the main concern of this research thesis, these ratios will be taken into consideration in order to produce a more complete analysis and an overall better comprehension of the relation between the financial market, social media and the analyzed multinational companies.

Ratios	Analysed Companies							
	Cisco	Adobe	Red Hat	SAP	Atlassian	Splunk	Salesforce	NVIDIA
Gross margin (TTM)	63.73%	88.18%	54.90%	72.26%	83.78%	72.44%	74.02%	64.39%
Gross Margin (5YA)	63.24%	86.71%	49.57%	71.49%	82.79%	79.53%	74.32%	61.18%
Gross Margin (5YA - industry)	56.14%	71.64%	51.84%	71.64%	71.64%	71.69%	71.69%	52.81%
Operating margin (TTM)	26.98%	36.76%	8.43%	16.73%	1.44%	-45.87%	3.49%	35.34%
Operating margin (5YA)	26.15%	32.62%	11.57%	20.12%	-0.77%	-21.29%	2.77%	29.19%
Operating margin (5YA - industry)	18.16%	21.39%	26.07%	21.39%	21.39%	21.55%	21.55%	25.16%
Pretax margin (TTM)	28.03%	36.14%	8.43%	24.60%	-19.26%	-52.64%	8.62%	35.21%
Pretax margin (5YA)	27.03%	32.08%	11.57%	22.38%	-26.43%	-23.45%	6.87%	29.28%
Pretax margin (5YA - industry)	17.87%	18.49%	25.00%	18.49%	18.49%	18.92%	18.92%	24.42%
Net Profit margin (TTM)	22.44%	30.55%	8.22%	19.34%	-21.84%	-53.14%	7.05%	33.81%
Net Profit margin (5YA)	21.91%	31.18%	11.54%	16.94%	-27.85%	-23.81%	8.77%	27.68%
Net Profit margin (5YA - industry)	14.19%	15.27%	18.69%	15.27%	15.27%	15.71%	15.71%	21.89%
Return on Equity (TTM)	28.19%	34.37%	23.86%	15.33%	-362.62%	-149.73%	3.62%	41.95%
Return on Equity (5YA)	23.33%	33.20%	42.60%	14.80%	-51.75%	-30.79%	6.83%	34.05%
Return on Equity (5YA - industry)	23.26%	23.78%	42.60%	23.78%	23.78%	23.69%	23.69%	25.49%
Return on Assets (TTM)	11.94%	18.72%	3.27%	8.31%	-16.79%	-25.04%	2.40%	24.31%
Return on Assets (5YA)	10.06%	17.81%	5.90%	8.20%	-14.25%	-11.76%	3.75%	22.19%
Return on Assets (5YA - industry)	8.84%	9.41%	5.90%	9.41%	9.41%	9.44%	9.44%	13.98%
Return on Investment (TTM)	16.19%	24.68%	4.40%	11%	-53.72%	-33.86%	2.95%	27.25%
Return on Investment (5YA)	13.48%	24.34%	8.16%	10.67%	-34.71%	-16.16%	5.64%	25.56%
Return on Investment (5YA - industry)	11.72%	13.21%	8.16%	13.21%	13.21%	13.18%	13.18%	17%

Source: www.YahooFinance.com

As could be observed from the previous table, the financial ratio analysis shows as the largest corporations within the sample of analyzed companies which are Cisco, Adobe, and NVIDIA, were able to improve all their most relevant financial ratios (Gross, Operating, Pretax and Net Profit margin, but also ROE, ROA and ROI) during the last year (2021) with respect both to their average of the past 5 years and also to their industry average ratios of the past 5 years. Furthermore, also share price trend over the past three years was taken into consideration in order to elaborate a more complete picture of the companies' financial situation. As demonstrated by the following graph, all the eight

studied companies increased their share price with respect to the last three years. Since stock prices are determined by the relation between demand and supply, we could assert that, during the last three years, all these companies were characterized by an increasing demand that, consequently, increased their share price. Moreover, also investors' sentiment is a relevant variable that is able to change share prices over time; again, due to the above-mentioned corporations' positive trend, we could state that these business realities were able to attract and confirm a positive perception from its investors. Not surprisingly, all these corporations were awarded as "Best Large Workplaces in Technology" standing to form their competitors for the initiatives and actions they implemented during the COVID-19 emergency. This could be interpreted as further proof of the ambivalent effect of CSR; if from one point of view CSR is able to make the society better-off, from the other side it rewards its supporters, which are corporations in this case, with an undeniable positive and profitable financial performance also during crisis years.
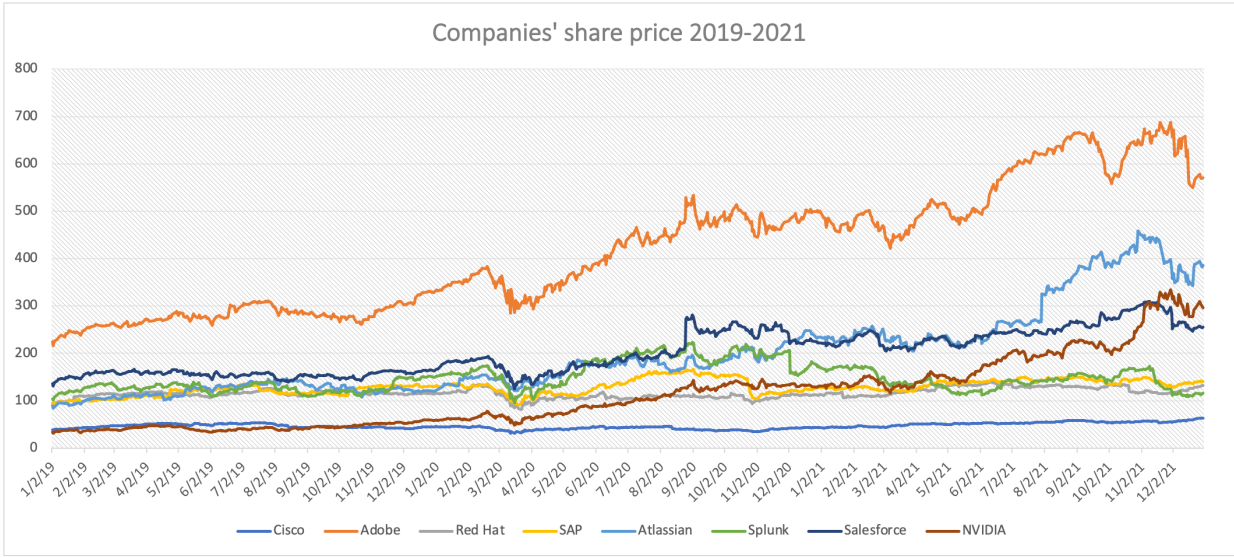
10. Analysis' results

10.1. Regression's analysis

Within the following section the results of regressions on panel data are reported. The model that was used is a random-effects model through the Generalize Least Square estimator. More precisely, two models were considered. Model 1 assumes that tweets

posted on day t affect the share price on the same day (t), while Model 2 assumes that tweets posted on day t affect the share price on the next day (t+1).

MODEL 1

The goal of this model is to analyze if tweets affect the prices within the same day.

- Dependent variable: share price on day t (the same date the CEO tweeted)
- Independent variables:
    - number of tweets posted by CEO on day t (Max_tweet_count)
    - number of CSR related tweets posted by CEO on day t (CSR_tweets_num),
    - number of followers of the CEO
    - number of retweets the post received
    - number of likes the post received
    - number of replies the post received

```
. xtreg Share_price max_tweet_count CSR_tweets_num Followers Retweets Likes Replies, re

Random-effects GLS regression              Number of obs     =       3,030
Group variable: Company_ID                 Number of groups  =           6

R-squared:                                 Obs per group:
     Within  = 0.0010                                    min =         505
     Between = 0.2563                                    avg =       505.0
     Overall = 0.2164                                    max =         505

                                           Wald chi2(6)      =      834.80
corr(u_i, X) = 0 (assumed)                 Prob > chi2       =      0.0000
```

Share_price	Coefficient	Std. err.	z	P>|z|	[95% conf. interval]	
max_tweet_count	3.291255	2.580421	1.28	0.202	-1.766278	8.348787
CSR_tweets_num	-18.27053	11.2799	-1.62	0.105	-40.37872	3.837665
Followers	-.0031441	.0001207	-26.04	0.000	-.0033807	-.0029075
Retweets	.0006709	.0081723	0.08	0.935	-.0153466	.0166884
Likes	-.1634493	.0357168	-4.58	0.000	-.2334529	-.0934456
Replies	4.130549	1.313712	3.14	0.002	1.55572	6.705377
_cons	271.6977	3.657614	74.28	0.000	264.529	278.8665

sigma_u	0					
sigma_e	56.517015					
rho	0	(fraction of variance due to u_i)				

The results of Model 1 are reported below.

Share prices that will be found in the following section were taken from the YahooFinance website on a day-to-day basis for a timespan of two years, 2020-2021 (www.YahooFinance.com).

Hypothesis 1a: The number of tweets posted by CEO on day t influence the share price at day t

Hypothesis 1b: The number of CSR related tweets on day t influence the share price at day t

Hypothesis 1c: The number of followers influence the share price at day t

Hypothesis 1d: The number of retweets influence the share price at day t

Hypothesis 1e: The number of likes influence the share price at day t

Hypothesis 1f: The number of replies influence the share price at day t

Assuming a confidence interval of 95%, if the p-value is less than 5%, then a coefficient is statistically significant. The results of Model 1 provide support for Hypothesis 1c, Hypothesis 1e and Hypothesis 1f.

- The total number of tweets on day t (b=3.29, p=0.202) does not have a statistically significant effect on share price on day t. Hence, Hypothesis 1a is rejected.

- The total number of CSR tweets on day t (b=-18.27, p=0.105) does not have a statistically significant effect on share price on day t. Hence, Hypothesis 1b is rejected.

- The number of followers (b=-0.003, p<0.01) has a negative and statistically significant effect on the share price on day t. Hence, Hypothesis 1c accepted. The number of followers negatively affects share price since the coefficient is negative. A negative coefficient implies that the independent variable, i.e. the number of followers in this case, negatively affect the dependent variable, which is the share price on day t. Consequently, an increase of the number of followers will decrease the share price on day t.

- The number of retweets (b=0.00067, p=0.935) does not have a statistically significant effect on share price on day t. Hence, Hypothesis 1d is rejected

- The number of likes (b=-0.16, p<0.01) has a negative and statistically significant effect on the share price on day t. Hence, Hypothesis 1e is accepted. This will imply that an increase in the number of likes will decrease the share price on day t.

- The number of replies (b=4.13, p=0.002) has a positive and statistically significant effect on the share price on day t. Hence, Hypothesis 1f is accepted. This will imply that an increase in the number of replies will increase the share price on day t.

X^2- test

Hypothesis: the variables are dependent to each other

Null Hypothesis: the variables are independent to each other

The aim of this test is to understand if the analyzed variables are dependent or independent of each other. Assuming a confident interval of 95%, if the p-value is greater than 5%, the Null Hypothesis will be accepted, implying that the variables do not influence each other and so they are independent.

Since the p-value for the chi-squared test is equal to 0.0000 (p-value < 0.01), we could state that the Hypothesis will be accepted. Consequently, the variables are dependent to each other.

R^2

R-squared, which stands for Coefficient of Determination of Linear Relations, is a value used in order to understand how much the independent variable can explain the variation of the dependent variable. Since R^2 is included between zero and one ($0 < R^2 < 1$), a value which is close to zero will suggest that the independent variables do not clearly explain the variation of the dependent variable. At the same time, a value which is close to 1 will suggest that the independent variables explain the variation of the dependent variable.

Since the R-squared value is equal to 0.2164 ($R^2 = 0.2164$), the variation of the dependent variable cannot be necessarily explained by the independent variables.

MODEL 2

The goal of this model was to analyze if tweets posted by CEO on day t affect the share prices of the next day (t+1).

- Dependent variable: share price at day t+1 (the day after the CEO tweeted)
- Independent variables:
    - number of tweets posted by CEO on day t (Max_tweet_count)
    - number of CSR related tweets posted by CEO on day t (CSR_tweets_num),
    - number of followers of the CEO
    - number of retweets the post received
    - number of likes the post received
    - number of replies the post received

```
. xtreg price_lead1 max_tweet_count CSR_tweets_num Followers Retweets Likes Replies, re

Random-effects GLS regression              Number of obs     =      2,827
Group variable: Company_ID                 Number of groups  =          6

R-squared:                                 Obs per group:
     Within  = 0.0027                                    min =        406
     Between = 0.2712                                    avg =      471.2
     Overall = 0.2012                                    max =        496

                                           Wald chi2(6)      =     710.42
corr(u_i, X) = 0 (assumed)                 Prob > chi2       =     0.0000
```

price_lead1	Coefficient	Std. err.	z	P>|z|	[95% conf. interval]	
max_tweet_count	29.90529	5.255939	5.69	0.000	19.60384	40.20675
CSR_tweets_num	-23.87053	14.45147	-1.65	0.099	-52.1949	4.453836
Followers	-.0031276	.0001293	-24.20	0.000	-.0033809	-.0028742
Retweets	-.0052259	.0084415	-0.62	0.536	-.0217709	.0113192
Likes	-.2179788	.0401176	-5.43	0.000	-.2966078	-.1393498
Replies	4.488745	1.444898	3.11	0.002	1.656797	7.320692
_cons	266.6762	3.90371	68.31	0.000	259.0251	274.3273

sigma_u	0	
sigma_e	57.271932	
rho	0	(fraction of variance due to u_i)

The results of Model 2 are reported below.

Share prices that will be found in the following section were taken from the YahooFinance website on a day-to-day basis for a timespan of two years, 2020-2021 (www.YahooFinance.com).

Hypothesis 1a: The number of tweets posted by CEO on day t influence the share price at day t+1

Hypothesis 1b: The number of CSR related tweets on day t influence the share price at day t+1

Hypothesis 1c: The number of followers influence the share price at day t+1

Hypothesis 1d: The number of retweets influence the share price at day t+1

Hypothesis 1e: The number of likes influence the share price at day t+1

Hypothesis 1f: The number of replies influence the share price at day t+1

Assuming a confidence interval of 95%, if the p-value is less than 5%, then a coefficient is statistically significant. The results of Model 2 provide support for Hypothesis 1a, Hypothesis 1c, Hypothesis 1e and Hypothesis 1f.

- The total number of tweets on day t (b=29.91, p<0.01) has a positive and statistically significant effect on the share price at day t+1. Hence, Hypothesis 1a is accepted. The total number of tweets on day t positively affects share price since the coefficient is positive. A positive coefficient implies that the independent variable, i.e. the total number of tweets on day t in this case, positively affect the dependent variable, which is the share price on day t+1. Consequently, an increase of the number of tweets on day t will increase the share price on day t+1.

- The total number of CSR tweets on day t (b=-23.87, p=0.099) does not have a statistically significant effect on share price on that day t+1. Hence, Hypothesis 1b is rejected.

- The number of followers (b=-0.003, p<0.01) has a negative and statistically significant effect on the share price at day t+1. Hence, Hypothesis 1c accepted. This will imply that an increase in the number of followers will decrease the share price on day t+1.

- The number of retweets (b=0.0052, p=0.536) does not have a statistically significant effect on share price on day t+1. Hence, Hypothesis 1d is rejected.
- The number of likes (b=-0.22, p<0.01) has a negative and statistically significant effect on the share price on day t+1. Hence, Hypothesis 1e is accepted. This will imply that an increase in the number of likes will decrease the share price on day t+1.
- The number of replies (b=4.49, p=0.002) has a positive and statistically significant effect on the share price on day t+1. Hence, Hypothesis 1f is accepted. This will imply that an increase in the number of replies will increase the share price on day t+1.

X^2- test

Hypothesis: the variables are dependent to each other

Null Hypothesis: the variables are independent to each other

Since the p-value for the chi-squared test is equal to 0.0000 (p-value = 0.0000), we could state that the Hypothesis will be accepted. Consequently, the variables are dependent to each other.

R^2

Since the R-squared value is equal to 0.2164 (R^2 = 0.2164), the variation of the dependent variable cannot be necessarily explained by the independent variables.

10.2. Excel's analysis

All the above explained analysis was focused on the CEOs tweets. The following section aim is to understand if companies' CSR tweets influence their own share prices.

To comprehend if such a relation exists or not, an excel analysis was implemented.

The excel file of tweets classification consists into the association between the date in which every single CSR tweet was posted and the respective share price variation that was registered in that same day (at time "t"). Subsequently, following the same logic, also the share price related to the day after the posting date of the CSR tweet was registered

(at time "t+1"). Using this methodology, it was possible to identify only those tweets which provoked a positive or negative share price variation of at least 5 per cent (share price variation < or > 5%).

The results are reported within the following table.

Company	Σ CSR Tweets	N. of CSR tweets associated with a share price variation ≤ or ≥ than 5% at time "t"	N. of CSR tweets associated with a share price variation ≤ or ≥ than 5% at time "t+1"	N. of CRS tweets associated with a share price variation ≤ or ≥ than 5% both at time "t" and "t+1"
Cisco	98	0	1	0
Adobe	56	1	1	0
Red Hat	25	0	0	0
SAP	61	0	0	0
Atlassian	68	4	7	0
Splunk	49	1	1	0
Salesforce	52	2	3	1
NVIDIA	20	3	1	1
TOTAL	429	11	14	2

11. Results interpretation

11.1. CEOs tweets

This is the last section of chapter 3, and since the previous paragraph was aimed at reporting numerically the research result, this time the outcomes will be analyzed concerning the theoretical concepts that were explained in the previous chapters.

Multinational tech companies were selected as the main object of this thesis research. Tech companies embrace the perfect mix of realities which embed the crucial issue of sustainable competitive advantage thanks to features such as, for example, big data gathering powered by cloud technology, online-tracking, analytics tools to monitor user experience or the possibility of automating processes like back-office functions (Lipovich, 2021).

These are types of corporations that are not interested only in increasing their profit without taking into consideration also the negative externalities that they could create; taking care of their people is an essential part of their value proposition. Furthermore, they were also awarded as "Best Large Workplaces in Technology" precisely because of the effort they put with respect to their employees during COVID challenges.

Also, the evolution of the term CSR during the years was explained until the concept of "giving back to society" was reached (Carrol, 2016). Following this definition, the corporation should take care also of the society and the environment in which they operate daily.

Consequently, nowadays, CSR issues are fully incorporated within the core business activities, especially if we are dealing with large corporations. The best and most efficient way of communicating these practices is through social media platforms. Particularly, it emerged that Twitter, which can be defined as the most popular microblogging service, thanks to its versatility is the most used one by corporations in order to communicate corporate initiatives, progress and success both with their stakeholders and the general public (www.Statista.com).

All the analyzed companies are based in the United States, and precisely the United States had the higher number of Twitter users in 2021. With a relevant range of 10 million users more than Japan and India, the U.S.A. positioned itself at the first place of this ranking (www.Statista.com).

Companies and CEOs presence on social media platforms could and should be also associated with the so-called reputational risk. Reputational risk refers to the possibility of damaging publicity, which can affect public perception. It refers also to unpredictable events that can have a negative impact on a company's reputation, thus affecting its income (Sickler, 2019). Therefore, CEOs have to be very careful when operating on the Twitter platform, even if they are not publishing tweets that are strictly related to their company's business. Stakeholders, but also all other tweets readers, will always associate the CEO's name to the company one, with a huge potential of influencing the future corporations' revenues, both in a positive and negative way.

Moreover, it was abundantly demonstrated that Twitter, as the corporate tool used for communications and interactions between the company itself and its shareholders, is a powerful instrument that can influence the future financial performance of a company (Best & Caylor, 2019).

The two-regression models that were performed on CEOs tweets show that there is evidence of some possible relations between the independent variables (see Model 1 and Model 2) and the dependent variable, the share prices. Precisely, the Chi-squared test clarified that within both "Model 1" and also "Model 2", the variables are dependent one to the other. Anyway, the coefficient analysis reveals that the total number of CSR tweets on day t does not have a statistically significant effect on share price both on day t and on day t+1.

The above-mentioned explanation is also summarized within the following table.

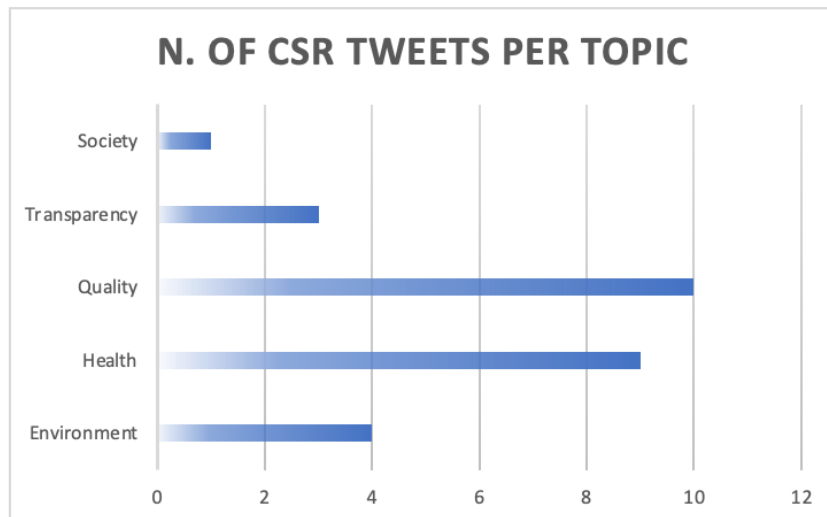|	Statistically significant independent variable	Coefficient sign
MODEL 1	Number of followers	Negative (-)
	Number of likes	Negatie (-)
	Number of replies	Positive (+)
	Statistically significant independent variable	Coefficient sign
MODEL 2	Total number of tweets	Positive (+)
	Number of followers	Negative (-)
	Number of likes	Negatie (-)
	Number of replies	Positive (+)

11.2. Companies' tweets

The analysis was performed on eight multinational tech companies, in a time span of two years, from 2020 to 2021.

Company	Σ CSR Tweets	N. of CSR tweets associated with a share price variation ≤ or ≥ than 5% between time "t" and "t+1"	% of CSR tweets associated with a share price variation ≤ or ≥ than 5% between time "t" and "t+1"
Cisco	98	1	1.02%
Adobe	56	2	3.57%
Red Hat	25	0	0.00%
SAP	61	0	0.00%
Atlassian	68	11	16.18%
Splunk	49	2	4.08%
Salesforce	52	6	11.54%
NVIDIA	20	5	25.00%
TOTAL	429	27	6.29%

During this period, a total of 429 Corporate Social Responsibility tweets were identified, but just 27 (6.29%) had a direct effect on the related company share price. This result implies that CSR tweets are not clearly correlated with "significant" share price changes. It is also important to remember that a significant share price change, as previously defined, is recognized with a positive or negative share price variation of at least 5 per cent.

	Environment	Health	Quality	Transparency	Society
Cisco	-	-	1	-	-
Adobe	-	-	1	-	1
Red Hat	-	-	-	-	-
SAP	-	-	-	-	-
Atlassian	1	6	3	1	-
Splunk	-	-	1	1	-
Salesforce	3	1	1	1	-
NVIDIA	-	2	3	-	-
TOTAL	4	9	10	3	1

N. OF CSR TWEETS PER TOPIC

Furthermore, within section "2.2.2. Tweets analysis" it was emphasized that CSR nowadays has a proper alphabet (Paola Nicoletti, 2017); consequently, it was possible to construct five main categories for every CSR most discussed topic.

"Quality" is the class with the higher number of CSR tweets associated with a significant share price variation among the analyzed companies; it refers to the quality of living issues and quality of work environment, which may include for example offering the same work opportunities with no discrimination based on sexual or religious orientation. "Health" is the second category for a number of significant tweets; it consolidates mostly mental health issues, both on the job and within personal life, but comprehends also initiatives aimed at improving work-life balance. "Environment" classification, of course, deals with all that types of corporate activities focused on reducing the corporation environmental impact (e.g., reducing carbon emissions). The last two categories refer to "transparency" meant as information transparency with respect to the general public and the company's shareholders, and "society" to which it is associated only one significant tweet; this last description includes themes as a philanthropic event, charitable donations and other social events directed at making society better-off.

11.3. Final Remarks

Both the regressions and the excel analysis' results emphasize that CSR tweets have no statistically significant effect on share price neither on day t nor on day t+1.
Consequently, we could state that the relation between CSR tweets and share prices variation, is not a demonstrated phenomenon. This could find a proper logic if we take

into consideration that, of course, share prices are influenced by a myriad of different factors. Some of the most relevant ones are the level of demand-supply within the market, the interest rates, and also the behaviour of short and long-term investors (www.wall-street.com).

The only circumstances in which a direct correlation between tweets and financial returns were clearly observed are in those cases in which well-known, trending and popular accounts are taken into consideration.

In most of cases, this association does not correspond with top executives, like the companies' CEOs we analyzed. It is just a direct and proportionate consequence of the number of followers that the individual account has. We previously made some references and examples with Elon Musk, the richest man on earth, CEO and founder of Tesla, SpaceX, Neuralink and The Boring Company. The entrepreneur, with his more than 60 million followers, several times was under the spotlight consequently to one of his eccentric tweets which, in turn, had a direct effect on Tesla stock price variation (Peters, 2020).

For sure, we could state that a CSR tweet posted through Musk's Twitter account could have higher possibilities of influencing his company's stock market return with respect to, for example, other multinational listed companies' executives. The actual and most relevant distinction, again, between Elon Musk and, for example, Cisco's CEO, Chuck Robbins, is not the perception of the former as a "better CEO" with respect to Robbins, but just a matter of "popularity". It can be safely stated that the charismatic and eccentric personality of the former, has a higher impact on the stock market, despite his concrete capabilities as an executive.

At the same time, even if we are dealing with a very popular individual like Musk, or simply with other extremely followed individuals with a huge engagement rate, obviously not all their tweets can impact the respective company's prices. Just those tweets that are perceived by the general public as eccentric, extravagant, or that somehow creates an interest in the mass media, could in some cases change expectations about the financial market return. Besides, it is not new that the stock market reflects and is influenced, also by mass psychology. Consequently, mass perception is a critical variable that must be taken into consideration when we are dealing with financial forecasts (Shiller, 2017). The only true evidence is that CSR topics that are communicated through social media platforms, like Twitter, are better perceived by the readers, and this phenomenon consequently also brings some economic benefits to the companies themselves

(Balasubramanian et al., 2020). This is also demonstrated by the financial ratio analysis present at the end the Chapter 3- first paragraph. Particularly, the largest corporations within the sample of analyzed companies which are Cisco, Adobe, and NVIDIA, were able to improve all their most relevant financial ratios (Gross, Operating, Pretax and Net Profit margin, but also ROE, ROA and ROI) during the last year (2021) with respect both to their average of the past 5 years and also to their industry average ratios of the past 5 years. We could now state that the CSR topic is ambivalent. This phenomenon will consequently imply that companies which truly care about CSR issues are actually able to make society better-off thanks to their actions and initiatives and, at the same time, this commitment will create a positive effect on the public perception of the company, which will be translated into a more valuable economic growth in the future. Still, a correlation between CSR tweets and share prices has not been proved.

Chapter 4: Conclusions

A short-window event study was conducted on US-based multinational tech companies to investigate the relationship between CSR tweets and related stocks prices movements. A sample of over 5,000 tweets was gathered over the course of the last two years (2020 and 2021). Regression models and excel analysis were used to correlate daily CSR tweets with daily changes in the companies' stock prices at the market level. The data shows that, however, the relationship has not yet been clearly defined.

Tweets downloaded through Python allowed a preliminary study to be carried out investigating the relationship between CSR tweets and stock market performance, motivated by the prospect of forecasting a relationship between those tweets and market performance. Stock market indicators such as volume of trades, market closing price, and average daily change in price were collected to track market movements between the period 2020-2021.

The existence or lack of correlations between the variables in context was determined using two regression models, allowing this investigation to explore the impact of CSR tweets on stock market price variations.

Even though the sample size of this study hindered statistically meaningful conclusions on the association between Twitter used for CSR issues and stock market movements, the following trends can be observed:

- the number of followers and likes has a negative and statistically significant effect on the share price both on day t and day t+1;

- the number of replies has a positive and statistically significant effect on the share price both on day t and day t+1;

- the total number of tweets on day t has a positive and statistically significant effect on the share price only on day t+1.

Furthermore, the Chi-squared test shows that variables analyzed within this research study, are dependent one to the other both at time "t" and "t+1". At the same time, the coefficient of determination of linear relation (R-squared) indicates that independent variables do not clearly explain the variation of the dependent variables (i.e., stock price variation); consequently, a linear regression model could not be the best match for these data representation.

Before concluding, we should also analyze some of the limitations that were encountered during this research thesis. In terms of downloaded tweets, Twitter imposes huge

limitations on information accessibility. Firstly, downloading tweets through Python did not allow me to get the specific number of followers, likes, replies and retweets updated on the day in which that tweet was posted; Python downloads data that are updated at the download date (cumulative data). Therefore, the research presented some counterintuitive results: followers and likes are associated with lower share prices. Presumably, this unexpected result could find their logic behind the concept that tweets from the Twitter account with a large number of followers have a greater impact on immediate returns on the same day; tweets from accounts with fewer followers, on the other hand, have a lower impact on returns. The outcomes could be explained by the speed with which information is spread. Tweets from Twitter account with a substantial number of followers are more likely to propagate quickly and hence be promptly incorporated into market values. On the other side, a small number of followers indicates a slow rate of dissemination, which implies it will take longer for stock prices to react to such information (Mejova et al., 2015). A higher number of followers will also imply, on average, a higher number of likes. This could find a proper logic if we take into consideration probabilities; more followers could be translated into a major sample of people reading the account's posts that, consequently, will imply a higher amount of likes with respect to accounts' posts with a lower number of followers (and probably a lower total amount of likes). Consequently, since all the analyzed companies have a high number of followers and likes (more than 500k followers on average, www.Twitter.com) we could hypothesize that the high propagation rate associated with other unknown variables, resulted in overall lower share prices among the investigated time period.

Replies, on the other hand, have a positive and statistically significant effect on the share price both on day t and day t+1; while the total number of tweets on day t has a positive and statistically significant effect on the share price just on day t+1. Replies, which could also be analyzed as "comments" to that post, will imply for sure an overall higher people involvement with respect to likes. Literally, a like requires just to press a button, and it will require less than one second to be done; replies, by contrast, denote that the reader is truly interested in the post topic to such an extent that he or she wants to participate to it by sharing his or her personal thoughts. Again, if a higher number of followers implies, on average, a higher number of likes, the analogy could be applied also with respect to the total number of tweets and the overall number of replies. Of course, the higher the number of tweets, the higher the probability to have a relevant number of replies with respect to

an account that is used to tweet less. This could find even more proper logic if we are considering that, as explained before, all the analyzed corporations are characterized by a huge number of followers. Consequently, the total amount of tweets and replies are related to a relevant engagement rate, which, associated with other unknown variables, resulted in higher share prices on day "t" and "t+1" for replies, and a higher share price on day "t+1" for the total number of tweets. Replies and the total number of tweets provoked the same effect with the only difference that the positive and statistically significant effect of replies can be observed both on day "t" and "t+1", while the total number of tweets positive and statistically significant effect is observed with a one-day "lag": only on day "t+1".

Furthermore, another limitation is originated from the maximum number of downloadable tweets per account, which is 3200; this obviously imposed some restrictions on the data sample since companies' Twitter accounts tend to tweet with a higher frequency with respect to their CEOs. Consequently, from the companies' accounts point of view, this limitation did not allow a sufficient data collection for regressions analysis; because of this reason, it had to be substituted with an excel investigation. On the other hand, no complications occurred in downloading CEOs tweets for the period 2020-2021 since they were abundantly within the 3200 tweets limitation. Consequently, given that Twitter is updated hundreds of millions of times every day, this appears to be a small sample size to be a representative sampling of CSR public perception.

A further complication is the length of the sample period. Of course, this issue is strictly related to the previous one since limitations on downloadable tweets will also be translated into a smaller timespan. Even if this two years period was precisely chosen in order to access CSR activities that were performed by the analyzed companies during the COVID-19 emergency, and for which those corporations were also awarded, we could state that the trends between CSR tweets and stock prices variation are not prominent enough in a smaller sample; the sample size was insufficient for the relationships to be classified as significant at 95 per cent certainty. Nevertheless, just because a relationship has yet to be proven statistically significant (again, there is no evidence of causation between CSR tweets and stock market movements), it does not exclude the possibility that it exists. This preliminary examination of the association between CSR tweets and market performance suggests that sentiment analysis on Twitter data could be useful for forecasting market movements. The findings lead to particularly interesting insights with

a great potential of cause-and-effect correlations that should be the focus of future research. Using a larger sample of tweets or a long time of observation, future examinations could look at the relationship between Twitter-based CSR topics and stock market movements. Moreover, another Python-related limitation is represented by the fact that I have not coded if a tweet was perceived positively or negatively by the public. Consequently, this will lead to another opportunity for future research studies to analyze if propagation rates and the related engagement levels differ for positive or negative information contained in a tweet.

Based on the findings, it is believed that in a more in-depth investigation, the amount of CSR tweets present on the Twitter platform could be compared to stock market movements in order to measure the impact of the former on the latter.

BIBLIOGRAPHY

- 'The European Business Network for Corporate Sustainability and Responsibility', Available at: https://www.csreurope.org
- Agudelo, M.A., Jóhannsdóttir, L. & Davídsdóttir, B. A, 2019. 'Literature review of the history and evolution of corporate social responsibility', *Int J Corporate Soc Responsibility* 4, 1
- Akilan, A., 2015, Text mining: Challenges and future directions In Electronics and Communication Systems (ICECS). *2nd International Conference on*, pp. 1679-1684. DOI: 10.1109/ECS.2015.7124872
- Araujo, T., & Kollat, J., 2018, Communicating effectively about CSR on Twitter: The power of engaging strategies and storytelling elements. *Internet Research*, 28(2), pp. 419–431.
- Arroyo, I., Martín, R. & Farfán, J., 2013, Usos, percepciones y potencialidades de las redes sociales en la construcción de las marcas. *Doxa Comunació*n, 16, pp. 129–149. DOI: 10.31921/doxacom.n16a6
- Balasubramanian, S.K., Fang, Y. & Yang, Z. (2021). Twitter Presence and Experience Improve Corporate Social Responsibility Outcomes. *Journal of Business Ethics 173*, 737–757 Available: https://doi.org/10.1007/s10551-020-04537-x
- Baumer, E. P., Sinclair, J., & Tomlinson, B., 2010. America is like Metamucil: fostering critical and creative thinking about metaphor in political blogs*. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pp. 1437-1446. Available at: https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.646.9852&rep=rep1&type=pdf
- Benkler, Y., 2006. The wealth of networks: How social production transforms markets and freedom. *New Haven: Yale University Press.* DOI: 10.1080/08997760701193787
- Bowen, H. R., 1953. 'Social responsibilities of the businessman', *University of Iowa Press*
- Burke, L., & Logsdon, J. M., 1996. How corporate social responsibility pays off. *Long Range Planning*, 29(4), 495–502.
- Carroll, A. B., 1991. The pyramid of corporate social responsibility: Toward the moral management of organizational stakeholders. *Business Horizons.* Volume 34, Issue 4, Pages 39-48.
- Carroll, A. B., 1999. 'Corporate social responsibility', *Business & Society,* 38(3), p. 268–295
- Carroll, A.B., 2015. 'Corporate Social Responsibility (CSR) is on a Sustainable Trajectory'. *Journal of Defense Management*. Vol 05 (02).
- Carroll, A.B., 2016. 'Carroll's pyramid of CSR', *Carroll International Journal of Corporate Social Responsibility*, p.
- Dawkins, J., 2004. Corporate responsibility: The communication challenge. *Journal of Communication Management*, 9(2), 108
- Fan, W., Wallace, L., Rich, S., & Zhang, Z. (2005) Tapping into the power of text mining, *Communications of the ACM*, Vol. 49, No. 9.
- Fischer, E. & Reuber, A.R. (2011) Social interaction via new social media: how can interactions on Twitter affect effectual thinking and behavior? J*ournal of Business Venturing*, 26, 1, pp. 1–18
- Friedman,1970. The Social Responsibility of Business is to Increase its Profits. *Milton Friedman, Capitalism and Freedom*, p. 3
- Hennig-Thurau, T., Malthouse, E.C., Friege, C., Gensler, S., Lobschat, S., Rangaswamy, A. & Skiera, B., 2010. The impact of new media on customer relationships. *Journal of Service Research*, 13, 3, pp. 311–330. DOI:10.1177/1094670510375460
- Hillenbrand, C. & Money, K, 2007. 'Corporate Responsibility and Corporate Reputation: Two Separate Concepts or Two Sides of the Same Coin?', *Corporate Reputation Review,* Vol. 10, p.270
- Katz, E., & Lazarsfeld, P. F. (1955) 'Personal influence: The part played by people in the flow of mass communications' in Schlüsselwerke der Netzwerkforschung (Eds) Holzer, B. & Stegbauer, C., *Springer VS, Wiesbaden,* pp. 293-296
- Kreps, T., 1962. 'Measurement of the Social Performance of Business', *The American Academy of Political & Social Science*
- Latapí Agudelo, M.A., Jóhannsdóttir, L. & Davídsdóttir, 2019. 'Literature review of the history and evolution of corporate social responsibility', *Int J Corporate Soc Responsibility* 4, 1
- Lipton, AM, 2020. 'The Case for Mandatory Stakeholders Disclosure', *Yale Journal of Regulation*
- Lovejoy, K., Waters, R.D. & Saxton, G.D., 2012, Engaging stakeholders through Twitter: how non-profit organizations are getting more out of 140 characters or less. *Public Relations Review*, 38, 2, pp. 313–318

- Lyon, T. P., & Montgomery, A. W., 2013. Tweetjacked: The impact of social media on corporate greenwashes. *Journal of Business Ethics*, 118(4), 747–757
- Mackey, J. & Sisodia, R., 2013. 'Conscious Capitalism', *Harvard Business Review Press*
- Maon, F., Lindgreen, A., & Swaen, V., 2009. Designing and implementing corporate social responsibility: An integrative framework grounded in theory and practice. *Journal of Business Ethics*, 87(S1), 71–89
- McCorkindale, T., 2010. Can you see the writing on my wall? A content analysis of the Fortune 50's Facebook social networking sites. *Public Relat. J.* 4(3)
- Méndiz, Alfonso, Victoria, Juan Salvador, Arroyo & Isidoro (2013), "LA EFICACIA DE LA PUBLICIDAD SOCIAL EN LAS REDES SOCIALES. UN EXPERIMENTO ONLINE CON USUARIOS JÓVENES." Razón y Palabra, Vol. n..82. Available at : https://www.redalyc.org/articulo.oa?id=199525737034
- Mosley Jr, R. C., 2012. Social media analytics: Data mining applied to insurance Twitter posts. In Casualty Actuarial Society E-Forum. *Winter 2012 Volume 2* (p. 1)
- Mujahid, M. & Abdullah, A., 2014. 'Impact of Corporate Social Responsibility on Firms Financial Performance and Shareholders wealth', *European Journal of Business and Management*, p. 181
- Neuman, W. R., Guggenheim, L., Jang, S. M., & Bae, S. Y., 2014. The dynamics of public attention: Dynamics of public attention. *Journal of Communication*, 64(2), 193–214
- Porter & Kramer, 2006. 'The Link Between Competitive Advantage and Corporate Social Responsibility', *Harvard Business Review,* p.13
- Porter, M. C., & Nhotsavang, B. A. M., 2015. 'Anti-social media: executive Twitter "engagement" and attitudes about media credibility', *Journal of Communication Management*, Vol. 19 Iss 3 pp. 270 – 287
- Robinson, R., Goh, T. T., & Zhang, R., 2012. Textual factors in online product reviews: a foundation for a more influential approach to opinion mining. *Electronic Commerce Research*, 12(3), 301-330
- Rybalko, S. & Seltzer, S., 2010. Dialogic communication in 140 characters or less: how Fortune 500 companies engage stakeholders using Twitter. *Public Relations Review*, 36, pp. 336–341
- Saxton, G. D., Gomez, L., Ngoh, Z., Lin, Y.-P., & Dietrich, S., 2019. Do CSR messages resonate? Examining public reactions to firms' CSR efforts on social media. *Journal of Business Ethics,* 155(2), 359–377
- Scherer, A.G., & Palazzo, G, 2007. 'Toward a Political Conception of Corporate Social Responsibility: Business and Society Seen from a Habermasian Perspective', *Academy of Management Review* 32, no. 4, 1096–120.
- Senellart, P., and Blondel V.D., (2004) 'Automatic Discovery of Similar Words' in Survey of Text Mining, Berry M. W. and Castellanos M. (ed.) *Clustering, Classification and Retrieval*. Springer Verlag, New York, 200, 24-43
- Smith, B.G., 2010. Socially distributing public relations: Twitter, Haiti, and interactivity in social media. *Public Relations Review*, 36, pp. 329–335
- Sorensen, L T. ,2009. User managed trust in social networking-Comparing Facebook, MySpace and Linkedin. First conference on Wireless Communication, Vehicular Technology, Information Theory and Aerospace & Electronics Systems Technology (Wireless ViTAE 2009). DOI: 10.1109/WIRELESSVITAE.2009.5172486
- Stohl, M., Stohl, C., & Townsley, N. C., 2007. A new generation of global corporate social responsibility. *Oxford* University, p. 30-44
- Thurau, T.H., Wiertz, C., & Feldhaus, F., 2012, Exploring the "Twitter Effect:" An Investigation of the Impact of Microblogging Word of Mouth on Consumers' Early Adoption of New Products, *SSRN Electronic journal*, DOI: 10.2139/ssrn.2016548
- Tsytsarau, M., & Palpanas, T., 2012. Survey on mining subjective data on the web. *Data Mining and Knowledge Discovery*, 24(3), 478-514.
- Waters, R.D. & Williams, J.M., 2011. Squawking, tweeting, cooing, and hooting: analyzing the communication patterns of government agencies on Twitter. *Journal of Public Affairs*, 11, 4, pp. 353–363
- White, C. L. & Boatwright, B., 2020. 'Social media ethics in the data economy: Issues of social responsibility for using Facebook for public relations', *Public Relations Review*, p.
- Whiting, A., & Williams, D., 2013. Why people use social media: A uses and gratifications approach. *Qualitative Market Research: An International Journal*, 16(4), 362–369
- William,O. F., 2014. 'Corporate Social Responsibility, the Role of Business in sustainable Development', *Routledg,* p. 9
- Wood, D., 1991. 'Corporate Social Performance Revisited', *The Academy of Management Review,* 16(4), 691-718

- Wright, D.K., Hinson, M.D., 2009. An updated look at the impact of social media on public relations practice. *Public Relat. J.* 3(2), 1–27
- Wu, J., Sun, H., & Tan, Y., 2013. Social media research: A review. *Journal of Systems Science and Systems Engineering,* 22(3), 257-282
- Yang, J. H., & Liu, S., 2017. Accounting narratives and impression management on social media. *Accounting and Business Research*, 47(6), 673-694
- Yang, S. & Lim, J.S., 2009. The effects of blog-mediated public relations (BMPR) on relational trust. *Journal of Public Relations Research*, 21, 3, pp. 341–359
- Yelena Mejova, Ingmar Weber & Michael W. Macy, 2015. Twitter: A Digital Socioscope. *Cambridge University Press,* 89
- Zhang, J. Q., Craciun, G., & Shin, D., 2010. When does electronic word-of- mouth matter? A study of consumer product reviews. *Journal of Business Research*, 63(12), 1336-1341
- Zhang, M., Jansen, B.J. & Chowdhury, A., 2011. Business engagement on Twitter: a path analysis. *Electronic Markets*, 21, 3, pp. 161–175

SITOGRAPHY

- 4 takeaways from Adobe Summit 2019: Changing the world through digital experiences. March 28, 2019. [Online]. Available at: https://contentsquare.com/blog/4-takeaways-from-adobe-summit-2019-changing-the-world-through-digital-experiences/. (Accessed: 20 Jan 2022)
- Abramovich G., (2021) *Adobe Digital Trends report uncovers big shifts in 2021 marketing priorities*. [Online]. Available at: https://business.adobe.com/blog/the-latest/adobe-econsultancy-digital-trends-reportU. (Accessed: 15 Jan 2022)
- *Add-On Sale Meaning & Definition*, MBA Skool Team. May 07, 2015. [Online]. Available at: https://www.mbaskool.com/business-concepts/marketing-and-strategy-terms/12988-add-on-sale.html. (Accessed: 1 Feb 2022)
- Adobe Corporate Communications. A collaborative approach to sustainability: 5 ways Adobe addressed the climate crisis amid a pandemic. October 02, 2021. [Online]. Available at: https://blog.adobe.com/en/publish/2021/02/10/5-ways-adobe-addressed-climate-crisis-pandemic#gs.nwqo3u. (Accessed: 22 Jan 2022)
- Adobe Corporate Social Responsibility Report, 2019. Adobe.com. [Online]. Available at: https://www.adobe.com/content/dam/cc/en/corporate-responsibility/pdfs/Adobe-CSR-Report-FY2019.pdf. (Accessed: 20 Jan 2022)
- Adobe Leadership in Creativity, Digital Documents and Customer Experience Management Categories Drives Next Era of Growth, AP News, November 04, 2019. [Online]. Available at: https://apnews.com/press-release/business-wire/technology-max-e6489559b8b94c44b5162108ceb29fa0. (Accessed: 17 Jan 2022)
- Adobe Reports Record Q4 and Fiscal 2021 Revenue; Company Outlines Strategy for Next Decade of Growth, Adobe News, December 16, 2021. [Online]. Available at: https://news.adobe.com/news/news-details/2021/Adobe-Reports-Record-Q4-and-Fiscal-2021-Revenue-Company-Outlines-Strategy-for-Next-Decade-of-Growth/default.aspx. (Accessed 17 Jan 2022)
- Adobe Resource Saver Calculator. Acrobatusers. [Online]. Available at: https://acrobatusers.com/resource-saver-calculator/. (Accessed: 28 Jan 2022)
- Adobe.com. Impakter Index. [Online]. Available at: https://index.impakter.com/adobe-2/. (Accessed: 28 Jan 2022)
- Anand, S. (2020) *Adobe - Surpasses $11B in Annual Revenue*". [Online]. Available at: https://startuptalky.com/adobe-success-story/. (Accessed: 12 Jan 2022)
- Atlassian. Cleverism.com. [Online]. Available at: https://www.cleverism.com/company/atlassian/. (Accessed: 1 Feb 2022)
- Atlassian. Comparably.com. [Online]. Available at: https://www.comparably.com/companies/atlassian. (Accessed: 1 Feb 2022)
- Atlassian.com. [Online]. Available at: https://www.atlassian.com/company. (Accessed: 1 Feb 2022)
- Buckley, J. (2021) *Atlassian has brought its net zero commitment forward to 2040 after recording a 34% rise in Q1 revenue*. Business Insider. [Online]. Available at: https://www.businessinsider.com.au/atlassian-has-brought-forward-its-net-zero-commitment-to-2040. (Accessed: 16 Jan 2022)
- Business Segment at SAP. Cleverism.com. [Online]. Available at: https://www.cleverism.com/company/sap/. (Accessed: 30 Jan 2022)
- Carlson N. (2011). 'The Real History Of Twitter' *Business Insider Australia*, 14 April, 2011 [Online]. Available: https://www.businessinsider.com.au/how-twitter-was-founded-2011-4. (Accessed : 12 Nov 2021)
- Carpenter, H. (2010) *Crowdsourcing for a Billion Dollar Business – Cisco I-Prize*. [Online]. Available at: https://www.cloudave.com/648/crowdsourcing-for-a-billion-dollar-business-cisco-i-prize/. (Accessed: 1 Feb 2022)
- Chowdhury S. (2020) *Volunteering for Impact: Do You Have an Idea to Change the World?.* SAP News. [Online]. Available at: https://news.sap.com/2020/11/employees-with-purpose-sap-global-month-service/. (Accessed: 1 Feb 2022)
- Cisco Systems's Business Strategy Case Study. [Online]. Available at: https://vizologi.com/business-strategy-canvas/cisco-systems-business-model-canvas/. (Accessed: 13 Jan 2022)
- CISCO. Business Model Navigator. [Online]. Available at: https://businessmodelnavigator.com/case-firm?id=26. (Accessed: 13 Jan 2022)

- Commission of the European Communities, 2001. Green paper: promoting a European framework for corporate social responsibility. *Brussels : E. Commission*. Available at : https://www.europarl.europa.eu/meetdocs/committees/deve/20020122/com(2001)366_en.pdf
- COVID-19 impact. Cisco. [Online]. Available at: https://www.cisco.com/c/dam/en_us/partners/downloads/coronavirus-letter.pdf. (Accessed: 1 Feb 2022)
- COVID-19 to Add as Many as 150 Million Extreme Poor by 2021. The World Bank. October 7, 2020. [Online]. Available at: https://www.worldbank.org/en/news/press-release/2020/10/07/covid-19-to-add-as-many-as-150-million-extreme-poor-by-2021. (Accessed: 30 Jan 2022)
- Covid-19. Adobe Blog. [Online]. Available at: https://blog.adobe.com/en/topics/covid-19. (Accessed: 22 Jan 2022)
- Craig Timberg, Drew Harwell, Hamza Shaban, Andrew Ba Tran and Brian Fung. (2019) *The New Zeeland shooting shows how YouTube spread hate and violent images – yet again* [Online]. Available at: https://www.washingtonpost.com/technology/2019/03/15/facebook-youtube-twitter-amplified-video-christchurch-mosque-shooting/. (Accessed: 1 Nov 2021)
- Creative Cloud access for students and teachers during COVID-19 campus closures. Helpx Abobe, Jan 6, 2022. [Online]. Available at: https://helpx.adobe.com/enterprise/kb/covid-19-education-labs.html. (Accessed: 22 Jan 2022)
- Cuofano G, *The Multi-Billion Dollar Subscription Based CRM*, FourWeekMBA. [Online]. Available at: https://fourweekmba.com/salesforce-business-model/. (Accessed: 5 Jan 2022)
- *Cuofano G., The Physical Platform for AI & Autonomous Driving*, FourWeekMBA. [Online]. Available at: https://fourweekmba.com/nvidia-business-model/. (Accessed: 5 Jan 2022)
- David Shedden, D. (2015) *Media History: Hudson River crash-landing photo sent with Twitter* [Online] Available at: https://www.poynter.org/reporting-editing/2015/today-in-media-history-2009-hudson-river-crash-landing-photo-sent-with-twitter/. (Accessed: 15 Nov 2021) Etter, M. (2014) Broadcasting, reacting, engaging: Three strategies for CSR communication in Twitter. Journal of Communication Management, 18(4), pp. 322–342. [Online]. Available at: https://abeuk.online/sites/default/files/files/6UBES_Article_12_0.pdf. (Accessed: 15 Nov 2021)
- Enderle R. (2020) *Cisco and the Critical Rebirth of HR*. IT Business Edge. [Online]. Available at: https://www.itbusinessedge.com/applications/cisco-and-the-critical-rebirth-of-hr/. (Accessed: 1 Feb 2022)
- Environmental Stewardship Policy, 2016. Corporate Social Responsibility. *INGRAM report.* [Online] Available at: https://corp.ingrammicro.com/IM.Com/media/Ingrammicro/Newsroom/2016_CorpSocRespReport_LR-(1).PDF
- Environmental, Social and Governance. Splunk. [Online]. Available at: https://www.splunk.com/en_us/about-us/esg-overview.html. (Accessed: 1 Feb 2022)
- ESG Reporting Hub and 2021 Cisco Purpose Report. CISCO. [Online]. Available at: https://www.cisco.com/c/en/us/about/csr.html. (Accessed: 1 Feb 2022)
- Examining Corporate Social Responsibility in the Industrial Space. 2019. [Online]. Available at: https://www.thomasnet.com/insights/corporate-social-responsibility-examples/ (Accessed: 4 June 2021)
- Farquhar S. (2014) *Pledge 1%: a new model for corporate philanthropy*. Atlassian. [Online]. Available at: https://www.atlassian.com/blog/announcements/corporate-philanthropy-pledge-1-percent. (Accessed: 6 Jan 2022)
- Fore H., & Koop W. (2021) *Reimagining education, together*. UNICEF. [Online]. Available at: https://blogs.unicef.org/blog/reimagining-education-together/. (Accessed: 1 Feb 2022)
- Friedman, M. (1970*) A Friedman doctrine-- The Social Responsibility of Business Is to Increase Its Profits*. The New York Times [Online]. Available at: https://www.nytimes.com/1970/09/13/archives/a-friedman-doctrine-the-social-responsibility-of-business-is-to-html (Accessed: 3 June 2021).
- G. Serafeim (2020) Social-Impact Efforts That Create Real Value. Harvard Business Review. [Online]. Available at: https://hbr.org/2020/09/social-impact-efforts-that-create-real-value. (Accessed: 3 Jan 2022)
- Grimes, S. (2008) Unstructured data and the 80 percent rule. *Carabridge Bridgepoints* [Online]. Available at: http://breakthroughanalysis.com/2008/08/01/unstructured-data-and-the-80-percent-rule/. (Accessed: 5 Nov 2021)

- Gupta A. (2020) *How Confluence provides Business Value to a Startup Founder*. UX Planet. [Online]. Available at: https://uxplanet.org/how-confluence-provides-business-value-to-a-startup-founder-d6d7f9390ecf. (Accessed: 1 Feb 2022)
- Hope, B. (2022) *How Nvidia is fighting climate change in the Omniverse*, Sustainability. [Online]. Available at: https://sustainabilitymag.com/esg/how-nvidia-fighting-climate-change-omniverse. (Accessed: 12 Jan 2022)
- How Atlassian Built a $10 Billion Growth Engine. NiraBlog.com. [Online]. Available at: https://nira.com/atlassian-history/. (Accessed: 3 Jan 2022)
- Huger J.W. (2015) Outreachy and the road toward diversity". Opensource.com. [Online]. Available at: https://opensource.com/life/15/8/interview-marina-zhurakhinskaya-outreachy. (Accessed: 29 Jan 2022)
- Is Technology Changing the Way We Volunteer? July 18, 2020. [Online]. Available at: https://vomo.org/blog/is-technology-changing-the-way-we-volunteer/. (Accessed: 1 Feb 2022)
- J. Fee. *How Has Corporate Social Responsibility Changed in 2021? Empower Your Employees*. [Online]. Available at: https://www.salesforce.com/blog/corporate-social-responsibility-empower-employees/. (Accessed: 5 Jan 2022)
- Jay Peters (2020) *Elon Musk says Tesla's stock price is too high, and now it has fallen*. [Online]. Available at: https://www.theverge.com/2020/5/1/21244136/elon-musk-tesla-stock-price-too-high-fall-tweet. (Accessed: 13 Sept 2021)
- Jurkowitz, M., & Vogt, N. (2013) *On Twitter: Anger greets the Zimmerman verdict.* Pew Research Center. [Online]. Available at: https://www.pewresearch.org/fact-tank/2013/07/17/on-twitter-anger-greets-the-zimmerman-verdict/. (Accessed: 1 Nov 2021)
- Kapok (2016) *Most Fortune 500 CEOs still sit on social media sidelines*. [Online]. Available at:*www.cio.com. (Accessed: 5 June 2021)*
- Keith Davis (1973) *Iron Law of Responsibility*. [Online]. Available at: *www.clutejournals.com*. (Accessed: 3 June 2021)
- Keller. J. (2010) *Evaluating Twitter's Iran Revolution [Online]. Available at:* https://www.theatlantic.com/technology/archive/2010/06/evaluating-irans-twitter-revolution/58337/. (Accessed: 2 Nov 2021)
- Kington, T. (2013) 'Vatican offers 'time off purgatory' to followers of Pope Francis tweets' *The Guardian*, 16 July 2013 [Online]. Available at: https://www.theguardian.com/world/2013/jul/16/vatican-indulgences-pope-francis-tweets. (Accessed: 15 Nov 2021)
- Lake S. (2021) *Adobe announces $3 million in donations to Black, Hispanic universities*. Fortune Education. September 14, 2021. [Online]. Available at: https://fortune.com/education/business/articles/2021/09/14/adobe-announces-1-million-donations-to-black-hispanic-universities/. (Accessed: 25 Jan 2022)
- Landing Adobe, [Online]. Available at: https://landing.adobe.com/en/na/products/marketing-cloud/59361-forrester-emss-wave.html. (Accessed: 12 Jan 2022)
- Maidenberg M. (2020) "Some Companies Say They Want to Be Antiracist. What Does That Mean?" The Wall Street Journal, July 2. [Online]. Available at: https://www.wsj.com/articles/some-companies-say-they-want-to-be-antiracist-what-does-that-mean-11593698759. (Accessed: 7 Jan 2022)
- Matt Levine (2021) *The Meme Stocks Can't Fail*. [Online]. Available at: https://www.bloomberg.com/news/newsletters/2021-07-15/money-stuff-the-meme-stocks-can-t-fail. (Accessed: 10 Sept 2021)
- McKinsey report (2009). McKinsey global survey results: how companies are benefiting from Web 2.0, McKinsey&Company [Online]. Available at: http://www.broadbandillinois.org/uploads/cms/documents/bewe09.pdf. (Accessed: 13 Nov 2021)
- Meyer, J. (2020) *History of Twitter: Jack Dorsey and the Social Media Giant*. [Online] Available at: https://www.thestreet.com/technology/history-of-twitter-facts-what-s-happening-in-2019-14995056. (Accessed: 3 Nov 2021)
- Millio D. (2020) *New Initiative from SAP: Spotlight Black Businesses*. SAP News. [Online]. Available at: https://news.sap.com/2020/07/spotlight-black-businesses-new-sap-initiative/. (Accessed: 31 Jan 2022)
- Morgan S. (2020) A *New Era: Splunk Welcomes Its First Chief of Social Impact, Kriss Deiglmeier*. [Online]. Available at: https://www.splunk.com/en_us/blog/splunk-for-good/a-new-era-splunk-welcomes-its-first-chief-of-social-impact-kriss-deiglmeier.html. (Accessed: 1 Feb 2022)

- Nakagawa I. (2021) *Thought Leadership to Powering an Inclusive Future for All*. [Online]. Available at: https://news-blogs.cisco.com/apjc/2021/07/16/to-powering-an-inclusive-future-for-all/. (Accessed: 30 Jan 2022)
- Nvidia Corporate Social Responsibility Report (2021). [Online]. Available At: https://images.nvidia.com/aem-dam/Solutions/documents/FY2021-NVIDIA-CSR-Social-Responsibility.pdf. (Accessed: 7 Jan 2022)
- *NVIDIA to Acquire Arm for $40 Billion, Creating World's Premier Computing Company for the Age of AI*, September 13 (2020). [Online]. Available at: https://nvidianews.nvidia.com/news/nvidia-to-acquire-arm-for-40-billion-creating-worlds-premier-computing-company-for-the-age-of-ai. (Accessed: 7 Jan 2022)
- NVIDIA.com, How NVIDIA and our employees are responding to the COVID-19 crisis. [Online]. Available at: https://www.nvidia.com/en-us/csr/our-response-to-covid-19/. (Accessed: 10 Jan 2022)
- NVIDIA.com. [Online]. Available at: https://www.nvidia.com/it-it/. (Accessed: 5 Jan 2022)
- Parity, Adobe. [Online]. Available at: https://www.adobe.com/diversity/parity/overview.html. (Accessed: 25 Jan 2022)
- Paul A. Eisenstein (2018) *Tesla stock plummets after Elon Musk smokes weed on live show and two execs quit in one day*. [Online]. Available at: https://www.nbcnews.com/tech/tech-news/tesla-stock-plummets-after-elon-musk-smokes-weed-live-show-n907476. (Accessed: 9 Sept 2021)
- Philantropy/Salforce.com. [Online]. Available at: https://www.salesforce.com/company/philanthropy/overview/. (Accessed: 5 Jan 2022)
- Power management guide. RedHat.com. [Online]. Available at: https://access.redhat.com/documentation/en-us/red_hat_enterprise_linux/7/html-single/power_management_guide/index. (Accessed: 29 Jan 2022)
- Privacy Policy Atlass. Atlass Movement. [Online]. Available at: https://www.atlasmovement.org/privacy_policy?locale=en. (Accessed: 1 Feb 2022)
- RALEIGH, N.C. (2021) *Red Hat Joins OS-Climate, Lends Open Source Leadership to Financial Services Industry Effort to Address Climate Change*. [Online]. Available at: https://www.redhat.com/en/about/press-releases/red-hat-joins-os-climate-lends-open-source-leadership-financial-services-industry-effort-address-climate-change. (Accessed: 29 Jan 2022)
- Red Hat Enterprise Linux. RedHat.com. [Online]. Available at: https://www.redhat.com/it/technologies/linux-platforms/enterprise-linux. (Accessed: 28 Jan 2022)
- RedHat Business Model. Stanford. [Online]. Available at: https://cs.stanford.edu/people/eroberts/cs201/projects/open-source/econ.htm. (Accessed: 28 Jan 2022)
- RedHat, 2020. Community and Social Responsibility Report. [Online]. Available at: https://www.redhat.com/rhdc/managed-files/rh-community-social-responsibility-2020-ebook-f26107-202011-en.pdf. (Accessed: 28 Jan 2022)
- RedHat's Company Overview. [Online]. Available at: https://vizologi.com/business-strategy-canvas/redhat-business-model-canvas/. (Accessed: 27 Jan 2022)
- Robert Young during an interview in 1994. [Online]. Available at: https://www.firstxw.com/view/230247.html. (Accessed: 28 Jan 2022)
- Roomy Khan (2021) *Social Media Fueled Stock Market Trading*. [Online]. Available at: https://www.forbes.com/sites/roomykhan/2021/03/08/social-media-fueled-stock-market-trading-the-unsuspecting-need-to-be-protected/. (Accessed: 11 Sept 2021)
- Rossolillo N. (2017) *Everything Investors Need to Know About Splunk*. The Motley Fool. [Online]. Available at: https://www.fool.com/investing/2017/07/22/everything-investors-need-to-know-about-splunk.aspx. (Accessed: 1 Feb 2022)
- Salesforce.com, [Online]. Available at: https://www.salesforce.com/it/?ir=1. (Accessed: 5 Jan 2022)
- SAP and UNICEF partner to give young people training in job skills to power the future workforce. Unicef. [Online]. Available at: https://www.unicef.org/partnerships/sap. (Accessed: 30 Jan 2022)
- SAP Company Information. SAP.com. [Online]. Available at:https://www.sap.com/about/company.html. (Accessed: 30 Jan 2022)
- SAP Corporate Social Responsibility. SAP.com. [Online]. Available at: https://assets.cdn.sap.com/sapcom/docs/2021/02/caa3234d-d07d-0010-87a3-c30de2ffd8ff.pdf. (Accessed: 30 Jan 2022)

- SAP Launches 5 & 5 by '25 Initiative, Rallying Businesses to Spend More with Social Enterprises and Diverse Suppliers. SAP News. October 5, 2020. [Online]. Available at: https://news.sap.com/2020/10/sap-launches-55by25-purposeful-procurement/. (Accessed: 1 Feb 2022)
- SAP Partners with NASSCOM Foundation to Open 25 NDLM Centers Across India. SAP News. November 17, 2015. [Online]. Available at: https://news.sap.com/india/2015/11/sap-partners-with-nasscom-foundation-to-open-25-ndlm-centres-across-india/. (Accessed: 13 Jan 2022)
- SAP Sustainability. SAP.com. [Online]. Available at: https://www.sap.com/about/company/purpose-and-sustainability.html. (Accessed: 30 Jan 2022)
- SAP's Business Strategy Case Study. Vizologi. [Online]. Available at: https://vizologi.com/business-strategy-canvas/sap-business-model-canvas/. (Accessed: 30 Jan 2022)
- SAP's Response to COVID-19. SAP News. [Online]. Available at: https://news.sap.com/covid-19/. (Accessed: 31 Jan 2022)
- Sickler J, 2019. *Reputational Risk and How to Manage it.* Reputation Management [Online]. Available at: https://www.reputationmanagement.com/blog/reputational-risk/ (Accessed 10 June 2021)
- SPLUNK Corporate Social Responsibility Report, 2020. SPUNK. [Online]. Available at: https://www.splunk.com/pdfs/environmental-social-and-governance-at-splunk.pdf. (Accessed: 1 Feb 2022)
- Splunk Solutions for COVID-19 Response, 2020. SPUNK. [Online]. Available at: https://www.splunk.com/pdfs/ebooks/splunk-response-to-covid-19-pbst.pdf. (Accessed: 1 Feb 2022)
- Sustainability Atlassian. Atlassian.com. [Online]. Available at: https://www.atlassian.com/company/corporate-social-responsibility. (Accessed: 28 Jan 2022)
- Sustainable Development Goal. *Launch of new sustainable development agenda to guide development actions for the next 15 years* [online]. Available at: https://www.un.org/sustainabledevelopment/blog/2015/12/launch-of-new-sustainable-development-agenda-to-guide-development-actions-for-the-next-15-years/
- Swart J. (2019) *Chuck Robbins decided to 'change everything' at Cisco, and it's workin.* [Online]. Available at: https://www.marketwatch.com/story/chuck-robbins-decided-to-change-everything-at-cisco-and-its-working-2019-05-25. (Accessed: 1 Feb 2022)
- Tae, K., (2018) 'Don't buy the "Twilight zone" comeback rallies in Snap and Twitter *shares' Consumer News and business Chanel*, February 22, 2018 [Online].Available at: https://www.cnbc.com/2018/02/22/moffettnathanson-dont-buy-the-snap-and-twitter-comebacks.html. (Accessed: 11 Nov 2021)
- Taking our culture to the next level. Cisco. [Online]. Available at: https://www.cisco.com/c/m/en_us/about/corporate-social-responsibility/2019/next-level.html. (Accessed: 28 Jan Feb 2022)
- The role of technology in powering an Inclusive Future. CISCO. [Online]. Available at: https://www.cisco.com/c/dam/m/en_us/about/cxo-agenda/inclusive-future/the-role-of-technology-in-powering-an-inclusive-future.pdf. (Accessed: 23 Jan 2022)
- Turn Data into Doing. Spunk.com. [Online]. Available at: https://www.splunk.com/. (Accessed: 1 Feb 2022)
- US Securities and Exchange commission (2018) 'On Musk Settles SEC Fraud Charges; Tesla Charged With and Resolves Securities Law Charge'. September 29, 2018. [Online] Available at: https://www.sec.gov/news/press-release/2018-226. (Accessed: 10 Nov 2021)
- Volunteer Group Responsibilities. ActivateGood.com. [Online]. Available at: https://activategood.org/groupresponsibilities/. (Accessed: 29 Jan 2022)
- Wagner, K. (2021) 'Twitter has a scary amount of power' *Bloomberg*, 22 Aprile 2021 [Online]. Available at: https://www.bloomberg.com/news/articles/2021-04-22/twitter-has-scary-amount-of-power-co-founder-biz-stone-says. (Accessed: 15 Nov 2021)
- What is Corporate Social Responsibility (CSR)? [Online]. Available at: https://corporatefinanceinstitute.com/resources/knowledge/other/corporate-social-responsibility-csr/. (Accessed: 3 Sept 2021)
- Williams, D.K. & Scott, M.M., (2012) 'New Research on Why CEOs Should Use Social Media' *Harvard Business Review* [Online]. Available at: https://hbr.org/2012/07/new-research-on-why-ceos-shoul (Accessed 6 June 2021)

- Winkler B. (2020) *WirVsVirus Hackathon – an uplifting story*. SAP Blog. March 25, 2020. [Online]. Available at: https://blogs.sap.com/2020/03/25/wirvsvirus-hackathon-an-uplifting-story/. (Accessed: 1 Feb 2022)
- Winners of CodeTheCurve Global Hackathon find Innovative Solutions to COVID-19 Crisis. UNESCO. May 01, 2020. [Online]. Available at: https://en.unesco.org/news/winners-codethecurve-global-hackathon-find-innovative-solutions-covid-19-crisis. (Accessed: 1 Feb 2022)
- Yurieff, K. (2018) *Snapchat stock loses $1.3 billion after Kylie Jenner tweet*. [Online]. Available at: https://money.cnn.com/2018/02/22/technology/snapchat-update-kylie-jenner/index.html. (Accessed: 11 Sept 2021)
- Zeen A. (2020) *Cisco Business Model – How does cisco make money*. [Online]. Available at: https://zeen.com/cisco-business-model-how-does-cisco-make-money/. (Accessed: 8 Jan 2022)