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"FINANCIAL COMMUNICATION AND CSR: AN INVESTIGATION OF ITALIAN UTILITIES AND FINANCIAL SERVICES DISCLOSURE THROUGH TWITTER FROM 2016 TO 2018"

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Firma dello studente

Index

Introduction

Financial communication represents one of the most crucial functions of business organizations as it is an essential element of market efficiency and a key component for stakeholders' confidence and credibility.

Hutchins (2008) defined the financial communication as a function encompassing all the strategies, tactics, and tools used to share financial data and information with investors and other stakeholders. As suggested by Laskin (2007), the aim of financial communication is that of increasing trust and reducing uncertainty risk in order to create a good environment that encourages investments.

With this premise, firms' communication strategy towards core stakeholders should go beyond the mandatory financial communication (Hoffman and Fieseler, 2012). Non-financial disclosure it is important for shareholders, and in general for all stakeholders, as it can contribute to the reduction of information asymmetry and market inefficiency (Arvidsson, 2011), and to the capture of additional firms value (Alwert et al., 2009) that could not be captured from financial disclosure alone.

Webranking by Comprend (2018) argues that the environmental, social and governance (ESG) criteria are becoming increasingly relevant to institutional investors. In fact, the CEO of BlackRock, the largest fund manager in the world, is now asking his own fund managers to consider ESG criteria within their own investment decisions.

Given the importance that financial and non-financial communication have for stakeholders, this dissertation has the aim of investigating how financial and CSR information through Twitter evolved over the period 2016-2018 in a group of Utilities and Financial Services companies.

Recent years academic literature has shown how Twitter has started playing an important role in the capital market. Jung, Naughton, Tahoun, and Wang (2016) found that roughly half of S&P 1500 firms have created either a corporate Twitter account or a Facebook page, with a growing preference for Twitter (Jung et al, page 226, 2016).

Some recent investigations showed the impact that Twitter information dissemination and disclosure can have in the stock market environment and whether Twitter is useful in predicting a firm's earnings and stock returns (Bartov, Faurel, and Mohanram, 2017; Blankespoor, Miller and White, 2014; Cade, 2018; Albarrak, Elnahass, Papagiannidis and Salama, 2020).

Furthermore, prior studies generally found evidence that CSR communication may have an impact on how stakeholders perceive an organization and have an influence on their relationships with the organization itself (Lii and Lee, 2012; Sen and Bhattacharya, 2001).

Regarding CSR information, the focus of this work will also be on analysing how the non-financial disclosure and digital transparency changed after the implementation in Italy of the European Directive 2014/95/EU.

The research is based on a sample of fourteen firms of two different industries, seven utilities companies and seven financial services companies that released Financial, CSR and Generic tweets for three consecutive years, from 2016 to 2018 (i.e. 42 firm-year observations). The method of the *Content Analysis* was adopted to code all the observations and to allow the author to answer to the four research questions which on the one hand confirmed or contradicted results already highlighted in previous works and that on the other hand answered new questions on which no studies have been done yet.

Firstly, the qualitative empirical research will introduce the digital transparency performance of Italian companies, compare it with the European results and examine how it changed after the introduction of the non-financial disclosure regulation.

Secondly, the analysis will show how the CSR and financial related information change in the years of analysis and whether it can be observed an improvement in the approach companies adopt in terms of managerial orientation (i.e. Results, Actions, Objectives, Commitment, Risks and Storytelling). In other words, the research will try to understand whether the sample companies tend to release more boilerplate information (like Commitment and Storytelling) or whether they prefer communicating more substantive information (like Actions and Results).

Furthermore, this study is a pilot test aiming to understand how firms use Twitter, either as a dissemination or as disclosure tool, or both, and how these choices changed from 2016 to 2018.

Regarding the way companies use Twitter, it will be interesting to comprehend whether they are strategic in the choice of CSR and financial information to be disclosed through Twitter; in other terms, are the contents released both positive and negative or there is a tendency in communicating only good and neutral results?

Finally, the analysis will explore whether to different tweets content and type of information correspond different stakeholders' reactions. This will allow to understand whether the companies approach when communicating financial and non-financial information on Twitter is in line with stakeholders' interests or whether there actual exist a gap between their information needs and the firms' communication strategy on Twitter.

Part I – Literature Review

1.1. Financial Communication

Communication plays a key role in finance since financial economists and practitioners tend to emphasize the centrality of the concept of information in capital markets (Laskin, 2018).
Hutchins (2008) defined the financial communication as an instrument composed by all the strategies, tactics, and tools used to share financial data and recommendations with investors and other stakeholders. This extremely important instrument allows companies to manage their external relations and to issue financial contents that stakeholders are interested in order to be able to assess the value of the firm. Indeed, the aim of this kind of information is that of supporting and strengthening firms' market value and its credibility to external and internal stakeholders (Avram, 2017).
Corporate financial communication provides different kind of information:

- Firm's global image;
- Firm's management message;
- Firm's long-term vision;
- Firm's accounting information (balance sheet, profit and loss account, balance sheet, cash flows, etc.);
- Firm's financial calendar;
- Firm's shareholding structure;
- Firm's corporate governance.

As companies are engaged in disclosing their intangible value, financial communication is increasingly combined with non-financial disclosure as it allows stakeholders to capture additional firms value (Alwert et al, 2009).
In the next sections the focus will be on the analysis of the information flow in the financial market; the role of investor relations in financial communication; the tools of financial communication and finally, a framework for firm communication will be described, in order to introduce the concepts of disclosure, dissemination and stakeholders' reactions, which will be crucial in the empirical research of this work.
As regards CSR, attention will be given to the importance of non-financial information disclosure for stakeholders, to the quality of released information and to the European directive on mandatory non-financial disclosure and its effects on CSR information disclosure and practices.

1.1.1. Information flow in the financial market

Financial communication goal is to provide investors with the information that is needed to make good investment decisions (Barone-Adesi, 2002). This is, indeed, the logic that financial disclosure regulations follow. The American entity SEC (Secure Exchange Commission) for example states that: *"All investors, whether large institutions or private individuals, should have access to certain basic facts about an investment prior to buying it, and so long as they hold it. Only through the steady flow of timely, comprehensive, and accurate information can people make sound investment decisions."*

The investment decision problem, that is choosing in which companies and types of securities to invest, gives rise to the need of corporate financial communication, both mandatory and voluntary, and at the same time motivates other subjects to take part to financial markets as information intermediaries: financial intermediaries (i.e. investment funds, insurance companies, and banking institutions), analysts (buy side and sell side), media, and rating agencies aim is to improve qualitative and reliable corporate financial communications, thus supporting and enhancing investment decisions quality (Palmieri and Palmieri, 2012).

Figure 1 illustrates the communication flows between companies and investors, all the information intermediaries that "link" them, and all the text types each subject communicate to financial markets.

Information intermediaries help reducing information asymmetries and appear as the least biased source of information: financial intermediaries offer to the financial markets their products (i.e. deposits, loans, funds) and exploit their expertise to connect investor resources to companies and vice versa; analysts typically produce technical evaluations useful to give recommendations whether to buy, sell or hold a stock; rating agencies focus on companies' ability to repay debts by assessing their solidity; financial media report and interpret facts, combine different point of views concerning an issue, and directly influence investor's decisions by setting the agenda of the important issues and orienting the attention towards certain companies rather than others (Palmieri and Palmieri, 2012; Bushee et al., 2010).

Information flows in the financial market

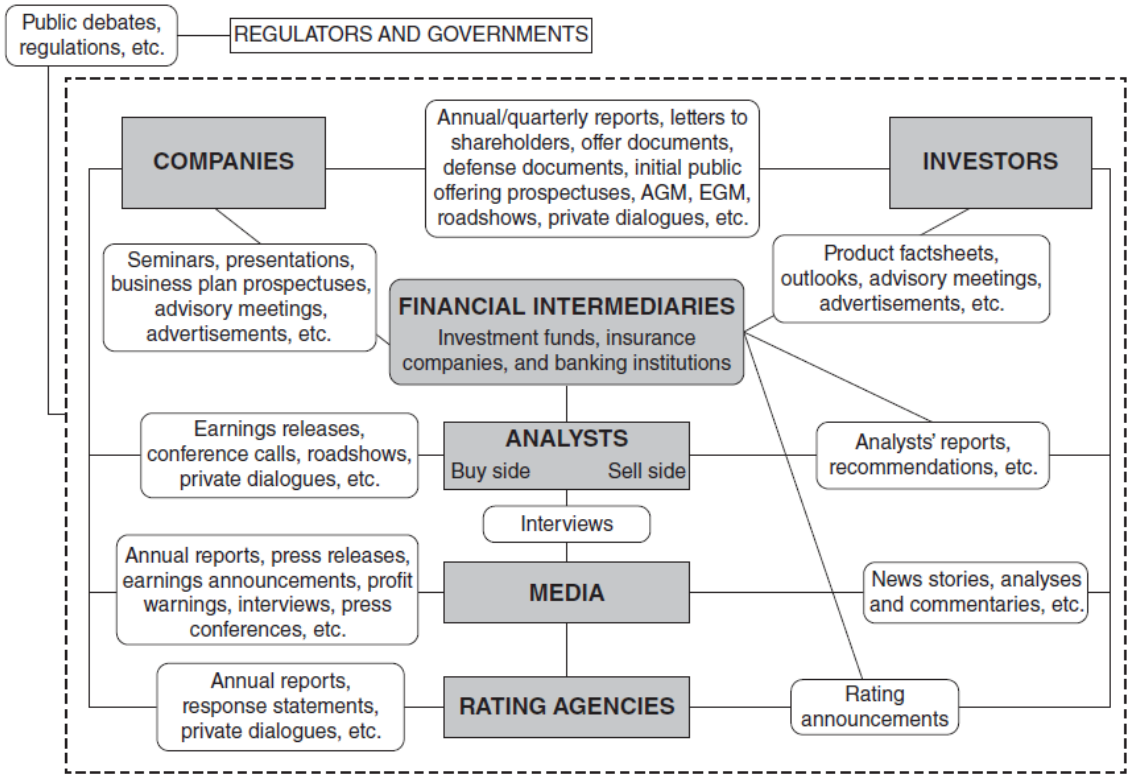

Figure 1: Adapted from Palmieri and Palmieri (2012).

The players of financial markets interact with each other by releasing text types that contribute to decrease the information asymmetries. Companies for instance disclose some compulsory information such as annual and quarterly reports, proxy statements, and offer documents, others are non-mandatory communications, like letters to shareholders and advertisements (Palmieri and Palmieri, 2012).

1.1.2. Financial Communication & Investor Relations

Firm communication and the role of investor relations are becoming a growing area of research in accounting literature as it is a cause of investor reactions and capital market outcomes. Firms' main responsible of external communication is the Investor Relator Officer (IRO). To describe the IRO role one widely accepted definition is provided by the National Investor Relations Institute's (NIRI) Board of Directors (2003): "*a strategic management responsibility that integrates finance, communication, marketing and securities law compliance to enable the most effective two-way communication between a company, the financial community, and other*

constituencies, which ultimately contributes to a company's securities achieving fair valuation".

According to Laskin (2018) the contribution of investor relations to companies consists in helping investor and analysts to develop more reliable expectations about share prices by improving the availability and quality of information disclosed. Thus, by releasing both financial and non-financial information (as, for instance, CSR), IROs, or whoever is in charge for external communication, are able to manage stakeholders' expectations about past and future firms' performance. The role of investor relators is not that of creating relationships but helping in creating expectations, *"which make it easier to ignore temporarily blips in performance"* (Laskin, 2018).

Financial communication and investor relations have gone through different eras in the last century and each of them was characterized by different features in terms of information needs, content disclosure and communication tools.

Laskin (2018) discusses about three different periods where the investor relator officers have evolved from a public relations role to a more strategic and financial one.

In the earliest era, the *communication era* (from 1945 to 1975), IRs function had a poor financial knowledge, lacked strategic and managerial activities and it was held by Public Relations function; the stream of information was one-way and it was disclosed through mass media channels that did not allow the collection of any feedback from shareholders. The goal of the companies was not that of listening their shareholders but that of promoting its products and sell its shares to a large amount of individual retail investors (Morrill, 1995).

In the second era, the *financial era* (from 1975 to 2005), IROs shifted from being a public relations function to a more strategic one. The focus of IRs activities changed from the numerous private shareholders to professional and institutional ones, which started demanding for new communication channels and higher quality of information. By making use of new communication tools, such us one-to-one meetings, the aim of IROs was that of pushing the stock price up as much as possible. Indeed, according to Laskin (2008), investor relations function at that time was associated to the marketing activity with the aim of improving the company's valuation, which led to the constant need of pushing up the share price up.

The current era, the *synergy era* (2005 -), IROs are required to possess both communication and financial skills. Communication between companies and stakeholders has become two-way as listening to investor and analysts, and the collection of feedback from the financial community have become of vital importance. Monologues have been substituted by dialogues, which help IRs to keep aligned the interest of their employers and that of their external target. In other words, investor relators are nowadays charged of releasing comprehensive and credible

corporate disclosure, engaging in a proactive relationship management, and fostering a favourable capital market reputation (Laskin, 2018).

Finally, over the last year, investor relations function has moved beyond the mere financial information reporting activities in order to start including non-financial related information, hence ensuring that both capital market participants and other stakeholders possess all the relevant information they need.

1.1.3. The tools for Financial Communication

Communication can be one-way and two-way and depending on the firm's financial communication strategy and on which communication tools the firms and investor relators decide to adopt, they will support different levels of stakeholder engagement: larger the use of two-way communication means, higher will be the stakeholder engagement (Bellucci et al., 2018).

The main purpose of one-communication tools is that of informing stakeholders, while two-way communication means allow stakeholders to be involved in the communication process, thus be empowered.

In addition to two-way (dialogue) and one-way communication means, in the last decades companies have started to interact with their stakeholders through the use of social media.

The Investor Relations function is responsible of managing the crucial stakeholder relations, that is those between companies and capital markets stakeholders (Laskin, 2009). Previous literature on information disclosure points out that shareholders, and more generally all the stakeholders, do not receive a continuous flow of information about the business development of the company, thus the task of IR is that of reducing as much as possible information asymmetries that could arise between business insiders and the financial community (Botosan, 1997; Merton, 1987).

According to international auditor PricewaterhouseCoopers (2009), corporate reporting represents the disclosure and presentation of corporate data, which commonly includes compulsory financial reporting regulated by international standards such as IFRS or GAAP, corporate governance disclosure, and, in the recent years, corporate social responsibility reporting.

The annual report is the most significant and most adopted communication tool of corporate reporting. It is a highly sophisticated one-way communication tool whose aim is, on the on hand, that of providing financial information that meet regulatory requirements (Stanton and Stanton, 2002), and, on the other hand, that of enhancing company's positioning and promoting

stakeholder relations, by presenting non-financial information as well (Laskin, 2018). To make the annual report effective and useful, it has to be readable otherwise stakeholders are not able to capture the relevant information and analysts tend to issue reports that have greater dispersion and are less accurate, due to the language complexity (Fakhfakh, 2015)

Other one-way communication instruments are IR websites, press releases and internet press releases. Press releases differ from annual reports since they disclose more fragmented and short-term information, while annual reports disclose more comprehensive data. Press releases are used by public companies to issue highly discretionary content and they can follow a proactive or defensive strategy (Aerts, 2009).

With the increasing information need of stakeholders (customers, employees, community) *"investor relations has moved beyond a mere reporting function and has taken on a more strategic role through proactive relationship management, two-way symmetrical communication, facilitation of dialogue and corporate listening, and fostering a favourable capital market reputation"* (Laskin, 2018).

When analysing which could be most effective two-way communication means for financial communication, it does not exist a unique answer as IRs professionals have adopted different combinations of tools that change in importance year after year according to the evolution of the information needs of the financial market and more generally of all the stakeholders.

The are several tools that allow companies to face all the arising stream of information needs, from developing an effective website and high-quality annual report and presentations, to organizing investor days and conference calls to update investors and financial analysts on firm's performance and future objectives. Among all the means, social media were one of the biggest challenges and opportunities of the last decade.

1.1.4. A framework for firm communication and investor response

As discussed by Blankespoor (2018), it is important to outline the main components of firm communication: disclosure, dissemination, investor response and management response.

a) Disclosure: it is the releasing of all those kinds of information that may have an impact on investment decision, stakeholders' reactions and finally, firm's valuation.

   Before releasing the information, the company, and more specifically investor relators and public relations officers, has to decide: "What" to communicate, in terms of the selection of information it wants to focus on during the announcement, such as actual rather than forecasts of future performance; "How" to present figures, in terms of medium to use and verbal or non-verbal attributes to choose; "Who" or whose

information view will be adopted during the presentation, like a third-person (the company), a collective (we) or individual first-person (I), such as the CEO or CFO (Blankespoor, 2018).

b) Dissemination: once the disclosure package has been created, investor relators have a wide range of communication channels where to spread the information and make it as much available and readable as possible: from the traditional means of communication, such as newspapers, conference calls and shareholder meetings, to the alternative ones like the use of social media.

c) Stakeholders response: After the information has been disclosed and disseminated through the various communication channels, it is the turn of investors and stakeholders to intervene in the communication process. They can respond to the disclosure through capital market actions and/or through written and verbal communications to management (privately or publicly).

   The response process consists in extracting, interpreting and assessing the credibility of the information and its issuer (Blankespoor, 2018). Stakeholders collect all the quantitative and qualitative information, as well as presentation attributes, in order to extract and interpret the information that has been released. Prior literature finds that investors' costs of extracting information depends also on the choices that firms make when communicating information, and in turn information costs affect investor response (Bloomfield, 2002; Grossman & Stiglitz, 1980; Libby & Emett, 2014). For example, firms that choose Direct Access Information Technology[1] to disclose and disseminate their information reduce investors' acquisition costs, allowing more potential investor to acquire and interpret the information (Blankespoor, Miller, White, 2014).

   Moreover, information costs could be higher for less sophisticated investors as they are less able to process and respond to less readable disclosures (Asay, Elliott & Rennekamp, 2017; Lawrence, 2013; Miller, 2010; Rennekamp, 2012), in this sense the way firms decide to disclose information affects investors' information costs and thus investor response. When the cost of information gets higher, investors will likely request a higher rate of return of their investments (Obeng, 2019).

   After the information has been interpreted, the stakeholders assess the level of credibility of the data that has been disclosed, which depend on two main factors: the quality and the entity or person issuing the information. The verifiability of the

[1] Blankespoor, Miller and White (2014) refer to the technologies (i.e. Twitter) that allow firms to directly access investors as DAITs (Direct Access Information Technology). They represent a "push" technology, as they allow companies to transmit information to the investors rather than requiring the user to ask for the information needed.

information quality can also influence the perceived credibility. Hutton, Miller, & Skinner (2003) affirm that the inclusion of verifiable forward-looking statements increases investor response to good news management forecasts.

d) Management response: it is important for managers to react to investors and stakeholder's reaction, in particular the objective is to contain the discontent in case of bad news and to broaden the positive reactions to good news. When deciding the response, management and investor relators have to considers the potential capital market benefits as well as the costs (e.g., direct disclosure costs, proprietary costs, and litigation risk), as in any disclosure decision (Beyer, Cohen, Lys, & Walther, 2010). A lack of response must be carefully adopted as it may be interpreted as a confirmation of bad expectations (Hollander, Pronk, and Roelofsen, 2010).

1.2. Corporate Social Responsibility

The main goal of firm communication and investor relations is to increase trust and to reduce uncertainty risk in order to create a good environment that encourages investments (Laskin, 2007). With this premise, firm communication strategy towards core stakeholders, should go beyond the mandatory financial communication (Hoffman and Fieseler, 2012).

As already introduced above, the primary goal of investor relations is to achieve a fair valuation of companies, which is reached whenever investors perceive a trust-based relationship between them and the firm (Hillman and Keim, 2001). Unethical decisions and immoral management may hurt firms' stock prices, thus firms' valuation, since investors do not matter only about financial performance but also corporate social responsibility activities.

According to Brønn (2010), *"society, markets, and related laws require organizations to use transparent financial and non-financial communications with stakeholders"*. This is consistent with the increasing need and demand from investors and more generally from all stakeholders of CSR information (Eccles & Klimenko, 2019).

Nowadays firm communication does not include only financial communication and investor relations should not be associated anymore only to two-way communication with investors, as all stakeholders could take part to firm's "circle of influence" and thus have an impact on the overall firm's valuation.

Despite investors being the key stakeholder in investor relations, according to Laskin (2018), firm communication is to be addressed to a wider range of market participant, from internal stakeholders (i.e. management teams, employees and unions) to external stakeholders (i.e. finance industry stakeholders, supply chain partners, local communities, and governing entities)

Many researchers pointed out that CSR is becoming of crucial importance in the business run as there is relationship between CSR and corporate financial performance (CFP), even if a consensus has not been reached in empirical researches about the correlation of CSR and CFP (Scholtens, 2008).

1.2.1. The importance of CSR disclosure for stakeholders

Corporate Social Responsibility activities and disclosure is driven by the needs of different stakeholders. According to Ditlev-Simonsen and Wenstop (2013) there are some specific stakeholders (key-stakeholders) that act as agents that motivate companies to engage in CSR activities and consequently in disclosing non-financial information. Their research focuses on owners/shareholders, employees, customers, NGOs, and governments which are considered as the motivators of Corporate Social Responsibility. Ditlev-Simonsen and Wenstop (2013) found that shareholders are perceived to be the main motivator.

Moreover, the work published by Seok, Lim and Kim (2019) supports that CSR news reports have an impact on firm value. They ran an empirical analysis which showed the effect of word of mouth and advertising in the relationship between CSR news report and firm value. Their results highlight the importance of publicizing CSR activities and managing the information delivered to stakeholders, as it has a positive impact on firm value. Shareholders, in particular, should be the stakeholders mostly interested in non-financial information disclosure and dissemination as a higher public acknowledgment of CSR related actions contributed to a higher firm value, thus directly affecting shareholders' value (Seok, Lim and Kim, 2019).

Additionally, non-financial disclosure it is important for shareholders, and in general for all stakeholders, as it can be considered as a remedy for information asymmetry and market inefficiency (Arvidsson, 2011), and as a way to try to capture some of the values deriving from intangible assets (Alwert et al., 2009) that could not be captured from financial disclosure alone.

To conclude, both Fieseler (2011) and Schiereck and Königs (2008) sustain that key investors are increasingly considering CSR-related information in their analyses, mostly to gain a more complete understanding of the business model and strategy as well as to better assess the risks of investing in a company.

Given the importance of CSR disclosure for stakeholders, some countries have deemed it appropriate to make the disclosure of non-financial information mandatory and, among all, those related to CSR.

With respect to non-financial disclosure, some European countries introduced regulations to oblige companies to report annually on their environmental performance already in the

Nineties: among these we find some Northern Europe countries such as Denmark, the Netherlands, Norway and Sweden. In 2001, France approved a law that required companies to disclose their environmental and social impact, and in 2005, the UK introduced a similar mandate (Hess, 2007).

In order to increase the relevance, consistency and comparability of information disclosed by certain large companies and groups across the Union, in 2014 the European Union issued the Directive 2014/95, which has been implemented and adapted by all the EU Member States in the following years.

1.2.2. CSR reporting and quality of disclosure

Previous research on Corporate Social Responsibility disclosure underline the problem of an increasing lack of completeness and a reduction of the level of credibility of reporting practices, as well as a failure to impact sustainable development (Husillos, Larringa &Alvarez. 2011; Gray, 2010).

According to Suchman (1995) legitimacy is *''generalized perception or assumption that the actions of an entity are desirable, proper or appropriate"* within the society; firms in order to reach the organizational legitimacy tend to adopt different practices to influence or "manipulate" stakeholders' perception about them (DiMaggio & Powell, 1983; Deephouse, 1996; Suchman, 1995) and CSR management is part of those means that could make change perceptions.

Organizational legitimacy con be viewed from two perspectives and there exist two approaches that the literature proposes about the CSR management: the substantive approach and the symbolic approach (Ashforth and Gibbs, 1990).

Rodrigue, Magnan and Cho (2013) suggest that the substantive approach is adopted by firms that engage in CSR activities in order to bring changes within their organisation, thus in turn translating these changes into an enhancement of environmental performance, while the symbolic approach is adopted by those firms that result as environmentally committed without implementing important changes in their organisation and performance. Indeed, Hopwood (2009) underlines that is crucial that aims and objectives are followed by actions and consequences.

The substantive and symbolic CSR management make arise an important research question, as companies could increase the amount of information they provide, but not its quality; to address this question, Michelon, Pilonato and Ricceri (2014) investigated in which way firms tend to use CSR reporting practices, in particular the use of stand-alone reports, assurance, and GRI

reporting guidance, and their impact on disclosure quality. Their empirical research, based on 112 listed companies on the London Stock Exchange, found that 55% of the observations have CSR stand-alone report, 30% provide assurance over CSR information disclosure and 18% observe the GRI reporting standards.

Furthermore, Michelon, Pilonato and Ricceri (2014) found evidence that the majority of sentences composing firms' CSR reports do not disclose relevant CSR information, as on average only 116 sentences out of 318 contain CSR related information and the Standardized Density Index is negatively associated with all reporting practices (CSR report, Assurance, and GRI). Their research also demonstrates that although there exist a significant and positive relationship between stand-alone reports and the quantity of disclosure, none of the means of disclosure is associated with a higher quality of information. They conclude suggesting that all the analysed reporting practices led to a symbolic, rather than substantive approach.

1.2.3. Non-financial disclosure: voluntary vs mandatory

Corporate social responsibility activities have been significantly increasing in recent years.

Jackson, Bartosch, Avetlsyan, Kinderman, Knudsen (2019) support that *"a key public policy approach to CSR focuses on transparency by mandating the disclosure of non-financial information*".

Non-financial information may be regulated in two different ways: it may be mandated by the government (mandatory NFD) or it may be disclosed thanks to the business self-regulation (voluntary). Both cases have advantages and limits.

Ideal types of hard government regulation and business self-regulation

	Hard regulation by government	**Pure business self-regulation**
Ambit	Mandatory	Voluntary
Content	State-created rules	Business-created principles
Enforcement	Legal/administrative	Market/stakeholder engagement
Regulatory trade-offs	Minimum standards (stringency)	Best practices (flexibility)
	One-size-fits-all (rigidity)	Lowest common denominator (complacency)
	Focus on preventing irresponsibility	Focus on promoting responsibility

Table 1. Source: Jackson, Bartosch, Avetlsyan, Kinderman, Knudsen, 2019

Government hard regulation of CSR activities may result in legislative or economic instruments that are mandatory, composed by state-created rules, and whose breach may entail legal or administrative sanctions.

Conversely, pure business self-regulations emerge in a voluntary ambit and is characterized by business-created principles whose assessment is up to firm's stakeholders. Regarding the trade-offs of these two ideal types of regulations, Jackson et al. (2019) affirm that *"government regulation may be more stringent around minimum standards but suffer problems of rigidity as regards content if a 'one-size-fits-all' approach is followed, while business self-regulation may be more flexible in supporting best practices, but tolerate greater complacency towards firms' strategic non-compliance".*

Mandatory non-financial disclosure (NFD), such the one recently adopted by the European Union (Directive 2014/95/EU), has a hybrid character compared to the opposite types of above-mentioned regulations. It has the aim to promote transparency, which in turns decreases information asymmetries between companies and their stakeholders (Hess, 2007).

Prior literature (Steurer, 2013; Reid and Toffel, 2009; Hess, 2007) supports that mandatory non-financial disclosure is an hybrid form of regulation because (1) to be completely effective and binding, it needs the combination of civil regulation and business self-regulation (2) sometimes it focuses on enforcing disclosure requirements rather than sanctioning failure to adopt CSR-related policies.

Furthermore, although mandatory NFD is required by law, theoretically firms still have some flexibility in deciding the CSR content to disclose, as mandatory NFD does not impose any specific CSR activity (Antal and Sobezak, 2007).

1.2.4. European Directive (2014/95/EU – DLG 254 30 Dec 2016)

The European Union Directive 2014/95 as regards disclosure of non-financial and diversity information is the most prominent regulation in mandatory NFD discipline of recent years.

The Directive was issued by the European Parliament to regulate the mandatory *"disclosure of non-financial information (NFI) in respect of certain large undertakings [which] is of importance for the interests of undertakings, shareholders and other stakeholders"* (European Union, 2014). Its main goal was that of harmonising the non-financial reporting policies of each EU Member States and to encourage companies to shift from a voluntary type of disclosure to one that is mandatory (La Torre et al. 2018).

In Italy, the aforementioned directive has been implemented through the legislative decree 30 December 2016, n. 254 which provided for the obligation for public companies with more than 500 employees to report, in the financial statements or in a specific and independent document, non-financial information and on the diversity. In particular, the non-financial information to be reported can be ascribable to environmental protection, social responsibility and treatment of employees, respect for human rights, anti-corruption and bribery, and diversity on company boards (European Commission).

Leopizzi, Coronella and Pizzi (2018) studied how Italian companies are reacting to the new non-financial information regulation; their research aims to assess, on the one hand, the level of compliance of the non-financial disclosure of the recipient companies of Legislative Decree 254/16, and to carry out, on the other hand, a comparison analysis between the reported information before and after the introduction of the decree itself, to verify the effect produced by the same on the quality of disclosure.

Their research presents a statistical inference analysis to define the factors capable of affecting the quality level of the NFD, and a qualitative analysis where a *content analysis* led to the definition of a Non-Financial Score. The Non-Financial Score aimed at measuring and quantifying the level of compliance to specific informative aspects including: the analysis of materiality, the representation of the business model, communication of the sustainability policy, the main risks, the system of indicators and other more specific information required by the current decree (already mentioned above).

To measure each element, Leopizzi et al. (2018), through a manual analysis, attributed a score of 0 in the case of absence of the element considered, 0.5 in the case of partial compliance of the information and 1 in the case of full completeness of the information produced. At the end of this evaluation, they then calculated a weighted average of the partial scores related to the level of compliance of the contents required by the legislator, namely:

Nf Score = Mean (Business Model, Policy, Sustainability Risks, KPI, Diversity)

As regards the inferential statistical analysis, Leopizzi et al. (2018) prepared a multiple regression with the aim of evaluating the factors that could affect the qualitative level of the disclosure reported by the PIEs[1].

The dependent variables were represented by five different areas of analysis (Business model, Policy, Sustainability risks, KPI and diversity) and by the non-financial score, while the

[1] The European Parliament in the Directive 2014/95/EU addresses the non-financial disclosure requirements to Public-Interest Entities and to those public-interest entities which are parent undertakings of a large group, in each case having an average number of employees in excess of 500, in the case of a group on a consolidated
basis.

independent variables concerned the following aspects: assurance provided by the Big 4, use of reports dedicated to NFD, number of pages, adoption of integrated reporting, number of years from the first reporting activity of non-financial information.

Furthermore, to evaluate the attitude of the company management to the non-financial reporting, some control variables were considered: they were related to economic-financial performance (average number of employees, total assets recorded in the financial statements, turnover, earnings per share and debt to equity ratio). It was also required to assess the impact of any external factors aspects such as: the sector and the country of origin.

Looking at some results of the analysis above described, with regard to the communication means for reporting the NFD, Leopizzi et al. (2018) observed that 88% of companies in the sample (147) have opted for the traditional financial tools, that is the Annual Report.

Furthermore, by calculating the standard deviation of the Non-Financial Score and of the other information disclosure (Business model, Policy, Sustainability risks, KPI and diversity) for the year 2017, they found that the average value of the quality level of the information tends to converge towards the same average value. These results suggested that the Legislative Decree 254/16 substantially favoured the standardization of the non-financial disclosure, that is not to say that there were no differences in the quality of the pre- and post-directive disclosure, but only that in post-directive year (2017) there was a standardization of documents containing non-financial information.

Non-financial Score analysis

	Business Model	Policy	Sustainability Risk	KPIs	Diversity	Nf_Score
Min	20.00%	7.14%	33.33%	10.00%	11.11%	19.17%
Max	100.00%	100.00%	100.00%	100.00%	100.00%	96.00%
Median	86.67%	57.14%	66.67%	100.00%	44.44%	68.13%
Mean	81.86%	58.45%	68.37%	88.71%	49.77%	69.43%
St. Dev.	13.83%	22.35%	9.65%	17.91%	20.17%	12.09%

Table 2. Leopizzi et al (2018).

Focusing on the differences between 2015 and 2017, the analysis highlights a substantial improvement in the information being investigated, more specifically there was an enhancement of the non-financial score of all the sectors (Table 3). They find evidence that the "Oil and Gas" sector realized a low increase justified by the high average starting data already recorded in the year 2015 (Carini et al., 2018; Venturelli et al., 2018).

Differences between 2015 and 2017

	Nf_Score 2017	Nf_Score 2015	Var Nf_Score
Bank	69.755%	52.226%	17.529%
Basic Materials	71.032%	25.183%	45.849%
Consumer Goods	71.393%	47.069%	24.324%
Consumer Services	66.221%	46.697%	19.525%
Health Care	66.565%	43.619%	22.946%
Industrials	67.414%	39.676%	27.739%
Insurance	69.513%	60.307%	9.206%
Oil and Gas	81.481%	75.303%	6.178%
Telecommunications	67.389%	50.039%	17.350%
Total	***69.432%***	***48.184%***	***21.248%***

Table 3. Source: Leopizzi and al. (2018).

As regards to the aspects related to the corporate dimension, their analysis found that the LOG ASSET, TURNOVER and EMPLOYEES variables positively influence the quality of the disclosure. This result also confirms what emerged from previous studies, that is the attitude to reporting non-financial information appears to be associated with company dimension (Baumann-Pauly et al., 2013; Wickert et al., 2016).

Finally, Leopizzi et al. (2018) highlight that the variable SECTOR negatively influenced the non-financial score, according to them, non-financial disclosure is more effective within companies active in non-financial sectors. That result therefore, it confirms the critical points detected by previous studies regarding the binomial financial sector - CSR (Herzig and Moon, 2013).

According to Herzig and Moon (2013), financial organizations are very interested in philanthropy, charitable foundations, fair treatment of employees, equal opportunities, diversity and job creation, however there is poor integration of CSR into core business activities which could have led corporate social irresponsibility, thus, CSR is perceived as an "add-on" or a marketing device.

In line with their assertion, European Commission in 2009 states: "*They [the corporate responsibility teams of UK banks] used to win lots of awards. But the reality is they never, ever got close to the business model of those banks"*, that is another way to affirm that the CSR activities undertaken by the Financial firms are not linked and integrated in their core business activities.

1.2.5. Impact of mandatory non-financial disclosure on CSR activities

Several prior studies already suggest that non-financial disclosure is likely to increase CSR practices, other than simple disclosure (Young and Marais 2012, Albertini 2014, Chelli et al. 2014).

Jackson, Bartosch, Avetlsyan, Kinderman, and Knudsen (2019) in their research focus on the effects of mandatory non-financial disclosure on firm-level CSR activities. They wanted to explore whether mandatory NFD enforcement may cause greater stringency around minimum standards (typical of government hard regulation) and whether it has any consequences on the level of flexibility of CSR activities.

Their first research question is whether NFD regulation lead to an increase in the average level of CSR. After having analysed 24 OECD countries (with some countries that require non-financial disclosure and others that rely on self-relugation), they found evidence that there is a significant positive average effect of NFD regulation on CSR activities. In addition, to better understand the trade-offs of mandatory NFD, Jackson et al. examined whether this kind of regulations lead to the largest increase in CSR activities in those firms that had a low firm-level CSR rather than those that already had a high level. They found that NFD regulation had a positive impact on both types of firms, but the size of the effect was twice larger for the 20% bottom firms. This suggests that NFD regulations bring CSR policies to minimum standards, consistent with the hypothesis that regulations lead to a greater level of stringency.

Regarding the correlation to the hypothesis that studies the correlation between mandatory NFD and corporate social irresponsibility (CSiR), Jackson et Al (2019) did not find any significant result in their analysis, suggesting that mandatory non-financial information does not cause a reduction in firms' irresponsible actions. They also find that this kind of regulations tend to reduce the gap between "best practice" firms and average firms. Finally, they argue that mandatory non-financial disclosure imposes companies to highlight only the positive aspects of CSR but does not require companies to disclose the impacts of potentially negative behaviour (CSiR).

1.3. Financial Communication and Social Media

The advent of social media in the 2000s revolutionized in a disruptive way how companies communicate with their recipients and the way they can collect information and immediately get to know and manage the reactions of external stakeholders to firm communications.

Social media are Internet-based applications that encourage users to generate their own content for the application (Kaplan & Haenlein, 2010). Year after year social media has acquired an increasing importance for public companies, that have started to develop and implement plans and actions to be present on those platforms that have the highest number of subscribers, that is to follow a strategic approach in order to take advantage of all the opportunities social media could offer. Companies have understood that the millions of social media users could actually be their customers, employees, communities, analysts and investor, and actively participating on these tools could increase engagement and business credibility.

As illustrated in the below bar chart, social media users have been exponentially increasing from 2010 to 2020. According to the Digital 2020 Global Overview Report[1] in 2020 the number of worldwide social media users has reached 3,8 billion, which represents an outstanding growth of +292% if compared to 2010 figures.

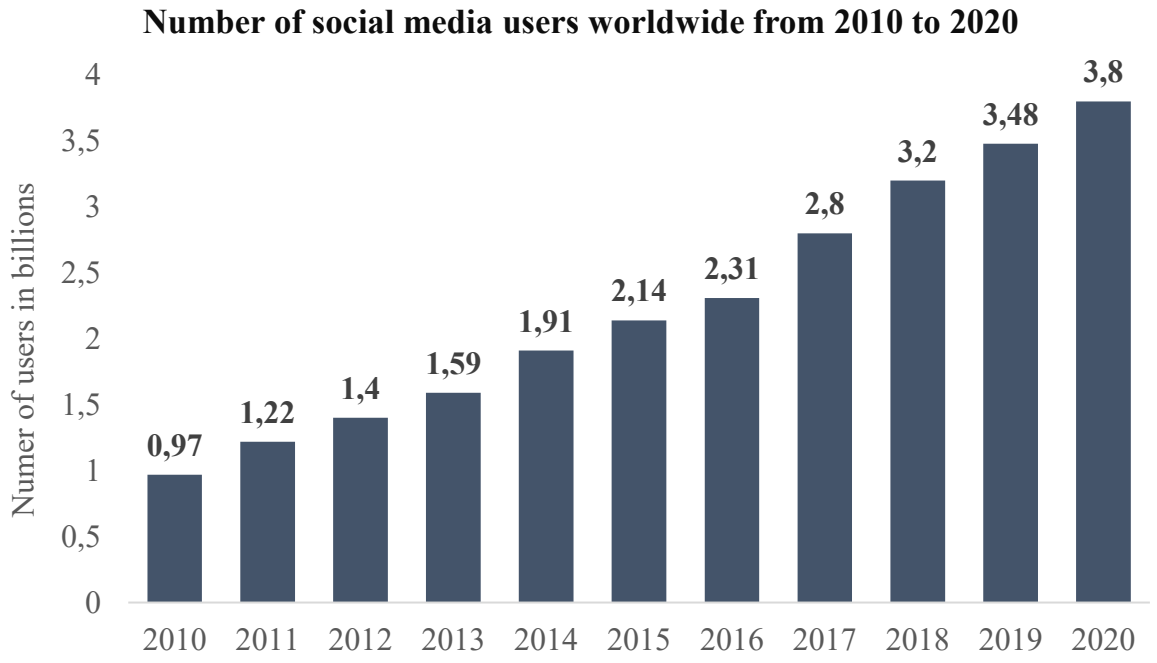

Figure 2: Author's elaboration. Source: wearesocial.com and statista.com

Social media, as characterized by the dynamic two-way exchange of user-generated content (Kaplan & Haenlein, 2010), nowadays represent an opportunity to be exploited both for companies and for their stakeholders. For the former they are nothing more than another very

[1]The report was published on January 30th 2020 by We Are Social, in partnership with Hootsuite.

powerful means of disclosure and dissemination that eliminates any intermediary with the recipient of the information, effectively becoming a DAIT (Direct-Access Information Technology). For the latter they offer the ability to publicly voice questions and interact in ways that give managers incentives to take action (Elliott, Grant, & Hobson, 2018).

Regarding information presentation, each social media platform (i.e. Twitter, Instagram, Facebook) encourages specific choices for medium creating more flexibility in firms' choices and allowing a higher range of informality, which in some ways affects the level of readability (Blankespoor, 2018). In addition, the greater use of non-text mediums, non-verbal attributes are more likely to be embedded in firm disclosure, thus increasing the opportunity for management to convey nuanced messages and connect with investors, but it also increases the risk of inadvertent release of information through non-verbal behaviour (Blankespoor et al., 2017; Hobson, Mayew, & Venkatachalam, 2012).

Besides the opportunities that social media offer in terms of communication, such as the possibility of reaching a broader stakeholder base, quickly, with lower costs, we should not forget what the challenges might be when we get involved on a two-way communication channel. Stakeholders expect firms to disclose and disseminate consistently, regardless the information being negative or positive, the implementation of a social media strategy should include not only good news but also the bad ones.

In addition, the public response of the recipients of the information comes into play, to which an interaction of the company is usually expected.

User-generated content is very often part of stakeholders' response, thus management response to stakeholders' reaction is a key challenge when deciding to adopt social media as a means for financial and non-financial information (Blankespoor, 2018). First, because investor concerns are public, there is more potential for emotional contagion or loss of control over the message (Jung et al., 2018; Lee, Hutton, & Shu, 2015). Second, the ease of interaction on social media can also increase the pressure on management to respond to any concerns voiced on that channel; a lack of response by management to an issue is much more visible (Cade, 2018). Third, the greater personalization encouraged by social media may divert investor attention toward the interaction with management rather than the incorporation of information into price (Elliott, Grant, & Hobson, 2018).

1.3.1. Communicating CSR on social media

When it comes to communicate firms' information, organizations and CEO's often use three different tools to interact with their stakeholders: company intranet, company website, and

social media networks (Weber Shandwick, 2012). Social media is likely to be the most popular as in the last decade firms' subscription to social platforms, such as Facebook, Twitter and LinkedIn, have been exponentially increasing.

Prior literature generally found evidence that CSR communication may have an impact on how stakeholders perceive an organization and have an influence on their relationships with the organization itself (Lii and Lee, 2012; Sen and Bhattacharya, 2001).

Du, Bhattacharya and Sen (2010) suggest that different types of CSR sources (who released the information) or channels (where the information is released) of CSR communication may also affect stakeholder's perceptions: stakeholders probably perceive firms as more self-interested in case of an exclusive use of company-controlled CSR communication channels (i.e. official corporate website, annual reports, TV commercials) rather than non-corporate sources which are less controllable (social media, customers, forums/blogs). Hence, the presence of a trade-off between controllability and credibility when it comes to disclosing CSR information: "*the less controllable the communicator is, the more credible it is, and vice versa*" (Du, Bhattacharya and Sen, 2010).

Wang and Huang (2018) have examined two frequently seen sources for CSR communication on social media (CEOs and organizational accounts) and their differences, and the types of CSR messages (internal and external) impact on organization-public relationships (OPR). Companies' CEOs could be a source for CSR communication if they decide to release information about the firm they work for through their social media account. Since the CEO often represents organization's image, CEOs that adopt social media may have an effect on firm's information environment. According to Tsai and Men (2017), CEO's personal tweets improved the information environment and made the retail investor base increase.

Wang and Huang (2018) answered to two research questions:

- *How do types of CSR messages (internal CSR, external CSR, control) influence stakeholders' perceptions of OPR and behaviour intention toward the organization?*
- *How does message source (organizations' Facebook account vs CEO's Facebook account) influence stakeholders' perceptions of OPR and behavioral intention toward the organization?*

To answer to their questions, they first defined the Organizational-Public Relationship (OPR): it was composed by five dimensions *Trust* toward the company, *Satisfaction* with the company, *Control mutuality* with the company, *Commitment* to the company, *Behaviour* intentions towards the company.

After defining a way to measure the OPR, they conducted an experiment where 242 participants were firstly asked to read on Facebook six posts, which consisted in six statements having two

different sources (CEO or organizational account) and 3 types of messages (internal CSR, external CSR, control).

Finally, the participant had to answer a questionnaire about the perceptions they had on the 5 dimensions above-mentioned:

1. Trust toward the company was assessed with six statements on a seven-point Likert scale. For example, they asked "The company has the ability to accomplish what it says it will do?".
2. Satisfaction with the company was assessed with four statements on a seven-point Likert scale, like "Generally speaking, I am pleased with the relationship the company has established with people like me."
3. Control mutuality with the company was assessed with four statements on a seven-point Likert scale, where for example participant had to tell how much they agreed with the following assertion: "The company really listens to what people like me have to say".
4. Commitment to the company was assessed with four statements on a seven-point Likert scale, such as "I value my relationship with the company more than with other companies".
5. Behavior intentions toward the company was measured with three items on a seven-point Likert scale, like "I will recommend the company".

In terms of message content, they found that different types of messages have distinct effects on the OPR. Emphasizing internal CSR activities on social media (Facebook in their specific research) made the public-organization relationship improve, even among external stakeholders, as they *"may perceive the organization as more caring when the organization treats its employees well"*. This finding is consistent with stakeholders' scepticism toward the reasons why firms get involved in external CSR activities (Du, Bhattacharya and Sen, 2010). *"External stakeholders tend to be less skeptical toward internal CSR activities as they are more directly related the operation of an organization"* (Wang and Huang, 2018).

Regarding the message source, in terms of who issued the messages (CEO's account or company's official account), Wang and Huang did not find evidence that the source significantly affects the CSR communication effectiveness which was measured by assessing the five dimensions of the Organization-Public Relationship (trust, satisfaction, control, commitment, behaviour towards the company. However, they have showed that in case of company's social media account, CSR messages were more effective than non-CSR messages in evoking stakeholders' behavioural indentations. In the specific case, non-CSR messages were a control variable regarding private information about CEOs' personal lives.

The limitation of the above-mentioned research is that it used Facebook as the social media platform, while it could be interesting studying the stakeholders' reactions on alternative and largely adopted platforms, such as Twitter.

1.3.2. Twitter as fims' main DAIT

If compared to traditional media, social media have several characteristics that make them a richer disclosure and dissemination channel. Social media such as Facebook, LinkedIn, Twitter, and YouTube make it possible for anyone with access to Internet to publicly broadcast opinions of a firm's operations, predictions of future stock price changes, or decisions to trade (Cade, 2018). The user-generated contents and the interaction between firms and stakeholders through likes, retweets and replies could make the dissemination of firm communications increase as dissemination on social media is not an exclusive result of firms' choices and efforts, but it could be originated by social media users, too. As already discussed above, social media create a public two-way communication, which can make firms lose control on what other say about them.

Prior literature assess that Twitter is one of the most appreciated social media platforms in terms of investors' perceptions and behaviour (Elliott, Grant, & Hodge, 2018; Guggenmos & Bennett, 2017). According to Hootsuite.com 63% of Italian companies had a Twitter account in 2018; Zephoria.com stated that 66% of companies that have 100 or more employees had a Twitter account in 2019 and, as claimed on Brandwatch.com[1] in 2017, 74% of Twitter users reported that they use this social network as a source of news.

Twitter can help predict firm-level earnings and stocks (Bartov, Faurel, Mohanram, 2018) and twitting financial communication is supposed to have an impact on cost of equity (Albarrak, Elnahass, Papagiannidis, Salama, 2020), and liquidity and information asymmetry (Blankespoor, Miller, White, 2014). Further details will be provided in the following chapters.

From a firms' perspective, the design of Twitter messages suggests that this social media is more suitable for dissemination rather than disclosing comprehensive information (Albarrak et al, 2020): indeed, the Tweet is a message or post published on Twitter, which length has 280 characters. Before November 2017, the length of the tweets should not exceed 140 characters. Despite the novelty that since 2018 allows the post of longer tweets, the average number of characters has however remained below 140. Twitter CEO Jack Dorsey said that the expanded

- [1] https://www.brandwatch.com/blog/amazing-social-media-statistics-and-facts/
  Brandwatch is a digital consumer intelligence company headquartered in Brighton, which offers digital services as market research, consumer research, social media analytics and social media monitoring.

tweet length has not actually changed the length of messages people are sending out. The preference of shorter messages is consistent with the research of Blankespoor et al. (2014) which finds evidence that tweets are more commonly used as a method of information dissemination.

The limit of 280 characters could make us think that companies prefer to tweet only to disseminate the information already disclosed through other means of communication that allow to release more in-depth news. The research will also aim to clarify whether the sample companies prefer to use Twitter only as a means of dissemination or even for disclosure purposes, thus confirming or not confirming the results of the research by Blankespoor et al (2014).

Twitter social network has provided companies with a mechanism that allow them to assess the impact of dissemination. While firms that disseminate press releases through traditional information intermediaries find it difficult to understand if and when the message was received by investors (Bushee, Miller, 2012), on Twitter firms have found a method to overcome this drawback as they have the possibility to directly disseminate information to its followers without an intermediary, control the timing of the dissemination, send multiple repeated messages (or similar messages) and know its exact number of followers and the number of clicks on the hyperlink to the source (i.e. firms' official website) containing the full-information disclosure (Jung, Naughton, Tahoun, and Wang, 2018).

Being Twitter a "push" technology, the information bypasses information intermediaries and direct reaches the stakeholders, making the cost of information acquisition lower (Blankespoor, Miller, White, 2014).

Another characteristic that makes Twitter appropriate for information dissemination is the "Retweet" feature, which allows the firms' followers to repost a Tweet and to further spread the news given.

1.4. The Financial Communication on Twitter

Recent years academic literature has shown how Twitter has started to play an important role in the capital market. Jung, Naughton, Tahoun, and Wang (2016) find that roughly half of S&P 1500 firms have created either a corporate Twitter account or a Facebook page, with a growing preference for Twitter (Jung et al, page 226, 2016). Seeing the trend in total worldwide social media users, the number of firms with a Twitter account has been certainly increasing in the last years, too.

Many are the investigations on the impact that the usage of Twitter can have in the stock market environment and whether Twitter is useful in predicting a firm's earnings and stock returns (Bartov, Faurel, and Mohanram, 2017; Blankespoor, Miller and White, 2014; Cade, 2018; Albarrak, Elnahass, Papagiannidis and Salama, 2020).
Here below the focus will be on financial communication dissemination on Twitter, market liquidity and information asymmetry, and cost of equity.

1.4.1. Strategic dissemination on Twitter

As already discussed above, companies tend to use social media, specially Twitter, when it comes to investor relations content. Jung, Naughton, Tahoun, Wang, 2018 in their research wanted to understand whether firms were strategic when disseminating information, in the sense that they use to post on Twitter mostly good news rather than bad ones. Before analysing the results of their work, it is useful to see the difference between strategic disclosure and strategic dissemination.
Strategic dissemination is different from strategic disclosure, whereby firms voluntarily provide information to the public if the benefits outweigh the costs (Schrand, Walther 2000; Lougee, Marquardt 2004; Kothari, Shu, Wysocki 2009). Conversely, *strategic dissemination refers to firms choosing to use or not use certain channels of communication to distribute both voluntary and mandatory information* (Jung, Naughton, Tahoun, Wang, 2018). Strategic dissemination is then a process that reveals how the companies try to control the information flow in the external environment and how they further attempt to positively influence financial markets when good news is disclosed, to mitigate bad news disclosure, or to effectively manage firms' crisis episodes.
Despite dissemination and disclosure are two different activities, when deciding the disclosure strategy, firms should also decide the related level of dissemination, as to various levels are associated many levels of public awareness of the firm's disclosure and investor recognition of the firm itself, hence firm value (Merton, 1987).
Prior research of Jung, Naughton, Tahoun, and Wang (2018) wanted to teste if firms are strategic in their dissemination, because as already studied by Miller and Skinner (2015) and Lee, Hutton and Shu (2015), firms appear to be selective in their use of social media, by trying to promote only good news or explain bad ones.
If firms' goal is to maintain corporate reputation by being as much transparent and reliable as possible, an hypothesis could be that firms should have a specific policy with regard to dissemination decisions, by either never using social media; only using them for marketing

(non-financial) or always using social media for financial news, independently of the kind of news (Jung, Naughton, Tahoun, and Wang, 2018).

However, Jung, Naughton, Tahoun, and Wang (2018) find that firms are less likely to disseminate via Twitter when the news is bad and when the magnitude of the bad news is worse. They also find evidence that the level of strategic dissemination varies based on firm specific factors, such as the sophistication of its investor base and the size of its social media audience: the lower the level of investor sophistication and larger the social media audience, the higher the incentives for strategically dissemination[1].

To come up with the above conclusions, Jung, Naughton, Tahoun, and Wang (2018) started their analysis with the following two hypotheses:

a. Strategic dissemination is associated with the direction of the news; firms are more (less) likely to disseminate good (bad) news over social media.
b. The extent of strategic dissemination is associated with the direction of the news; within the same quarter, firms tend to send more good news (fewer bad news) tweets over social media.

In addition to testing the above hypotheses, they also conducted two more sets of analysis. The first one examined whether three cross-sectional factors (firm's level of litigation risk; average sophistication of the firm's investors; size of the firm's social media audience) could strengthen or weaken the incentives for strategic dissemination. The second one investigated the consequences of disseminating earnings news over Twitter.

To test the ex-ante hypotheses Jung, Naughton, Tahoun, and Wang (2018) used a cross-sectional probit regression specification where TW is variable set to 1 (0 otherwise) if firm *i* had a Twitter account any time during the sample period; PRESS_RELEASES and MEDIA_NEWS are related to a firm's traditional media activity; the other variables are all related other firms characteristics, such as firm size, measured as the log of total assets (SIZE), the market-to-book ratio (MTB), return on assets (ROA), yearly sales growth (GROWTH), and the debt-to-asset ratio (LEVERAGE).

The results of the equation suggest that firms of the sample Twitter accounts are larger, more valuable, spend more in advertising, have lower leverage, higher analyst coverage, and issue more press releases (Jung, Naughton, Tahoun, and Wang, 2018). However, they also find that for firms using Twitter, the number of articles written about them on traditional media is lower.

By integrating the above equation with some new variables, such as MISSEST, an indicator variable set to 1 (0 otherwise) if firm i's actual earnings per share (EPS) is below the latest

[1] This result was obtained by analyzing Twitter data only (the authors of the research decided to focus only on Twitter given the higher corporate usage with respect to other social media).

consensus mean analyst forecast for quarter q, and by modifying the timing, that is measuring the dependent and independent variables quarterly Jung, Naughton, Tahoun, and Wang (2018) formally tested the first hypothesis. They found evidence that that firms that miss analyst earnings expectations and miss by larger amounts are less likely to tweet earnings news over Twitter, thus supporting the hypothesis that the decision to disseminate earnings news is related to the direction on the news (good or bad), consistently with strategic dissemination behaviour by firms.

To provide further evidence on strategic dissemination in the social media, Jung, Naughton, Tahoun, and Wang (2018) tested their second hypothesis, concluding that "*the extent of strategic dissemination each quarter is associated with the direction of earnings news*".

Finally, by investigating how Twitter audience[1] react to dissemination of earning news, the authors of the research suggest that "*while firms exhibit strategic behaviour in their dissemination of earnings news over Twitter, their followers are not more or less likely to retweet good or bad news"*.

1.4.2. Dissemination on Twitter and market liquidity

Blankespoor, Miller and White (2014) have examined if firms can reduce information asymmetry by disseminating news directly to investor by transmitting information on DAITs platforms, such as Twitter and Facebook, rather than rely on intermediaries. Direct access information technologies allow investors to reduce information acquisition costs and potentially increase the number of investors that has been reached by information. This aligns investors' information sets, reducing information asymmetry among investors and increasing liquidity (Diamond and Verrecchia, 1991).

In order to assess the impact on market liquidity of information dissemination through Twitter, Blankespoor, Miller and White (2014) have studied only Tweets with hyperlinks in order to isolate dissemination of information and exclude pure information disclosure. They used firm's bid-ask spread[2] as the main proxy for information asymmetry and they found that firm-initiated dissemination through DAITs is negatively associated with information asymmetry for all the dissemination proxies, which were LinktoPR (Tweets with an hyperlink), LinkTweet_abn

[1] Twitter firms' audience in this specific analysis was calculated as the sum of the followers and the number of followers of the followers who share/retweet firms' posts/tweets.

[2] Blankespoor, Miller and White (2014) measure abnormal bid-ask spread as the event period average daily percent spread minus the pre-period average daily percent spread, where daily percent spread is the daily average of each quote's spread, calculated as the difference between the offer price and bid price, divided by the midpoint of the offer and bid price, all multiplied by 100.

(increase in the average daily number of Tweets with a hyperlink during the three-day event window) and Clicks (to measure breadth of investor viewership of the disseminated information. They do not sustain that Twitter help increase firms' visibility but that it can help mitigate information asymmetry, primarily for firms that are less visible.

With the usage of descriptive statistics Blankespoor, Miller and White (2014) observe that, in terms of twitting activity, 75% of firms' Tweets contain hyperlinks, suggesting that Twitter is majorly used for dissemination rather than disclosure.

Going deep in the research of Blankespoor, Miller and White (2018), they tested the impact of dissemination on information asymmetry by estimating a pooled OLS regression for firm *i* and news event t^1 using robust standard errors clustered by firm and year-month:

$$INFO\_ASYM_{it} = \beta_0 + \beta_1 DISSEM_{it} + \sum Controls$$

where INFO_ASYM represents either Spread_abn or Depth_abn, and DISSEM represents LinktoPR, LinkTweets_abn, or Clicks. In Blankespoor, Miller and White (2018) research, information asymmetry variable is measured by the *bid-ask spread*, as supported by Leuz and Verrecchia (2000), and by the *Depth*[2] as supported by Lee et al. (1993) and Kavajecz (1999) who argue that an understanding of shifts in market liquidity can be further enhanced by examining depth.

In addition to evidence of the effects of dissemination on information asymmetries, thus, on market liquidity, they argue that investors with higher information acquisition costs are more likely to benefit from DAIT dissemination. This is due to the fact that smaller investors have fewer resources to collect all the available information, therefore deficiencies in the dissemination strategy is likely to have a greater impact on retail investors rather than on larger ones (Blankespoor, Miller and White, 2014).

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[1] The news event *t* was represented by the day in each the sample firms did an earnings announcement press releases. Blankespoor, Miller and White (2014) analysed the dissemination tweets posted both during the event period (three-day window around the news event) and pre-period (the period of 60 trading days prior to the event period).

[2] Depth or Depth of Market (DOM) represents the number of shares available at each price. Blankespoor, Miller and White (2014) use this measure as a proxy of information asymmetry as it allows to better understand the shifts in market liquidity: higher the Depth, lower the information asymmetry. They measure the abnormal depth during the event period as the log of the average daily depth during the event period minus the log of the average daily depth during the pre-period, where the daily depth is the daily average of each quote's depth.

1.4.3. Twitter dissemination impact on cost of equity

Albarrak, Elnahass, Papagiannidis and Salama (2020) affirm that "*reducing information asymmetry between investors and a firm can have an impact on the cost of equity, especially in an environment or times of uncertainty*". The impact of the level of information asymmetry on the cost of capital is reasonable since theoretically *"in the presence of perfect competition, information asymmetry has no separate effect on cost of capital after controlling for the average precision of information. In contrast, in an economy where competition is imperfect, information asymmetry has a separate effect on firms' cost of capital"* (Balakrishnan, Vashishtha and Verrecchia, 2019).

New direct-access technologies can help firms to implement new dissemination strategies that can potentially reduce the information gap between them and investors and informed investors and non-informed investors. Complementary use of social media channels helps overcoming the limitations of press coverage, especially for lower press coverage firms, being more independent from other information mediators, and reducing investors' information acquisition costs.

Prior literature has already examined the consequences of firms' dissemination of information on Twitter (Blankespoor, Miller & White, 2014; Lee, Hutton, & Shu, 2015; Prokofieva, 2015; Jung et al., 2018; Mazboudi & Khalil, 2017; Cade, 2018), showing that firms could benefit from investor relations content dissemination on Twitter, by enhancing market liquidity and mitigating negative market response.

The study of Albarrak, Elnahass, Papagiannidis and Salama (2020) seeks to assess the impact of dissemination of financial information on firms cost of equity (COE), which *"represents the compensation the market demands in exchange for owning the asset and bearing the risk of ownership"* (Kenton, 2020).

Albarrak, Elnahass, Papagiannidis and Salama (2020) show that Twitter dissemination of financial information improves firm's information, thus reducing information asymmetry, and consequently reducing the cost of capital. This mechanism happens because if investors acquire information periodically, "*they become less concerned about information asymmetry and thus improve stock liquidity and reduce the cost of equity*".

1.5. Research questions

In the previous sections the dissertation focused on examining the literature related to financial communication and the way companies use to disclose and disseminate it in the capital markets. To be specific, this work has firstly introduced the meaning of financial communication and non-financial communication (CSR) and then it has highlighted the importance of effectively disclosing and disseminating it to companies' stakeholders.

As already discussed, literature on information disclosure points out that shareholders, and more generally all the stakeholders, do not receive a continuous flow of information about the business development of the company, thus companies aim should be that of reducing as much as possible information asymmetries that could arise between business insiders and the financial community (Botosan, 1997; Merton, 1987).

As supported by the American entity Securities and Exchange Commission (SEC), "*only through the steady flow of timely, comprehensive, and accurate information people can make sound investment decisions".*

Many are the tools that companies can choose to externally communicate with their stakeholders in order to fill the information gap that frequently lead to information asymmetries: many one-way and two-way communication tools have been mentioned, and in particular the focus was on Social Media adoption by companies.

Social Media being Direct Access Information Technologies (DAITs), they allow investors to reduce information acquisition costs and potentially increase the number of investors that has been reached by information and, being Twitter and Facebook the two social media platforms that firms typically choose for communication, with a growing preference for Twitter (Jung et al, page 226, 2016), this dissertation will focus on investigating financial and CSR disclosure through Twitter.

Previous researches found evidence that firms use Twitter as a strategic tool for dissemination (Jung et al, 2018) and that they mainly adopt it for information dissemination purposes rather than pure information disclosure (Blankespoor et al, 2014).

In addition to examining how companies use Twitter, it is interesting to go in depth and understand the type of content that they prefer to disclose on Twitter to their stakeholders, such as financial information, non-financial information and more generic ones (for example those related to marketing).

Considering non-financial information, previous works have already assessed the quality of the information that companies release through their CSR reports and the type of approach that companies follow when disclosing non-financial content (Michelon, Pilonato and Ricceri,

2014), while others have studied the evolution of CSR reporting after the implementation of the European Union Directive 2014/95 regarding non-financial disclosure (Leopizzi, Coronella and Pizzi, 2018).

As well as past research, this dissertation focuses on financial and non-financial disclosure, but while some authors have analyzed the different aspects of disclosure through the typical one-way and two-way communication tools (i.e. annual reports, press releases, investor days, conference calls) and given the effects of the use of Twitter that have been highlighted by previous studies, this research will focus on the analysis of firms communication only on Twitter.

Furthermore, the way Twitter works and its features give the opportunity to the corporate audience to transmit a reaction right after a communication has been posted by the company; this mechanism will allow the author to investigate stakeholders' preferences to different types of information content release on social media. This is an area of research that has not been investigated in past literature and this work will try to understand, through Twitter engagement metrics (Likes, Retweets and Replies), which information type stakeholders are mostly interested in.

With the above premises introduced above, the following research questions were formulated.

1. *How does digital transparency and the quantity of CSR information change after the European Union Directive 2014/95?*

   Taking in the account the research of Leopizzi, Coronella and Pizzi (2018) on the effects of mandatory non-financial disclosure, I expect to observe an increase both in quantity of CSR information and on digital transparency of the CSR information after the implementation of the European Union Directive 2014/95 in Italy.

2. *How does the CSR and financial related information change in the years of analysis?*
   a. *Did the firms that already intensively disseminate and those that poorly disseminate experience different changes in the financial and CSR information after the European Union Directive 2014/95 implementation?*

      The study just mentioned by Leopizzi et al. (2018) found that the Oil&Gas sector realized a lower increase of the quantity of CSR related information after the decree 30 December 2016, n. 254, as the starting point was already high if compared to other sectors. In this work a comparative analysis between Utilities

and Financial Services will be implemented to find any difference in the reaction of these two industries to the new mandatory NFD regulation.

b. *What type of managerial orientation and type of information companies mostly release? Do they follow a boilerplate/symbolic or committed/substantive approach?*

   Michelon et al. (2014) in their research support that firms use to adopt a boilerplate approach when it comes to CSR reporting. This dissertation will question which approach Utilities and Financial services follow when disclosing or dissemination both financial and non-financial information.

3. *Are companies strategic in the choice of CSR and financial information to be disclosed through Twitter?*

   a. *Do the companies strategically choose the information to disseminate or disclose on Twitter? In other words, are the contents released both positive and negative or there is a tendency in communicating only good and neutral news?*

      After having analysed previous studies, I expect to find evidence that firms are strategic when choosing the content of information to disseminate or disclose, in line with the findings of Jung, Naughton, Tahoun, and Wang (2018). In other words, ex-ante I suppose that the "sign" of the managerial orientation *Results* will be in most cases positive or neutral, suggesting that companies tend to avoid disseminating or disclosing bad news, thus manipulating stakeholders' expectations on the organization.

   a. *Is there a clear a preference in the use of Twitter as a dissemination rather than a disclosure tool?*

      As discussed by Blankespoor et al. (2014) and Alabarrak (2020), I expect to arrive at the conclusion that Twitter is majorly used as a dissemination tool. Considering the limited characters feature of the Tweet, Twitter could be adopted to disseminate information that had already been disclosed on other communication means that allow to release more in-depth news.

      Anyway, I don't exclude that some firms prefer to use Twitter to shortly and quickly disclose information to update on projects and results with more frequency and to a wider range of stakeholders.

4. *What are the Twitter audience reactions to the different kinds of Tweets in terms of managerial orientation, information type and CSR category? Is there an "information*

gap" between what the followers prefer to be informed about and the communications that the companies release on Twitter?

With regards to external and internal CSR tweets, I expect different reactions, thus different levels of Twitter engagement, as Wang and Huang (2018) found that different types of messages have distinct effects on the relationship between the organization and its stakeholders.

Part II – Empirical Research

2.1. Methodology and sample description

The empirical research is based on a sample of fourteen firms of two different sectors, seven utilities companies[1] and seven financial services companies[2]. The analysis focuses on the tweets posted by each firm for three consecutive years, from 2016 to 2018 (i.e. 42 firm-year observations).

2.1.1. Sample selection

The sample selection started from a database[3] of tweets from January 2016 to October 2019 posted by 74 companies that appeared in the Europe's leading survey Webranking by Comprend.

Comprend is a digital corporate communication pioneer, dealing with clients that are FTSE 250 and FTSE 1000 listed companies, as well as companies that have just listed. Comprend offers services and solutions in the field of websites, research, technology advisory, corporate reporting, IPOs, brand strategy, and engaging and motivating internal communication. Webranking is a further well-known contribution proposed by Comprend: established in 1997, it is defined as *"Europe's leading survey of corporate websites and the only global ranking that is based on stakeholder expectations"*[4], and offers an yearly snapshot into how companies are communicating to their stakeholders via digital channels, that is their digital transparency. Every year Comprend undertakes a research phase with the aim of deeply understanding stakeholders' motivations and expectations and building the Webranking framework. In particular, they survey what jobseekers and the capital market (analysts, investors, and business journalists) want from a listed company website; the feedback of approximately 500 respondents becomes the basis for the Webranking criteria. Once the criteria are identified, the companies' ranking is carried out by list (*Europe 500* or *Global 100*), by sector (*Basic Resources*, *Industrial Goods*, *Oil&Gas*), and by country (*Austria, Belgium, Denmark, Finland,*

[1] Utilities industry includes companies that belong to the following Super Sectors of Borsa Italiana: Oil&Gas, Public Services and Raw Materials (Tenaris).
[2] Financial Services industry includes companies that belong to the following Super Sectors of Borsa Italiana: Banks, Insurance, Financial Services.
[3] The database was provided by IULM University.
[4] Source: https://www.comprend.com/webranking/

France, Germany, Italy, Netherlands, Norway, Russia, Spain, Sweden, Switzerland, United Kingdom). This research will focus on the Italian companies Webranking results[1].

To define the sample of companies and observations (the tweets posted by the companies) on which the content analysis will be focused, the process selection started from a database of 74 Webranking listed companies which posted a total amount of 162.430 tweets from the 1st of January 2016 to the 8th of October 2019.

Firstly, the firms that were neither Utilities nor Financial Services[2] and the 2019 observations[3] were excluded from the initial database; this led to a group of observations which consisted in 30 Utilities and Financial Services companies which posted 48.329 Tweets from the beginning of 2016 to the end of 2018.

Secondly, all the Italian and other languages tweets were excluded, thus keeping only English Tweets from 2016 to 2018 (20 companies and 6.827 observations).

Finally, all the companies that did not post any tweet during all the three years of investigation were left out in order to be able to carry out a comparative analysis between 2016 and 2018.

As illustrated in the below table, from this point forward, the research will focus on 14 companies (see Table 6 in the Appendix section) who disclosed or disseminated Corporate Social Responsibility and Financial information on Twitter from 1st of January 2016 to 31st of December 2018.

[1] The Italian ranking is executed in collaboration with Lundquist, which is an Italian company dealing with corporate communication as well, with the mission of filling the gap between companies and its audience.

2 Only the Utilities and Financial Services companies were considered as they belong to the two industries of the database having the highest number of firms and in order to exclude the effect of firms that could have lead to misleading results (for instance, Juventus posted 38k tweets in three years, representing 23% of total tweets, despite not communicating any financial or CSR information in most cases).

[3] 2019 observations were excluded as the year was not complete (last tweet of the database dates 08/10/2019).

Sample selection

	# of Firms	# of Obs
Webranking Listed Companies	74	162.430
Exclude Firms that were neither Utilities nor Financial Services	(43)	(103.501)
Exclude 2019 Tweets	(1)	(10.600)
Utilities and Financial Services Firms from 2016 to 2018	30	48.329
Exclude Italian Tweets	(10)	(41.502)
English tweets from 2016 to 2018	20	6.827
Exclude non-comparable data	(6)	(214)
Final Sample	**14**	**6.613**

Table 4. Source: Authors' elaboration

2.1.2. Content analysis

In order to analyze each tweet, this work has made use of the scientific tool that is the Content Analysis.

The original definition of content analysis was provided by Berelson (1952) who stated that is *"a research technique for the objective, systematic and quantitative description of the manifest content of communication"*, while according to a more recent definition of Krippendorff (2004), *"content analysis is a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use"*.

The first definition includes the dual requirements of *"objective"* and "*systematic"*, which can be also find in the second one under the terms of *"replicable"* and *"valid"*.

The research techniques are expected to be replicable and objective, in the sense that if the content analysis were run on the same data in a different point in time and by another researcher, it would lead to the same findings and evidences (Krippendorff, 2004).

Furthermore, the content analysis is supposed to yield valid results in the sense that the findings can be supported by independent evidences (Krippendorff, 2004).

If compared to the definition provided by Berelson (1952), the one suggested by Krippendorff (2004) intentionally omits a further requirement that wants the content analysis to be "quantitative", as qualitative analysis has been proven successful in many research areas, such

as in computer text analysis. This specific research makes also use of qualitative techniques, as it consisted in manually analyzing each tweet by reading each of them, in order to be able to define valid codes.
Krippendorff (2004) suggests a process the analyst must follow to proceed from texts to results:

- *Unitizing*: relying on unitizing schemes;
- *Sampling*: relying on sampling plans;
- *Recording/coding*: relying on coding instructions;
- *Reducing data to manageable representations*: relying on established statistical techniques or other methods for summarizing or simplifying data;
- *Abductively inferring contextual phenomena*: relying on analytical constructs or models of the chosen context as warrants;
- *Narrating the answer to the research question*: relying on narrative traditions or discursive conventions.

In this research the author will follow the above process, except for the *Sampling* phase as all tweets are unique and must be analyzed individually, without the possibility of economizing on research efforts by limiting observations to a manageable subset of units that is conceptually representative of the set of all units.
The *unit* of the content analysis will be the *Tweet* posted by the corporate accounts of the sample companies.
To code all the units, an electronic file (Excel) was used: it made the coding phase quicker and it allowed more reliable checks and subsequent analysis. Each tweet of the database was coded in the following dimensions:

1. The *Account* column indicates the Twitter account name of each company who posted the tweet;
2. The *Industry* column distinguishes the companies in Utilities or Financial Services;
3. The *Tweet* column contains the text of each tweet;
4. The *Language* column distinguishes whether the tweet was written in Italian or English. Despite the Italian number of tweets was higher than the English ones for both industries (see *Table 4*), the analysis continues based only on English tweets.

Such choice was motivated by the fact that all the sample companies are listed on the Italian stock market and this condition implies that information disclosure and dissemination should be available and readily understood by all stakeholders[1] .

5&6. A *Disclosure* and *Dissemination* column has been added to each tweet and a binary information type (0,1) was given to both.

The *Dissemination* column was filled in based on the assumption that all the tweets containing a hyperlink were disseminating information that was first disclosed on another source, *i.e.* company website or another social or traditional media (see Blankespoor, Miller and White, 2014). This approach was adopted by Jung, Naughton, Tahoun, and Wang (2018), as well.

A manual check was executed to include all those Tweets that do not contain any hyperlink, but that for example were disseminating information by inviting the audience to conference calls.

The *Disclosure* column was first filled in 1 whenever the tweet did not contain a hyperlink, assuming that the Tweets that did not link to any other source, were posted to directly disclose information on Twitter. A manual check was executed to include the Tweets containing a hyperlink, thus disseminating information, but that were disclosing information as well and, finally, all the tweets that did not include a hyperlink, but that were not disclosing any kind of information were excluded (i.e. "*Watch the video message of Italian Minister @dariofrance on #TheHumanSafetyNet #THSNVenicepic.twitter.com/5Wx1rsYpaa")*

Hereafter there are three examples of *Disclosure* and *Dissemination* classification:

- Tweet that is pure information dissemination on Twitter: *"#UniCreditResearch: In his final note of the year, #UniCredit Chief Economist Erik Nielsen and his team outline the top ten risks to our central outlook for 2019. https://www.research.unicredit.eu/DocsKey/economics_docs_2018_168586.ashx?EXT=pdf&KEY=C814QI31EjqIm_1zIJDBJGy024c_GR3A1RbAp7pjwag=&T=1 ...pic.twitter.com/49blp1LelN",* Unicredit, 2018.
- Tweet that is only an information disclosure on Twitter: "*Great news from our team in #Ghana! Congratulations to our colleagues on receiving three prizes*

[1] The Italian tweets exclusion is supported also by the Market Information Guidelines "*Guida per l'informazione al mercato*" released by the Italian Exchange. In Principle 1, General Criteria, it recommends the issuers and entities that control them to communicate to the market in compliance with the criteria of correctness, clarity and parity of access to information.

during the "Sustainability and Social Investment Awards 2018"pic.twitter.com/4zdxRTNUpN", Eni, 2018.

- Tweet that is both a Disclosure and a Dissemination tweet as it directly discloses information on Twitter and includes a link to read the full press release. *"We close the year with another important transaction: We signed an agreement for the acquisition of 19 concessions in Central and Southern Italy and Sardinia. With over 50,000 new users, the company outperforms the 2018 target set in the Strategic Plan http://bit.ly/TW_PressRelease_Dec18 ...pic.twitter.com/DfNXh2jFjY"*, Italgas, 2018.

7-9. The tweets were codified according to their content in three binary columns: Financial Information, Corporate Social Responsibility and Generic (residual category).

To assign a 0 or 1 value to each column, a list of keywords has first been used (see Appendix, Table 5) and then a manual check has been done to verify that the resulting coding was correct.

Find below the presentation of some examples of Financial Information, CSR and Generic Information.

- Tweets that disclosed Financial information:
    - "*Financial highlights 1Q 2017: EBIT +6.6% and net profit +19.8% compared with adjusted pro-forma 1Q 2016, technical investments +13.7%"*
    - *"8 years fixed rate note issue successfully launched for a tot amount of €500mn, reserved for institutional investors http://bit.ly/2j9xXNb"*, Snam, 2017.
- Tweets that disclosed and disseminated CSR-related information:
    - *"#UniCredit4Good: "My desk is doing good deeds!" #UniCredit @Bank_Austria and #Caritas are processing the largest non-cash donation in the aid organisation's history. Read more https://www.bankaustria.at/en/about-us-press-current-press-releases_30515.jsp ...pic.twitter.com/1AN7hNpWmj"*, Unicredit, 2018.
    - *"From supporting our neighbors to employee training, our vision is to set the standard for sustainability on all fronts. Learn what we've accomplished at http://Tenaris.com/sustainability .pic.twitter.com/kX"*, Tenaris, 2018.

- Tweets that communicated Generic information (residual category):
    - *"With our Snam custom iOS apps, we are able to see cartography combined with #AppleMaps http://www.apple.co/business-snam pic.twitter.com/GSuFoyU2fD"*, Snam, 2017.
    - *"A look at the supermarket of the future: #energy is on the shelf! https://www.eniday.com/en/education_en/not-just-good-for-cooking/ ... #enidaypic.twitter.com/4N9y6xFEBp"*, Eni, 2016.

10. *CSR_Category*: according to the disclosure content required by the European Union Directive 2014/95 on mandatory non-financial information, each CSR Tweet has been classified in 6 categories: ENV (environmental protection), EMP (employees treatment), RIG (respect for human rights), COR (anti-corruption and bribery), DIV (diversity on company boards, in terms of age, gender, educational and professional background) and SOC (residual category containing all generic objectives and commitment to social responsibility).

    Employees treatment and *Diversity on company boards* are assumed to be internal CSR-related information, while *Environmental protection*, *Anti-corruption and bribery, Respect for human rights*, and the residual category are assumed to be external CSR-related information (see Wang and Huang, 2018).

    Here below there are some examples for each CSR_Category:

    - Environmental protection: "*Proud to be part of #OGCI & to announce first three investments in low-emission technologies and projects http://bit.ly/2zS3USG #OGCI17pic.twitter.com/pjfg9nl5FH"*, Eni, 2017.
    - Employee treatment: "*TenarisUniversity received a mention from @TrainingMagUS on our exemplary use of MOOCS in employee education: http://www.tenaris.com/en/MediaAndPublications/News/2016/November/Training%20magazine%20MOOC%20article.aspx ...pic.twitter.com/h9hkWhVSXz"*, Tenaris, 2016.
    - Respect for human rights: *"Indifference may as well be synonymous with violence. Let's raise our voice to say #NOgenderviolence #NOViolenceagainstWomen #InternationalDayfortheEliminationofViolence againstWomen #InternationalDayfortheEliminationofVAWpic.twitter.com/Qy"*, Unicredit, 2018.
    - Anti-corruption and bribery*: "#Terna first Italian company to obtain ISO 37001 certification for its #Antibribery management system http://bit.ly/2jw7D3Q"*

- Residual category: "*The long-term sustainability of our business and the communities where we operate is a key part of our vision. We are honored to have been recognized as a Steel Sustainability Champion by @worldsteel. Read more:http://www.tenaris.com/en/MediaAndPublications/News/2018/April/TenarisSustainability.aspx ...pic.twitter.com/dsWxNUhC5q"*, Terna SpA, 2017.

11-13. For each Financial and CSR Tweet further dimensions of analysis were considered:

- To understand both the time orientation (forward or backward looking) and which approach the firm adopted when disclosing or disseminating CSR or financial information, in line with Michelon et al (2014) the *Managerial_Orientation* dimension is used to code each Tweet in *Risks* (measurement and disclosure of an undesirable event that could lead to a loss in case that an uncertain future activity will take place)*; Commitment* (release of information concerning future activities the company will be engaged in)*; Objectives* (communication of future strategy and related goals); *Actions* (activities that firms have already accomplished)*; Results* (release of outcomes and consequences of the firms' operations); *Storytelling* (all that information not strictly related to the company's performance but anyway related to Financial or CSR performance).

  The managerial orientation will help understanding whether firms are really committed in implementing changes in the organizational performance (in this case *Managerial_Orientation* will be Actions and Results) or just aims at releasing boilerplate information (Storytelling, Risks, Commitment, Objectives), that is engaging in committed or boilerplate approach, in line with Michelon, Pilonato and Ricceri (2014) research method.
- In line with Beretta and Bozzolan (2004) and Michelon, Pilonato and Ricceri (2014) researches that point out that it is not important only how much firms disclose but also what and how they disclose, the dimension *Information_Type* assigned to each Tweet (*Storytelling* excluded) the classification *Qualitative, Quantitative* or *Monetary*. Information is: *Quantitative* when the Tweet contains any kind of numerical quantity; *Monetary* when the Tweet contains any values in Euro, Dollars or any other currency; *Qualitative* in the remaining cases.
- The dimension *Time_Orientation* could be *Forward* or *Backward* looking. This variable is a derived variable: *Results* and *Actions* are assumed to be *Backward* looking, while *Risks*, *Commitment* and *Objectives* are *Forward* looking.

14. *Results_sign*: All the Tweets concerning *Results* information type have been classified in *Positive* or *Negative* news. A *Neutral* category has been added to group all those results that weren't clear in their "sign", either because they were just an announcement of the results release or because the information given was not compared to previous or target performances.

Here below there are some examples of the classification of the *Results_sign* dimension:

- *Positive* results:
    - *"Today #BancaIFIS approved the #results1Q18. Positive performance in lending to #enterprises and managing NPLs: increases in volumes, customers and new investments in #technology. Read the press release: http://bit.ly/1Q2018-press-release ... #performance #NPL #SMEs #May10pic.twitter.com/hpQzp3rCcE"*, Banca IFIS, 2018.
    - *"E&P: adj EBIT at € 5.2 bln, twice as large as in 2016. Operating costs at 6.6 $/bbl and depreciation costs at 10.3 $/bbl in line with our expectations #eniIRpic.twitter.com/3S0z1ZsKWK"*, Eni, 2018.
- *Negative* results:
    - *"Net Result Euro 11.0 million (Euro -3.8 million) compared to 14.8 million for the first half 2015".* Falck Renewables, 2016.
    - *"Cuts to investments in response to falling prices: the market characteristics in early 2016 http://bit.ly/1TgIdBp pic.twitter.com/SFYgCS93G1"*, Eni, 2016.
- *Neutral* results:
    - *"Terna preliminary results 2016: consolidated revenue €2.1 billion – EBITDA 1.54 billion http://bit.ly/2lywyDG #TernaPlan"*, Terna SpA, 2017.
    - *"Edison publishes first half financial results. here the full press release http://bit.ly/2a6x96E #IR #eng".* Edison, 2016.

15. The *Webranking_Score* column corresponds to the value that the company who posted the Tweet obtained in the Webranking in the year of publication of the tweet. Webranking Value will be used as proxy for the quality of information released.

16. The *Hyperlink* column assumes a value of 1 if the Tweet contains a hyperlink, 0 otherwise.

17-19. Three dimensions are included in the database to measure the interactions and reactions of the audience to each Tweet publication:

- The *Likes* column shows how many people liked the Tweet, thus can be considered as the simplest form of engagement on Twitter[1].
- The *Retweets* column shows how many people re-posted a Tweet. This Twitter feature help the follower of the company to share Tweets they are interested in with all their followers. Such mechanism allows companies to increase their audience, as the information that they disclose or disseminate do not reach only their followers, but some followers of their followers. This is one of the reasons of Twitter is a two-communication tool on which firms have a low level of control over the information they decide to release.
- The *Replies* column allows to know how many people wrote a reply to the Tweet.

20. The *Date* column shows the day on which each Tweet has been posted. In this research the date is included in an interval of three years, starting from 01/01/2016 and ending on 31/12/2018.

Hereafter there are some examples of complete Tweets coding.

- *"#HeraGroup and @BioOnBioplastic together to revolutionize the production of #bioplastic, 100% natural and biodegradable: Lux-on is born, the new company for the development of biopolymers using CO2 captured from the atmosphere".* Account Gruppohera; Industry Utilities; Disclosure 1; Dissemination 0; Financial 0; CSR 1; Generic 0; Managerial Orientations "Actions"; Information Type "Qualitative"; Time Orientation "Backward"; Hyperlink 0; Likes 3; Retweet 0; Replies 0, Date 10/12/2018.
- *"Preliminary #Results1Y15 Net Banking Income 408 million euro +43,6%pic.twitter.com/6C6Wl1YEsk".* Account BancaIFIS; Industry Financial Services; Disclosure 1; Dissemination 0; Financial 1; CSR 0; Generic 0; Managerial Orientations "Results"; Information Type "Monetary"; "Positive" result; Time Orientation "Backward"; Hyperlink 0; Likes 3; Retweet 9; Replies 0, Date 19/01/2016.
- *"Is it possible to transform the heat of cities for our household #energydemand? https://www.eniday.com/en/technology_en/satellite-sustainable-thermal-energy/ ...#eniday #geothermalenergypic.twitter.com/rtx5akWWUz".* Account Eni;

[1] Source: https://follows.com/blog/2016/01/tweet-likes-twitter

Industry Utilities; Disclosure 0; Dissemination 1; Financial 0; CSR 1; Generic 0; Managerial Orientations “Storytelling”; Information Type “Qualitative”; “-” result; Time Orientation “-”; Hyperlink 1; Likes 6; Retweet 4; Replies 1, Date 16/07/2017.

- *“In case you have missed it, here you can read the article by our Group Ceo Philippe Donnet about 2018 Half Year #GeneraliResults https://goo.gl/b8XqoD pic.twitter.com/y24CPgLxqT”.* Account GENERALI; Industry Financial Services; Disclosure 0; Dissemination 1; Financial 1; CSR 0; Generic 0; Managerial Orientations “Results”; Information Type “Qualitative”; “Neutral” result; Time Orientation “Backward”; Hyperlink 1; Likes 26; Retweet 21; Replies 0; Date 06/08/2018.
- *“Promoting local employment and supply chain, supporting social initiatives, opening our projects to local investment, sharing knowledge, protecting the environment: this is our recipe for #sustainability. @WindEurope @WindEnergyHH #GlobalWindSummit #sustainabilityatthecorepic.twitter.com /CcVr9nnXei”.* Account falckrenewables; Industry Utilities; Disclosure 1; Dissemination 0; Financial 0; CSR 1; Generic 0; Managerial Orientations “Commitment”; Information Type “Qualitative”; “-” result; Time Orientation “Forward”; Hyperlink 0; Likes 2; Retweet 1; Replies 0; Date 28/09/2018.

Coding scheme of Tweets

Industry	Utilities Financial Services
Purpose of Tweet publication	Dissemination Disclosure
Content	Financial CSR* Generic
*CSR Category	Environment Employees treatment Human Rights Anti-corruption Board diversity Social responsibility (generic category)
Managerial Orientation	Actions Results Risks Commitment Objectives Storytelling
Information Type	Qualitative Quantitative Monetary
Results Sign	Positive Negative Neutral
Time Orientation	Forward looking Backward looking
Digital Transparency	Webranking Score
Twitter Engagement measures	Likes Retweets Replies

Table 5. Source: Authors' elaboration.

From a first quick analysis (*Table 6*) it is possible to notice that the amount of tweets posted by the Utilities companies (comparing the same number of companies, seven Financial Services and seven Utilities) is more than double if compared to the amount of tweets released by Financial Services companies.

By questioning the content of the tweets (Financial, CSR o Generic information), at first glance it can be seen that the distribution is different according to the type of industry: in the case of financial services firms the number of tweets disclosing and/or disseminating financial information is higher than the other two types of performance (CSR and Generic), while in the case of utilities companies, despite the higher amount of generic tweets, it seems that firms were more keen in communicating CSR information rather than Financial information.

As expected, given the higher number of tweets posted Utilities companies (4.684 vs 2.123) the dimensions expressing the interaction or engagement of the audience on Twitter are higher than those of financial services companies. As this representation is not enough to assess in which circumstances the engagement is larger, further deeper analysis will be carried out in the next sections.

Content type and Twitter metrics by Industry

	Financial services				Utilities			
	2016	2017	2018	Total	2016	2017	2018	Total
Number of Tweets	531	792	800	2.123	1.743	1.688	1.253	4.684
Financial	330	370	372	1.072	394	448	346	1.188
CSR	26	76	107	209	425	502	417	1.344
Generic	175	349	325	849	937	765	499	2.201
Likes	3.474	6.270	9.184	18.928	6.886	11.738	9.876	28.500
Retweets	2.207	3.916	4.100	10.223	8.563	8.237	5.050	21.850
Replies	147	87	199	433	240	499	332	1.071

Table 6. Source: Author's elaboration

By focusing on the Managerial_orientation (*Table 7*) of the tweets it is possible to notice that Results is the category with the higher number of tweets for both types of industry, suggesting that firms are often orientated at communicating backward looking information.

Managerial_orientation by Industry

	Financial services				Utilities			
	2016	2017	2018	Total	2016	2017	2018	Total
Actions	50	97	125	272	109	133	106	348
Results	140	156	134	430	335	361	270	966
Commitment	25	33	32	90	152	188	181	521
Objectives	8	9	37	54	69	104	112	285
Risks	12	13	11	36	12	17	8	37
Storytelling	121	134	136	391	135	121	77	333

Table 7. Source: Author's elaboration.

In addition, further information about each company was collected. The additional information is:

- *Listed Company* contains the names of the 14 firms subject to research.
- *Webranking Variables* indicate the position and the score in the Webranking report that each firm obtained during the years of investigation. The information has been gathered from the yearly Webranking reports published on Lundquist.it.
- *Profiling Variables* give further information about the *Listing Segment,* the *Super Sector* and the *Year of Listing.* All this information was collected from the *Borsa Italiana* website.
- *Performance Variables* include five variables concerning the economic performance and the financial valuation of each firm in 2016, 2017, 2018. These variables are: *Sales, Income, Market Capitalization, End-year share price, Book-to-market ratio.* The sources of this data are the Consolidated Financial Statements published by the companies on their official corporate website.
- *Twitter Presence Variables* include *Twitter Corporate Account* (the name of the twitter account), *Following_Corporate* (the number of Twitter accounts that the company follows), *Follower_Corporate* (the number of Twitter accounts that follow the *Twitter Corporate Account*), *Tweet_corporate* (number of Tweets posted by the company), *Joined Twitter In* (year when the company signed up for the first time).

2.2. Descriptive analysis

In the next sections the author will continue the process of the content analysis. In particular the objective is that of reducing all the coded units of each dimension in simplified and manageable representations in order to start finding some evidences in the behavior of companies from 2016 to 2018.

To be able to summarize and analyze the data, each dimension has been assigned a zero or one value (see an example of the database representation in the Appendix, *Table 50*).

2.2.1. Digital transparency

The companies that are analyzed in this dissertation were all present in the Webranking survey by Comprend. As already discussed in the previous paragraphs, Webranking research, that monitors the trends of corporate communication on digital channels and evaluates transparency among the major companies at European level, is based on annual surveys to investors, financial journalists, talents looking for new opportunities and digital managers. The research therefore effectively measures the gap between stakeholder expectations and the response of companies. The sections of the corporate website (some criteria include additional digital channels, such as social media and Wikipedia) that are subject to evaluation are the following: Homepage, About, Press, Reporting, The Share, Investor Relations, Governance, CSR/Sustainability, Careers, Features.

The authors of the surveys sustain that investors are getting more and more interested in Governance and CSR. As introduced in the previous paragraphs (see section 1.2.1.), too, the environmental, social and governance (ESG) criteria are becoming increasingly relevant to institutional investors. Indeed, the CEO of BlackRock, the largest fund manager in the world, is now asking his own fund managers to consider ESG (i.e. CSR) criteria within their own investment decisions. The Non-Financial Information Directive led to a significant increase in the number of companies presenting a sustainability report (from 44% to 69%), a number in line with the European sample. Italian companies, however, tend to be good at reporting performance, but less in making commitments for the future and disclosing measurable targets (Webranking, 2018).

In the following two sub-sections, the focus will firstly be on all the Italian companies that have been evaluated by Comprend and on a comparison with the European sample performance, and afterwards only the sample companies of this research will be considered to investigate their transparency progress from 2016 to 2018.

2.2.1.1. Italian companies in the European context

The Webranking research is based on the Transparency Stress Test on 10 sections that have been analyzed in order to assign the digital transparency score to each company (Homepage, About, Press, Reporting, The Share, Investor Relations, Governance, CSR/Sustainability, Careers, Features). Considering half of the maximum score (50 out of 100) the minimum threshold for satisfying the requests of stakeholders, the graphs in *Figure 3* show the results of the companies that participated to 2016, 2017 and 2018 surveys. The companies that obtained 50 points or more passed from being 23% in 2016, to 28% in 2017 and to 31% in 2018 (+8pp in two years), while the participants that failed the test passed from 52% in 2016 to 28% in 2018 (-24pp in two years).

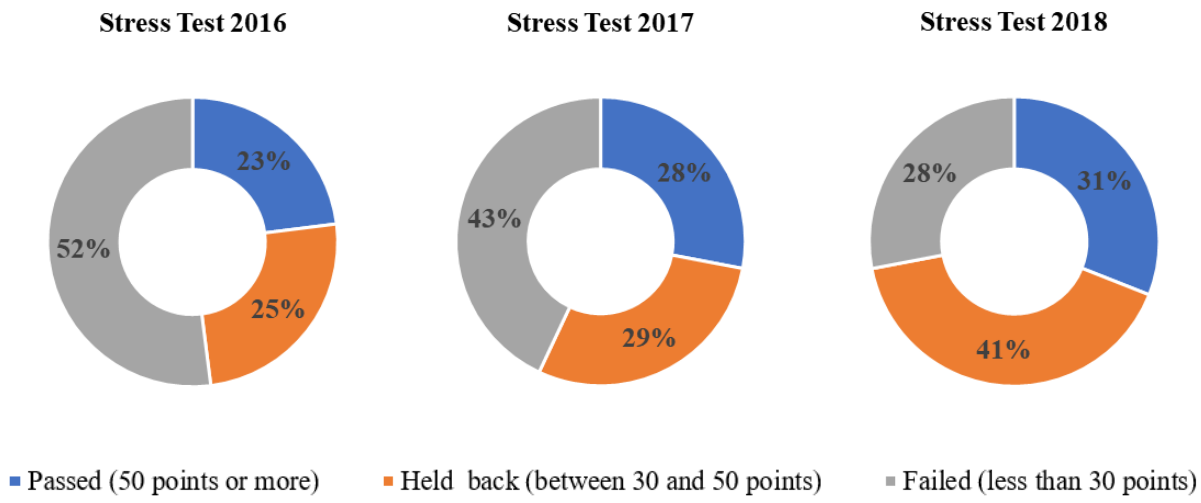

Figure 3: Author's elaboration. Source: Webranking by Comprend 2016, 2017, 2018

Webranking points out that since the early 2000s it has signaled the distance of Italian companies from their European counterparts in terms of transparency in corporate and financial communication on the web. However, as it can also be seen in the consistent enhancement of the Stress Test results, Webranking claims to have given a strong contribution to the creation of a culture of transparency in Italy and showed a significant performance improvement of Italian companies and substantial reduction of the gap compared to other countries.

When analyzing the performance of Italian companies in the Webranking Europe, in 2016 only 19 participants out of 500 were Italian (4 in the top 10), while in 2017 Webranking Italy shows a greater presence, with 29 companies included in the ranking. With eight companies breaking into the top fifty, and four companies in the top ten, making it the most represented country

within the latter: Snam took the first position again, while Eni moved up to second, with Generali in fifth, and Terna in sixth, while the rest of the positions were filled by Swiss and Finnish companies.

In 2018, the Webranking on digital transparency crowned Eni (with 93.2 points out of 100), following the Finnish Wärtsilä in second position (92.5) and Snam in third (91.3). The great transparency in the communication of Italian listed companies is also demonstrated by Terna (5th place), Generali (6th) and Prysmian (10th) which enter the Top 10 of the ranking.

The 2018 edition of the Webranking research drawn up by Comprend in collaboration with Lundquist includes in total 25 Italian companies. The average score of the Italians increased by 6.6 points, reaching 59.4 points, compared to the European figure which stood at 47.2 points.

The excellent results this year close the gap with Europe. Eni, on the podium for the eleventh consecutive year and Snam, which is in the top three for the fifth year in a row, confirm their constant commitment to meeting the requests of stakeholders.

Despite the 2018 excellent results of some Italian top performers in the European ranking, there are some research ares whose results are still below the European average and among these ones Sustainability and Governance represant two areas with a significant negative gap.

2.2.1.2. Transparency of the sample companies

Considering the Webrankig_score dimension as a proxy of digital transparency, *Table 8* shows the evolution of transparency of information from 2016 to 2018 in the sector of Financial Services and Utilities.

In the Financial services sector, the Mean of the Webranking Score in 2016 was 5% higher than in 2016, while in the case of utilities companies the Mean value increased only by 2% from 2016 to 2018.

By calculating the Mean measure, thus excluding the outlier values, the transparency of information registered a more remarkable growth in the Utilities sectors (19%) if compared to the one performed by the financial sector (+2%).

However, it is worth to note how Webranking score values differ in the two sectors examined. All the measures (Mean, Median, Minimum and Maximum) of the Financial Sevices firms are definitely below the performance of Utilities companies in all the three years of investigation: for example, in 2018 the average transparency of the Utilities sector was 19,2 points above the Financial sector. This evidence is in line with the findings of Leopizzi et al (2018) and Herzig and Moon (2013), that support that non-financial disclosure is more effective within companies active in non-financial sectors.

	Financial Services			Utilities		
	2016	2017	2018	2016	2017	2018
Mean	52,5	53,7	55,1	70,1	71,9	71,8
Median	52,5	54,3	53,6	67,7	79,9	80,3
Minimum	34,0	17,5	20,5	36,0	34,3	32,7
Maximum	83,4	87,8	85,2	93,6	94,2	93,2

Table 8. Source: Author's elaboration.

By examining the transparency performance of the seven Utilities companies of the sample, it can be noticed that 4 out of 5 firms that participated to the ranking released by Comprend increased their transparency of information from 2016 to 2018. The remaining two companies took part to the survey only from 2017 or 2018. In general, the trend is positive.
Eni and Snam are the two firms that also appeared in the Top 10 Europe 500 Webranking by Comprend in all the three years. Their level of communication transparency is already very high, and this is the reason behind a weaker transparency growth if compared to the companies in the sample.

Webranking Score	2016	2017	2018	2016 vs 2018	Trend
eni	87,0	92,4	93,2	7%	↗
ERGnow	67,7	74,8	76,8	13%	↗
falckrenewables	0,0	0,0	32,7		↗
Italgas	0,0	50,9	80,3		↗
snam	93,6	94,2	91,3	-2%	↘
Tenaris	36,0	34,3	40,0	11%	↗
TernaSpA	66,2	85,0	88,1	33%	↗

Table 9. Source: Author's elaboration.

In the case of Financial Services sector, *Table 10* shows that 4 out of 5 companies that participated to the ranking released by Comprend increased their transparency of information from 2016 to 2018. The remaining 2 companies took part to the survey only from 2017 or 2018 or did not participated. In general, the trend is positive, as it can be seen an improvement both

in value of the score and in the number of firms participating to the ranking; in 2018, 5 out of 7 firms passed the Transparency Stress Test.

Webranking Score	2016	2017	2018	2016 vs 2018	Trend
Banca_MPS	34,0		40,6	19%	↗
BancaIFIS	38,9	54,3	53,6	38%	↗
GENERALI	83,4	87,8	85,2	2%	↗
intesasanpaolo	53,5	51,1	52,8	-1%	↘
MediobancaOltre	52,5	57,7	70,5	34%	↗
TamburiTIP	0,0	17,5	20,5		↗
UniCredit_PR	0,0	0,0	62,7		↗

Table 10. Source: Author's elaboration.

Given the fact that information disclosure is industry specific, in next paragraphs Utilities and Financial Services companies will be analyzed in separated paragraphs.

2.2.2. Utilities companies

In the next paragraphs the focus will be that of carrying out a comparative analysis from 2016 to 2018 of Utilities companies only.

Tweets Content

Considering all the Tweets (Financial, CSR, Generic content) posted by the Utilities companies from 2016 to 2018 (*see Table 11a*), it is evident that there was a decrease in the total amount of Tweets (-30%). Only 1 out of 7 firms increased the total amount of released information on Twitter. Looking at the Tweets containing Generic information only (nor CSR neither Financial information, *Table 11b*), the reduction is even higher (-47%).

Industry	Utilities

Tweets Count	2016	2017	2018	2016 vs 2018	Trend
eni	1034	883	620	-40%	↘
ERGnow	174	159	140	-20%	↘
falckrenewables	55	37	46	-16%	↘
Italgas	9	42	8	-11%	↘
snam	139	253	124	-11%	↘
Tenaris	252	173	153	-39%	↘
TernaSpA	33	84	91	176%	↗
Total	**1696**	**1631**	**1182**	**-30%**	↘

Industry	Utilities
Generic	1

Tweets count	2016	2017	2018	2016 vs 2018	Trend
eni	588	438	270	-54%	↘
ERGnow	30	20	31	3%	↗
falckrenewables	17	8	6	-65%	↘
Italgas	5	7	1	-80%	↘
snam	45	99	39	-13%	↘
Tenaris	222	159	125	-44%	↘
TernaSpA	11	18	17	55%	↗
Total	**918**	**749**	**489**	**-47%**	↘

Table 11a and 11b. Source: Author's elaboration.

Examining only the tweets containing CSR information on *Table 12a* it can be seen that despite 3 out of 7 companies increased the number of CSR Tweets from 2016 to 2018, the overall variation between the two years was negative (-10%) and the same trend can be observed in the case of Financial content tweets, where only 2 out of 7 companies increased the number of financial tweets (see *Table 12b).*

Industry	Utilities
CSR	1

Tweets Count	2016	2017	2018	2016 vs 2018	Trend
eni	274	287	209	-24%	↘
ERGnow	103	95	64	-38%	↘
falckrenewables	2	6	15	650%	↗
Italgas		3	1		↗
snam	15	63	43	187%	↗
Tenaris	21	6	20	-5%	↘
TernaSpA	7	21	29	314%	↗
Total	**422**	**481**	**381**	**-10%**	↘

Industry	Utilities
Financial	1

Tweets count	2016	2017	2018	2016 vs 2018	Trend
eni	176	162	143	-19%	↘
ERGnow	47	52	45	-4%	↘
falckrenewables	38	23	25	-34%	↘
Italgas	4	32	6	50%	↗
snam	80	101	43	-46%	↘
Tenaris	9	8	8	-11%	↘
TernaSpA	15	49	46	207%	↗
Total	**369**	**427**	**316**	**-14%**	↘

Table 12a and 12b. Source: Author's elaboration.

Table 13 shows a recap of the three types of tweet content and the % variation for three years: it can be observed that the variation of Financial and CSR tweets is positive only from 2016 to 2017, while in the other variations are negatice. However, it is worth pointing out that the reduction from 2016 to 2018 of CSR related information (-10%) is lower than both Generic information (-47%) and Financial related information (-14%).

Content	2016	2017	2018	2016 vs 2017	2017 vs 2018	2016 vs 2018
Financial	369	427	316	16%	-26%	-14%
CSR	422	481	381	14%	-21%	-10%
Generic	918	749	489	-18%	-35%	-47%

Table 13. Source: Author's elaboration.

As regards the weighted percentages of each type of information content on total tweets, *Table 14* shows that in the case of Utilities companies CSR tweets are more than Financial tweet in all the three years of analysis and that Generic content is always more frequent that the other two information categories. However, the percentage weight changed from year to year and it is important to note that both Financial and CSR tweets weight increased from 2016 to 2018 (+5pp and +7pp respectively), with CSR weight increase being higher than the Financial one. Conversely, Generic content weight lost 13pp in two years.

Content	2016	2017	2018
Financial	22%	26%	27%
CSR	25%	29%	32%
Generic	54%	45%	41%

Table 14. Source: Author's elaboration.

The following part of analysis will focus on Financial and CSR information posted on Twitter by the 7 utilities companies investigated. Each Tweet has been analyzed according to the dimensions presented in *Table 5*. The following dimensions will be analyzed: CSR category, Managerial Orientation, Information Type, Results Sign, Time Orientation, Dissemination and Disclosure.

CSR Category

Table 15 investigates whether companies tend to prefer disclosing and/or disseminate CSR information that is more related to a specific non-financial information area.

Each CSR tweet was coded according to five scopes that are ascribable to the content requirements of the European Directive on non-financial disclosure (corruption/bribery,

employee treatment, environment, human rights, diversity on company boards). All the tweets that were just issuing generic information about being socially responsible were coded as the *SOC* category.

It can be seen that there were no tweets releasing information about the diversity on company boards and that the messages communicating anti-corruption content were almost missing (only 3 tweets in 2018). Environmental protection was the CSR topic that utilities companies mostly prefer to tweet (75% in 2016, 80% in 2017, 76% in 2018), followed by the generic tweets about social responsibility. The messages talking about employee treatment and human rights were reserved to lower number of total tweets, from 2% to 3%.

	Utilities		
CSR_Category	**2016**	**2017**	**2018**
COR	0%	0%	1%
EMP	5%	2%	2%
ENV	75%	80%	76%
RIG	3%	2%	2%
SOC	17%	16%	19%

Table 15. Source: Author's elaboration.

Managerial Orientation: Symbolic approach information

In order to study if firms undertake a symbolic/boilerplate or a substantive/committed approach when releasing information (see Rodrigue, Magnan and Cho, 2013; Michelon, Pilonato and Ricceri, 2014), this analysis assumes that Objectives, Commitment, Risks and Storytelling information are to be considered symbolic information.

Summing up these four kinds of Managerial_Orientation it can be observed (see Table 53a in the Appendix) a slight reduction from 2016 to 2018 (-6%). If considering each of them singularly, *Commitment* is the category that shows an important increase from 2016 to 2018 (+19%), while *Storytelling* registered the opposite trend (-43%).

When considering only financial tweets (see Table 53b), total boilerplate information is almost stable during the three years of analysis (+3% from 2016 to 2018).

Table 16 examines the evolution of the weighted percentage of each symbolic managerial orientation. It is interesting to note that in case of CSR tweets, Storytelling information weighed 42% in 2016 while in 2018 it decreased to 26%, with a higher preference for Commitment

information (53%). When considering financial tweets only, Objectives and Commitment information totally amounted to 81% of total boilerplate information in 2016, while in 2018 it arrived at a weight of 97%.

When comparing Financial and CSR tweets, it is worth noting that CSR information is mostly about commitment or storytelling information about social responsibility issues that are not strictly related to the companies themselves, while financial tweets mostly communicate messages about companies' financial objectives.

	2016				2017				2018			
	Obj.	**Comm.**	**Risks**	**Stor.**	**Obj.**	**Comm.**	**Risks**	**Stor.**	**Obj.**	**Comm.**	**Risks**	**Stor.**
CSR	12,6%	41,7%	3,2%	42,4%	17,6%	46,6%	4,7%	31,1%	18,8%	52,7%	2,7%	25,7%
Financial	54,1%	36,1%	4,9%	4,9%	63,2%	26,5%	0,0%	10,3%	81,0%	15,9%	0,0%	3,2%

Table 16. Source: Author's elaboration.

Managerial Orientation: Substantive approach information

Assuming that the managerial orientations *Actions* and *Results* are considered as substantive approach information, in the case of CSR tweets it can be observed a modest reduction of 21% from 2016 to 2018 (see *Table 54* in the Appendix*)*. Considering each type of managerial orientation, the results show different trends: *Results* tweets were almost flat (-4%) and *Actions* tweets decreased by 35%.

Financial tweets with Managerial_Orientation that was *Actions* or *Results* (see *Table 55*) showed a slight decrease from 2016 to 2018 (-18%). In particular, the tweets disclosing or disseminating *Results* decreased by 19% and *Actions* decreased by 14%.

Examining the weighted percentages *Actions* and *Results*, it can be observed (see *Table 17*) that in case CSR information firms disclose Actions and Results with same incidence (approximately 50% and 50%), while when considering only financial tweets, Utilities companies prefer to focus on Results (around 80% of total committed approach information).

	2016		2017		2018	
	Actions	**Results**	**Actions**	**Results**	**Actions**	**Results**
CSR	44,2%	55,8%	50,0%	50,0%	53,9%	46,1%
Financial	18,8%	81,2%	19,2%	80,8%	19,8%	80,2%

Table 17. Source: Author's elaboration.

Symbolic vs Substantive approach

Table 18 shows the weighted percentages of symbolic and substantive approach information depending on whether the tweets were releasing CSR or Financial content. It is interesting to note that in the case of Financial information, firms tend to adopt a committed approach in all the 3 years of investigation, while in case of CSR information they prefer to disclose boilerplate information. Furthermore, for both CSR and Financial content tweets, the weight of committed information decreases from 2016 to 2018 (-3pp for both content types).

	2016		2017		2018	
	Boilerplate	**Committed**	**Boilerplate**	**Committed**	**Boilerplate**	**Committed**
CSR	73,2%	26,8%	75,5%	24,5%	76,6%	23,4%
Financial	16,5%	83,5%	15,9%	84,1%	19,9%	80,1%

Table 18. Source: Author's elaboration.

Results sign

When analyzing the sign of the tweets that were coded as Results (*Table 19*), it is evident that utilities companies prefer not to release negative results, nor regard CSR content, neither Financial information, even if in the latter case the negative results accounted for 8% in 2016, going diminishing in 2017 and 2018.

Positive results accounted for 86% of total CSR tweets in 2016 and for 94% in 2018 (+8pp), while they accounted for 54% of financial tweets in 2016 and 65% in 2018 (+11pp), making the Neutral results weighted percentage decrease from 2016 to 2018 (-4pp).

Results Sign	**CSR**			**Financial**		
	2016	**2017**	**2018**	**2016**	**2017**	**2018**
Positive	86%	92%	94%	54%	58%	65%
Negative	0%	0%	0%	8%	1%	1%
Neutral	14%	8%	6%	38%	41%	34%

Table 19. Source: Author's elaboration.

Information type

By analyzing the types of information (qualitative, quantitative or monetary), CSR *Qualitative* information registered a small reduction from 2016 to 2018 (-12%), while *Quantitative* information in 2018 was 10% higher than in 2016 (see *Table 57*).

Quantitative and *Monetary* tweets represented a very low amount if compared to total: in 2016 they were 23 out of 422 (5% of total CSR tweets) and in 2018 they amounted to 28 out of 381 (7% of total CSR tweets), thus showing a feeble growth (see *Table 20*).

In the case of Financial information tweets (see *Table 58*), both *Qualitative* and *Monetary* information diminished from 2016 to 2018 (by 21% and 33% respectively), while *Quantitative* information increased by 61%.

Unlike tweets that disclosed or disseminated CSR information, *Quantitative* and *Monetary* information tweets represented a substantial share of total Financial tweets: in 2016 they were 141 out of 369 (38% of total Financial tweets) and in 2018 they amounted to 136 out of 316 (43% of total Financial tweets), thus showing a moderate growth (+5 pp).

	2016			2017			2018		
	Qualitative	Quantitative	Monetary	Qualitative	Quantitative	Monetary	Qualitative	Quantitative	Monetary
CSR	94,5%	5,0%	0,5%	91,9%	7,7%	0,4%	92,7%	6,0%	1,3%
Financial	61,8%	11,9%	26,3%	61,6%	13,6%	24,8%	57,0%	22,5%	20,6%

Table 20. Source: Author's elaboration.

Time Orientation

Considering the *Time_Orientation* of CSR tweets, the tweets containing *Backward* orientated information were fewer than the *Forward* ones in all the 3 three observed years. Furthermore, *Backward* tweets decreased by 13% from 2016 to 2018, while the *Forward* ones increased by 36% in number of tweet (+11pp of weighted percentage).

In the case of Financial tweets, the time orientation is pretty different if compared to CSR related tweets. Financial tweets were in all the 3 years mostly *Backward* orientated (84% in 2016, 86% in 2017, 81% in 2018), even if *Forward* tweets registered a growth of 4pp from 2016 to 2018.

	2016		2017		2018	
	Backward	**Forward**	**Backward**	**Forward**	**Backward**	**Forward**
CSR	38,8%	61,2%	32,0%	68,0%	27,6%	72,4%
Financial	84,2%	15,8%	85,5%	14,5%	80,6%	19,4%

Table 21. Source: Author's elaboration.

Dissemination vs Disclosure

On *Table 22a* only the Tweets *disseminating* CSR information were considered, while on *Table 22b* the observations are based on tweets *disclosing* CSR-related information tweets only. It can be observed that *Dissemination* and *Disclosure* showed two opposite trends: the first one decreased from 2016 to 2018 (-46%), while the second one significantly increased (+56%). Considering the CSR tweets that both disclosed and disseminated information (*Table 61*) we can see an increase from 2016 to 2018 (+14%).

Industry	Utilities
CSR	1
Dissemination	1
Disclosure	0

Tweets Cour	2016	2017	2018	2016 vs 2018	Trend
eni	120	95	66	-45%	↘
ERGnow	78	64	37	-53%	↘
falckrenewables		1			↗
Italgas		1			↗
snam	1	3	4	300%	↗
Tenaris	2			-100%	↘
TernaSpA		3	1		↗
Total	**201**	**167**	**108**	**-46%**	↘

Industry	Utilities
CSR	1
Dissemination	0
Disclosure	1

Tweets Cour	2016	2017	2018	2016 vs 2018	Trend
eni	29	46	12	-59%	↘
ERGnow	5	14	11	120%	↗
falckrenewabl	2	5	14	600%	↗
snam	5	32	27	440%	↗
Tenaris	9	4	11	22%	↗
TernaSpA	2	11	6	200%	↗
Total	**52**	**112**	**81**	**56%**	↗

Table 22a and 22b. Source: Author's elaboration.

The below two tables have the same scope of analysis of the previous two, that is understanding whether Twitter is more adopted as a disclosure rather than a dissemination tool, with the difference that they observe Financial tweets only. Both disclosure and dissemination tweets registered a reduction from 2016 to 2018 (-30% and -40% respectively).
Looking at financial tweets that both disclosed and disseminated information (Table 62), the result is in contrast with that of *Dissemination* and *Disclosure* taken individually: indeed, they increased by 53% from 2016 to 2018.

Industry	Utilities
Financial	1
Dissemination	1
Disclosure	0

Tweets Cour	2016	2017	2018	2016 vs 2018	Trend
eni	57	44	31	-46%	↘
ERGnow	11	22	8	-27%	↘
falckrenewables		2			↗
Italgas	1	13	2	100%	↗
snam	16	32	15	-6%	↘
Tenaris	3	1		-100%	↘
TernaSpA	3	6	8	167%	↗
Total	**91**	**120**	**64**	**-30%**	↘

Industry	Utilities
Financial	1
Dissemination	0
Disclosure	1

Tweets Cour	2016	2017	2018	2016 vs 2018	Trend
eni	79	88	59	-25%	↘
ERGnow	14	5	21	50%	↗
falckrenewabl	38	9	6	-84%	↘
Italgas	2	14		-100%	↘
snam	48	41	15	-69%	↘
Tenaris	3	4	3	0%	↘
TernaSpA	2	8	7	250%	↗
Total	**186**	**169**	**111**	**-40%**	↘

Table 23a and 23b. Source: Author's elaboration.

Despite the increasing number of tweets *disclosing* information, tweets that *disseminated* information were more than the ones only *disclosing* CSR-related information in all the observed years (see *Table 24*)

The tweets that were both disseminating and disclosing CSR information represented 40% of total CSR-related tweets in 2016 and 50% of total CSR-related tweets in 2018, thus resulting in an increase of 10pp from 2016 to 2018.

Furthermore, unlike the case of CSR tweets, *Disclosure* was preferred to *Dissemination* in all the 3 years when examining only Financial information; however there was a shift from preferring to adopt Twitter mostly as a disclosure tool, to the release of messages that were both disseminating and disclosing information. Indeed, Twitter was used both as a dissemination and disclosure tool in 25% of cases in 2016 and in 45% of cases in 2018 (20pp from 2016 to 2018).

	2016			2017			2018		
	Disclosure	**Dissemination**	**Both**	**Disclosure**	**Dissemination**	**Both**	**Disclosure**	**Dissemination**	**Both**
CSR	12,3%	47,6%	40,0%	23,3%	34,7%	42,0%	21,3%	28,3%	50,4%
Financial	50,4%	24,7%	24,9%	39,6%	28,1%	32,3%	35,1%	20,3%	44,6%

Table 24. Source: Author's elaboration.

2.2.3. Financial services companies

In the next paragraphs the focus will be that of making a comparative analysis from 2016 to 2018 of Financial services companies only.

Tweets Content

Considering all the Tweets (Financial, CSR, Generic) posted by Financial Services companies from 2016 to 2018 (*Table 25a*), it is evident that there was a growth in the total amount of Tweets (+48%). Despite the overall rise in the number of tweets posted from 2016 to 2018, 4 out of 7 firms diminished the amount of disclosed or disseminated information on Twitter; the overall positive variation was enhanced by one specific firm that increased its social presence on Twitter by 446% from 2016 to 2018 (Generali).
Looking at the Tweets containing only Generic information (*Table 25b*), the growth was even higher (+86%) and the positive trend was experienced by more Financial Services firms (4 out 6 companies).

Tweets Count	2016	2017	2018	2016 vs 2018	Trend
Banca_MPS	7		3	-57%	↘
BancaIFIS	271	212	150	-45%	↘
GENERALI	52	307	284	446%	↗
intesasanpaolo	51	83	43	-16%	↘
MediobancaOltre	4	15	1	-75%	↘
TamburiTIP	15	14	22	47%	↗
UniCredit_PR	128	161	281	120%	↗
Total	**528**	**792**	**784**	**48%**	↗

Generic	1

Tweets Count	2016	2017	2018	2016 vs 2018	Trend
BancaIFIS	20	37	6	-70%	↘
GENERALI	41	211	168	310%	↗
intesasanpaolo	17	29	22	29%	↗
MediobancaOltre	4	15	1	-75%	↘
TamburiTIP	11	9	19	73%	↗
UniCredit_PR	81	48	108	33%	↗
Total	**174**	**349**	**324**	**86%**	↗

Table 25a and 25b. Source: Author's elaboration.

Examining only the tweets containing CSR information on the *Table 26a* and the ones containing only Financial information on *Table 26b*, we can see that tweets releasing CSR-related information experienced a huge increase from 2016 to 2018 (+328%), while the tweets containing Financial information grew only by 9% from 2016 to 2018.

CSR	1

Tweets Count	2016	2017	2018	2016 vs 2018	Trend
BancaIFIS	2			-100%	↘
GENERALI	8	58	47	488%	↗
intesasanpaolo	7	11	6	-14%	↘
UniCredit_PR	8	7	54	575%	↗
Total	**25**	**76**	**107**	**328%**	↗

Financial	1

Tweets Count	2016	2017	2018	2016 vs 2018	Trend
Banca_MPS	7		3	-57%	↘
BancaIFIS	249	175	144	-42%	↘
GENERALI	3	40	70	2233%	↗
intesasanpaolo	27	44	16	-41%	↘
TamburiTIP	4	5	3	-25%	↘
UniCredit_PR	39	106	121	210%	↗
Total	**329**	**370**	**357**	**9%**	↗

Table 26a and 26b. Source: Author's elaboration.

Beside the growth of both types of information disclosed or disseminated, it is observable that the firms were more likely to release Financial rather CSR-related content: indeed, only 4 (3, if looking at the firms that posted CSR tweets in all the 3 years) out of the 7 firms object of this analysis chose to release CSR tweets and these ones represented only 5% in 2016 and 14% in 2018 of total tweets posted by the same 4 firms. The Financial Services companies that chose to release financial contents were 6 out 7 and the financial tweets represented 62% in 2016 and 45% of total tweets posted by the same 6 firms.

Table 27 sums up the percentage growth of each content type, showing that CSR information is the only one that increased both in 2017 and 2018. Indeed, it can be observed that the CSR tweets weighted percentage increased by 9pp while those of Financial tweets decreased by 17pp from 2016 to 2018 (*Table 28*).

Content	2016	2017	2018	2016 vs 2017	2017 vs 2018	2016 vs 2018
Financial	329	370	357	12%	-4%	9%
CSR	25	76	107	204%	41%	328%
Generic	174	349	324	101%	-7%	86%

Table 27. Source: Author's elaboration.

Content	2016	2017	2018
Financial	62%	47%	45%
CSR	5%	10%	14%
Generic	33%	44%	41%

Table 28. Source: Author's elaboration.

CSR Category

Table 29 investigates whether companies prefer disclosing and/or disseminate CSR information that is related to a specific non-financial information area.

It can be seen that there were no tweets releasing information about the diversity on company boards and that the messages communicating anti-corruption content were missing too.

The CSR category that Financial services companies mostly choose is that related to generic social responsibility issues as it represented 52% of total CSR in tweets in 2016 and 67% in 2018 (+15pp). The second most released category was Environmental protection, even if it was considerable reduced from 2016 to 2018 (-24pp). On the other hand, employee treatment and human rights together in 2018 were 9 percentage points higher than 2016.

	Financial services		
CSR Category	**2016**	**2017**	**2018**
COR	0%	0%	0%
EMP	0%	2%	8%
ENV	43%	30%	19%
RIG	5%	0%	6%
SOC	52%	67%	67%

Table 29. Source: Author's elaboration.

Managerial Orientation: Symbolic approach information

In order to study if firms undertake a symbolic or a substantive approach when releasing information, this analysis assumes that Objectives, Commitment, Risks and Storytelling information are to be considered boilerplate information.

Summing up these four kinds of Managerial Orientation it can be observed (see Table 63 in the Appendix) an outstanding growth from 2016 to 2018 (+119%), in the case of CSR tweets.

When considering only financial tweets (see *Table 64*), total boilerplate information, despite being reduced by 9% from 2016 to 2017, it grew by 16% from 2016 to 2018.

Table 30 examines the evolution of the weighted percentage of each symbolic managerial orientation. It is interesting to note that in case of CSR content, Commitment was the mostly adopted managerial orientation by Financial services companies; however its weighted

percentage on total boilerplate information has been reduced from 75% in 2016 to 63% in 2018, while the other three orientations increased.

When comparing Financial to CSR tweets, it is worth noting that CSR information is mostly about commitment or storytelling information about social responsibility issues that are not strictly related to the companies themselves, while financial tweets were mostly characterized by storytelling information only (more that 70% in all the three years).

	2016				2017				2018			
	Obj.	**Comm.**	**Risks**	**Stor.**	**Obj.**	**Comm.**	**Risks**	**Stor.**	**Obj.**	**Comm.**	**Risks**	**Stor.**
CSR	0,0%	75,0%	0,0%	25,0%	5,3%	40,4%	1,8%	52,6%	5,7%	62,9%	2,9%	28,6%
Financial	5,4%	8,8%	8,1%	77,7%	4,4%	8,9%	8,9%	77,8%	15,8%	4,7%	5,8%	73,7%

Table 30. Source: Author's elaboration.

Managerial Orientation: Substantive approach information

Keeping only CSR tweets with Managerial_Orientation that was *Actions* or *Results* it can be seen a large growth from 2016 to 2018 (+700%). This result was pushed by the specific Managerial_Orientation *Actions* (see *Table 65*).

Financial tweets with Managerial_Orientation that was *Actions* or *Results* showed a slight increase from 2016 to 2018 (+3%). In particular, the tweets releasing information about *Actions* increased by 43%, while *Results* decreased by 9%.

Examining the weighted percentages *Actions* and *Results*, it can be observed (see *Table 31*) that in case CSR information firms mainly disclose Actions related information (89% in 2016, 79% in 2017 and 90% in 2018), while when considering only financial tweets, Financial services companies prefer to focus on Results (79% in 2016, 65% in 2017, 68% in 2018) even if Actions weighted percentage grew by 9pp from 2016 to 2018.

	2016		2017		2018	
	Actions	**Results**	**Actions**	**Results**	**Actions**	**Results**
CSR	88,9%	11,1%	78,9%	21,1%	90,3%	9,7%
Financial	23,2%	76,8%	35,3%	64,7%	32,3%	67,7%

Table 31. Source: Author's elaboration.

Symbolic vs Substantive Approach

Table 32 shows the weighted percentages of boilerplate and committed approach information depending on whether the tweets were releasing CSR or Financial content. It is interesting to note that in the case of Financial information firms tend to adopt a Committed approach in all the 3 years of investigation, while in case of CSR information they prefer to disclose boilerplate information. However, in 2018 substantive information seemed to overcome the boilerplate one for both types of content. On the other hand, Financial tweets that were releasing boilerplate information in 2018 were 3pp higher than in 2016.

	2016		2017		2018	
	Boilerplate	Committed	Boilerplate	Committed	Boilerplate	Committed
CSR	64,0%	36,0%	75,0%	25,0%	32,7%	67,3%
Financial	45,0%	55,0%	36,5%	63,5%	47,9%	52,1%

Table 32. Source: Author's elaboration.

Results sign

When analyzing the sign of the tweets that were coded as Results, it is evident that Financial Services companies prefer not to release negative results, nor regard CSR content, neither Financial information.

Positive results accounted for 100% of total CSR tweets in 2016 and 2018, while they accounted for 29% of financial tweets in 2016 and 45% in 2018 (+16pp), making the Neutral results weighted percentage diminish from 2016 to 2018 (-15pp).

Results Sign	CSR			Financial		
	2016	2017	2018	2016	2017	2018
Positive	100%	75%	100%	29%	38%	45%
Negative	0%	0%	0%	1%	0%	1%
Neutral	0%	25%	0%	69%	63%	54%

Table 33. Source: Author's elaboration.

Information type

Considering the *Information Type* of CSR Tweets, it can be seen that *Qualitative* information registered a huge growth from 2016 to 2018 (+309%), while *Quantitative* and *Monetary* information tweets were not enough to make a conclusion on the trend from 2016 to 2018 (see Table 68).

In the case of Financial information tweets, both *Quantitative* and *Monetary* information diminished (by 82% and 76% respectively), while *Qualitative* information grew by 38%, thus suggesting that Financial Services companies are more cautious.

Qualitative information tweets represented a substantial share of total Financial tweets: in 2016 they were 246 out of 329 (75% of total Financial tweets) and in 2018 they amounted to 339 out of 357 (95% of total Financial tweets), thus showing a substantial growth (+20 pp). Similarly, CSR tweets were principally communicating qualitative information (*Table 34*).

	2016			2017			2018		
	Qualitative	Quantitative	Monetary	Qualitative	Quantitative	Monetary	Qualitative	Quantitative	Monetary
CSR	92,0%	4,0%	4,0%	89,5%	9,2%	1,3%	87,9%	7,5%	4,7%
Financial	74,8%	11,6%	13,7%	83,2%	5,9%	10,8%	95,0%	2,0%	3,1%

Table 34. Source: Author's elaboration.

Time Orientation

Considering the *Time Orientation* of CSR tweets, the tweets containing *Backward* orientated information were fewer than the *Forward* ones in 2016 and 2017, while in 2018 *Backward* tweets were more than *Forward* ones. Both *Forward* and *Backward* tweets increased from 2016 to 2018 (Table 70).

In the case of Financial tweets, the time orientation is much different if compared to CSR related tweets. Financial tweets were in all the 3 years mostly *Backward* orientated (85% in 2016, 89% in 2017, 73% in 2018), even if *Forward* orientated information increased by 36% from 2016 to 2018 (*Table 35*).

CSR Tweets in 2016 and 2017 were mainly Forward oriented, while in 2018 Backward oriented information became more frequent (73% of total CSR tweets).

	2016		2017		2018	
	Backward	Forward	Backward	Forward	Backward	Forward
CSR	42,9%	57,1%	43,5%	56,5%	73,2%	26,8%
Financial	84,6%	15,4%	88,7%	11,3%	80,5%	19,5%

Table 35. Source: Author's elaboration.

Dissemination vs Disclosure

On *Table 36a* only the Tweets *disseminating* CSR information were considered, while on *Table 36b* the observations are based on tweets only *disclosing* CSR-related information tweets. It can be observed that firms were not very likely using Twitter solely as a means of disclosure or solely as a means of dissemination.

Considering the CSR tweets that both disclosed and disseminated information we can see an important growth from 2016 to 2018 (see *Table 72*).

Industry	Financia ervices
CSR	1
Dissemination	1
Disclosure	0

Tweets Count	2016	2017	2018	2016 vs 2018	Trend
GENERALI	1	26	10	900%	↗
UniCredit_PR	1	1		-100%	↘
Total	**2**	**27**	**10**	**400%**	↗

Industry	Financia ervices
CSR	1
Dissemination	0
Disclosure	1

Tweets Count	2016	2017	2018	2016 vs 2018	Trend
BancaIFIS	2			-100%	↘
GENERALI	6	15	10	67%	↗
intesasanpaolo	6	4	3	-50%	↘
UniCredit_PR	1	1	8	700%	↗
Total	**15**	**20**	**21**	**40%**	↗

Table 36a and 36b. Source: Author's elaboration.

The below two tables have the same objective of the previous two, with the difference that they observe Financial tweets only. Tweets that only disseminated information grey by 30%, while the ones that only disclosed information decreased by 27%. Despite the decreasing number of tweets only disclosing information, these ones were more (38% of total Financial tweets) if compared to the *Dissemination* tweets (24% of total 2018 financial tweets).

Looking at financial tweets that both disclosed and disseminated information, the trend is different if compared to that of *Dissemination* and *Disclosure* taken individually: indeed, they increased by 72% from 2016 to 2018. In case financial tweets, Twitter was used both as a dissemination and disclosure tool in 24% of cases in 2016 and in 38% of cases in 2018 (+ 14 pp from 2016 to 2018).

Industry	Financial Services
Financial	1
Dissemination	1
Disclosure	0

Tweets Count	2016	2017	2018	2016 vs 2018	Trend
Banca_MPS	4		1	-75%	↘
BancaIFIS	43	45	29	-33%	↘
GENERALI	2	12	20	900%	↗
intesasanpaolo	1	8	1	0%	↘
TamburiTIP	1			-100%	↘
UniCredit_PR	16	36	36	125%	↗
Total	**67**	**101**	**87**	**30%**	↗

Industry	Financial Services
Financial	1
Dissemination	0
Disclosure	1

Tweets Count	2016	2017	2018	2016 vs 2018	Trend
Banca_MPS	1			-100%	↘
BancaIFIS	158	70	99	-37%	↘
GENERALI		7	22		↗
intesasanpaolo	19	17	5	-74%	↘
UniCredit_PR	5	14	8	60%	↗
Total	**183**	**108**	**134**	**-27%**	↘

Table 37a and 37b. Source: Author's elaboration.

The tweets that both disseminated and disclosed CSR information represented 32% of total CSR-related tweets in 2016 and they arrived at a weighted percentage of 71% of total CSR-related tweets in 2018 (*Table 38*), thus suggesting a growing preference of posting tweets that both disseminated and disclosed information. In the case of financial tweets, it seems that in 2016 Twitter was used as a disclosure tool while in the next two years they preferred to use it as both disclosure and dissemination tool. The tweets that were only disseminating information represented for both types of content a smaller share of total 2018 tweets.

	2016			2017			2018		
	Disclosure	**Dissemination**	**Both**	**Disclosure**	**Dissemination**	**Both**	**Disclosure**	**Dissemination**	**Both**
CSR	60,0%	8,0%	32,0%	26,3%	35,5%	38,2%	19,6%	9,3%	71,0%
Financial	55,6%	20,4%	24,0%	29,2%	27,3%	43,5%	37,5%	24,4%	38,1%

Table 38. Source: Author's elaboration.

2.2.4. Stakeholders' reactions

The analysis of the three Twitter metrics (Likes, Retweets, Replies[1]) can help measuring the engagement of the audience (in this specific case it is represented by corporate accounts' stakeholders) and can help answer the research questions about whether the stakeholders' reactions change depending on the type of content (Financial, CSR or Generic) companies decide to disclose and/or disseminate.

[1] *Likes* are represented by a small heart and are used to show appreciation for a Tweet. *Retweets* are the tweets that companies' followers share publicly with their followers and doesn't depend on the number of followers of the accounts that retweet; *Replies* are responses to something written by someone on Twitter.

Table 39 examines three Twitter engagement ratios calculated on total Tweets, independently of the content of the information released. Financial services companies average *Likes* per tweet is much higher if compared to utilities companies in all the three years of investigation, while average *Retweets* ratio is more similar between the two kinds of industry.

Investigating on the evolution of the ratios from 2016 to 2018, it is worth noting that the Average *Likes* per tweet rose by 77% when considering Financial Services only and by 103% in case of Utilities companies. On the other hand, average *Retweet* per tweet followed a different evolution, as the ratios of Financial Services companies increased by 24% while Utilities experienced a negative variation of 18%.

Total tweets	Financial Services			Utilities		
	2016	2017	2018	2016	2017	2018
Average *Likes* per tweet	6,6	7,9	11,7	4,0	7,0	8,1
Average *Retweets* per tweet	4,2	4,9	5,2	5,0	4,9	4,1
Average *Replies* per tweet	0,3	0,1	0,3	0,1	0,3	0,3

Table 39. Source: Author's elaboration.

The average Likes, Retweets and Replies per tweet were affected by the number of followers of each sector and company. Financial Services had an average of 11,7 likes per tweet in 2018, which was 3,6 likes per tweet higher than the average of Utilities companies, but this is in part due to the fact that Financial companies had 25% more followers than Utilities.

Furthermore, the improvement of the three metrics from 2016 to 2018 can't be motivated as a pure increase in stakeholders' engagement as it may be that the averages increased as consequence of a higher number of followers. Not having the yearly follower's historical data, this research can't carry out a comparative analysis of each metric from 2016 to 2018 and find any evidence that the improvement of some metrics was ascribable to the enhancement of stakeholders' engagement.

Despite not being able to make an accurate year over year comparative analysis, it will be feasible to compare the average Likes, Retweets and Replies of each sector, type of content and other dimensions.

Tweets Content

By focusing on the type of content communicated (Financial information in *Table 40* and CSR information in *Table 41*), it is interesting to note how the ratio results differ significantly from each other. In the case of Financial tweets all the ratios are much lower than CSR information, regardless the type of industry and year of investigation, suggesting that the stakeholders are more interested in being updated about companies' behavior in terms of corporate social responsibility.

It is also worth noting that the average *Likes* per tweet of Financial Services significantly improved from 2016 to 2018 when considering only financial content tweets, while in the case of CSR tweets it decreased and the same can be observed for the other two metrics.

Conversely, all the metrics of Utilities companies rose from 2016 to 2018 regardless of message content, except for the average Retweets of CSR tweets that in 2018 was lower than 2016.

Financial tweets	Financial Services			Utilities		
	2016	2017	2018	2016	2017	2018
Average *Likes* per tweet	2,6	5,8	10,1	2,2	3,9	6,8
Average *Retweets* per tweet	2,9	3,9	4,6	2,8	3,0	4,1
Average *Replies* per tweet	0,1	0,1	0,2	0,1	0,1	0,2

Table 40. Source: Author's elaboration.

CSR Tweets	Financial Services			Utilities		
	2016	2017	2018	2016	2017	2018
Average *Likes* per tweet	16,8	14,0	12,9	4,2	8,7	8,2
Average *Retweets* per tweet	9,4	8,6	6,0	5,3	5,8	4,4
Average *Replies* per tweet	0,4	0,2	0,3	0,1	0,5	0,3

Table 41. Source: Author's elaboration.

The following two tables examine the average *Likes*, *Retweets* and *Replies* of each company (*Table 42a* focuses on Financial content and *Table 41b* focuses on CSR content), showing that Generali is the company having the best engagement results in the Financial Services sample companies and that Tenaris is the best performer in the Utilities sample companies, both as regards financial and non-financial content. Clearly, the average likes/retweets/replies per tweet

are influenced by the number of followers each company has, so the results are not fully comparable. Generali and Unicredit, for instance, both had 37k followers in 2019 (see *Table 75* in the Appendix), thus we could affirm that, being their ratios comparable, Generali is better in terms of stakeholders' engagement. On the other hand, if we had to compare Eni's ratios with those of Snam we would incorrectly conclude that Eni's Twitter performance is better than Snam; in fact, Eni had 54k followers in 2019 while Snam had only 7k followers.

Financial Content	*Avg Likes*	*Avg Retweets*	*Avg Replies*
Financial services	**6,3**	**3,8**	**0,1**
Banca_MPS	4,8	3,2	0,2
BancaIFIS	4,3	2,7	0,0
GENERALI	18,7	10,8	0,5
intesasanpaolo	2,2	2,0	0,1
TamburiTIP	1,4	1,0	0,0
UniCredit_PR	6,6	4,0	0,2
Utilities	**4,2**	**3,2**	**0,1**
eni	6,1	5,1	0,2
ERGnow	1,4	2,7	0,0
falckrenewables	0,8	0,4	0,0
Italgas	0,8	0,5	0,3
snam	3,4	1,7	0,1
Tenaris	13,1	6,3	0,1
TernaSpA	2,6	1,6	0,0

Table 42a. Source: Author's elaboration.

CSR Content	*Avg Likes*	*Avg Retweets*	*Avg Replies*
Financial services	**13,8**	**7,3**	**0,3**
BancaIFIS	0,5	0,5	0,0
GENERALI	18,5	9,7	0,4
intesasanpaolo	8,3	6,9	0,3
UniCredit_PR	8,5	4,0	0,1
Utilities	**7,0**	**5,2**	**0,3**
eni	8,0	5,9	0,4
ERGnow	3,3	4,2	0,1
falckrenewables	2,9	1,0	0,1
Italgas	3,0	1,8	0,8
snam	9,2	4,8	0,2
Tenaris	11,7	6,7	0,1
TernaSpA	4,5	2,2	0,0

Table 42b. Source: Author's elaboration.

In the next paragraphs the analysis will focus on the reactions to the different dimensions and it will highlight the main outcomes.

- **Managerial Orientation:** in the case of Financial Services companies, by measuring the average *Likes* per tweet of each managerial orientation, it is interesting to note that Commitment and Objectives tweets collect the higher amount of Likes, regardless of the content (financial or CSR), suggesting that stakeholders are concerned about the future strategy of the company. However, by measuring the average Retweets it can be observed that the followers tend to spread Results related information as well.
  With regard to Utilities companies, it can be seen that the followers prefer reading Actions related information in case of financial content and messages about CSR Objectives in case of CSR content.

Finncial Content	Utilities	Financial services
Avg Likes		
Results	3,1	6,4
Actions	7,7	5,5
Commitment	6,2	7,5
Objectives	4,4	14,9
Risks	2,7	4,4
Storytelling	7,7	5,5
Avg Retweets		
Results	2,3	5,3
Actions	6,1	3,2
Commitment	3,7	3,8
Objectives	3,6	7,1
Risks	5,3	2,6
Storytelling	10,6	2,1
Avg Replies		
Results	0,1	0,2
Actions	0,3	0,1
Commitment	0,1	0,3
Objectives	0,2	0,2
Risks	0,0	0,1
Storytelling	0,4	0,0

CSR Content	Utilities	Financial Services
Avg Likes		
Results	7,5	11,0
Actions	6,9	12,1
Commitment	7,7	18,9
Objectives	9,9	17,8
Risks	5,7	12,0
Storytelling	4,6	10,9
Avg Retweets		
Results	5,3	7,6
Actions	5,1	5,8
Commitment	5,5	10,5
Objectives	6,7	11,2
Risks	4,2	9,0
Storytelling	4,2	5,7
Avg Replies		
Results	0,3	0,4
Actions	0,2	0,2
Commitment	0,3	0,3
Objectives	0,6	0,0
Risks	0,3	0,0
Storytelling	0,2	0,4

Table 43a and 43b. Source: Author's elaboration.

- **Results sign**: by analyzing the reactions to different Results sign of Financial content tweets, it is interesting to note that the average Likes are higher for Positive results for both industries, while the average Retweets are higher in case of Negative results for Financial Services companies, thus suggesting that even if the followers like reading positive results, in case of negative ones they are more likely to retweet them in order to spread the information.
-

	Financial Content		CSR Content	
	Utilities	**Financial services**	**Utilities**	**Financial services**
Avg Likes				
Negative	1,3	4,3		
Neutral	3,0	5,5	20,5	1,0
Positive	3,2	7,9	6,0	12,0
Avg Retweets				
Negative	2,0	6,0		
Neutral	2,2	4,9	11,5	2,0
Positive	2,3	5,9	4,5	8,2
Avg Replies				
Negative	0,0	0,0		
Neutral	0,1	0,2	1,2	0,0
Positive	0,1	0,1	0,2	0,4

Table 44a and 44b. Source: Author's elaboration.

- **Information type**: Utilities followers equally prefer qualitative and quantitative information when it comes to financial content, while in case of CSR content they like and retweet more Monetary information.

  Financial Services followers definitely like Qualitative information when it comes to financial content but tend to retweet more the Quantitative information. The average Likes in case of CSR content could suggest that financial services followers equally prefer qualitative and quantitative information.

Finncial Content	Utilities	Financial Services
Avg Likes		
Monetary	1,7	3,5
Qualitative	4,9	6,8
Quantitative	4,9	2,9
Avg Retweets		
Monetary	1,6	4,0
Qualitative	3,7	3,7
Quantitative	3,7	5,5
Avg Replies		
Monetary	0,1	0,1
Qualitative	0,2	0,1
Quantitative	0,1	0,0

CSR Content	Utilities	Financial Services
Avg Likes		
Monetary	7,7	10,7
Qualitative	7,3	13,9
Quantitative	3,4	13,3
Avg Retweets		
Monetary	5,6	5,4
Qualitative	5,3	7,5
Quantitative	3,5	7,3
Avg Replies		
Monetary	0,1	0,3
Qualitative	0,3	0,3
Quantitative	0,1	0,1

Table 45a and 45b. Source: Author's elaboration.

- **Time orientation**: both utilities and financial services followers on average like, retweet and reply more to forward information, which is composed by *Objectives*, *Commitment* and *Risks*.

Finncial Content	Utilities	Financial Services
Avg Likes		
Backward	4,0	6,1
Forward	4,9	9,3
Avg Retweets		
Backward	3,0	4,6
Forward	3,7	4,7
Avg Replies		
Backward	0,1	0,1
Forward	0,2	0,2

CSR Content	Utilities	Financial Services
Avg Likes		
Backward	7,2	12,0
Forward	8,2	18,5
Avg Retweets		
Backward	5,2	6,1
Forward	5,7	10,5
Avg Replies		
Backward	0,3	0,3
Forward	0,4	0,3

Table 46a and 46b. Source: Author's elaboration.

- **Disclosure and Dissemination**: it is interesting to note that, in case of financial content, stakeholders on average like, retweet and reply more to tweets that are posted with the aim of disseminating information rather than purely disclosing information, regardless the type of company. However, on *Table 47a* it is possible to observe that the tweets that both disclosed and disseminated information have received even more likes and retweets. This evidence suggest that stakeholders prefer to read a short information

preview before clicking on the link inserted in the tweet and fully read a more comprehensive information.

	Disclosure only		Dissemination only		Both	
Financial Content	**Utilities**	**Financial Services**	**Utilities**	**Financial Services**	**Utilities**	**Financial Services**
Avg Likes	2,65	5,04	3,34	6,14	6,66	7,70
Avg Retweets	2,18	3,30	2,60	4,11	4,97	4,18
Avg Replies	0,09	0,06	0,12	0,16	0,20	0,15

Table 47a. Source: Author's elaboration.

Conversely, in case of CSR content (*Table 47b*) , stakeholders appear to have a higher preference for the tweets that were posted to merely disclose information, as average Likes, Retweets and Replies were higher than the tweets that were only disseminating information or both disclosing and disseminating.

	Disclosure only		Dissemination only		Both	
CSR Content	**Utilities**	**Financial Services**	**Utilities**	**Financial Services**	**Utilities**	**Financial Services**
Avg Likes	9,6	19,3	4,8	10,1	7,8	12,3
Avg Retweets	5,4	10,0	4,5	5,2	5,7	6,8
Avg Replies	0,5	0,4	0,2	0,3	0,3	0,2

Table 47b. Source: Author's elaboration.

- **CSR Category**: the below table shows which category of CSR content tweets the followers liked and retweeted the most. It is possible to see that the tweets containing information about employee treatment and human rights were the two categories that on average received more likes and were retweeted more frequently, regardless the company being part of Utilities or Financial Services industry. Moreover, the generic category about corporate social responsibility was the category that received lower average Likes per tweet in the case of Utilities companies, while when it comes to Financial Services, Environmental protection tweets are the one that receive the lowest amount of preference; this could be due to the fact that the Environment is not directly affected by Financial companies activities, contrary to what happens in the case of Utilities companies.

	Avg Likes					*Avg Retweets*					*Avg Replies*				
	COR	**EMP**	**ENV**	**RIG**	**SOC**	**COR**	**EMP**	**ENV**	**RIG**	**SOC**	**COR**	**EMP**	**ENV**	**RIG**	**SOC**
Utilities	7,5	9,5	8,1	9,7	6,3	2,0	6,2	5,8	6,5	4,1	0,0	0,1	0,4	0,3	0,2
Financial Services		15,6	11,7	24,1	15,0		6,0	8,1	12,4	7,5		0,3	0,2	0,6	0,2

Table 48. Source: Author's elaboration.

2.3. Results

1. *How does digital transparency and the quantity of CSR information change after the European Union Directive 2014/95?*

   The European Union Directive 2014/95 in Italy has been implemented through the legislative decree 30 December 2016, n. 254, thus the research is questioning whether after 2016 there has been a change in the digital transparency.

   Considering the Stress Tests carried out by Comprend and applied to around 100 Italian companies, it is possible to highlight that companies that passed the test, as they obtained more than 50 points, increased from representing the 23% of total companies participating to the survey in 2016 to 28% in 2017 and to 31% in 2018. Hence, it can be affirmed that after the implementation of the non-financial disclosure regulation Italian companies increased their digital transparency.

   By focusing only on the 14 companies subject to the further analysis in this dissertation, it is worth noting that the Mean result in terms of digital transparency of Financial Services companies passed form 52,5 in 2016 to 55,1 in 2018 and from 70,1 in 2016 to 71,8 in 2018 in the case of Utilities companies.

   With regard to CSR information, we can observe (see *Table 13*) that in 2017 CSR information twitted by Utilities companies increased by 14% and the year after (2018) diminished by 21%. However, it is important to highlight that the weighted percentage of total tweets of CSR information increased by 7 percentage points from 2016 to 2018 (see *Table 14*). Unlike Utilities companies, Financial Services CSR tweets in 2018 were three times higher than 2016 (see *Table 26*) and the weighted percentage on total tweets increased by 9pp from 2016 to 2018 (see *Table 27*).

   To sum up we can say that after the non-financial regulation digital transparency and the quantity of CSR tweets released both by Utilities and Financial services companies improved, which is a result in line with Leopizzi et al (2018).

1. *How does the CSR and financial related information change in the years of analysis?*
   a. *Did the firms that already intensively disseminate and those that poorly disseminate experience different changes in the financial and CSR information after the European Union Directive 2014/95 implementation?*

      By analysing the content of the tweets from 2016 to 2017 it can be noticed that both CSR and Financial tweets increased in number of tweets and weighted percentages on total tweets for both types of industries (see Tables 12, 13, 26,

27); if we had to compare 2016 with 2018, a reduction of CSR and Financial tweets can be observed in case of Utilities companies, while Financial companies kept increasing both CSR and Financial information tweets.

The different trends of CSR content in the two industries may be due to the fact that Utilities companies starting point was already quite high (25% of total tweets in 2016), while Financial Services companies released CSR content in only 5% of total tweets.

This is consistent with the study of Leopizzi et al. (2018) that found that the Oil&Gas sector realized a lower increase of the quantity of CSR related information after the decree 30 December 2016, n. 254, as the starting point was already high if compared to other sectors.

b. *What type of managerial orientation and type of information companies mostly release? Do they follow a boilerplate/symbolic or committed/substantive approach?*

When analysing the approach that the companies followed in terms of managerial orientation, the results significantly differ depending on the industry and type of content (financial or CSR information).

Utilities companies mostly released boilerplate communications (i.e. objectives, commitment, risks and storytelling information) during the three years when communicating CSR contents (73% in 2016, 76% in 2017 and 77% in 2018), while when disseminating or disclosing financial information they followed a more committed approach (84% in 2016 and 2017, 80% in 2018).

Financial Services in 2016 mostly disclosed CSR boilerplate information (64%) but in 2018 they adopted a more committed approach, releasing more Actions and Results information rather than Objectives, Commitment, Risks or Storytelling. Considering financial content tweets, they equally communicated both boilerplate and substantive information.

Regardless the approach each industry mostly adopted, the amount of substantive information (Results and Actions) tweets generally diminished for both industries from 2016 to 2018: -4 percentage points for Utilities companies (both CSR and financial contents) and -3 percentage points for financial content of Financial Services companies).

To conclude, we can observe that there has not been an improvement in terms of substantive information released (actions and results) after the non-financial disclosure European regulation, as in most cases it was reduced, in favour of

greater amount of boilerplate communications. This result is in line with Michelon et al. (2014) findings that supported that companies tend to adopt a boilerplate approach when disclosing CSR reports.

2. *Are companies strategic in the choice of CSR and financial information to be disclosed through Twitter?*
    a. *Do the companies strategically choose the information to disseminate or disclose on Twitter? In other words, are the contents released both positive and negative or there is a tendency in communicating only good and neutral news?*
    By analysing the Results sign (Positive, Negative, Neutral) of CSR tweets it is evident that Utilities firms disclose or disseminate mostly positive information (86% in 2016, 92% in 2017 and 94% in 2018); the remaining results were neutral (see *Table 19*). The same results can be observed for Financial Services companies (see *Table 32*). These outcomes are consistent with Jackson et al (2019) research which argues that mandatory non-financial disclosure imposes companies to highlight only the positive aspects of CSR but does not require companies to disclose the impacts of potentially negative behaviour (Corporate Social Irresponsibility).

    When it comes to financial content tweets, we can similarly observe that negative results account for only around 1% of total financial tweets in both industries. However, in this case positive Results represented only 29% to 45% of total financial tweets of Financial Services companies and 54% to 65% of financial tweets of Utilities companies. The remaining Results were neutral.

    To conclude we can suppose that in case of CSR tweets the sample companies fully avoid to disclose negative Results and at most release some neutral Results, while in case of Financial tweets the companies communicate mainly positive results and neutral results (probably when the actual results were negative). *Table 51* in the Appendix show that in 2017 and 2018 many negative performances occurred in terms of Sales, Income, Market Capitalization, Book-to-market ratios, End-year share price, but it seems that the companies do not release most of these negative results on Twitter, thus suggesting that they are strategic in the use of Twitter as a disclosure and dissemination tool. This deduction is in line with the findings of Jung et al (2018).

b. *Is there a clear a preference in the use of Twitter as a dissemination rather than a disclosure tool?*

By examining the way the sample companies used Twitter in three years, it can be noticed that Utilities companies adopted in 2016 this social media mainly as a Dissemination tool when it comes to CSR information (48% of total tweets) and as a Disclosure means for financial communications. These choices changed in the following two years arriving in 2018 at using Twitter both as a Disclosure and Dissemination tool (the tweet both immediately disclosed a short message and included a hyperlink to a source that discloses more in-depth information) for both types of tweet content (see *Table 23*).

With regard to Financial Services companies, the results are quite different as in 2016 they preferred to use Twitter mainly as a disclosure tool for both financial and non-financial information. As well as Utilities companies, the preferences changed in the following two years as in 2018 they adopted Twitter mainly as a tool both for disclosing and disseminating information for both types of content (see *Table 36*).

Blankespoor et al. (2014) and Alabarrak (2020) supported that Twitter is majorly used a dissemination tool, while after having analysed the tweets of Financial and Utilities companies from 2016 to 2018 we can affirm that, as ex-ante supposed, many companies have started posting tweets that were both disseminating and disclosing in order to shortly and quickly update on projects and results their stakeholders.

3. *What are the Twitter audience reactions to the different kinds of Tweets in terms of managerial orientation, information type and CSR category? Is there an "information gap" between what the followers prefer to be informed about and the communications that the companies release on Twitter?*

Twitter audience reactions have been analysed by measuring the average Likes/Retweets/Replies per tweet corresponding to different dimensions (tweets content, managerial orientation, results sign, information type, time orientation, dissemination/disclosure). Here it will be reported only the most significant evidences.

The first evidence that the analysis revealed is that stakeholders (corporate followers) on average like, retweet and reply more frequently to CSR content tweets, rather than to Financial content tweets. This observation is valid regardless the industry and the year of investigation (see Table 38 and 39).

Considering the average likes of Backward and Forward information it is worth noting that both Utilities and Financial services followers on average like, retweet and reply more to forward information rather than backward information, suggesting that stakeholders are often interested in the future strategy of the companies, their commitment and objectives. This evidence is consistent with Comprend (Webranking by Comprend, 2018) that affirm that Italian companies are good at reporting their performance, but less in making commitments for the future, declaring measurable targets, which is what actually stakeholders ask for.

With regard to CSR category, it is interesting to point out that the tweets containing information about employee treatment and human rights were the two categories that on average received more likes and were retweeted more frequently, regardless the industry. This is consistent with Wang and Huang (2018) research which supports that emphasizing internal CSR activities on social media (Facebook in their specific research) made the public-organization relationship improve, even among external stakeholders, as they *"may perceive the organization as more caring when the organization treats its employees well"* and because *"external stakeholders tend to be less skeptical toward internal CSR activities as they are more directly related the operation of an organization"* (Wang and Huang, 2018).

When investigating whether there exist an "information gap" between how and what companies release on Twitter and what are the actual followers/stakeholders' interests and needs, the following evidences are worth to be noticed:

- Average likes and retweets per tweet are higher in the case of CSR information tweets rather than Financial tweets (regardless the industry and year of observation), suggesting that stakeholders are interested in being informed about companies' strategies and actions in terms of corporate social responsibility; on the other hand, although we have seen a slight increase in the weighted percentages of CSR tweets on total Tweets for both industries, non-financial communications sometimes still account for a low weighted percentage of total information released on Twitter, primarily in the case of Financial services industries, thus making arise an information gap.
- Objectives related tweets are the ones that financial services followers like the most (at least twice all the other managerial orientations) when it comes to financial information (see *Table 43a*), while actually only 3% of financial content tweets are disclosing or disseminating objectives. A similar information gap has been found in terms of CSR tweets as well: Objectives are the tweets that financial services

followers like to retweet the most, but this kind of information represents only 2% of total CSR communications.

- Regarding the CSR category, we have mentioned above that Employee Treatment and Human Rights are two non-financial information areas that the followers mostly appreciate. By examining the number of tweets that released these two types of information and concluding that only 6% of total three years CSR tweets meet this information need, it is possible to notice a further significant information gap.
- After having found that the followers of both industries prefer the tweets that both disclose and disseminate information, it is interesting to point out that although firms in 2016 were mostly adopting Twitter as either a disclosure tool or a dissemination tool (depending on the industry and tweet content), in the following years they have changed their way of communication and have started to increase the number of tweets that were both disclosing and disseminating information. Therefore, in this case companies seem to be more aligned with their stakeholders' preferences.

Conclusion

This paper had the aim of investigating how financial and non-financial communication through Twitter evolved over the period 2016-2018 in a group of Utilities and Financial Services companies.

The first part of the essay primarily dealt with the meaning of financial communication and the review and analysis of the main tools that firms adopt when disclosing information to their external stakeholders. Afterward, the concept of Corporate Social Responsibility was introduced, the importance for stakeholders of an effective CSR communication has been highlighted especially in the light of the regulation on mandatory non-financial information disclosure (European Union Directive 2014/95, which was implemented in Italy through the legislative decree 30 December 2016, n. 254). Finally, the focus has been on analyzing the recent years academic literature that shows how Twitter has started to play an important role for companies and the impact of Twitter dissemination on capital markets.

The literature review carried out in the first part allowed the author to formulate research questions which on the one hand confirmed or contradicted results already highlighted in previous papers and that on the other hand answered new questions on which no studies have been done yet.

Thanks to the *Content Analysis* applied to almost seven thousand observations (i.e. tweets posted from 2016 to 2018 by fourteen companies belonging to Utilities and Financial Services industries), it is possible to draw the following conclusions.

Firstly, the yearly overall number of tweets was reduced by 12% from 2016 to 2018, despite an increase of 9% from 2016 to 2017. However, it is important to point out that the variation differed depending on the industry and on the type of content communicated (i.e. financial, CSR or generic information); furthermore, it has been noticed that in some cases financial and CSR number of tweets acquired a greater weight on total tweets, thus decreasing the number of messages that released residual information (generic content).

Going into the details of each type of industry and type of content, by comparing 2016 figures to 2018 ones, a reduction of CSR and Financial tweets can be observed in case of Utilities companies, while Financial companies kept increasing both CSR and Financial information tweets; the weighted percentage of CSR tweets of Utilities firms increased by 7 percentage points from 2016 to 2018, while Financial Services CSR tweets in 2018 were three times higher than 2016 and the weighted percentage on total tweets increased by 9pp from 2016 to 2018.

The different trends of CSR content in the two industries may be due to the fact that Utilities companies starting point was already quite high (25% of total tweets in 2016), while Financial

Services companies released CSR content in only 5% of total tweets. This is consistent with the study of Leopizzi et al. (2018) that found that the Oil&Gas sector realized a lower increase of the quantity of CSR related information after the decree 30 December 2016, n. 254, as the starting point was already high if compared to other sectors.

With regard to the mandatory non-financial disclosure regulation, the analysis of the Webranking by Comprend results allowed to deduct that after the European Directive digital transparency of both industries improved, with the Financial Services companies improvement being slightly greater than the one of Utilities; this result is in line with Leopizzi et al. (2018) findings, as well.

Moreover, the content analysis showed how companies have changed from 2016 to 2018 in terms of how they use Twitter, either as a disclosure or dissemination tool: in 2016 they used it mostly as a disclosure tool (with some exceptions), while in the following years they started posting tweets that were both disseminating and disclosing information (the tweet both immediately disclosed a short message and included a hyperlink to a source that discloses more in-depth information), which was in line with stakeholders' preferences.

Keeping focusing on the way companies use Twitter, we could also conclude that they are strategic in the choice of types of results to disseminate or disclose (i.e. positive, negative or neutral results). The research shows that when releasing financial information, they tend to communicate mainly positive and neutral results, fully avoiding the negative results which on average represented only 1% of total tweets, while in the case of CSR tweets the results were virtually only positive. These outcomes are consistent with the findings of Jung et al (2018), who support that firms are strategic when they disseminate information, and with Jackson et al (2019) research which argue that mandatory non-financial disclosure imposes companies to highlight only the positive aspects of CSR but does not require companies to disclose the impacts of potentially negative behaviour.

Finally, an analysis on stakeholders' reaction to different kinds of tweets was carried out in order to examine which are the types of contents they are mostly interested in and to highlight any information gap between their information need and the contents that companies use to release on social media.

Average likes and retweets per tweet were higher in the case of CSR information tweets rather than Financial tweets, suggesting that stakeholders are interested in being informed about companies' strategies and actions in terms of corporate social responsibility; on the other hand, although we have seen a slight increase in the weighted percentages of CSR tweets on total Tweets for both industries, non-financial communications sometimes still account for a low

weighted percentage of total information released on Twitter, primarily in the case of Financial services industries, highlighting a possible information gap.

Objectives related tweets are the ones that financial services followers like the most (at least twice all the other managerial orientations) when it comes to financial information while actually only 3% of financial content tweets are disclosing or disseminating objectives. A similar information gap has been found in terms of CSR tweets as well. This evidence is consistent with Comprend (Webranking by Comprend, 2018) that affirm that Italian companies are good at reporting their performance, but less in making commitments for the future, declaring measurable targets, which is what actually stakeholders often ask for.

Regarding the CSR category, we have observed that Employee Treatment and Human Rights are the two non-financial information areas that the followers mostly appreciate, but only 6% of total three years CSR tweets meet this information need, thus it is possible to notice a further significant information gap.

To conclude it can be said that companies in some cases improved their financial and non-financial communication on Twitter from 2016 to 2018, but there is still a lot of room for improvement, such as issuing less boilerplate information (i.e. storytelling and commitment) and more contents that match the information need of stakeholders.

Appendix

Keywords for CSR and Financial Information Coding

Financial Information	CSR Information
1Q / 2Q / 3Q / 4Q	Carbon
Acquisition	Children
Analyst/s	CircularEconomy
AnnualReport	Citizens
BalanceSheet	Climate
Board of directors	ClimateChange
Bond	CO2 emissions
Business/Industrial/strategic plan	CSR
Cash flow	Decarbonization
CFO	Dialogue
Debt	Diversity
Dividends	Employee/community engagement
Ebit/Ebitda	Energy/water/resources saving
Finance/financial	Environment
FY15 / FY16/ FY17/ FY18	ESG
GreenFinance	Green energy
H1 / H2	Human rights
Income	Inclusion
Investment/s	Local community
Investor/s	Lowcarbon
IR	Reforestation
Profitability	Renewable
Rating	Sharing economy
Results	Socialresponsibility
Revenue	Stakeholders
Sale	Sustainability
Shareholder/s	Sustainable
Shares	Waste
SustainableFinance	Women

Table 49. Source: Authors' elaboration.

Database representation

Account	Industry	Tweet	Disclosure	Dissemination	Content_type			CSR_Category					Managerial_Orientation						Information_type			Results_sign			Time_ Orientation		Hyperlink	Webrank	Twitter dimensions			Year
Account	Industry	Tweet	Disclosur	sseminat	inancia	CSR	Generic	ENV	EMP	RIG	COR	SOC	Action	Result	nmitm	bjectiv	Risks	rytell	ualitati	uantitati	Monetar	Positiv	egativ	Neutra	ackwar	orwar	Hyperlin	Webran	Likes	Retweet	Replies	Year
eni	Utilities	Proof of facts: an assessment of the prospe	0	1	0	1	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	1	87	2	5	0	2016
eni	Utilities	A #green shamrock that can perform trillior	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	87	4	10	1	2016
eni	Utilities	Eni starts production of Mpungi #offshore	1	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	1	87	17	23	0	2016
eni	Utilities	After holidays diet tips? Less vegetable oil	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	87	1	5	1	2016
eni	Utilities	#Norway isn't just fjords, auroras and salm	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	87	5	8	0	2016
eni	Utilities	Existing technology in a new light: Archime	1	1	0	1	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	1	87	10	10	0	2016
eni	Utilities	#Africa to attain the "green' turn of the wo	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	87	7	5	0	2016
eni	Utilities	#BioFuels are getting the respect they dese	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	87	7	20	0	2016
eni	Utilities	#Research and #innovation to give value to	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	87	4	8	0	2016
eni	Utilities	The international community to honor its r	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	87	3	5	0	2016
eni	Utilities	Welcome to the #hotelcalifornia...Now enli	1	1	0	1	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	1	0	1	87	3	9	1	2016
eni	Utilities	#eniday and the coffee machines to go hunt	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	87	6	10	0	2016
eni	Utilities	Lots of sunshine, but little in the way of so	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	87	7	4	0	2016
ERGnow	Utilities	ERG finalized #EMTN programme for up	1	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	1	76,8	0	0	0	2018
ERGnow	Utilities	"ERG. Always one step ahead" is the book	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	76,8	0	1	0	2018
ERGnow	Utilities	"ERG. Always one step ahead" is the book	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	76,8	2	3	0	2018
ERGnow	Utilities	"ERG. Always one step ahead" is the book	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	76,8	2	3	0	2018
ERGnow	Utilities	#COP24 #ClimateChange #ClimateActionh	0	1	0	1	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	1	76,8	1	2	0	2018
ERGnow	Utilities	ERG is attending today's #RUKOnshore18	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	76,8	9	3	0	2018
ERGnow	Utilities	The #greenERGymakers at work even in th	1	0	0	1	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	0	76,8	10	8	0	2018
ERGnow	Utilities	#RESource2018 #100to100k #greenenERG	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	76,8	0	1	0	2018
ERGnow	Utilities	ERG adheres to #RESource2018 initiative t	1	1	0	1	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	1	76,8	4	3	0	2018
ERGnow	Utilities	ERG executes two Environmental Social G	1	1	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0	1	76,8	3	3	0	2018
ERGnow	Utilities	ERG executes two Environmental Social G	1	1	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0	1	76,8	0	2	0	2018
ERGnow	Utilities	European Parliament gives final green light	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	76,8	1	2	0	2018
ERGnow	Utilities	LEGO launches functioning wind turbine m	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	76,8	0	1	0	2018
ERGnow	Utilities	Board of Directors of ERG approves the Ir	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	1	0	1	76,8	0	2	1	2018
ERGnow	Utilities	Scottish #windturbines provided record lev	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	76,8	2	3	0	2018
ERGnow	Utilities	#ThePowerofChange at #Festivalscienza #(	1	1	0	1	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	1	76,8	1	2	0	2018
ERGnow	Utilities	#ThePowerofChange at #Festivalscienza #(	1	1	0	1	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	1	76,8	1	3	0	2018
ERGnow	Utilities	#ThePowerofChange at #Festivalscienza #(	1	1	0	1	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	1	76,8	1	3	0	2018
ERGnow	Utilities	#ThePowerofChange at #Festivalscienza #(	1	1	0	1	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	1	76,8	3	1	0	2018
ERGnow	Utilities	"You can results or excuses, not both" #gr	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	76,8	3	5	0	2018
ERGnow	Utilities	ERG and @EON_Italia have signed a trade	1	1	0	1	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	1	76,8	3	0	0	2018
ERGnow	Utilities	From tomorrow to Sunday #ThePowerofC	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	76,8	5	3	0	2018
ERGnow	Utilities	#EvolvingEnergies Saturday 20 and Sunday	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	76,8	1	1	0	2018
ERGnow	Utilities	2.Tomorrow and Sunday Palazzo Ducale in	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	76,8	1	0	0	2018
ERGnow	Utilities	Tomorrow and Sunday 21 ERG for Young:	1	0	0	1	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	0	76,8	4	2	0	2018
ERGnow	Utilities	[#CNE18] Retrouvez l'équipe de @ERGno	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	76,8	4	4	0	2018
ERGnow	Utilities	ERG will participate at the 9° edition of th	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	76,8	3	3	0	2018
ERGnow	Utilities	For @ERGnow's 80th anniversary next we	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	76,8	1	0	0	2018
ERGnow	Utilities	For @ERGnow's 80th anniversary next we	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	76,8	2	2	0	2018
ERGnow	Utilities	For @ERGnow's 80th anniversary next we	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	76,8	0	1	0	2018

Table 50. Source: author's representation.

Financial and Webranking performance 2016-2018

	2016	2017	2018	2016 vs 2017	Trend	2017 vs 2018	Trend
Banca Ifis							
Webranking value	38,9	54,3	53,6	40%	↗	-1%	↘
Sales (€/M)	326,0	525,3	576,5	61%	↗	10%	↗
Income (€/M)	688,0	180,8	146,8	-74%	↘	-19%	↘
Market Capitalization (€/M)	1.389,0	2.178,5	825,1	57%	↗	-62%	↘
Book-to-market ratio	0,9	0,6	1,7	-28%	↘	164%	↗
End-Year Share Price	26,0	40,8	15,4	57%	↗	-62%	↘
Banca Monte dei Paschi di Siena							
Webranking value	34,0	30,3	40,6	-11%	↘	34%	↗
Sales (€/M)	4.282,0	4.025,6	3.287,5	-6%	↘	-18%	↘
Income (€/M)	3.241,1	- 3.502,3	278,6	-208%	↘	-108%	↘
Market Capitalization (€/M)	442,2	4.463,1	1.705,3	909%	↗	-62%	↘
Book-to-market ratio	14,5	2,3	5,3	-84%	↘	126%	↗
End-Year Share Price	15,1	3,9	1,5	-74%	↘	-62%	↘
Eni							
Webranking value	87,0	92,4	93,2	6%	↗	1%	↗
Sales (€/M)	55.762,0	66.919,0	75.822,0	20%	↗	13%	↗
Income (€/M)	- 1.464,0	3.374,0	4.126,0	-330%	↘	22%	↗
Market Capitalization (€/M)	55.817,1	49.695,2	49.695,2	-11%	↘	0%	↘
Book-to-market ratio	1,0	1,0	1,0	2%	↗	6%	↗
End-Year Share Price	15,5	13,8	13,8	-11%	↘	0%	↘
ERGnow							
Webranking value	67,7	74,8	76,8	10%	↗	3%	↗
Sales (€/M)	1.025,5	1.054,0	1.024,0	3%	↗	-3%	↘
Income (€/M)	122,5	206,8	132,6	69%	↗	-36%	↘
Market Capitalization (€/M)	1.535,0	2.315,0	2.480,0	51%	↗	7%	↗
Book-to-market ratio	1,1	0,8	0,7	-28%	↘	-9%	↘
End-Year Share Price	10,2	15,4	16,5	51%	↗	7%	↗
falckrenewables							
Webranking value	-	30,0	32,7		↗	9%	↗
Sales (€/M)	249,6	288,6	335,9	16%	↗	16%	↗
Income (€/M)	- 3,9	19,8	44,2	-603%	↘	123%	↗
Market Capitalization (€/M)	268,7	629,1	678,2	134%	↗	8%	↗
Book-to-market ratio	1,6	0,8	0,8	-52%	↘	4%	↗
End-Year Share Price	0,9	2,2	2,3	135%	↗	8%	↗
Generali							
Webranking value	83,4	87,8	85,2	5%	↗	-3%	↘
Sales (€/M)	85.518,0	83.418,0	74.699,0	-2%	↘	-10%	↘
Income (€/M)	2.239,0	2.295,0	2.497,0	3%	↗	9%	↗
Market Capitalization (€/M)	22.026,0	23.739,0	22.851,0	8%	↗	-4%	↘
Book-to-market ratio	1,2	1,1	1,1	-5%	↘	-2%	↘
End-Year Share Price	14,1	15,2	14,6	8%	↗	-4%	↘
Intesa Sanpaolo							
Webranking value	53,5	51,1	52,8	-4%	↘	3%	↗
Sales (€/M)	16.975,0	17.473,0	17.875,0	3%	↗	2%	↗
Income (€/M)	3.111,0	7.316,0	4.050,0	135%	↗	-45%	↘
Market Capitalization (€/M)	37.152,0	44.820,0	44.947,0	21%	↗	0%	↗
Book-to-market ratio	1,3	1,3	1,2	-5%	↘	-4%	↘
End-Year Share Price	2,4	2,8	1,9	14%	↗	-30%	↘
Italgas							
Webranking value	-	50,9	80,3		↗	58%	↗
Sales (€/M)	196,1	1.124,0	1.176,0	473%	↗	5%	↗
Income (€/M)	- 72,2	293,0	313,7	-506%	↘	7%	↗
Market Capitalization (€/M)	3.019,0	4.135,0	4.036,0	37%	↗	-2%	↘
Book-to-market ratio	0,4	0,3	0,3	-19%	↘	15%	↗
End-Year Share Price	3,7	4,5	4,8	21%	↗	6%	↗
Snam							
Webranking value	93,6	94,2	91,3	1%	↗	-3%	↘
Sales (€/M)	2.560,0	2.533,0	2.586,0	-1%	↘	2%	↗
Income (€/M)	845,0	940,0	1.010,0	11%	↗	7%	↗
Market Capitalization (€/M)	13.612,0	13.953,0	12.606,0	3%	↗	-10%	↘
Book-to-market ratio	0,5	0,4	0,5	-7%	↘	7%	↗
End-Year Share Price	3,9	4,1	3,8	4%	↗	-8%	↘
Tamburi Investment Partners							
Webranking value	-	17,5	20,5		↗	17%	↗
Sales (€/M)	12,4	7,2	11,0	-42%	↘	53%	↗
Income (€/M)	85,6	72,1	29,8	-16%	↘	-59%	↘
Market Capitalization (€/M)	526,8	873,3	911,8	66%	↗	4%	↗
Book-to-market ratio	0,8	0,7	0,7	-11%	↘	-1%	↘
End-Year Share Price	3,6	5,6	5,7	54%	↗	3%	↗
Tenaris							
Webranking value	36,0	34,3	40,0	-5%	↘	17%	↗
Sales (€/M)	3.975,5	4.896,8	7.091,3	23%	↗	45%	↗
Income (€/M)	0,1	0,5	0,8	813%	↗	63%	↗
Market Capitalization (€/M)	20.033,7	15.535,9	11.144,3	-22%	↘	-28%	↘
Book-to-market ratio	0,5	0,7	1,0	31%	↗	43%	↗
End-Year Share Price	17,0	13,2	9,4	-22%	↘	-28%	↘
TernaSpA							
Webranking value	66,2	85,0	88,1	28%	↗	4%	↗
Sales (€/M)	2.103,0	2.248,0	2.319,1	7%	↗	3%	↗
Income (€/M)	627,9	694,0	711,6	11%	↗	3%	↗
Market Capitalization (€/M)	9.367,0	9.668,0	9.507,0	3%	↗	-2%	↘
Book-to-market ratio	0,4	0,4	0,4	4%	↗	8%	↗
End-Year Share Price	4,4	4,8	5,0	11%	↗	2%	↗
UniCredit							
Webranking value	59,3	57,4	62,7	-3%	↘	9%	↗
Sales (€/M)	19.595,0	19.941,0	19.723,0	2%	↗	-1%	↘
Income (€/M)	-11.790,0	5.473,0	3.892,0	-146%	↘	-29%	↘
Market Capitalization (€/M)	8.467,0	34.681,0	22.063,6	310%	↗	-36%	↘
Book-to-market ratio	4,6	1,7	2,5	-63%	↘	48%	↗
End-Year Share Price	13,7	15,6	9,9	14%	↗	-37%	↘

Table 51: Source: Author's elaboration, Webranking and Companies' official website

Sample Companies

Utilities	Financial Services
Eni	Banca Ifis
Erg	Banca Monte dei Paschi di Siena
Falck Renewables	Generali
Italgas	Intesa Sanpaolo
Snam	Mediobanca
Tenaris	Tamburi Investment Partners
Terna Spa	UniCredit

Table 52. Source: Authors' elaboration.

Industry	Utilit
CSR	1

	2016				2017				2018							2016 vs 2018	Trend
	Obj.	Comm	Risks	Stor.	Obj.	Comm	Risks	Stor.	Obj.	Comm	Risks	Stor.	2016	2017	2018		
eni	26	105	8	77	31	121	12	63	26	108	6	38	216	227	178	-18%	↘
ERGnow	7	15	2	54	10	12	2	46	4	11	0	35	78	70	50	-36%	↘
falckrenewables	2	0	0	0	2	2	0	0	1	6	0	0	2	4	7	250%	↗
Italgas					1	0	0	0	0	0	0	0	0	1	0		↗
snam	2	3	0	0	18	21	3	3	15	18	2	2	5	45	37	640%	↗
Tenaris	2	5	0	0	0	4	0	0	1	6	0	0	7	4	7	0%	↘
TernaSpA	0	1	0	0	2	9	0	1	8	5	0	0	1	12	13	1200%	↗
Total	**39**	**129**	**10**	**131**	**64**	**169**	**17**	**113**	**55**	**154**	**8**	**75**	**309**	**363**	**292**	**-6%**	↘

Table 53a. Source: Authors' elaboration.

Industry	Utilit
Financial	1

	2016				2017				2018							2016 vs 2018	Trend
	Obj.	Comm.	Risks	Stor.	Obj.	Comm.	Risks	Stor.	Obj.	Comm.	Risks	Stor.	2016	2017	2018		
eni	10	15	2	2	15	3	0	7	23	3	0	1	29	25	27	-7%	↘
ERGnow	3	0	1	1	7	1	0	0	13	2	0	1	5	8	16	220%	↗
falckrenewables	3	1	0	0	2	0	0	0	6	0	0	0	4	2	6	50%	↗
Italgas	0	1	0	0	5	1	0	0	0	0	0	0	1	6	0	-100%	↘
snam	14	5	0	0	9	9	0	0	5	3	0	0	19	18	8	-58%	↘
Tenaris	2	0	0	0	0	1	0	0	1	1	0	0	2	1	2	0%	↘
TernaSpA	1	0	0	0	5	3	0	0	3	1	0	0	1	8	4	300%	↗
Total	**33**	**22**	**3**	**3**	**43**	**18**	**0**	**7**	**51**	**10**	**0**	**2**	**61**	**68**	**63**	**3%**	↗

Table 53b. Source: Authors' elaboration

Industry	Utilitie
CSR	1

	2016		2017		2018					2016 vs	Trend
	Actions	Results	Actions	Results	Actions	Results	2016	2017	2018	2018	
eni	37	21	38	22	18	13	58	60	31	-47%	↘
ERGnow	2	23	13	12	6	8	25	25	14	-44%	↘
falckrenewables	0	0	1	1	5	3	0	2	8		↗
Italgas			0	2	1	0	0	2	1		↗
snam	2	8	5	13	4	2	10	18	6	-40%	↘
Tenaris	7	7	1	1	10	3	14	2	13	-7%	↘
TernaSpA	2	4	1	8	4	12	6	9	16	167%	↗
Total	**50**	**63**	**59**	**59**	**48**	**41**	**113**	**118**	**89**	**-21%**	↘

Table 54. Source: Author's elaboration.

Industry	Utilitie
Financial	1

	2016		2017		2018					2016 vs	Trend
	Actions	Results	Actions	Results	Actions	Results	2016	2017	2018	2018	
eni	25	122	26	111	22	94	147	137	116	-21%	↘
ERGnow	3	39	6	38	6	23	42	44	29	-31%	↘
falckrenewables	2	32	8	13	12	7	34	21	19	-44%	↘
Italgas	2	1	4	22	0	6	3	26	6	100%	↗
snam	21	40	15	68	3	32	61	83	35	-43%	↘
Tenaris	3	4	3	4	5	1	7	7	6	-14%	↘
TernaSpA	2	12	7	34	2	40	14	41	42	200%	↗
Total	**58**	**250**	**69**	**290**	**50**	**203**	**308**	**359**	**253**	**-18%**	↘

Table 55. Source: Author's elaboration.

	2016		2017		2018	
	Boilerplate	Committed	Boilerplate	Committed	Boilerplate	Committed
CSR	309	113	363	118	292	89
Financial	61	308	68	359	63	253

Table 56. Source: Author's elaboration.

Industry	Utilities
CSR	1

	2016			2017			2018			2016 vs 2018		
	Qualitative	Quantitative	Monetary	Qualitative	Quantitative	Monetary	Qualitative	Quantitative	Monetary	Qualitative	Quantitative	Monetary
eni	269	5	0	278	9	0	203	5	1	-25%	0%	
ERGnow	88	14	1	73	21	1	52	12	0	-41%	-14%	-100%
falckrenewables	2	0	0	6	0	0	13	2	0	550%		
Italgas				3	0	0	1	0	0			
snam	13	2	0	58	5	0	41	0	2	215%	-100%	
Tenaris	21	0	0	6	0	0	20	0	0	-5%		
TernaSpA	6	0	1	18	2	1	23	4	2	283%		100%
Total	**399**	**21**	**2**	**442**	**37**	**2**	**353**	**23**	**5**	**-12%**	**10%**	**150%**

Table 57. Source: Author's elaboration.

Industry	Utilities
Financial	1

	2016			2017			2018			2016 vs 2018		
	Qualitative	Quantitative	Monetary	Qualitative	Quantitative	Monetary	Qualitative	Quantitative	Monetary	Qualitative	Quantitative	Monetary
eni	114	23	39	88	20	54	85	24	34	-25%	4%	-13%
ERGnow	22	5	20	28	4	20	18	12	15	-18%	140%	-25%
falckrenewables	15	2	21	17	2	4	14	9	2	-7%	350%	-90%
Italgas	3	0	1	23	3	6	5	1	0	67%		-100%
snam	59	9	12	75	14	12	33	4	6	-44%	-56%	-50%
Tenaris	7	2	0	6	2	0	4	4	0	-43%	100%	
TernaSpA	8	3	4	26	13	10	21	17	8	163%	467%	100%
Total	**228**	**44**	**97**	**263**	**58**	**106**	**180**	**71**	**65**	**-21%**	**61%**	**-33%**

Table 58. Source: Author's elaboration.

Industry	Utilities
CSR	1

	2016		2017		2018		2016 vs 2018	
	Backward	Forward	Backward	Forward	Backward	Forward	Backward	Forward
eni	58	139	60	165	31	142	-47%	2%
ERGnow	25	24	25	24	14	15	-44%	-38%
falckrenewables	0	2	2	4	6	9		350%
Italgas			2	1	1	0		
snam	10	5	18	42	6	35	-40%	600%
Tenaris	14	7	2	4	11	9	-21%	29%
TernaSpA	6	1	9	11	16	13	167%	1200%
Total	**113**	**178**	**118**	**251**	**85**	**223**	**-25%**	**25%**

Table 59. Source: Author's elaboration.

Industry	Utilities
Financial	1

	2016		2017		2018		2016 vs 2018	
	Backward	Forward	Backward	Forward	Backward	Forward	Backward	Forward
eni	147	27	137	18	116	26	-21%	-4%
ERGnow	42	4	44	8	29	15	-31%	275%
falckrenewables	34	4	21	2	19	6	-44%	50%
Italgas	3	1	26	6	6	0	100%	-100%
snam	61	19	83	18	35	8	-43%	-58%
Tenaris	7	2	7	1	6	2	-14%	0%
TernaSpA	14	1	41	8	42	4	200%	300%
Total	**308**	**58**	**359**	**61**	**253**	**61**	**-18%**	**5%**

Table 60. Source: Author's elaboration.

Industry	Utilities
CSR	1
Disclosure	1
Dissemination	1

Tweets Cour	2016	2017	2018	2016 vs 2018	Trend
eni	125	146	131	5%	↗
ERGnow	20	17	16	-20%	↘
falckrenewables			1		↗
Italgas		2	1		↗
snam	9	28	12	33%	↗
Tenaris	10	2	9	-10%	↘
TernaSpA	5	7	22	340%	↗
Total	**169**	**202**	**192**	**14%**	↗

Table 61. Source: Author's elaboration.

Industry	Utilities
Financial	1
Disclosure	1
Dissemination	1

Tweets Cour	2016	2017	2018	2016 vs 2018	Trend
eni	40	30	53	33%	↗
ERGnow	22	25	16	-27%	↘
falckrenewables		12	19		↗
Italgas	1	5	4	300%	↗
snam	16	28	13	-19%	↘
Tenaris	3	3	5	67%	↗
TernaSpA	10	35	31	210%	↗
Total	**92**	**138**	**141**	**53%**	↗

Table 62. Source: Author's elaboration.

Industry	Financial services
CSR	1

	2016				2017				2018							2016 vs	Trend
	Obj.	Comm	Risks	Stor.	Obj.	Comm	Risks	Stor.	Obj.	Comm	Risks	Stor.	2016	2017	2018	2018	
BancaIFIS	0	2	0	0									2	0	0	-100%	↘
GENERALI	0	3	0	3	3	17	1	30	1	15	1	10	6	51	27	350%	↗
intesasanpaolo	0	7	0	0	0	5	0	0	0	5	0	0	7	5	5	-29%	↘
UniCredit_PR	0	0	0	1	0	1	0	0	1	2	0	0	1	1	3	200%	↗
Total	**0**	**12**	**0**	**4**	**3**	**23**	**1**	**30**	**2**	**22**	**1**	**10**	**16**	**57**	**35**	**119%**	↗

Table 63. Source: Author's elaboration.

Industry	Financial services
Financial	1

	2016				2017				2018							2016 vs	Trend
	Obj.	Comm	Risks	Stor.	Obj.	Comm	Risks	Stor.	Obj.	Comm	Risks	Stor.	2016	2017	2018	2018	
Banca_MPS	1	1	1	0					0	0	0	0	3	0	0	-100%	↘
BancaIFIS	3	9	9	95	2	6	8	75	4	3	2	85	116	91	94	-19%	↘
GENERALI	0	0	0	0	1	4	1	7	22	3	5	7	0	13	37		↗
intesasanpaolo	1	3	1	2	1	2	0	3	1	0	0	4	7	6	5	-29%	↘
TamburiTIP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		↗
UniCredit_PR	3	0	1	18	2	0	3	20	0	2	3	30	22	25	35	59%	↗
Total	**8**	**13**	**12**	**115**	**6**	**12**	**12**	**105**	**27**	**8**	**10**	**126**	**148**	**135**	**171**	**16%**	↗

Table 64. Source: Author's elaboration.

Industry	Financial services
CSR	1

	2016		2017		2018					2016 vs	Trend
	Actio	Resul	Actio	Resul	Actio	Resul	2016	2017	2018	2018	
BancaIFIS	0	0					0	0	0		↗
GENERALI	1	1	6	1	16	4	2	7	20	900%	↗
intesasanpaolo	0	0	5	1	0	1	0	6	1		↗
UniCredit_PR	7	0	4	2	49	2	7	6	51	629%	↗
Total	**8**	**1**	**15**	**4**	**65**	**7**	**9**	**19**	**72**	**700%**	↗

Table 65. Source: Author's elaboration.

Industry	Financial services
Financial	1

	2016		2017		2018					2016 vs 2018	Trend
	Actio	Resul	Actio	Resul	Actio	Resul	2016	2017	2018		
Banca_MPS	1	3			0	3	4	0	3	-25%	↘
BancaIFIS	27	106	23	61	7	43	133	68	50	-62%	↘
GENERALI	0	3	4	23	10	23	3	33	33	1000%	↗
intesasanpaolo	4	16	6	32	2	9	20	34	11	-45%	↘
TamburiTIP	1	3	3	2	1	2	4	3	3	-25%	↘
UniCredit_PR	9	8	47	34	40	46	17	74	86	406%	↗
Total	**42**	**139**	**83**	**152**	**60**	**126**	**181**	**212**	**186**	**3%**	↗

Table 66. Source: Author's elaboration.

	2016		2017		2018	
	Boilerplate	Committed	Boilerplate	Committed	Boilerplate	Committed
CSR	16	9	57	19	35	72
Financial	148	181	135	235	171	186

Table 67. Source: Author's elaboration.

Industry	Financial services
CSR	1

	2016			2017			2018			2016 vs 2018		
	Qualitative	Quantitative	Monetary	Qualitative	Quantitative	Monetary	Qualitative	Quantitative	Monetary	Qualitative	Quantitative	Monetary
BancaIFIS	2	0	0							-100%		
GENERALI	8	0	0	53	5	0	44	2	1	450%		
intesasanpaolo	7	0	0	11	0	0	6	0	0	-14%		
UniCredit_PR	6	1	1	4	2	1	44	6	4	633%	500%	300%
Total	**23**	**1**	**1**	**68**	**7**	**1**	**94**	**8**	**5**	**309%**	**700%**	**400%**

Table 68. Source: Author's elaboration.

Industry	Financial services
Financial	1

	2016			2017			2018			2016 vs 2018		
	Qualitative	Quantitative	Monetary	Qualitative	Quantitative	Monetary	Qualitative	Quantitative	Monetary	Qualitative	Quantitative	Monetary
Banca_MPS	7	0	0				1	0	2	-86%		
BancaIFIS	181	34	34	147	8	20	141	2	1	-22%	-94%	-97%
GENERALI	3	0	0	35	2	3	69	0	1	2200%		
intesasanpaolo	18	2	7	29	7	8	14	0	2	-22%	-100%	-71%
TamburiTIP	2	0	2	3	0	2	0	2	1	-100%		-50%
UniCredit_PR	35	2	2	94	5	7	114	3	4	226%	50%	100%
Total	**246**	**38**	**45**	**308**	**22**	**40**	**339**	**7**	**11**	**38%**	**-82%**	**-76%**

Table 69. Source: Author's elaboration.

Industry	Financial services
CSR	1

	2016		2017		2018		2016 vs 2018	
	Backward	Forward	Backward	Forward	Backward	Forward	Backward	Forward
BancaIFIS	0	2						-100%
GENERALI	2	3	8	20	20	17	900%	467%
intesasanpaolo	0	7	6	5	1	5		-29%
UniCredit_PR	7	0	6	1	50	4	614%	
Total	**9**	**12**	**20**	**26**	**71**	**26**	**689%**	**117%**

Table 70. Source: Author's elaboration.

Industry	Financial services
Financial	1

	2016		2017		2018		2016 vs 2018	
	Backward	Forward	Backward	Forward	Backward	Forward	Backward	Forward
Banca_MPS	4	3			3	0	-25%	-100%
BancaIFIS	133	21	84	16	50	9	-62%	-57%
GENERALI	3	0	27	6	33	30	1000%	
intesasanpaolo	20	5	38	3	11	1	-45%	-80%
TamburiTIP	4	0	5	0	3	0	-25%	
UniCredit_PR	17	4	81	5	86	5	406%	25%
Total	**181**	**33**	**235**	**30**	**186**	**45**	**3%**	**36%**

Table 71. Source: Author's elaboration.

Industry	Financial services
CSR	1
Disclosure	1
Dissemination	1

Tweets Co	2016	2017	2018	2016 vs 2018	Trend
GENERALI	1	17	27	2600%	↗
intesasanpaolo	1	7	3	200%	↗
UniCredit_PR	6	5	46	667%	↗
Total	**8**	**29**	**76**	**850%**	↗

Table 72. Source: Author's elaboration.

Industry	Financial Services
Financial	1
Disclosure	1
Dissemination	1

Tweets Count	2016	2017	2018	2016 vs 2018	Trend
Banca_MPS	2		2	0%	↘
BancaIFIS	48	60	16	-67%	↘
GENERALI	1	21	28	2700%	↗
intesasanpaolo	7	19	10	43%	↗
TamburiTIP	3	5	3	0%	↘
UniCredit_PR	18	56	77	328%	↗
Total	**79**	**161**	**136**	**72%**	↗

Table 73. Source: Author's elaboration.

	2016			2017			2018		
	Disclosure	Dissemination	Both	Disclosure	Dissemination	Both	Disclosure	Dissemination	Both
CSR	15	2	8	20	27	29	21	10	76
Financial	183	67	79	108	101	161	134	87	136

Table 74. Source: Author's elaboration

Twitter presence as of October 2019

Account corporate	Following corporate	Follower corporate	Joined Twitter in
Financial Services	***3.206***	***106.994***	
@UniCredit_IT	341	37.489	2016
@Banca_MPS	61	10.300	2009
@BancaIFIS	798	6.289	2011
@Generali	242	37.100	2013
@intesasanpaolo	612	12.100	2011
@MediobancaOltre	1.083	799	2016
@TamburiTIP	69	2.917	2013
Utilities	***6.359***	***85.791***	
@falckrenewables	279	1.846	2012
@eni	1.258	54.500	2009
@ERGnow	3.276	7.829	2014
@Italgas	44	2.335	2016
@Snam	443	7.183	2013
@Tenaris	373	7.292	2011
@TernaSPA	686	4.806	2011

Table 75. Source: Author's elaboration

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