Development of an Online Reputation index

Master Thesis
MSc. Business Administration

Name: *Sofie Blankhorst*
Student Number: *S1490591*
First supervisor: *Dr. E. Constantinides*
Second supervisor: *Dr. S.A. de Vries*
Date: *23-06-2017*

Acknowledgements

This master thesis is the last assignment of my study Business Administration at the University of Twente. After I completed my study Commercial Economics, I decided to study Business Administration with a specialization in Strategic Marketing & Business Information. I had a great time during my study. I expanded my knowledge and skills, which hopefully will benefit my career opportunities for the future.

I would like to thank some people for helping me during my master thesis. First of all I would like to thank my first supervisor Dr. Efthymios Constantinides for revising my thesis. Also a special thanks to my second supervisor Dr. S.A. De Vries for all the feedback sessions and great ideas during the writing process. Besides this, my thankfulness goes out to the EIT Digital, in special to Karin Oost and Michael Mast for their co-operation in this research.
At last, I would like to thank my family for always supporting and encouraging me during the difficult times in writing my master thesis. Their support was very important to me.

Thank you all.

For now I hope you enjoy reading this master thesis.

-Sofie Blankhorst-
Enschede, June 2017

Management summary

Practical usable Online Reputation index

Introduction
This study shows the development of an Online Reputation index method. The EIT Digital was used as a case study wherein the new OR-index method was tested. In the last few years the amount of social media users has risen with a fast space, which resulted in the rise of available big social data. This data has been used as input for the index. Reputation studies have been used for quite some time now, however the establishment of an online reputation based on Big Social Data is a new development. Concepts such as Big Data, Business Intelligence and Big Social Data are used very often in organizations. But, there is little scientific research that gives more explanation in these concepts. Moreover, many companies already collect enormous amounts of data, but valuable insights in this sort of online reputation data analysis is yet limited.

Research
In this research the following question was formulated: *What is a practical, valid and reliable Online Reputation index method for the Higher Education Network*? To answer this question, five sub-questions were formulated which gave different perspectives on the development of the OR index. The research investigated which constructs were part of the reputation index and in which way validity and reliability could be tested to investigate to what extent the developed index is quality acceptable index.

Development
The Online Reputation index method was developed based on metrics obtained from literature on measuring online reputation. The metrics were then used to determine the reputation within the online domain. In total 6 metrics have been selected: Followers, Visitors, Share of Voice, Reach, Sentiment and Conversation Volume. For each metric, weightings have been determined based on their importance in forming the online reputation. With this information a formula has been developed. By using the formula the OR index can be calculated daily. To provide more insights for the potential patterns within the OR index, knowledge from the economic area was used. In stock exchanges, such as the AEX, patterns exist already for a longer time period. Based on the knowledge on stock patterns, four patterns are defined that could exist in the OR-index. These patterns are: Crossover pattern, Explosive OR pattern, Increased or Decreased OR pattern and OR-Correlation pattern. If one of these four patterns existed in the OR-index, has been tested and investigated in the conduction phase of the index.

Results
Based on the results of the OR index it was determined how the online reputation has developed itself for a set time interval by investigating the contexts of the conversations within the chosen time interval. With the results of the context analysis it was possible to identify the cause of a specific reputation trend. One of the results showed that there was a high increase in the OR-index from one day to another. This cause of this was the sudden increase in the amount and reach of neutral conversations around that day.

Practical usefulness and recommendations
As this is a development study, the practical usefulness of this method is also relevant. The process of determining the OR-index is not a difficult one, however some implications arose around the practical usability of the developed method at certain steps in the method. First of all, the filtering procedure had its implication in the languages selected. To determine the OR-index, 10 languages have been taken into account, which made it difficult to filter certain conversations for their belonging sentiment. In addition, it became more difficult to conduct context analysis on the conversations since the researcher was only familiar with 2 languages. Another implication in the conduction of context analyses is that this process is done manually. When there are for example 140 conversations in 1 day, then determining the context around each conversation takes a lot of time.
It has been recommended to extent the online reputation metrics with other OR metrics in determining the OR index if the additional metrics are reliable and valid which must be investigated by more research.
Moreover, it has been suggested to conduct more research on the metrics that in this research lack in content validity. Whenever more research has been conducted on these metrics the decision can be set to omit the metrics when content validity is still not met or to keep the metrics when content validity is met.

The last recommendation is to adapt the tooling. In this research two toolings are used, the problem with one of them is that the data triangulation is not possible, the underlying algorithm is unknown and the accuracy of data download availabilities is limited for a time period of 7 days, resulting in a limitation of the reliability and validity of the tooling.
Perhaps another tooling could be used that has the ability to download data for a longer time period, the option to conduct data triangulation and has a known algorithm. This contributes to the reliability and validity of the data collection measurement and eventually to the reliability and validity of the OR-index.

Table of contents

1. Introduction

In the first chapter the context of the research area will be discussed. A problem analysis is carried out, which should provide more insight about the context of the problem (§ 1.1). On the basis of this context the main question and sub-questions will be formulated (§1.2). In the last section of this chapter there will be a discussion of the practical and scientific relevance of the research (§ 1.3 and § 1.4).

1.1. Problem analysis

1.1.1. Social media; a reputational risk driver

An industrial accident, a revelation of unethical or criminal practices, a product recall, an extended service outrage, company reputations are in the spotlight like never before. Recent years have witnessed an explosion of social media commentary, strong interventions by regulators, and high profile pressure group campaigns. (Wijman, 2014) With the advance of Web 2.0 technologies, social media has become an additional driver of reputation risk. Content generated through communication in social media can become viral as it reaches and involves a large number of users worldwide.

Several cases have appeared in which the organizational reputation was at risk through the content generated on a social media platform by an customers/employee or other corporations (Horn et al,. 2015). Take for example the case where the reputation of an organization was at risk due to an angry customer. The customer, who was a musician, flew with an airline that accidentally damaged his guitar. The airline refused to buy the musician a new guitar and so the musician updated a music video about the incident on the social video platform YouTube. Millions of people saw the video. As a result, the reputation of the airline was at risk. The airline answered on the event, trying to prevent more reputational damage (Sinanaj, Muntermann & Cziesla, 2015).

Another example that shows the risk of social media on the reputation of an organization is from the Chelsea Football Club. A group of Chelsea fans abused a commuter on the Paris Metro by refusing him to access on the train. Somebody filmed the incident and uploaded the video on Social Media. The incident went viral in only a few hours. In order to prevent a further loss of the reputation, the football club acted on the event by banning the Chelsea fans (Broking Faculty, 2015).

These two cases show how fast bad news, including videos on YouTube or other rumors, misinformation and libelous attacks, can spread across the world in a few seconds. Such activities of placing bad news have the potential to damage the organizations reputation in a very short time (Zurich, 2010).

1.1.2. Big data

Gaining and maintaining a positive reputation is very important. To discover what the reputation of an organization is, many organizations still send out surveys to people to measure the reputation, when eventually the survey information will be used to establish reputation scores. But it takes much time to collect, analyze and visualize this data from the surveys. Because of this, the reputation measured with the surveys is not in line with the current reputation. Moreover, in crisis situations the reputation needs to be measured daily to successfully manage these reputational challenges. Therefore, an established reputation score that generates an index based on a daily basis could be an interesting development for this.
The continuing collecting and sending of surveys to conduct actual reputation measurements is time consuming and expensive in comparison with a yearly measurement. However, a reputation measurement is much more functional and valuable when shorter time intervals are used. The index developed will give an actual rending of the reputation so that organizations are more up to date with their reputation. To achieve this, data needs to be collected that will be continually updated.
The capturing of a reputation index based on big (social) data can be an interesting development. With the index and the use of the data an actual reputation measurement can be conducted.
At the moment, organizations are using big data to transform all aspects of their business, including transforming their operational processes, customer experiences and changing business models (Strong, 2015). In the field of marketing and market research, big data is a term that is used very often. Big data can be described as extremely large data sets that may be analyzed computationally to reveal patterns, trends, and associations, especially relating to human behavior and interactions (Aggerwal, 2016). In the theoretical framework, the term big data would be further discussed.

Exact figures on the amount of data that are stored in data servers are hard to get. However, a company like Facebook is known that it collects about 500 TB 1 per day (Tam, 2012). Google processes even more data; in 2008 this was PB1 20 per day (Dean & Ghemawat, 2008). This amount is caused by all (web) services they offer, like Android, Google Maps or Gmail. Every day millions of people use their services. People are mailing and texting each other, using GPS or Wi-Fi on their smartphone or install various applications on their tablet. All this information created by these users is collected and stored on large servers, in short Big Data. Facebook and Google are just a few examples of large Internet companies, engaged in collecting all this personal information.

1.1.3. Implementing Big Data

Big data can be used as an information source for measuring the online reputation since this data is constantly up to date. However, the amount of big data is growing and therefore collection and analyzing it becomes a difficult process and it brings challenges. In the journal of computer engineering and information technology the potential challenges are discussed. The challenges of Big Data can be grouped into three main categories based on the data life cycle: data, process and management challenges. Data challenges are the ones pertain to the characteristics of the data itself, for example the data volume, variety, velocity, veracity, volatility, quality, discovery and dogmatism. The second group is the process challenges that are related to a series of how techniques: how to capture data, how to integrate data, how to transform data, how to select the right model for analysis and how to provide the results. The third category is management challenges, which cover all privacy, security, governance and ethical aspects (Nasser & Tariq, 2015).
With the rise of the Internet, the amount of big data is increased enormous, especially with the introduction of social media. Social networks have seen an unprecedented growth in terms of users around the world (*e.g.*, as of 11th July 2014, Twitter has over 645,750,000 users and grows by an estimated 135,000 users every day, generating 9100 tweets per second) (Sarker et al, 2015). Through the rise of social media, a new information source is available, where data of people can be collected and analyzed. This development makes it possible and interesting to in particular make use of the social media data.

1.2. Research Questions

This paper is a design study. The goal is to develop an online reputation index method, which measures the online reputation by using big (social) data. The developed method will be tested and executed within the EIT Digital. Based on the goal of this study, the following research questions can be formulated:

M-RQ: What is a practical, valid and reliable Online Reputation index method for the Higher Education Network?

In order to answer the research question, there are 5 sub questions formulated that offer support to the main research question. The first sub questions are about identifying the metrics of online reputation and the drafting of the online reputation index. The sub questions are defined as follows:

RQ-1: What are valid and reliable metrics of Online Reputation? (§ 2.2.4)

RQ-2: What is an Online Reputation Index? (§ 2.2.5)

The next sub questions are related to how the OR-index is developed and tested. In addition, the practical relevance and possible adjustments that are necessary to ensure the usability of the index will also be considered. Thereon, the following sub questions can be defined:

RQ-3: What is the OR-index of the EIT Digital? (§ 4)

RQ- 4:What is the validity and reliability of the OR-index? (§ 4)

RQ-5: Which adjustments must be introduced for the method? (§ 5)

1.3. Practical relevance

Now that the role of social media has risen in such a speed all over the world and the amount of people using it has grown tremendously, the importance of social media can no longer be underestimated. Messages through social media about wrongdoing can have a huge negative impact on the reputation of the organization. Hence, it would be interesting to mainly focus on this domain in this research. The EIT Digital can use the received information about the reputation for example in crisis situations. Or to use the information for adjusting certain activities where there is need from people. Either way, in both cases the information offers the EIT Digital to establish the reputation in the online domain, where after the possibility exists to improve the reputation that eventually can lead to a preference of customers in doing business with you when other organizations products and services are available at the same cost and quality.

One of the practical relevance's of this method is that it is not necessary anymore to approach people for filling in surveys. Collecting data from surveys is time consuming and not up to date, this method will offer a solution to this problem since data collected is up to date and is less time consuming. Moreover, organizations can yield benefits from potential competitors and big data can leverage the decision-making. For example, when the organization have a positive or negative reputation, they can use big data to gain an understanding of what the needs are from the target audience and respond upon these needs. (Villanova University, 2013)

1.4. Academic relevance

Not so long ago, reputation only consisted of what people, particularly those who knew and often interacted with you, knew and thought about u. Unless you were a celebrity, most of the people managed the reputation by acting good or bad in relation to those directly around them. In some instances, a second-degree perception, which is what the people who knew you said about you to the people who they knew, could influence the reputation. But this has changed dramatically. One of the biggest changes comes from the rise of the Internet and in particular social media. The amount of people that can create an opinion about what sort of organization you are is exponentially larger then it was a few years before now. The ability to manage or maintain the online reputation is growing more and more out of individual control. There is little knowledge on how the historical understanding of managing the reputation translates to digital behavior (Davis & Patterson, 2012). Moreover big data stemming from the Internet brings an overload of information. Approaches are needed that allow structure to structure such data, identify the relevant data and make it possible to optimize the decision making process. A possible solution would be to use automated tools that have the ability to cope with big data (Kumar & Dash, 2015).
This study will fill in this gap of lack of knowledge on managing the online reputation by using automated tools that have suitable big databases resulting in an online reputation index.

1.5. Design methodology

This paper represent a design approach study, which is focused on developing an online reputation index method based on literature review. The developed method is tested and conducted on a case study; EIT Digital. Adopting the developed method enables the EIT Digital to identify the online reputation on a daily basis.

To develop an online reputation index the first step is to set requirements and conditions which is the goal of chapter 2. Several requirements have to be set that give more insights into specific topics of importance before developing an index. Also, conditions are set to ensure that the index is of quality acceptable. These requirements and conditions are all based upon literature. With the requirements and conditions set, chapter 3 can be conducted. In this chapter the index method is developed. The first section of chapter 3 describes the steps that are part of the developed index method. After this, the extent to which the method meets the requirements is explored in the second section of chapter 3. It is important that the method meets all the requirements. When the developed method is finished and it meets the requirements, the method can be conducted in the field. The results of the conduction and the extent to which the method meets the conditions is assessed and described in chapter 4. Hereafter conclusions are drawn on the sub and main question(s) formulated and potential adjustments to the method are made in chapter 5. The last chapter discusses the limitations and recommendations of this research that are made based upon the conduction of the method.

2. Requirements & Conditions for the development of the index

2.1. Introduction

This chapter is focused on the theoretical background of the requirements necessary before developing the index and on the conditions needed for the index to be quality acceptable. Based on the main research question: *What is a practical, valid and reliable online reputation index method for the Higher education network?* a framework is created that consists of design questions each focused on different elements needed to answer main research question (see image 1). The design questions identify the requirements and conditions necessary in order to develop the index method in chapter 3. In total there are three elements, which are; Data, index and Reliability & Validity. Based on these three elements, design questions have been formulated for each element. Design questions 1 till 5 identify the requirements and design questions 6 and 7 identify the conditions. The chapter is split up into two parts. The first part aims to provide insights on design questions related to the requirements where the second part is focused on answering the design questions related to the conditions of the OR-index.

Data	**Design question 1:** What are the different data sources that can be used as input for the index?
Index	**Design question 2:** How can online reputation be defined in order for the index to be a reliable and valid representation of the online reputation? **Design question 3:** How can the online reputation be measured? **Design question 4:** How can a decision be set to fix the index? **Design question 5:** What are the different OR-index patterns?
Reliability & Validity	**Design question 6:** How can reliability be assessed? **Design question 7:** How can validity be assessed?

Image 1. Framework

Finally, with the identification of the requirement and conditions in §2.3 and §2.4, conclusions are made in § 2.4 that briefly give an overview of the building blocks necessary for designing the OR-index in chapter 3 and for testing the index in chapter 4.

2.2. Requirements of the online reputation index

A requirement can be described as something that is needed or obligated. Requirements are necessary attributes in a system, a statement that identifies a capability, characteristic or quality factor of a system to have value and utility to a user (Young, 2004). Requirements form the basis for the development work that follows in chapter 3 and so they are very important. With this information the next step is to build and develop the design of the index, where requirements are used as input in the design stage of the index development in chapter 3. As mentioned in § 2.1 there are five design questions that identify the requirements that are necessary in order to develop the index in the next chapter, these are broader explained in this section. At the end of each section a brief conclusion is given that identifies the requirement.

2.2.1. Big data, Business intelligence and Big Social Data

This section strives to answer the first design question by identifying the different data sources. By discussing the different types of data sources, insights are given into the many used terms and concepts around these sources that can be used as input for the index.

DQ1: What are the different data sources that can be used as input for the index?

Big data

Big data is many times defined as extremely big data sets that have grown beyond the ability to control and analyze them with traditional data processing instruments. Many literature have argued upon the definition of big data and when all of these definitions are bundled together, big data can be defined as follows: Big data can be seen as a situation in which data sets have grown to such huge sizes that usual information technologies have no longer the capability to effectively handle the quantity of the data set or the scale and growth of the data sets. Or in other words, the data set has grown to such a large amount that it is tough to manage and even more difficult to receive value out of it. The difficulties arise from the acquisition, storage, searching sharing, analytics and visualization of the data (Ohlhorst, 2012). An example of Big data is internet clickstream data, such as the amount of visitors (Woodie, 2014). Big data can be featured by the 5 "V's"; Volume, Varity, Variability, Velocity and Value (Demchenko, Ngo, De Laat, Membrey & Gordijenko, 2014). Image 2 shows the 5 V's.

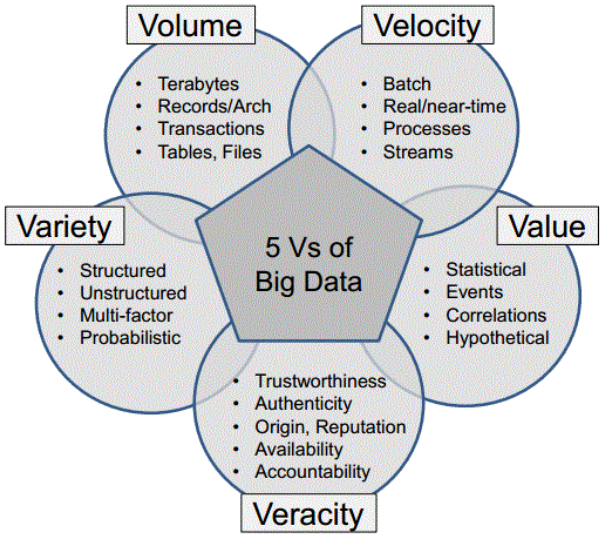


Image 2: 5 V's from Big Data (Demchenko et al.,2014)

Volume

The size of big data is larger than conventional data. The term big is therefore referring to the volume of the data. The volume of big data is the amount of data generated each second, that are according to the social network Facebook, around four billion like clicks, four hundred million updates by users and in total ten billion messages generated each day. Besides Facebook, there are many more other social sites that have around the

same data generation amount. This amount of volume cannot be stored and analyzed with traditional systems and it requires new techniques to handle this amount of data (Marr, 2014).

Variety

The concept of Varity concerns the diversity in data sources. Variety in big data includes traditional sources of data, among physical real world data (traffic data), spreadsheets, social data (Twitter articles) but also newer sources of unstructured or semi structured data (Ishikawa, 2015; Natarajan, Frenzel & Smaltz, 2017). When data was not that big, data was normally heterogeneous, and this data could be easily put into tables. But in the present, data that is generated is according to statistics, unstructured in 80 percent of the cases. Unstructured data contain photos, videos texts, graphics etc. This forces to come up with new solutions to store the data (Marr, 2014).

Veracity

Veracity refers to the abnormality in data and is one of the biggest challenges in data analyses. Finding and using data that is relevant for analyses so that the results are trustworthiness is becoming very difficult (Manish, 2016). Since there are many forms of big data, the quality and accuracy is less controllable (Marr, 2014).

Velocity

Big data is featured by velocity due to its diversity in speed. Velocity determines the speed at which new data is produced and the rate at which it is spread from one location to another. These locations can be their origin or where it is used. Velocity of big data can be understand by the speed at which social website content can go viral in seconds. (Manish, 2016).

Value

The last characteristic is Value. Big data is valuable because it can be used to conduct analyses. The results coming from the analyses can then be used to make business decisions. Big data can be used for both businesses and analyses activities (Manish, 2016). It's important to assure that the insights that are generated are based on accurate data and lead to measurable improvements at the end of the day (Jain, 2016).

Business Intelligence

The term Business Intelligence has first been defined in 2011 by Saberhwal and Becerra-Fernandez as supporting decision making by using valuable information and knowledge through different sources of data.
According to Rud (2009) *"Business intelligence (BI) is a set of theories, methods, architectures and technologies which can help to convert raw data into meaningful and useful information for business purposes. BI can handle large amounts of information and can help facilitate new to identify and develop applications. By making use of new features and 18 Practicable "Social Media Reputation 'index implementing an effective strategy, a competitive market can benefit and stability yield in the long term".*
Business Intelligence (BI) should not be confused with Big Data. BI is frequently given as Big Data but these terms, however, differ from each other. The main distinguishing feature between Business Intelligence and Big Data is the focus on the data collected and processed data. Business Intelligence solutions are focused on consistent structured and persistent data. While Big Data Solutions been specifically optimized for more unstructured and non-consistent data (Arthur, 2013; Blumberg and Atre, 2003).

Big social data

In the present days we live in a society where people are continually interacting with each other. Most of these social interactions are taking place on the Internet and is moderated by information technologies, this is caused by the sudden evolution of social computing and the explosion of social media services on the Internet. A large amount of digital content is spread through social media services among Facebook, Twitter and YouTube (Olshannikova et al., 2017).

From a data perspective, this has resulted in a visible emergence of comprehensive amounts of data generated by humans (Monash, 2010 & Chen, 2010). This data consists of multiple social uses and diverse meanings (for example, sharing content on Facebook, commenting on content, sharing a video on YouTube or other content generated on social media). It has been argued that this type of unstructured-semi structured data forms 95% of all the Big Data (Gandomi and Haider, 2015). The explosion of this Social Data has led to theories and studies on the appearing subject of Big Social Data.

Big Social data can be referred to as data that is big in volume and related to humans. The data represents the behavior of humans and technology-mediated social interactions on the Internet. Big Social Data is mostly used for predictive and descriptive goals to leverage human decision-making, by obtaining information from social media data and social interactions of humans (Golbeck, Robles & Turner, 2011; Power & Phillips-Wren, 2011).

According to Bello-Orgaz et al (2016), Big Social Data can be seen as a combination of Big Data and social media where Big Social Data is needed to analyze huge amount of data from several social media websites. Bella – Orgaz et al (2016) define Big social data as follows: "Those processes and methods that are designed to provide sensitive and relevant knowledge to any user or company from social media data sources when data sources can be characterized by their different formats and contents, their very large size, and the online or streamed generation of information".

The concept and the definition of big social data mainly focuses on social media data, but besides social media as a data source, big social data also consists of other data sources among: Enterprise applications, mobile& apps, search and sensor data. Each of these 'Big Five' data sources has their own characteristics. One source explains something about how people search the Internet, where another data source shows what patterns there are in purchases (Bloem et al, 2012). In this research, the use of big social data plays an important role.

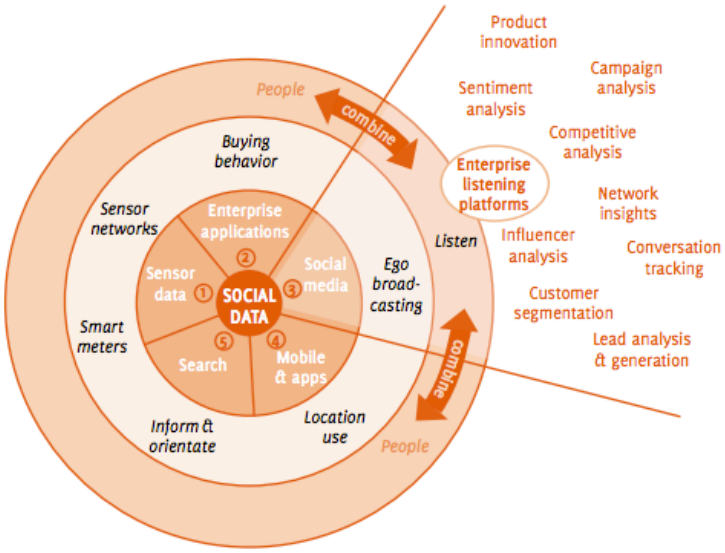


Image 3: The Big Five of Social Data (Bloem et al, 2012)

Conclusion

The goal of this section was to answer the first design question: *What are the different data sources that can be used as input for the index?* The different data sources that can be used for the index were explored and defined. Within this research, big data and big social data, specifically social media data is the main data source used as input and required for the development of the OR- index.

2.2.2. Online Reputation

In order for the online reputation index to be a valid and reliable representation of the online reputation, it is required to explore and define the term online reptuation. To define the online reputation, it is necessary to first identify the historically concept of reputation, secondly explore the importance of a good reputation and finally explore the definition of online reputation. The last two topics that are discussed in this section are about social media. This because social media is a huge potential risk driver for online reputations and so more insights are given on the motivations of people to spread content, and the impact of social media on online reputations. Overall the main focus of this section is to answer the second design question:

DQ2: How can online reputation be defined in order for the index to be a reliable and valid representation of the online reputation?

Reputation

According to different studies corporate reputation can be defined as perceptions and attitudes that different individual members within a stakeholder group have towards an organization based on the expected financial, social or business value compared with competitors within the same industry or community (Highhouse et al., 2009; Schwaiger, 2004; Hiles, 2011).

There are three terms in this definition of corporate reputation that are explained further. To begin with, stakeholders have perceptions of the company formed by the expectation they have or can expect from the company. A stakeholder can be referred to as a human that thinks they have a certain right to expect a value from a company, and that are prepared and are skilled to act upon that expectation in a good or bad way (Hiles, 2011). Stakeholders can create or destroy value, directly or with others. When expectations are being unfulfilled, the chance is bigger that there will be action that can damage the reputation of the organization. For example, a nongovernmental organization can think it has the right to hold an organization to its norms of behavior. If organizations do not meet those expectations, the NGO can go public with indictments that can influence the perceptions held by the stakeholders of the organization. Second, reputations are not the same for every stakeholder since stakeholders differ in expectations of value. Finally, reputation is competitive and companies with the best reputation have competitive advantage compared with companies that have poor reputations (Hiles, 2011).

Importance of a good reputation

The importance of a reputation is argued as to be the most valued organizational asset. A positive and linear relationship exists between reputation and the success of an organization. When an organization yields a positive reputation this facilitates and accelerates the business of organizations. This phenomenon has been observed by the Journal of Business Strategy, which claims that organizations with good reputations improved their business in economic expansion and in periods of prosperity (Gibson, Gonzales & Castanon 2006).

The benefits from achieving a good reputation can consist of many things. First of all it can lead to privileges from the customer in doing business with the organization over competitors. Furthermore, it can empower the organization to increase the prices for their products or services. Because when stakeholders perceive a good reputation of the organization they are more likely to accept increases in prices then of an organization with a negative reputation. A good reputation also has the possibility to strengthen the attractiveness of an organization, simplifying the realization of a broad range of activities. From research literature, we know that companies with positive reputations can more easily attract and retain employees and can ask a higher price for its products". (Fombrun and van Riel, 2007). Besides this, a good reputation can enhance the support and loyalty from stakeholders (Gottschalk, 2011). This benefit is also mentioned according to the Reputation Institute (2010). They claim that "highly reputable companies create the highest level of support and the general public is five times more likely to support the most reputable companies". This is particularly important when the organization faces a crisis situation. In these situations, having benefit of the doubt can be small line leading to a survival or total failure of the organization. Good reputations can cope with crisis situations. This is proven by empirical studies (Warlick, 1992 cited in Doh & Stumpf, 2006).

There is no doubt that good reputations are worth investing in since it has many benefits coming from it. But not every organization yields a positive reputation. When bad reputations exist among organizations they have a hard time in deflecting it to a positive reputaton. This is because reputations are build upon the previous actions and performances of organizations and this past behavior will be used by its stakeholders to forecast future actions (Dowling 2006). So whenever an organization has a bad reputation based on previous behavior, the future actions are also seen as negative by stakeholders, which make it very hard for organizations to reverse this negative reputation into a positive one.
The opposing effects of good and bad reputation can impact the organizations health in multiple ways and can cause avoidance or attraction of stakeholders within certain groups. It is important that organizations should care about managing their reputation. Organizations that often measure, value and manage their corporate reputation have a bigger chance of staying alive in the hazardous, loud and challenging environments in which contemporary organization currently operating in (Fombrun & Riel, 2004),

Online reputation

Online reputation, E-reputation, cyber reputation, web reputation, and digital reputation are some of the several terms used to designate different practices, technologies or professional services (Alloing 2013).
According to the Business directory, online reputation is the status of a corporation in the Internet through blogs, public discussions and other Web articles. Another source, defines online reputation as the information that is available on the Internet about yourself or about your brand/organization. Or in other words, it is the information that you place on the Internet on for example your corporate website or social media such as a Facebook page and the information that other people place on the Internet. This both build the online reputation (Wikipedia). This definition of Wikipedia is in line with the definition from Miller (2015), which defines online reputation as the impression your company gives online created by people and the organization itself.

An online reputation can also be described as the owned, paid media and earned media. Owned media is the information that the organization places on the Internet. It is the content that the organization has complete control over such as the corporate website, blogs, communities, email newsletters as well social media services like Facebook, Twitter, YouTube and other social networks (Lamb et al.,2013.; Kolb, 2015). Paid media is the communication stemming from third parties at the request of the organization and against payment, such as campaigns on Google AdWords or Bing advertisements (Lamb et al.,2013; Kolb, 2015).
Earned media can be considered as 'free' communication by third parties such as consumers or professional media outlets (Wikipedia.org, 2017). It is the content that someone else creates, for example content spread by people on Facebook, blog posts of your organization by bloggers, content generated by people on forums, press releases by the news, competitors who spread content about your organization or reviews about you organization. It is any information generated by others (Anon, 2017).
There is a distinction in earned media. There are two subtypes of earned media namely *traditional media* and *social media* (Stephen and Galak, 2012). When professional media outlets generate content we can speak of traditional media (Humphreys, 2016). Content can be for example an article in a newspaper created by the media. On the other hand, when consumers generate content we can speak of social media. Content in this form can refer to blogs posts, conversations in online discussions, forums and communities, Tweets on Twitters or status updates on Facebook (Humphreys, 2016).

Several authors agree upon the statement that earned media is the most important driver in building an online reputation. According to Risi (2015), earned media should be the cornerstone of driving reputation and reputation is built upon the content on earned social media. The article of Bunting & Lipski (2011) is in line with Risi (2015). Bunting & Lipski (2011) claim that online brand reputation is mainly influenced not by what companies do or say, but rather by how others perceive and respond to their actions and words. This has also claimed by Burgess (2017). They claim that reputations are very important and are often built or destroyed down with earned media. A fourth author that agrees upon the importance of earned media in reputation building is Strauss (2016). The book claims that reputation is a belief in the mind of the beholder, and is based on what other people think of it (E-marketing By Judy Strauss, Frost Raymond D). The last author that is in line with the statement is Fombrun & Riel (2004), this book notates that reputations are built from earned media coverage.

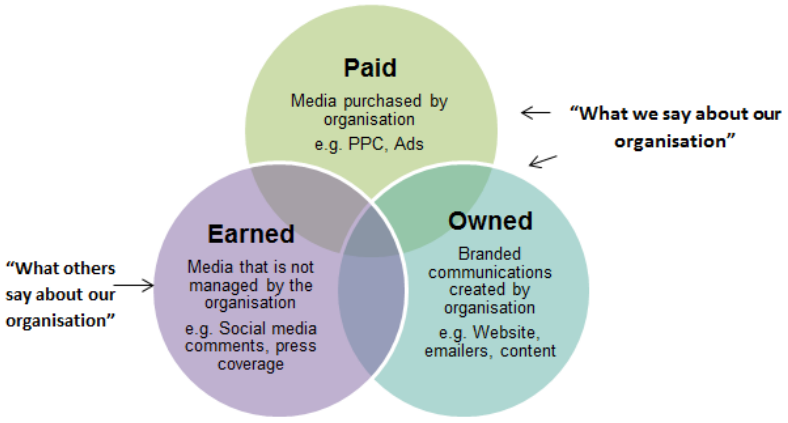


Image 4.The online reputation pillars: Owned, earned and paid media (Powell, 2015)

Motivations of consumers to participate in creation of online content.

Since earned social media, is the most important driver in building reputation of an organization, it is important for businesses to understand all mechanisms that motivate consumers to participate in the creation of online content (Sparks & Browning 2011). The creation of negative or positive online content by consumers on the Internet can be referred to as the electronic word of mouth (Sparks & Browning 2011). EWOM refers to "any positive or negative statement made by potential, actual, or former consumers about a product or company through online media, such as forums in blogs and social networking sites," (Hennig-Thurau et al. 2004)

One of the first studies that explored the motivations of eWOM is from Hennig-Thurau et al (2004) and is developed by using previous literature on motivations from WOM and eWOM. In his study he created a framework that is based upon the principles and support from four main studies; Dichter's seminal research on WOM advertising (1966), Engel's text on Principles of Consumer Behavior (1993), an influential study of WOM motivations (Sundaram, et al., 1998) and a formative manuscript on the management and economic leverage of virtual communities (Balasubramanian & Mahajan, 2001).

Hennig-Thurau et al. (204) found out eight factors that motivate consumers in the creation of eWOM communication; venting negative feelings, concern for other consumers, social benefits, economic incentives, helping the company, advice seeking, platform assistance and self-enhancement. The factors are found based upon a survey sample from German internet-based opinion-platform users.
Although the study from Hennig-Thurau et al. (2004) is used as a directive for many other studies concerning the motivations of eWOM, there are also recent studies that focus on exploring the motivations of engaging in eWOM. An example is the study from Christodoulides and colleagues (2012) that explored the motivations for creating user generated content. By an elaborating theoretical study on motivations for creating user generated content UGC, they came up with four motivations; co-creation, empowerment, community and self-concept

As mentioned, the motivations of eWOM has been studies by many researchers and even though the study from Hennig-Thurau (2004) is most of the time used as a guideline for motivations in eWOM, not every study came up with the same motivations, some differ in motivations (see image 5).

Hennig-Thurau et al. (2004)	*Christodoulides et al. (2012)*	*Bronner & De Hoog (2011)*	*Cheung & Lee (2012)*	*Yap, Soetarto, Sweeney (2013)*	*Yoo, Sanders, Moon (2013)*	*Gretzel & Yoo (2007)*	*Ho & Dempsey (2010)*	*Jeong & Jang (2011)*
Platform assistance/ problem-solving support								
Venting negative feelings				Venting negative feelings		Venting negative feelings		
Concern for other consumers/altruism		Helping others	Helping/ altruism	Help other consumers	Concern for other customers	Concern for other consumers	Need to be altruistic/ personal growth	Concern for others
Extraversion/ positive self enhancement	Self-concept	Self-directed/ personal	Reputation/ egoism	Positive self enhancement	Self enhancement	Extraversion/ positive self enhancement	Need to be different	Express positive feelings
Social benefits	Community	Social benefits	Belonging/ collectivism	Social benefits	Social benefit	Social benefits	Need to be part of a group	
Economic incentives					Economic incentives	Economic incentives		
Helping the company		Helping companies		Helping the company		Helping the company		Helping company
Advice seeking				Advice seeking				
	Co-creation							

Image 5: Motivations of eWOM (Rensink, 2013)

As can be seen in the image, there are different motivations for consumers to participate in creating online content on the Internet. Even though differences exist in the type of motivations, they all can affect the perceptions of other consumers and stakeholders or impact the organizations reputation, sales, and even survival (Kietzmann et al., 2011).

Impact of social media on reputation

The potential risks of social media are huge. Online content created by consumers about organizations on the Internet, especially on social media can have a huge impact on the reputation of organizations. A single tweet or a YouTube video can become viral as it reaches and involves a large number of users worldwide. The last few years have seen a enormous increase in eWOM made possible by social media. Social media gives consumers the potential to evaluate businesses through online reviews and social media commentary on popular social media websites like Facebook and Twitter which can build or damage the reputation of an organization (Dijkmans, Kerkhof and Beukeboom, 2015; Ghose and Ipeirotis, 2009). These evaluations of consumers about organizations or products on social media can reach many other potential consumers. Social media serves as the most important source for consumers to be aware about new brands, products/services and they trust the earned media (Peyok, 2015). If consumers hear or are aware of new brands through social media then this will influence how consumers perceive the brand. These perceptions lead to the development of the organizations reputation from consumers in either a good or bad way. Given the ways that social media have empowered consumers, reputation risk will only increase for organizations.

The next example from Google shows the impact of social media on the reputation of an organization. A couple of users of the social media website YouTube were unsatisfied that Google limited the opportunity to comment on videos. As a resistance to this limitation, a singer from England made a song, called 'My Thoughts on Google+' and uploaded it on YouTube to insult Google. Around two million people have been reached with the song and many people who saw the video supported the opinion of the singer about Google. Some even proposed to use other video platforms, such as Vimeo and suggested to quit using YouTube. Next to this, a petition was created on the website change.org. This petition reached around 200,00 people.
Google came with the argument that a limitation was required since the organization increasingly had to deal with comments that are not serious and not related to the theme and that they were now able to put the most popular comments on top. Consumers replied to this by the argument that it was still possible to create fake accounts on Google+. Even though many negative consumer perceptions were created by this event, Google did not changed back the old comment function.

This example shows three different risky properties of social media, which organizations in any time need to be aware of. To begin with, it gives evidence in how strong the voice of only 1 consumer can be. There is only 1 consumer needed that can lead to a snowball effect, causing many other consumers to complain as well.
In the second place, the example shows that little changes can cause high awareness. Google merely wanted to connect the people that use their video platform YouTube to the social media website Google+, but instead people proposed to use the other video platform Vimeo, which is the competitor of YouTube.
It shows that organizations need to monitor the changes on their social media accounts and the implementation comprehensively and need to have contingency plans available for crisis situations. Undervaluing the risks of the results of little changes of social media can induce high reputational damages or destroy the reputation for organizations.
At last, the example shows how organizations should not respond to consumer complaints. It is essential that organizations should never ignore complaints but instead respond to them. Google tried to justify for the new comment function but did not change back the previous function. Nonetheless, the justification from Google was not enough for many people and so the petition received many subscribers (Therre, 2013).

Conclusion

This section was to understand the concept of online reputation and to answer the second design question: *How can online reputation be defined in order for the index to be a reliable and valid representation of the online reputation?* Based on the extensive literature it can be stated that online reputation is the information spread by the organization on the Internet and the information spread by others on the Internet. Even though, information spread by others is seen by many authors as the most important driver, the focus of this study is the whole online reputation, by taken into account the information created by the organization and the information created by others.

2.2.3. Metrics of Online Reputation

Since the index is based on the online reputation, it is required to identify how the online reputation can be measured and so in this section, the metrics are identified that measure online reputation based on big (social) data. The aim is to use as much metrics as possible to give the most accurate representation of the online

reputation. To establish the OR-index, several individual metrics are identified and selected. With these metrics the OR-index will be calculated and determined daily. The goal of this section is to give answer on the first sub question and on the third design question.

S-RQ1: What are valid and reliable metrics of Online Reputation?

DQ3: How can the online reputation be measured?

Metrics

Metrics are also referred to as numbers that give essential information of a process. They show precise measurements of how a process is operating and can be used to propose improvements, indicate progress or achievements (Managementstudyguide.com, n.d.; Saxena, 2008). Reputation metrics can be classified into quantitative and qualitative metrics. The goal of quantitative metrics is to provide a numerical score and are based upon financial or market variables without taking the opinion expressed by the stakeholder into account. Qualitative metrics are a barometer of reputation, and so they point out the level of exposure of an organization to reputational risks. Meanwhile, qualitative metrics are based on expectations of stakeholders. The goal of these metrics is to synthesize the opinions expressed at a certain time (Dell'Atti and Trotta, 2016).

The metrics that measure online reputation are quantitative and qualitative and are selected based upon earned social media metrics literature, web analytics literature and examples of social media monitoring tools that measure online reputations. First, the reputation index from Rankingz and social media monitoring tools, among Hootsuite, Mention, Rankur and Trackur are used as an example or guideline in selecting the right metrics for this study. Second, several metrics from the book of Hemann & Burbary (2013) are selected. The metrics selected out of this literature is mostly earned social media focused. This because earned social media metrics are most often discussed in the literature as measurement indicators for online reputation and third, web analytics metrics are selected since these metrics are many times associated and aligned with current reputation metrics according to different literature (Chritton, 2014; Schmitz, 2014; Matia, 2016; Caroll 2016). By combining the literature and examples the metrics that are most relevant for measuring online reputation are selected. Relevance is based on how many times the metrics are used in the literature and examples. An overview of al the different online reputation metrics found based on literature and examples can be founded in appendix 1.

Based on an online reputation index example from Rankingz (2013), the metrics selected are grouped into three factors that each focus on different elements in measuring the online reputation. The three factors are: presence, activity and engagement (Rankingz, 2013). A factor refers to one of the elements contributing to a particular result or situation, the online reputation (Silverston and Agnew, 2011). The online reputation index score is calculated by measuring these three factors through the metrics belonging with them. The factors and metrics belonging to each factor are discussed below.

Presence

The first factor is presence. This factor is aiming to provide more insights in to how big an organization is online (Rankingz, 2013). Presence conforms the creating of a footprint on the Internet, in terms of the places you have been, the things that you have said and shared (Thorson, 2014; Fenwick, 2016). In short, it is the information that the organization has spread on the Internet. The presence of the organization online can be measured by looking at the fan base of the organization on various owned social media channels and by identifying how many visitors the corporate website has each day. By identifying the amount of visitors the corporate website it gives a good explanation on how the content spread by the organization or other people on owned social media websites is perceived. Since positive content created on social media is driving more visitors to the corporate website with 22% it is therefore a great metric for measuring reputation. By looking at the amount of followers on the owned social media websites, it shows if people perceive the information the organization has spread, or the online presence that the organization has created of itself as positive and therefore perceive the online reputation of the organization as positive.

Followers

Followers relate to the amount of fans on the organizations owned social media websites. Other words for the term are likes and subscribers. The name depends on the social network site. Followers belong to Twitter, likes to Facebook and subscribers to YouTube. For the easiness we only use the word followers in this research. It

has been identified by Haijli (2015) that an increase or decrease in followers can indicate a certain level of reputation of an organization. An increase in followers relate to a better online reputation. The amount of followers the organization has on the social media websites, on for example Facebook, Twitter or YouTube indicates how many people are prepared to attach them selves to an organization. If people end up following the organization they want to be connected to the organization, meaning that the organization is doing something good and people perceive the organizations reputation as good. After all, no one will follow an organization when they perceive the reputation of the organization as negative. The same can be said for the Facebook Likes: if people are 'liking' the organization on Facebook, this means the information that the organization has posted online has somehow a positive reputation for always having something valuable to offer (Bassig, 2012). Since a decrease or increase in the amount of followers can indicate a certain level of reputation it has been decided to use this metric in the OR-index.

Visitors

The term visitors or users refer to the number of times new and returning users load the website content in a specific time period (Optimize Smart, 2017). It is has been identified that earned social media drives the search optimization resulting in more visitors to the corporate website. Likewise, if more and more people are sharing your content and it's being featured all around the web in an earned capacity, than this is positive for the organization and is driving more visitors to the corporate website (Stamoulis, n.d.). If the number of visitors increases over time, then, logically, the number of those users who eventually become customers should also increase. An increase in the amount of visitors can be seen as a primary factor in determining the success of an online reputation management effort. Businesses with better online reputations generate more visitors to their corporate website (ArgonMarketing.com, 2017). These behaviors of visiting the corporate website are therefore also used as a metric to measure the online reputation.

Activity

The second factor is activity. This factor is concerned with how much activity there is concerning an organization in the online sphere compared to the competitors of the organization (Jobs, 2014). The metric belonging to activity is share of voice (Rankingz, 2013).

Share of voice

Share of voice tracks in percentage form, how much conversation is happening about one brand versus another. The key objective through the growth and measurement of online SOV is reputation (Eightytwenty.ie, 2017). Measuring Share of voice is a good indicator of the organizations reputation and visibility (Marketingworks360.com, 2016). This is essential because management assess 60% of the organizations market value can be assigned to its reputation. Moreover, people who tend to buy a product or service are now as much as 57% of the way along the buying process before really engaging with the organization, which makes being visible even more important. (Shandwick, n.d.). Besides this, a great share of voice is also important whenever a crisis or negative story arises. According to a research from Media Tenor's it is suggested that an organization has to have a minimum share of voice of 35% in order to retain the rate of negative conversations to a minimum in ordinary times. The organization should endeavor them selves to optimize the share of voice to influence the mix of positive, negative and neutral conversations leading to the establishment a more positive reputation (Eccles, Newquist & Schatz, 2007). Overall, having a good share of voice enhances the reputation of an organization and so is taken into account as a metric in the development of the OR-index (Griffin, 2008).

Engagement

Engagement is the last factor. This factor is concerned with how often the organization is mentioned on the Internet. Engagement in the online world is defined as a visitor taking a certain action more then only seeing or reading content. When the visitor takes such an action, it is most possible that this person is expressing interest in the organization (Paine, 2011). Such a form of interaction includes mentioning the organization in online conversations. This interaction is an indicator of how engaged people are. The higher the volume of conversations the more engaged users the organization has and probably a more positive reputation. To give more valuable insight into the conversations, the reach and sentiment are also considered as metrics. Reach refers to how many people have been reached with the conversations where sentiment refers to how many of the conversations are positive, neutral and negative.

Conversation volume

Conversations volume presents a measure of the amount of Internet postings that include a particular name or term. The amount of conversations can be helpful to predict the success of an organization and can say something about the reputation (Babin and Zikmund, 2016). If an organization wants to set a positive reputation it has to land and stay on peoples minds. Therefore, the organization must be frequently mentioned on the Internet (Rogers, 2012). Based on this literature it can be stated that the amount of conversations relates to the reputation and therefore selected as a metric in the development of the online reputation index. But drawing conclusions on the organizations success based on conversation volume alone is not an accurate representation of the reputation. The amount of conversations does not indicate if these conversations are positive, neutral or negative and how many people have seen these conversations, hence the sentiment and reach of these conversations are also used as metrics.

Sentiment

Sentiment as a metric will helps to understand the overall feeling surrounding conversations to create a broader and more complete picture of the social conversations that matters (Dunham, 2014).
According to Lui (2012), sentiment is related with analyzing the opinions of people, evaluations, appraisals, attitudes and emotions against entities such as products, services, organizations, individuals, issues, events, topics and their attribute online. Sentiment can be useful for several things. First by looking at the sentiment over time it can show if the reputation has changed (Berger, 2016). Second, with sentiment one can detect a possible crisis. When for example there is a sudden increase in negative conversations, it could indicate that a crisis is developing. Third, sentiment can also be used to investigate how the organization is perceived in compared with the organizations competitors. Finally, sentiment can be used to evaluate campaigns and other initiatives (Dunham, 2014). Sentiment can be classified into three categories: Neutral conversations, positive conversations and negative conversations (Spiliotopoulou & Charalabidis, 2014). In order to obtain the most positive reputation it is favorable to receive many positive and neutral conversations, and minimum negative conversations.

Reach

Reach measures the distribution of online conversations or in other words, it measures how many people have potentially seen the conversations. It is a measure of possible audience scope (Berger, 2015). Reach is essential in conversations because it will help to understand the possible impact of conversations created by the organization or by others (Union Metrics Help Desk, 2017). Reach is estimated by the sum of people who follow a user and the amount of users that shared the content with others (Berger and Berger, 2015). People who have been reached by positive conversations can be influenced by these conversations and so the reputation of the organization can be build in a positive way. The opposite occurs when people have been reached with negative conversations. Reach of conversations can either build or damage the reputation depending on the sentiment and so reach is a valuable metric that can give more insights on the conversations and therefore used in the development of the online reputation index.

Conclusion

This section aimed to answer the first sub question and the third design question. The index is a representation of the online reputation and so it is required to identify how to measure this concept. Based on literature it can be stated that online reputation can be measured with metrics. In total there are 6 metrics selected to measure the online reputation: Followers, Visitors, Share of Voice, Conversation volume, Reach and Sentiment, see image 6 for the factors & metrics. The metrics were divided into three factors, presence, activity and engagement and are used into the development of the daily online reputation index. The process of developing the online reputation index is described in the next section.

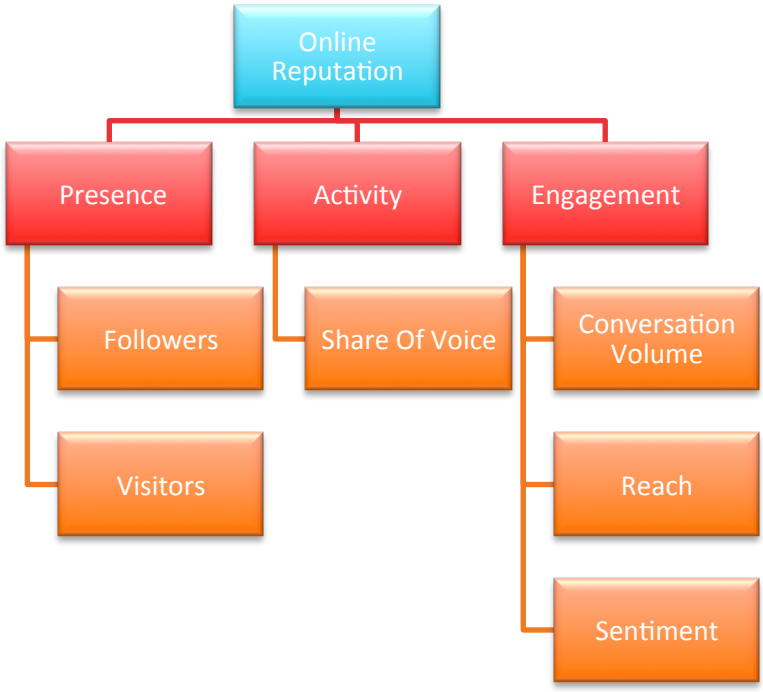


Image 6: Online Reputation (Factors & Metrics)

2.2.4. Index Development

This section will focus on developing the index. Starting with further defining the concept of an index is and how the AEX index can serve as an example for the development of our online reputation index. Then the weightings belonging to the metrics are discussed. Finally with the information from the example formula of the AEX index and metric weightings, a formula is developed to calculate the online reputation index. The focus in this section lays on answering the second sub-research question and the fourth design question.

S-RQ2: What is an Online Reputation Index?

DQ4: How can a decision be set to fix the index?

Online Reputation Index VS. AEX

To understand how an online reputation index for the EIT Digital can be developed we shall first look at what in index is. An index is a thing that declares certain circumstances with reference to a phenomenon. It is a number or an embodiment of what needs to be indicated. The index number is a statistical apparatus developed to measure alterations or dissimilarities in a variable or bunch of variables that belong to the same group. (Medhi, 1992).

The index consists of six metrics, weightings and a formula that eventually form the OR-index. Measuring online reputation, as well as the global economic indexes, is strongly depended on human factors and interactions. Economic or social unrest in organizations often translates also in the economic figures of such a company. For developing the OR index, it can be analyzed in how the financial sector develops this type of indexes and calculations. Therefore, the "Amsterdam Exchange Index" (AEX) will be taken as a starting point for the preparation of the SMR index.

AEX

The Amsterdam Exchange index (AEX) is the Dutch stock market index of 25 Dutch companies. In the stock market in the Netherlands, an index is being used for three different functions. First, it serves as an indication of the stock market climate. Second, the stock market indexes function as a benchmark to follow the development of a certain stock market portfolio. Last, the indices serve as an underlying value for options and other derivative products (Euronext, 2016).

The AEX is being established on a daily basis. At the end of each day a final provision is being made. On this basis, the next index is being calculated, the AEX index. The calculation formula of the AEX index is relatively

simple. Each fund has its own weighting in the AEX. For the calculation the 27 funds with the highest free float market capitalization are taken into account. These 27 funds need to be multiplied by there weighting factor and current rate, added together and eventually divided by a divisor (for example the number 1000) in order to calculate the AEX (Behr, 2014). See the image below for an interpretation of the AEX index.

$$FF_{fondsX} = \frac{Shares\ available}{Shares\ total} * 100\%$$

$$FFm = Shares\ total * fffondsx$$

$$AEX = \frac{\sum_{i=1}^{27} Shares * ffm * actual\ rate}{divisor}$$

Image 7. AEX formula based on textual explanation of Behr(2014) and DFT (2011).

Online Reputation Index

Euronext Amsterdam created an AEX index price chart that offers a detailed overview of the index number of the AEX. This makes it possible for investors and companies to investigate and detect changes of the index number across time. For example, it is possible to get an overview of the index number of a day, a month, a year, or even for the period of five years (Euronext, 2016). For the development of the online reputation index for the EIT Digital, the foundation and basis of weightings of the AEX index formula, and the AEX index price chart could be used to calculate the online reputation for the EIT Digital. The online reputation index will consist of a formula where weightings are used for each metric so that each metric has its own weighting in forming the online reputation index score. From the AEX index price chart the overview of the index score at a daily basis. Combining these features together from the AEX our online reputation index will be developed through a formula where each metric weighting based on a importance scale is multiplied with a scale number. The weightings belonging to each metric and the formula will be discussed in the next section.

Metric Weightings

Now that the metrics have been selected specific weights have to be set for the metrics that are used in the formula to calculate the index number. A metric weighting is a numeric value that declares the importance of each metric compared to the other metrics. When determining upon a suitable weighting value, the first choice has to be made, and that is to decide to obtain equal or different weightings (Maggino & Ruvigliono n.d). Equal weightings happens mainly when (i) the theoretical structure attributes to each metric the same adequacy in defining the variable to be measured, (ii) the theoretical structure does not allow hypotheses to be consistently derived on differential weightings, (iii) the statistical and empirical knowledge is not sufficient for determining weights, (iv) the correct adoption and practice of different procedures do not agree with each other (Sharpe, 2004). Whenever certain metrics are more important then others, differential weighting can be chosen. Allocating different weights should be supported by (i) theoretical evidence that give meaning on each metric or by (ii) methodological concerns that helps to identify the correct techniques, consistently with the theoretical structure (Nardo et al., 2005).

Because theoretical evidence exist that shows which metric is more or less important in online reputation, different weightings are used for the metrics. According to Chang & Chen (2017), sentiment is more important then numbers (numbers are simple views such as the amount of followers or conversation volume). This is in line with Cision (2017), which claims that sentiment is the most important metric in measuring an organizations reputation, compared with the number of followers, commenting and participating in any activity online. This evidence shows that sentiment is considered as the most important metric in the index. It has also been stated that negative sentiment plays a more important role then positive sentiment (Bouchard, 2016) and therefore has a higher weighting then positive and neutral sentiment. Next to this, conversation volume is seen as more important then the metric followers. According to Ken (2014), A high number of people mention the organization gives a better accurate picture of the organization and is more valuable then simply following the organization. Although, conversation volume is more important than followers, it is considered as less important then the metric sentiment. This because conversation volume alone does not imply how good the organization is perceived online. Without it, measurement of mentions alone could be misleading. If you were

measuring mentions for your company's new product, you might assume a surge in mentions meant it was being well received. After all, more mentions = more people talking about the product. But these mentions can also be negative which harms the reputation of the reputation. This evidence shows that conversation volume is less important then the sentiment but more important then the amount of followers.

Since different weightings are used for the metrics a determination must be made upon a weighting scale. A method for doing this is to look at the relative importance of each individual metric (Medhi, 1992). A usable scale is a Likert importance scale that scales importance in to 5 values, where 1 refers to the less important, 2 refers to slightly important, 3 refer to moderate important, 4 refers to important and 5 refers to very important (Brown, 2010). Since there is only evidence that sentiment is more important then the other metrics, and conversation volume is more important then followers but no further evidence is found on the importance of rest of the metrics, it is assumed that they are evenly important and therefore the scale weightings of the followers, visitors, share of voice and reach are the same.
The metric sentiment is split up in three categories (positive, negative and neutral sentiment), where the category negative has a higher importance, followed up by positive and then neutral. Negative is a 5, Positive is a, 4 and neutral is a 3. Conversation volume is a 2 and the rest of the metrics are a 1. The metric sentiment and reach are combined together as a weight and in the formula. This is decided because positive, negative or neutral conversations can influence many other people in a positive or negative way, depending on the reach of the conversation. When many people are reached, then this does not imply if all these people are reached by positive conversations. The following example will show this problem. For example when 10 conversations are positive with a reach of 10,000 and 2 conversations are negative with a reach of 20,000 the negative conversations have a much more influence in the index then the 10,000 positive conversations reach. If only the metric reach was not subdivided into the sentiment, it will lead to an incorrect representation of the online reputation. By combining these metrics, for each sentiment type (positive, negative and neutral), the importance value of the metric sentiment is added up with the importance value of reach. Resulting in the following values: Reach + Sentiment Negative = 5+1=6, Reach + Sentiment Positive=4+1=5, Reach + Sentiment Neutral=3+1=4. The importance scale is then normalized to a smaller scale, the weight scale, to transform the index score into a smaller number. Normalization is done by dividing 30 through the total of the numbers which is 6+5+4+2+1+1+1+1 =21. 30/20= 1,5, which is proportional to one. 1,5 is then divided by 20 and multiplied with each importance scale value. See the table below for the resulting metric weightings.

	Weight scale	Importance scale
Total	1,5	20
Reach+ Sentiment Negative	0,5	6
Reach+ Sentiment Positive	0,4	5
Reach+ Sentiment Neutral	0,3	4
Conversation Volume	0,2	2
Followers	0,1	1
Visitors	0,1	1
Share of Voice	0,1	1

Image 8. Metric weightings

Index Formula

With the metric weighting information available the next step is to develop the formula. The formula consists of the selected metrics and their weighting, multiplied with a scale numbers. Scale numbers refers to the data value of each metric. Since data numbers for each metric can vary in largeness a scale is developed to give each outcome of the metric the same importance in forming the index. This strives to give a solution to overcome the problem that certain metrics have a much more influence in forming the index.
For example when the amount of conversation is 300 and the positive sentiment reach is 4.000.000, the positive sentiment reach will have a way greater influence when calculating the index. To set scales, the data has to be collected and therefore this process of developing the scale is presented in chapter 4. In order to develop the scale in chapter 4, the process of how to set a scale is presented in chapter 3. A calculation of the index can be displayed with the following formula:

INDEXscore= *(FOLLOWER=0,1*scaleNMBR) + (SOV=0,1*scaleNMBR) + (VISITOR=0,1* scaleNMBR) - (REACHNEG=0,5* scaleNMBR) + (REACHNEU=0,3* scaleNMBR) + (REACHPOS=0,4* scaleNMBR) + (CONVOL=0,2*scaleNMBR).*

Conclusion

The goal of section 2.2.4 was to answer the fourth design question and the second sub-question. In order to answer this, insights were given on the economic sector where already for a long time indexes are used on a daily basis. The AEX was the basis for the way in which the OR-index could be developed. The metrics selected in measuring online reputation in section 2.2.3 were used to calculate the online reputation index where each metric has their own weighting based upon a 5-point Likert importance scale. Finally a formula is developed that consist of the metric weightings and scale numbers, where each metric weighting is multiplied with a scale number which result in a total index score.

2.2.5. Online reputation patterns

This section will look into which online reputation patterns can be identified from the online reputation index. The goal of this section is to answer the fifth design question.

DQ5: What are the different OR index patterns?

Stock patterns

Patterns are a manner of identifying and describing approaches and structures that are encountered repeatedly in a discipline. Christopher Alexander defined it as: 'Each pattern describes a problem which occurs over and over again in our environment, and then describes the core of the solution to that problem, in such a way that u can use this solution a million times over without ever doing it the same way twice (as cited in Caroll, 2013). In the stock market patterns are widely used to identify current market trends and trend reversals and to trigger buy and sell signals. These patterns give insights into what is happening with the index (Janssen, Langager, & Murphy, (2011). The patterns from the stock market can contribute to an interpretation of the OR-Index. In this section common patterns of the stock market will be explained in detail.

Head and Shoulders

The head-and-shoulders pattern is one of the most popular and reliable chart patterns an when visualized, it looks like the pattern consists of a head and two shoulders (see image 8). Two variants exist of the head and shoulder pattern that is the head and shoulders top and the head and shoulders bottom. The first is a signal that the price of a security is intended to drop. As soon as the pattern is finished, the security is falling down. This version is also considered as a trend reversal pattern due to its peaks at the upward trends. The other variant, also considered as the inverse the head-and-shoulders pattern, signals that the price of a security is set to move upwards and usually is coming after the end of a downward trend (Investopedia, n.d.).

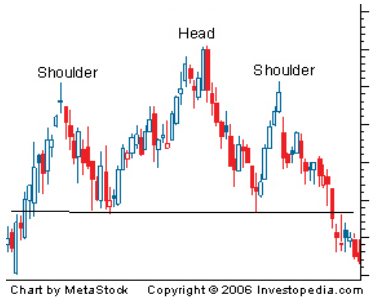
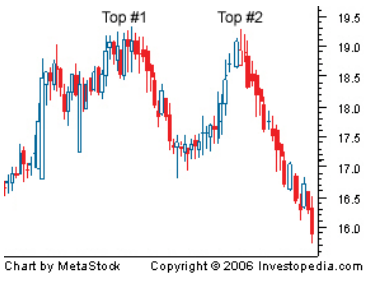


Image 9. Head and Shoulders Pattern

Double top and Double Bottom

The double tops and bottoms pattern signals an important trend reversal pattern that will commonly be escorted with a powerful trending regime, and is regarded as one of the most used patterns (Gunn, 2009; Langager & Murphy, n.d.). These patterns occur when a price movement test support or protest levels two times and is not able to break through and are frequently used to notify intermediate and long-term trend reversals.



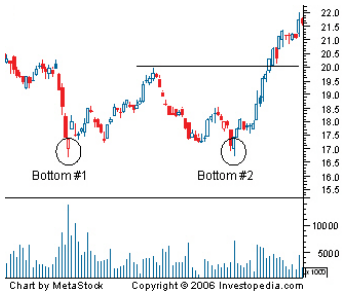


Image 10. *Double Top* *Double Bottom*

A double top formation is a retest of a previous resistance level and is finished when the lowest trough between the two peaks in a double top formation is violated. A double bottom is a retest of a previous support level and is finished when the highest peak between two troughs in a double bottom is violated (Lim, 2016). Whenever a double top pattern occurs it means that the price movement has attempted two times to shift over a specific price level. After these two attempts to set the price higher, the trend reversers and price heads drop. In case of a double bottom, the price movement has attempted to go lower two times, but has found support every time. After the second lack off the support, the security set foot in a new trend and rises (Langager & Murphy, n.d.).

Triangles

This pattern is the most commonly used pattern in technical analysis. There are three types of triangles that diverse in construct and implication, those are the symmetrical triangle, the ascending triangle and the descending triangle. These patterns can last from several weeks to a couple of months. In case of a symmetrical triangle, two trend lines come together from different directions and eventually meet. This patterns is considered as neutral, in that a breakout occurs to the upside or downside, it is an affirmation of a trend in that direction. An ascending triangle consists of an upper trend line, which is flat, and a bottom trend line that is in an upward slope. This pattern is considered as a bullish pattern, where chartist search for an upside breakout. A descending triangle consists of a lower trend line that is flat and an upper trend line that is declining. This pattern is seen as a bearish pattern and chartists hope for a downside breakout (Langager & Murphy, n.d.).

Image 11. Symmetric triangle *Ascending triangle* *Descending triangle*

Flag and Pennant

These patterns are short-term continuation patterns and are made when there is a narrow price motion, continued with a commonly sideways price motion. The pattern is then finished by another sharp price motion in the similar direction as the move that began the trend. The duration of these patterns vary from one to three weeks. While looking at these two patterns, it can be seen that small differences exist between a pennant and a flag. The major difference of these price movements exists in the middle part of the pattern. The middle part of a pennant is featured by trend lines that come together. In a flag, the trend lines in the middle part of the pattern do not come together. It is expected that the trend is continued whenever the price induces over the upper trend line, this applies for both the flag and the pennant (Langager & Murphy, n.d.).

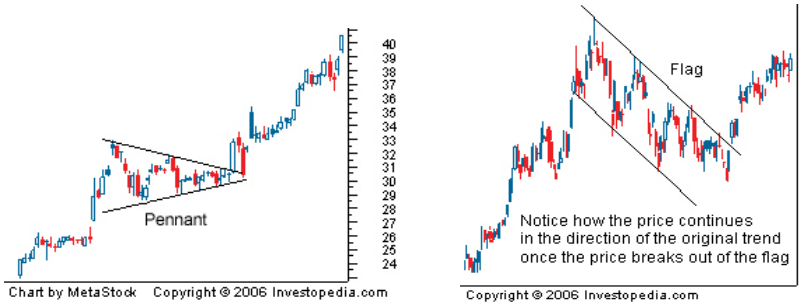
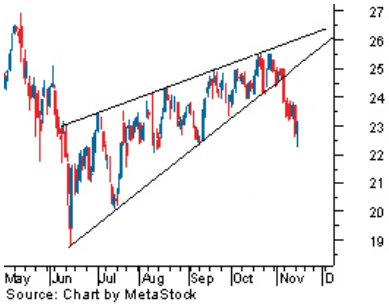


Image 12. *Pennant* *Flag*

Wedge

The wedge pattern is a generally known pattern in the price charts of assets and is featured by a contracting range in prices, combined with a rising trend in prices (rising wedge) or a falling trend in prices (falling wedge) which are the two main types of wedges (Google Books, 2017). The falling wedge slopes downward and is considered as a bullish pattern, referring to a signal that a price break will occur upwards through the wedge.

The rising wedge slopes upward and is considered as a bearish pattern, referring to a signal that the security is potentially going towards a downward position. The wedge pattern looks similar to the symmetrical triangle, because both have two trend lines, support and resistance. In general it is a long-term pattern, and is most of the time lasts three to six months (Langager & Murphy, n.d.).



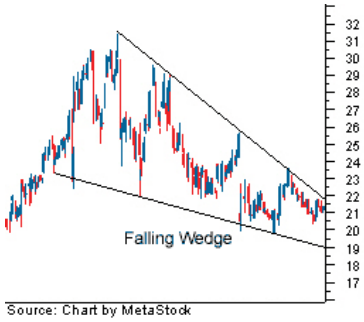


Image 13. *Rising wedge* *Falling wedge*

Triple Tops and Bottoms

Triple tops and triple bottoms are reversal patterns and are created when a security tries to shift over a certain level of support or resistance in the line of the ruling trend. This type of chart is considered when the market attempts to shift a security in a particular line. These two patterns are created when price movement tests a support or resistance level three times and is not able to succeed. After these attempts, the buyers (in triple tops) or the sellers (in triple bottom) give up and the opposite group takes a hold of the security.

Triple tops is considered as a bearish reversal pattern and is formed when a security in upward position tests the same level of resistance three times and does not succeed to break out. Triple bottoms on the other hand is considered as the bullish reversal pattern and is formed when a security is in a down position, does not succeed to fall through a certain level of support and is falling back to a level of resistance every time (Langager & Murphy, n.d.).

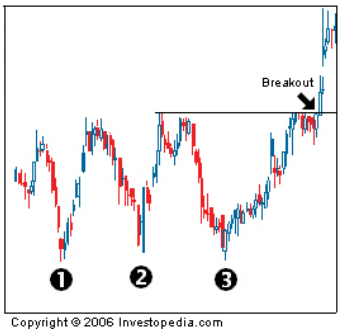


Image 14. *Triple tops* *Triple bottoms*

Gaps

A gap in a chart refers to the empty space between a trading period and the trading period before that trading period. This kind of pattern occurs when large dissimilarities exist in prices between two consecutive trading periods. For example, if a stock of an organization trades around 40 euro and the next period it opens at 45 euro, there will be a gap in the chart between these two trading periods. Gaps are normally formed whenever some very important event has happened, that will effect the security, such as a better earnings then expected or a merger agreement (HowTheMarketWorks Education Center, 2012). 4 main types of Gaps exist, which are Common, breakaway, runaway and exhaustion gaps. Each is similar in structure but differ in their location in the trend (Langager & Murphy, n.d.).

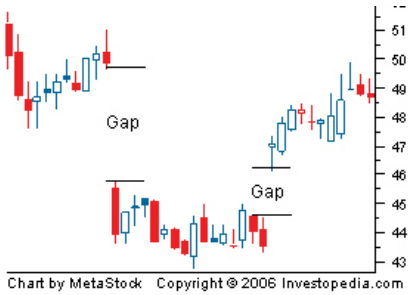


Image 15. Gaps

Cup and Handle

The cup and Handle pattern is a failed bowl pattern (Blankson, 2004).
A cup-and-handle pattern signals a continuance to an uphill trend. When visualized into a chart, the pattern looks like the shape of a cup and handle as might be expected from the name (Little, 2008). Where the cup represents the dipping curve in the price, followed up by little adjustments (the handle) and eventually concluding with a reversal (Thomsett, 2013). The time duration of the pattern can vary from a few months to a year, but the shape of the pattern stays the same.

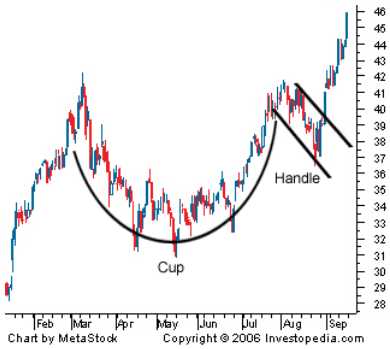


Image 16. Cup and Handle

Online reputation patterns

Since the patterns that are discussed are derived from the economic market it is possible that these patterns are not applicable for the OR-index. The following patterns can occur in visualizing the OR-index.

Crossover pattern

This crossover pattern is primarily visible, as the OR-index is plotted against the individual OR-metrics. This pattern describes a transition where an underlying OR metric has such a strong influence that the OR index takes over the form of the underlying OR metric. On the other hand it says that the other OR metrics are very weak. This phenomenon can occur.

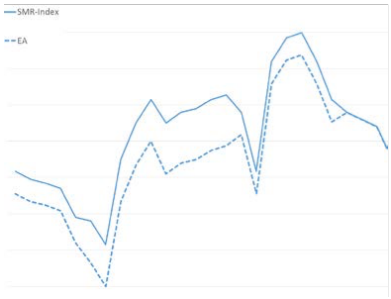


Image 17. Crossover

Explosive OR pattern

What a characteristic is of this pattern is that there is a strong exponential increase, making the graph extreme gouging in the growth direction where the channel was already going. This growth chart breaks extreme from the current trend. A similar trend is also observed when suddenly a very large (social) media coverage for a particular event occurs. In the case of the OR index such an outlier can only occur if there is suddenly very strong increase or decrease in the metrics.

Image 18. Explosive OR pattern

Increased and Decreased OR pattern

Compared with the Explosive OR pattern, these patterns also show a sharp rise or fall, however, the rise or fall is much more straightforward and much more abrupt established. Figure 19 shows how a cascading drop suddenly turns into a positive increase strength. This is an example of an Increased OR pattern. If it had been reversed, there would logically been a Decreased OR pattern.

Image 19. Increased OR pattern

OR Correlation Pattern

In statistics, the phenomenon correlation is a familiar concept. Correlation can be seen as a (linear) correlation between two variables. Earlier, the reinforcing features in the crossover pattern have been discussed, where also a sort of cohesion can be seen (see image 17). In the case of the OR correlation pattern, a negative correlation is described. The increase in the OR-index score of one organization leads to a decrease in the index score of another organization and vice versa. The features of this pattern are visible in image 20.

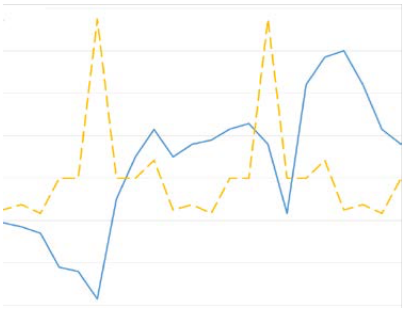


Image 20. OR correlation pattern

Conclusion

The goal of this section was to answer the fifth design question: *What are the different OR-index patterns?* In this section 8 patterns that occur in the stock market and securities industries and 4 possible patterns that can exist in the OR-index have been discussed.

Patterns may help in analyzing the OR index. When a specific pattern occurs, then an analysis may reveal whereby these patterns originate, in order to obtain a better understanding of how, a reputation is developed at that time and has formed. When analyzing the OR- index, four possible patterns can occur: Crossover, Explosive OR, Increased or Decreased pattern OR and OR Correlation Pattern. The expectation is that such patterns can manifest themselves in establishing an OR index chart. A next step is to identify a context around these chart patterns. Then draw conclusions from the composite data set about how and why the reputation has shaped.

2.3. Conditions for a valid and reliable index

Ensuring quality of a measurement tool is very important in order for the index to be reliable and valid.
According to Kimberlin and Winterstein (2008), reliability and validity are the key indicators in assessing quality of a measurement tool, and so in order for the index to be quality acceptable, reliability and validity needs to be ensured. While reliability is about the accuracy of the tool, validity is about whether the data collected can yield a valid measure of a theoretical construct that is pertinent to our research question (Cheliotis, Ly & Song, 2015). This section aims to provide insights into these two conditions by exploring the last two design questions.

DQ6: *How can reliability be assessed?*

DQ7: *How can validity be assessed?*

2.3.1. Reliability

Reliability refers to as the preciseness of the measurement tools that collect the data (Boeije, 2008; DeVellis, 2003). In order for the tool to be reliable, it should be applied two times and the tool should produce strong positive correlated data (Cheliotis, Lu & Song, 2015). An estimate of reliability can be achieved through evaluate inter-rater reliability. By using the same measurement tool with two observers at the same time to see if the results are the same reliability can be assessed. This test includes a process for qualitatively determining the level of agreement between two observers. So does each observer give consistent results of the required data.

Inter rater-reliability is important because it represents the extent to which the collected data is accurately collected by the measurement tool. There are a variety of methods available to measure inter-rater reliability. The two most common methods are percent agreement and Cohen's Kappa. Percent agreement is calculated as the number of agreement scores divided by the total number of scores. Where agreement score refer to the required same data that is and should be collected, and the total number of scores refer to the total required same and wrong data collected. Cohen critiqued that this method does not take into account the concern that some raters made random guesses because they did not know what to insert. To correct for this concern, the Cohen's kappa was developed. Therefore in this research the Cohen's Kappa is used to test for reliability. The kappa can range from −1 to +1. The results of the Kappa can be interpreted as follows; values ≤0 are referring to no agreement, 0,01-0,20 are none to a little agreement, 0,21-0,40 a fair agreement, 0,41-0,60 a moderate agreement, 0,61-0,80 a substantial agreement and 0,81-1,00 almost perfect agreements (McHugh, 2012). When values are above >0,7 then the measurement tool is considered to be reliable. The aim is to reduce as much observer bias as possible

2.3.2. Validity

The general concept of validity was traditionally defined as the extent to which a measurement tool measures what it claims, or purports to be measuring, for example, that a pain assessment tool measures pain intensity and not anxiety (Kimberlin & Winterstein, 2008; Twycross & Shields, 2004). "In the broadest terms, validity in measurement addresses the degree to which the concept or concepts under study are accurately represented by the particular items on your measurement tool" (as cited in Cottrell and McKenzie, 2011). Originally there are three categories of validity that provide evidence of the quality of measurement tool: construct, content

and criterion validity (Brown, !996). Besides these three categories, two more forms of validity are added from the study of Auerbach and Silverman (2003) that are focused on validating qualitative data, which is also part of the OR-index. The two forms are transparency and generalizability. The five validity types are explained below.

Construct validity

This type of validity is a statement based on the congestion of evidence from many studies using a particular measuring tool. It is related to evaluate the link between the measure and the underlying theory. Construct validity is evaluated through examining the relationship of the measure that is evaluated by variables, recognized as being theoretically related to the construct that is measured by the tool (Kimberlin & Winterstein, 2008). So in order for construct validity to exist, there need to be a clear link between the construct that is measured and its measures that are selected to measure the construct.

In this study it is expected that the measures (metrics) selected for the index are theoretically related to the construct measured: online reputation. This is expected due to the extensive literature study that is conducted for this research. For each selected metric, several literature studies have been used to support that these metrics are related to measuring the construct online reputation. Therefore efforts are being made to ensure the construct validity of the online reputation index.

Content validity

This type of validity can be defined as whether the measurement tool resembles to others to be measuring what it says it measures (Twycross & Shields, 2004). It refers to how adequate the items developed to operationalize the construct deliver a sufficient and representative sample of all possible items that could measure the construct. Since no statistical text exist to establish if a measure sufficiently covers a content domain or sufficiently represents a construct, the content validity generally is assessed by the judgments of experts in the area to give their opinion (Kimberlin & Winterstein, 2008). A widely know method for measuring content validity is developed by C. H. Lawshe (Lawshe, 1975). This method is looking at the agreement among panelists in terms of how essential a specific item is.

Lawshe (1975) proposed that the panelists are subject matter experts and are the judgers that have to respond to the following question; Is the skill or knowledge measured by this item 'essential,' 'useful, but not essential,' or 'not necessary' to the performance of the construct?" In order to use the Lawshe method to measure content validity, the question should be adapted to this research. For that reason the following question will be formulated; is the metric followers/visitors/conversation volume/sentiment/reach/ share of voice essential, useful but not essential or not necessary to measure the online reputation for an organization? If more then half of the panelists conclude that an item is essential, then that item has at least some content validity. The more panelists agree that a certain item is essential, the greater the level of content validity. Based on these assumptions, Lawshe came up with a formula called the content validity ratio. CVR=(ne-N/2)/(N/2), where CVR= content validity ratio, ne= number of panelists indicating essential and N=total number of panelists. For validating the instrument, the CVR must be calculated for each metric (Lawshe, 1975). The values of the content validity ratio are determined by the Lawshe Table. The table consists of the number of panelists and a CVR value (See image 20).

TABLE 1
Minimum Values of CVR and CVR_t
One Tailed Test, p = .05

No. of Panelists	Min. Value*
5	.99
6	.99
7	.99
8	.75
9	.78
10	.62
11	.59
12	.56
13	.54
14	.51
15	.49
20	.42
25	.37
30	.33
35	.31
40	.29

Image 21. Lawshe Table (Lawshe, 1975)

At least five people are recommended to judge the metrics in order to have sufficient control over chance agreement, When 5 people are asked for their opinion, a minimum CVR value of 0,99 needs to be established for each metric in order to ensure content validity of the OR-index (Wynd et al. 2003; Yaghmale, 2003; Lynn, 1986).

Criterion validity

Criterion validity gives evidence on how the results of the new measurement tool correlates with another measurement tool that measure the same or similar construct that are theoretically related to each other. Criterion validity consists of two types, concurrent and predictive validity (Thyer, 2010).
The concurrent validity estimates the correlation between the scores of the new measurement tool with scores of another well-known measurement tool (Kimberlin & Winterstein, 2008). The two most well known reputation measurements tools are RepTrak and Reputation Quotient (Reputationinstitute.com, 2017; Theharrispoll.com, 2017). RepTrak provides monthly reputation measurements scores, and looks at the perception of stakeholders. Another commonly used reputation measurement tool is the Reputation Quotient from Harris. This tool is based on annual measurements. So in order to ensure criterion validity, the results from the OR-index and the results from RepTrak or Reputation Quotient must correlate with each other.
Predictive validity, refers to the ability of the measurement to predict a certain criterion in the future (Thyer, 2010). To assess the predictive validity the index should be able to predict a criterion, such as the success or reputation development of the organization in the future.

Generalizability

For qualitative data it is very hard to be generalizable. The generalizability described by Auerbach and Silverman (2003) and Maxwell (1992) refers to the ability to apply the theory universally. In this study, for example, it is important that the data set provides a representative view of actually discoverable online data. Generalizability of the data can be increased by making use of data triangulation (Boeije, 2008). This means that measurements from different angles are performed (Strauss & Corbin, 2008). By using multiple toolings, it can become clear if similar data is acquired using the same queries or search terms.

Transparency

Auerbach and Silverstein (2003) define transparency as a measure of how well the researcher informs the reader how they arrived at their interpretations. The reader must understand the process that was involved in the interpretations: the method of sample selection, the data collection procedure and the researchers own epistemological viewpoints. When this process is done correctly, the transparency is seen as reliable by Walsh (2003). Because online data collection tools often use proprietary software, partly because this is often their core business, it is not clear whether all data also actually become available with the data collection measurement tool. This affects the reliability and validity. Therefore the extent to access the source code or algorithm belonging to the tools should also be investigated. In addition, an indication can be given to what extent different toolings are used. This also increases the generalizability of the research.

Conclusion

The goal of this section was to provide insights into the last two design questions: *how can reliability and validity be assessed?* In this section, 6 methods have been discussed that indicate how to assess reliability and validity. Which of these methods are applicable in this study?

In context of the research the determination of the kappa-value, contributes to the reliability of the data collection measurement tool. By testing the tool with two people the reliability of the tool is assessed. Besides the reliability, the validity needs also be assessed. This can be done by using the Lawshe method, which looks at the essentialness of the metrics in terms of measuring the construct online reputation. Hereby the content validity of the develop index is assessed. Whether the index meets the two conditions, will be clarified in chapter four, where the index is conducted in the field and the two conditions of the index to be quality acceptable are assessed. If the index does not meet the conditions then the method is altered in chapter five in order for the index to be reliable and valid.

2.4. Conclusion requirements & conditions

The goal of this chapter was to answer the formulated design questions based on theory related to the requirements and conditions necessary before developing the index. The design questions and requirements & conditions are displayed in the table below. It is important to note that the requirements form the building blocks of the next chapter.

Design Questions	Requirements & Conditions
Design Question 1 *What are the different data sources that can be used as input for the index?*	R1: In this study the data sources Big Social Data and Big Data are used as input for the index.
Design Question 2 *How can online reputation be defined in order for the index to be a reliable and valid representation of the online reputation?*	R2: Online reputation can be defined as the information on the internet spread by the organization and by others.
Design Question 3 *How can the online reputation be measured?*	R3: Online reputation can be measured with 6 metrics; Followers, Visitors, Share of Voice, Reach, Sentiment and Conversation volume.
Design Question 4 *How can a decision be set to fix the index?*	R4: The index is set through metric weightings and scale numbers. Each metric with the belonging weight is multiplied by a scale number. ***INDEXscore=*** *(FOLLOWER=0,1*scaleNMBR) + (SOV=0,1*scaleNMBR) + (VISITOR=0,1* scaleNMBR) - (REACHNEG=0,5* scaleNMBR) + (REACHNEU=0,3* scaleNMBR) + (REACHPOS=0,4* scaleNMBR) + (CONVOL=0,2*scaleNMBR).*
Design Question 5 *What are the different OR-index patterns?*	R5: In total 4 patterns can occur from the OR-index: Crossover, Explosive OR, Increased or Decreased pattern OR and OR Correlation Pattern
Design Question 6 *How can reliability be assessed?*	C1: With the Kappa Value. Value needs to be at least $\kappa > 0.7$.
Design Question 7 *How can validity be assessed?*	C2: By using the Lawshe method. Ask experts to rate the essentialness of the metrics in terms of measuring the construct online reputation

3. Description of the OR-index method

In chapter 2, the requirements and conditions of this study are described. This chapter aims to develop an online reputation index (OR-index) method that meets the requirements discussed in chapter 2 and so each requirement should be mentioned in one of the steps of the method. A method can be defined as an settled, logical, or instructed practice according to a solid plan of accomplishing specific ends with precision and efficiency, ordinarily in an arranged order of fixed steps (BusinessDictionary.com, 2017). A method consists in this study of the goal, expected results and steps.

3.1. Goal

Goals focus on the purpose of the method, for who is the method and what is the reason for wanting the method. The method should strive to show a daily online reputation index of the EIT digital. The online reputation in this method is concerned with the information on the Internet placed by the organization itself and by others. In total there are 6 metrics that are all related to measuring the construct online reputation. The metrics consist of big (social) data, which is available to collect through different tools. With the development of the method, the EIT Digital can use the index for example in crisis situations or other situations that are potentially damaging to the reputation. When there is for example a large or small decrease in the index score from one day to another, the EIT Digital can look up in which metric(s) there is a decrease and find out the potential cause of the decrease by looking at the context of conversations.

3.2. Expected results

The second thing that is necessary is to identify the expected results. This conforms the expectation of the method, or in other words, what are the results that are expected for the correct functioning of the method (Yash, 2014). Identifying expected results is required so that actual results can be valuated to show if the method is a success or failure. Without expected results there is no way of telling if the method has done what the method is intended to do (Horch, 2003). It is expected that the method is reliable and valid. Moreover it is expected that the method is practical usable. The extent to which the method is reliable and valid is tested in chapter 4 and the practical usability of the method is evaluated in chapter 5.

3.3. Steps

Steps describe the procedure of developing a method. This method consists of 10 steps. In order for the observers to use the method the right way, a handbook has been developed that describe the process of conducting each step detail. The handbook can be found in appendix A. The ten steps are now further discussed in detail below. In some steps tools are necessary, when this is the case, the selected tool in the step is also mentioned.

Determine data sample and time interval

Data sample

In determining the data sample it is first necessary to determine which organizations, products or services are included in the index. The context determines how much and what data is being collected. The context in this case is situated on the EIT Digital but the OR-index method can also be applied in other sectors. When the context is determined, the next step is to determine over what period of time the data must be collected.

Time interval

An index is basically a continuous measurement. Once started, the index is only functional if the index calculations are repeated at a fixed time intervals and recorded. However, the reputation measurement can also be calculated on an occasional moments but the main idea and focus of this method is to measure the reputation daily to get the best representation of the online reputation.

Determine collection needs

To determine the collection needs, 3 things need to be clarified. The data needed, the amount of data needed and the sources of data.

Data needed

The data needed falls under big data and big social data. Big data can be characterized by the 5 v's; Velocity, Variety, Value, Volume and Veracity. Big Social Data refers to large data volumes that relate to people or

represent their behavior and technology-mediated social interactions in the digital domain. Both data types are used in this research. 6 Metrics have been chosen that collects these two data types.

Amount of data needed

It is the goal of the OR-index to measure the reputation daily, so therefore the amount of data that is needed is the data from the metrics of the day that one wants to calculate the OR-index for. There is no rule for the minimum or maximum amount of data needed to calculate the index.

Sources of data

Sources include websites that are part of big (social) data. Examples of big social data sources are online news, the web and social networks sites, such as Facebook, Twitter, forums and blogs (Song, 2014). Big data on the other hand focuses on more then only social networks and online news and takes for example also into account the Internet click stream data (Martinek, 2017). As mentioned in chapter 2, there are 6 metrics described and selected. These 6 metrics are all based upon sources of big data or big social data.

- Followers: focus on social media network sites
- Visitors: focus on corporate website (part of big data)
- Share of voice: focus on social media network sites, online news and the web
- Sentiment: focus on social media network sites, online news and the web
- Reach: focus on social media network sites, online news and the web
- Conversation volume: focus on social media network sites, online news and the web

Collecting the data

Now that the data sample, time interval and the needed data have been determined, the data can be collected. In this research, a social media management tool is used to download and collect the data.
It is decided to use an automated and computerized tool because manual mechanism of data entry leaves a huge opportunity for mistakes and human error. Besides, there is also a high risk of compromised and inaccurate data entries caused by personal biases and friend favors that can potentially alter the inferences and results and so, lose the efficacy and portability of the data analysis and results. By using smart and automated tools to collect the data, it makes it convenient to focus on other factors and parameters while the tool provides up to date and accurate data (Mitrefinch.ca, 2016).
Since it is the aim to collect data at the same conditions each time, it is important to collect the data step for step. The process of collecting the data consists of three steps and will be explained below in detail.

Search on the organizations name

To collect the amount of Followers and the amount of Visitors the tool Google Analytics can be used. For the other metrics Share of Voice, Sentiment and Reach, it is necessary to search for the organizations name in the tool Mention. Using the name of the organization in the tool will provide the necessary big social data that are available to collect and download.

Setting the time interval

Set a filter for the chosen time period.

Setting the data type

A data file needs to be chosen. Excel or CSV are the very common types of data files available to store and manage the data.

Filtering the data

When the data is collected with the tools, it should be exported into excel formats in order to manually filter the data for noise and only obtain the data that should be used for analyses. Noise in the data collected can refer to measurement error or to background data. Measurement error is the difference between a measured value of a quantity and its true value. In statistics, an error is not a "mistake" (Dodge, 2003). Background data are something other than what you are trying to measure. This can be unlabeled data or data that that is not useful to the phenomenon that one wants to monitor. It can also be the case that the data is labeled as positive or negative when it is neutral due to errors in the data collection tool. Therefore the conversations should be

read by the observers and double-checked to see if the tool correctly labels the conversation. When not, the observer needs to manually adapt the conversation to its correct sentiment.
Since most of the data collection tools collect data that is not useful for our analyses, this data should be filtered out (Phillips, 2017). One useful method for validating the accuracy and effectiveness of a data cleaning technique is to carry out a manual surveillance of the data (Xiong et al., 2006). When the data is collected and exported into excel, the data measurement error and background data should be detected and filtered out by deleting it from the excel file.

Merge the data files

When the necessary data is collected from the tools, exported into excel and the noise is filtered, the remaining data will be converted into the standard excel sheet where all the data comes together into rows and columns (see appendix C for the standard excel file). Where the rows represent the numeric value belonging to each metric and the columns represent the name of the metrics. When the data is stored it can easily be managed by adding new data to the file collected from the tools. By merging the data together into one large file, the analysis can be carried out relatively easily.

Setting the Scale

Setting scales is necessary in order to overcome the problem that certain metrics have a bigger influence in calculating the OR-index due to their large data number. Therefore it has been decided to set scales. A scale has been chosen that varies from 1 till 10. For the metrics conversation volume, positive reach, neutral reach, share of voice and followers 1 refers to the lowest data number/best scale number, and 10 refer to the highest data number/worst scale number. In case of negative sentiment reach, 1 refers to the best scale number and 10 refer to the worst scale numbers. This is the case because when more people are reached with negative conversations, the lower the reputation will be, therefore the higher the scale number and the lower the OR-index score. To set the scales for each metric the merged data file need to be used. This process is described in the next chapter.

Calculating the OR-index

When the data is collected and merged into 1 file, the OR-index will be calculated by using the formula in the last column of the standard excel file where the data is merged and stored. For each day the OR-index is calculated. As discussed in 2.2.5 a formula is developed consisting of metric weightings and scale numbers to calculate the online reputation index. The OR-index formula was developed as follows:

INDEXscore= *(FOLLOWER=0,1*scaleNMBR) + (SOV=0,1*scaleNMBR) + (VISITOR=0,1* scaleNMBR) - (REACHNEG=0,5* scaleNMBR) + (REACHNEU=0,3* scaleNMBR) + (REACHPOS=0,4* scaleNMBR) + (CONVOL=0,2*scaleNMBR).*

For the formula to be reliable in measuring the online reputation it should be regularly evaluated. The idea is to evaluate the formula once in six months with the reputation scan of Van Riel. It is possible that the evaluation shows that the OR-index measurement method is not the same with the method of Van Riel, this can be caused by a change in the conditions of certain social media websites. Social media websites can choose to change their conditions, for example to not show the negative conversations concerning a topic. Whenever this is the case, then the consequences for the index should be determined.

Visualizing the OR-index

When the OR-index is calculated the next step is to visualize the index number with a suitable tool to identify possible patterns. Visualization is a general term that describes any effort to help people understand the significance of data by placing it in a visual context. Patterns, trends and correlations can be exposed and recognized easier with data visualization software (Rouse, 2012). In this study the tool Tableau Software is used for visualization of the index.

Analyzing the OR-patterns

After visualizing the index into a graph, possible patterns can be recognized. By looking at the possible OR-patterns from chapter 2 and compare these to the patterns resulting from visualization, a suited pattern can be chosen. In total four possible OR patterns could occur.

- Crossover pattern
- Explosive OR

- Increased or Decreased pattern OR
- OR Correlation Pattern

Conducting context analyses

To give more explanation to discovered patterns, context analyses can be conducted to give a statement of the measured OR-index. Context around conversations of the EIT Digital can be further investigated to give more insights into why there is for example a sudden increase or decrease in the OR-index. By looking at the context of conversations, the potential cause of the existing OR-pattern can be identified.

Conclusion

In the first section of this chapter the goal of the method is described. The second section described the expected returns of the method and in section three it is discussed how the method for OR index is developed. This method consists of 10 steps. The steps developed are briefly summarized below.

- Determine sample dataset and time interval
- Determine collection needs
- Collecting the data
- Filter the data
- Merge the data
- Setting the scale
- Calculating the OR index
- Visualizing the OR index
- Analyzing the OR patterns
- Conducting context analyses

3.4. Meeting the requirements

This section strives to explore to what extent the index method meets the requirements.
Several requirements were described in chapter two that were necessary in order to develop the index method. Now that the index is developed, the method in terms of meeting the requirements will be investigated.

R1: The first requirement is concerned with using big data and big social data as input for the index. Since these are the data sources that form the input for the index, the definitions of these concepts should be mentioned in one of the steps. The concepts big social data and big data are both mentioned in the second step, which is concerned with the data that is needed.

R2: Defining the online reputation in the method is the second requirement and is mentioned in the goal section. It is very important to broadly define the concept online reputation since the OR-index is all about measuring the online reputation.

R3: The third requirement is to use different metrics that measure online reputation. This requirement is mentioned in Step 2 and step 3. Both steps give information on what the metrics are for measuring the online reputation. In step 3 the tools needed for each metric is also mentioned.

R4: Set a decision to fix the index is the fourth requirements and is mentioned in the seventh step of the method. This step is about calculating the index and therefore the formula of the index is mentioned.

R5: The last requirement was identifying the possible OR-patterns in order to give more insights into what is happening with the index. The possible patterns have been mentioned in step 9.

3.5. Practicality, Reliability and Validity

This section aims to provide a reflection of the practicality, reliability and validity of the developed OR-index method.

3.5.1. Practicality

Practicality can be assessed after the method has been tested and conducted on the case study; The EIT Digital. Assessing practicality is done based on looking at the arising difficulties and ambiguities when conducting the method. When difficulties or ambiguities arise, then they can be treated or filtered out of the method in order for the developed index method to be practical.

3.5.2. Reliability

For the index to be reliable it has been suggested that the data collection measurement instrument must be reliable. The method to test for this reliability is the Kappa Value. By looking at the data collected for each metric from two observers with the same instrument, the Kappa Value can be conducted.
To assess the Kappa value for the instrument Google Analytics (which collects the data followers and visitors), the tool must be used by two observers at the same time. Collect this data and look at the results to assess the Kappa Value and eventually the reliability of the data collection instrument.
Assessing the reliability of the instrument Mention (which collects the data Sentiment, Reach, Conversation volume and Share of voice) must also be done in the same way. Collect the data with the tool by using it with two observers at the same time. Look at the results and conduct the Kappa value.
For both instruments a minimum Kappa Value of >0,7 must be assessed in order to ensure reliability.

3.5.3. Validity

In chapter two, five methods have been discussed that can be used to assess the validity of the index. In this study only one method is applicable, which is the construct validity.
To assess construct validity the Lawshe method is used. This method looks at the essentialness of the metrics selected in order to measure the construct online reputation. Experts need to be asked for their opinion to rate the essentialness of the metrics that measure online reputation. A minimum of 5 experts is needed to assess construct validity. A letter is created in which experts are asked on their co-operation to rate each metric separately in measuring online reputation. With all the opinions, the Lawshe method can be conducted for each metric. In case when 5 experts give their opinion, a minimum value of >0,99 on each metric is needed to ensure construct validity.

4. Results OR-index of the EIT Digital

The previous chapter described the development of the OR index method based on the requirements. This chapter consists of a two-step approach. First it will discuss how the method was put into practice and second, the chapter discusses to what extent the index is successful, based on testing the index on reliability and validity. The purpose of this research was firstly to conduct a formative evaluation of the developed method. Secondly, the method could actually be applied in practice. For this purpose, the method was performed on the EIT Digital. The goal of this chapter is to give answers on the two formulated sub questions.

S-RQ 3: What is the OR-index of the EIT Digital?
S-RQ 4:What is the reliability and validity of the OR-index?

The chapter begins with giving information on the EIT, which is the case study in this research. Hereafter the goal & expected results are described. Then the method is put into practice and the results from each step of the method are described. At last, it is explored to what extent the OR-index is reliable and valid by making use of the Kappa Value and the Lawshe method, described in chapter 2.

4.1. EIT

The aim of this study is to develop an online reputation index method. The method is conducted on a case study: The EIT Digital and so more information is provided on what it is, and what the goals of the EIT are. The EIT stands for European Institute of Innovation & Technology and is created in 2008 to foster innovation and entrepreneurship around Europe. The goal of the EIT is to first bring together higher education academies, research laboratories and organizations to build dynamic cross-border partnerships. Secondly, the EIT strives to bring together knowledge and innovation societies that make innovative products and services, create new organizations, and coach a new generation of entrepreneurs (European Institute of Innovation & Technology (EIT), 2017). Since the EIT Digital is used as a case study in this research, data needs to be collected around this context. Some big (social) data collected through metrics (Followers and Visitors) is not available for open download and so the EIT Digital co-operated in this data collection process by collecting and sending the big (social) data.

4.2. Goal & Expected Results

The goal of the method was to give a daily online reputation index score by a simple dashboard. After implementing the method on the case study it can be concluded that the method meets the goal. It gives an overview of the online reputation index by a simple dashboard. It was expected that the method was practical usable, reliable and valid. Results show that the method is practical and reliable but lacks in validity. In chapter 5 recommendations and alterations to the method are made in order for the index to be valid.

4.3. Steps

Determine sample dataset and time interval

- **Data sample**
  Big (social) data around the context of the EIT Digital.
- **Time interval**
  Time interval of 7 days: 29-03-2017 / 04-04-2017.
  This because the data collection tool Mention, which is used for the metrics Sentiment, Reach, Conversation Volume and Share of Voice does not provide accurate data older then the last 7 days ago. So the time interval to collect the data is set on 7 days.

Determine collection needs

- **Data needed**
  Followers, Visitors, Sentiment, Reach, Conversation volume and Share of voice
- **Sources**
  - Followers: Facebook, Twitter, LinkedIn and YouTube.
  - Visitors: EITdigital.eu.
  - Sentiment: Twitter, YouTube, Instagram, Blogs Forums, online news sites and web.
  - Share of voice: Twitter, YouTube, Instagram, Blogs Forums, online news sites and web.

- Conversation volume: Twitter, YouTube, Instagram, Blogs Forums, online news sites and web
- Reach: Twitter, YouTube, Instagram, Blogs Forums, online news sites and web.

Collecting the data

- **Choose organizations name**
  The first step is to insert the organizations name. EIT Digital is used as the search term in the tool Mention for the metrics Sentiment, Conversation Volume and Reach. For the metric Share of Voice the EIT Digital is used as search term in the tool Mention, and Warwick Business School and ESCP Europe are also used as search terms. For the metric Followers and Visitors the data is collected from the tool Google Analytics and there is no need to search for the organizations name
- **Time interval**
  The time interval is derived on the bases of the prior determination of the time interval, which is 29-03-27/04-04-17.
- **Download options.**
  Excel files are used as download option because these files are accessible for the visualization program Tableau that is used in the later step.
- **Tools used**
  The data from the metrics Sentiment, Conversation Volume and Reach is downloaded from the tool Mention into an excel format, the metric data from Followers and Visitors is collected through Google Analytics and downloaded into an excel file. The data from the metric Share of Voice is collected from Mention and downloaded into a PDF file and manually inserted into the standard excel file. For a short overview of how the excel file looks like after the data Sentiment, Reach and Conversation Volume is collected with the tool Mention can be seen appendix D.

Filtering the data

- **Filtering for metrics: Followers & Visitors**
  As discussed in the previous step, the collected data Followers and Visitors is downloaded with Google Analytics and exported into an excel file. The data is then manually inserted into the standard excel file. Therefore for these metrics, no filtering is necessary.
- **Filtering for metric: Share of Voice**
  A PDF file is downloaded that shows the data numbers for the set time interval of this metric. This data is then also manually inserted into the standard excel file. This data cannot be filtered.
- **Filtering for metrics: Sentiment, Reach & Conversation volume**
  For the collected data from the tool Mention of the metrics Reach, Sentiment and Conversation Volume, filtering is necessary. The data is downloaded into an excel file. The excel file consists of 19 columns and within this file, much background data exists that is not necessary in calculating the OR-index. Hence, this data is filtered out by deleting it from the excel file resulting in only 4 columns (description, published at, tone and cumulative reach). For an example of the remaining filtered file see appendix E. Besides this, the sentiment of each conversation is being investigated to be sure if the right sentiment is given to each conversation. The remaining 4 columns are necessary in order to calculate the reach, sentiment and conversation volume. The published at column is necessary to calculate the conversation volume, the tone is necessary to identify the sentiment of conversations, and the cumulative reach is necessary to calculate the reach.

Merge the data

- **Splitting the data file**
  Before merging the filtered data that consists of the metrics sentiment, reach and conversation volume file into the standard excel file, the data is split up into 7 tabs, referring to 7 separate days. By doing this, calculation of the metrics for each day is easier which is necessary before merging the data into the standard excel file. For each day a separate tab is created that represents the data.
- **Calculating the metrics**
  - Reach & Sentiment: As discussed, the metrics reach and sentiment are combined together, so therefore must also be calculated together. To calculate the reach of conversations for each day, a filter is set on the tone column. The reach of positive, neutral and negative conversations is calculated by a formula SUM, which sums up the reach of the conversations

by separating them in tone. When these two metrics are calculated for the last 7 days, the other metric, conversation volume, can be calculated.

- Conversations Volume: To calculate the conversation volume, the left side of excel file is used, which shows a number. When this number stops, it means that the amount of conversations has ended which refer to the amount conversations. These data numbers can now be inserted manually into the standard excel file. After the merging process, the standard excel file is completed.

Setting Scales

- **Maximum data number**

  In order to overcome the problem that certain metrics have a bigger influence in determining the OR-index, a solution is made to use scales for the metrics. To use scales, the standard excel file is used where all the data that has been collected and filtered is now available in 1 file. The scales are created by first looking at the maximum data number within the time interval of 7 days for each metric. This number is rounded to a simple number. This is done in order to easily calculate the scales.

- **Creation of scales**

  With the rounded maximum number of each metric, the scale for each metric is created. See image 22. The scale works as follows; when the amount of visitors on 29-03-27 is for example 435, the scale number for that day is 5. This scale number is then multiplied with the metric weighting of that metric.

Scale	Followers	Visistors	S.o.V	Neu.S.R	Pos.S.R	Neg.S.R	Con.Vol
10	*18,000 - 16,200*	*1000 - 900*	*100 - 90*	*2 mln - 1,8 mln*	*2 mln - 1,8 mln*	*1000-900*	*150 - 135*
9	*16,199 - 14,400*	*899 - 800*	*89 - 80*	*1,799,999 - 1,6 mln*	*1,799,999 - 1,6 mln*	*899-800*	*134 - 120*
8	*14,399 - 12,600*	*799 - 700*	*79 - 70*	*1,599,999 - 1,4 mln*	*1,599,999 - 1,4 mln*	*799-700*	*119 - 105*
7	*12,599 - 10,800*	*699 -600*	*69 - 60*	*1,399,999 - 1,2 mln*	*1,399,999 - 1,2 mln*	*699-600*	*104 - 90*
6	*10,799 - 9000*	*599 - 500*	*59 - 50*	*1,199,999 - 1 mln*	*1,199,999 - 1 mln*	*599-500*	*89 - 75*
5	*8999 - 7200*	*499 - 400*	*49 - 40*	*999,999 - 800,000*	*999,999 - 800,000*	*499-400*	*74 - 60*
4	*7199 - 5400*	*399 - 300*	*39 - 30*	*799,999 - 600,000*	*799,999 - 600,000*	*399-300*	*59 - 45*
3	*5399 - 3600*	*299 - 200*	*29 - 20*	*599,999 - 400,000*	*599,999 - 400,000*	*299-200*	*44 - 30*
2	*3599 - 1800*	*199 - 100*	*19-10.*	*399,999 - 200,000*	*399,999 - 200,000*	*199-100*	*29 - 15*
1	*1799 - 0*	*99 - 0*	*9 - 0*	*199,999 - 0*	*199,999 - 0*	*99-0*	*14 - 0*

Image 22. Scale Table

Calculating the OR-index

The developed scale needs to be used in order to calculate the OR-index. As known, the OR-index consists of a formula. This formula is visible in the last column of the standard excel file. The OR-index is calculated by multiplying the metric weightings by their scale number. This process is repeated for every metric each day resulting in an OR-index for the EIT Digital for the days 29-03-17 till 04-04-17.

Day	Followers	Visitors	S.o.V	Neu.S.R	Pos.S.R	Neg.S.R	Con.Vol	**OR-index**
29-03-17	16943	910	92,7	166205	71572	0	38	***3,8***
ScaleNumb	10	10	10	1	1	1	3	
30-03-17	16960	751	82,6	289521	266312	0	71	***4,6***
ScaleNumb	10	8	9	2	2	1	5	
31-03-17	16975	646	84,8	1919217	1874023	0	140	***11,1***
ScaleNumb	10	7	9	10	10	1	10	
01-04-17	17002	245	60,5	470239	75033	0	23	***3,2***
ScaleNumb	10	3	7	3	1	1	2	
02-04-17	17013	263	57,1	220985	3134	0	18	***2,8***
ScaleNumb	10	3	6	2	1	1	2	
03-04-17	17020	685	75,4	1447936	653110	0	96	***6,4***
ScaleNumb	10	7	8	8	4	1	1	
04-04-17	17035	670	71,2	1426677	1111847	0	120	***8,6***
ScaleNumb	10	7	8	8	6	1	9	

Image 23. OR-index of the EIT Digital from 29-03-17 till 04-04-17

OR-index Dashboard

The OR index consists of a dashboard that shows how the online reputation develops itself daily. It has been stated that the software used for this process is Tableau, but due to download limitations Excel is used instead of Tableau. With the use of Excel a dashboard is created. Within the dashboard several things are visible. First the OR index score from 29-03-17/04-04-17 is visualized with score labels. Secondly, the separate metrics are visualized against the same time interval to identify the underlying OR pattern and thirdly, a small info graphic is created in which is stated what metrics caused the OR index to follow the pattern visualized in the dashboard (left image), what OR patterns occur in the OR index score (middle image) and what the cause was for the explosive increase in the OR index score on 31-03-17 (right image).

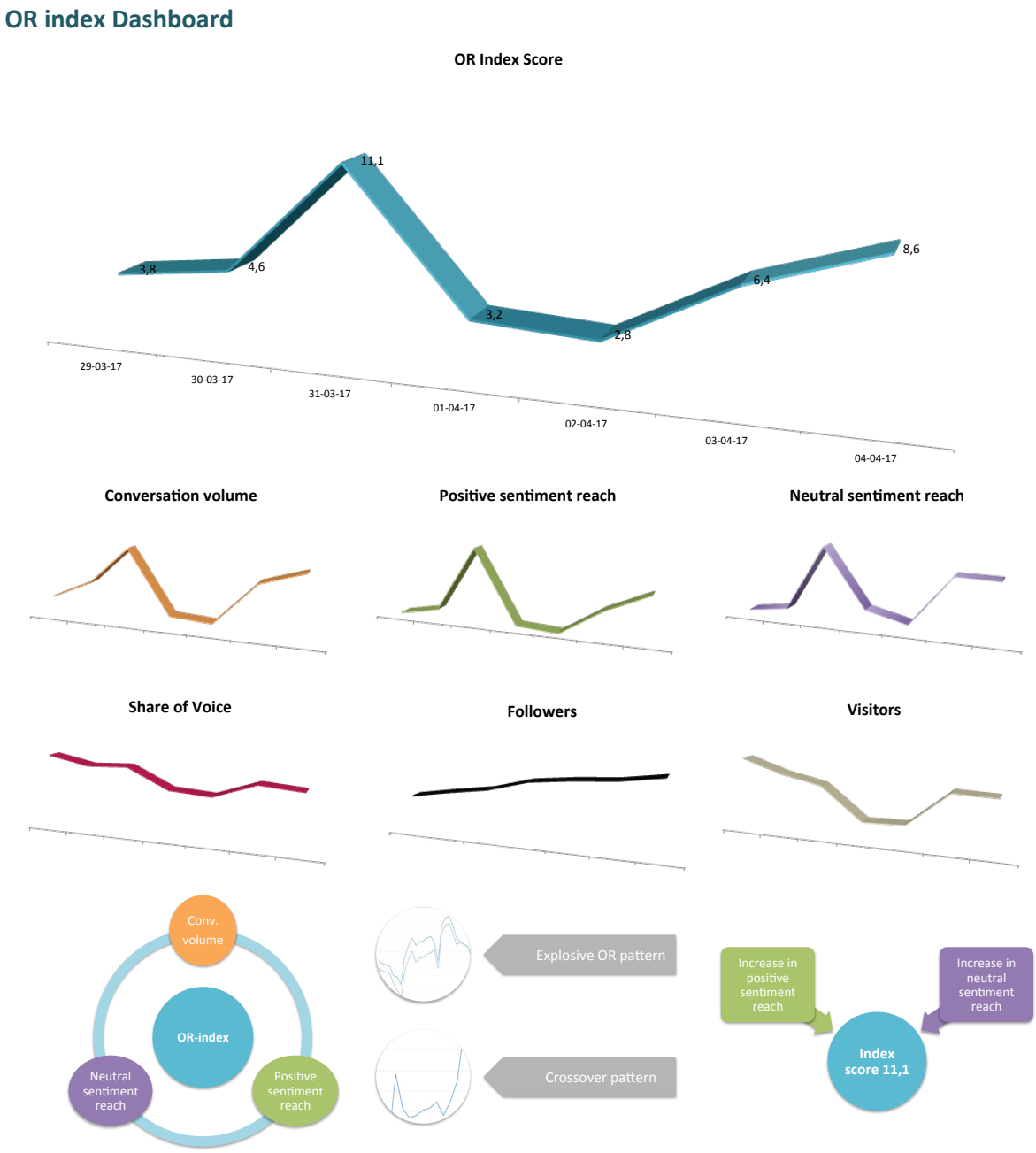


Figure 24. OR-index Dashboard

Analyzing the OR pattern

As can be seen in the dashboard there is an explosive increase since the pattern is gouging in the growth direction where it was already going to, resulting in an explosive OR-pattern. It can also be the case that a crossover pattern exists, meaning certain metric(s) have such a strong influence that the OR-index takes over the form of the underlying metrics, making the OR-pattern a crossover pattern. To judge this, the OR-index is plotted against the individual metrics. The Positive Sentiment Reach, Neutral Sentiment Reach and the Conversation Volume, follow almost the same pattern as the OR-index. This is due to the broad range (high increase and sudden decrease) in data numbers within these metrics in the same days as of the OR-pattern, see image 22. Another cause can be that these three metrics have the highest weighting in forming the OR-index and so have the potential to influence the OR-index more then the other metrics or that the other metrics are very just very weak. However, it can be stated that the OR-index is an explosive and crossover pattern.

Conducting context analyses

To provide more insights into why there is an explosive pattern, first the context around the neutral and positive conversations with the biggest reach on 31 March are broader investigated. It has been chosen to not take into account the metric amount of conversations, because this metric does not provide any information on identifying the subject that caused the explosive increase.

In total there are 141 conversations on 31-03-17. All 141 conversations are created on Twitter. 5 of the 141 conversations stand out because they have a very high reach number, which is above the 100,000. 3 of the 5 conversations consist of the same context and are about the Startup Europe that comes to Sillicon Valley which is an event co-organized by the EIT-digital. These 3 conversations are created by three different people/organizations. 1 is created by the EIT digital itself, the other is created by SEP (Startup Europe Partnerships) and the last one created by Edna Ayme, the communication director of the EIT Digital.
The other 2 conversations differ in context. One is about a new job opening at the EIT House as office manager and is created by the EIT Digital and the other conversation is about the EIT Digital Accelerator, which is created by BigDataOpines.

Besides the five conversations with the highest reach, an analysis of the context of the other conversations is also important. This because the five conversations with the highest reach only have a total reach of ca. 650.000 where the total reach of conversations on 31-3-17 is ca. 2 million. Hence a big gap of 1,3 million exist, which can be the cause of 20 other conversations with a high reach with an unidentified context. Therefore an analysis of the remaining conversations is also important to identify the real cause of the increase.

38 of the remaining 136 conversations are about the Startup Europe that comes to Sillicon Valley and the reach of these conversations is 333,981. The total the reach of conversation (plus the 3 conversations that stand out with) about the Startup Europe is 762,627. 48 of the remaining 136 conversations are about the EIT Digital Accelerator. The reach of these conversations is 389,679. The total reach of conversations in this context with the 1 conversation that stand out is 524,695. 4 of the remaining conversations are about the job openings at the EIT Digital or about a review from a person that has a job at the EIT Digital. The reach of these conversations with the conversation that stand out is in total 197,958. The rest of the remaining conversations consist of different subjects and have a low reach.
Overall the reach of conversations about Startup Europe comes to Sillicon Valley and reach of conversations about EIT Digital accelerator are the main cause of the sudden increase of the OR-index from 30 to 31 March 2017. It stands out that the EIT Digital creates most of the conversations itself and conversation by other people are very low, this can be due to their focus on b2b.

The cause of the decrease from 31 March to 1 April is due to the drop in the reach of positive and neutral conversations and due to the decrease of the amount of visitors on the corporate website. Because the first of April falls within the weekend, the amount of conversations started by the EIT Digital and conversations by other people are less then during the week, which can be the cause of the decrease.

4.4. Conditions of the OR-index

In order for the developed OR-index to be quality acceptable it is tested against the two validity and reliability methods. In chapter 2, 6 methods have been discussed regarding reliability and validity that indicates the conditions in order for the index to be quality acceptable. The methods applicable in this study is the kappa-value, this method contributes to the reliability of the data collection measurement tool and the Lawshe method, which looks at the essentialness of the metrics in terms of measuring the construct online reputation and is related to testing the content validity.

4.4.1. Reliability

To test the reliability of the data collection measurement tools, two observers have been selected to collect the required data with the tool needed for that data to be collected. The required data that the observers need to collect are the amount of followers, visitors, conversation volume, share of voice, reach and sentiment. After the two observers collected the required data with the assigned tools, the kappa test was conducted to see if the data collection measurement tool is reliable. The Kappa Value is conducted 2 times, since two tools have been used to collect the data. From the output of the data collection measurement instrument Google Analytics (used to collect the data of the amount of followers and visitors) an inter-reliability test of $\kappa = 1.00$ was emerged. For the tool Mention (used to collect the share of voice, reach, sentiment and conversation volume) the same value of $\kappa = 1.00$ was emerged. These outcomes are sufficient to make the data collection measurement tools reliable, and therefore making the OR-index reliable.

4.4.2. Validity

For the OR-index to be quality acceptable, validity should be ensured. As discussed in chapter 2, 5 types of validity categories exists; construct validity, content validity, criterion validity, generalizability and transparency. It has been assumed that construct validity could be ensured due to the extensive literature and that criterion validity, generalizability and transparency could not be ensured. More information on why it was not possible ensure these validity categories is described in chapter 5. The only option left to test validity was the Lawshe method. This method has been conducted to assess and hopefully ensure content validity of the index.

Measuring content validity based on assessing the judgments of experts in the area to give their opinion on the essentialness of an item in measuring the construct is also known as the Lawshe method.
To select the experts, the search term of online reputation expert on Google has been filled in and searched for that resulted in a selection of 15 experts. Hereafter a letter has been made in which the experts are asked to rate the metrics based on the essentialness on measuring the construct online reputation (see appendix F for the letter and appendix G for a list of the experts contacted).
From the 15 selected experts, only 5 responded. All 5 of them responded that the metric sentiment is essential in measuring the online reputation. The responses on the rest of the metrics differ from each expert. Expert 1 answered that only the sentiment is important in measuring online reputation and that the rest of the metrics are only essential when one wants to measure the influence/trust. This statement is partly in line with the statement from Expert 2, which responded that the sentiment is essential in measuring the online reputation of an organization but the rest of the metrics are also KPI's to take into consideration in measuring the online reputation so they are useful but not essential. Expert 3 responded that all the metrics are essential and can be measured, this expert is the only one who judged all the metrics selected as essential. Expert 4 judged that the sentiment is the essential metric in measuring the online reputation but he did not have the knowledge to judge the other metrics. The last expert claimed that sentiment was very essential in measuring one's online reputation and that the rest of the metrics could also essential but less important then the metric sentiment.

With the statements from the experts the Lawshe method can be conducted. In order for a metric to have content validity, the minimum value of the CVR should be 0,99. The CVR is calculated by the following formula: CVR= (NE-N/2)/(N/2). For each metric the CVR is calculated which should results in a value of 0,99 or higher.
Sentiment: 5 experts agreed upon the essentialness of the metric in measuring online reputation. In total there were 5 experts, resulting in a CVR value of =(5-5/2)/(5/2)= 1,00. This value is above 0,99 therefore content validity of the metric sentiment is established. For the remaining metrics only 2 expert answered that they are essential which result in a CVR value of =(2-5/2)/(5/2)=-0,2 As can be seen the value is far below the required value of 0,99, which means that the metrics followers, visitors, share of voice, reach and conversation volume do not have content validity.

4.5. Analyses practical usability

With the development of a new method it is important to see whether this method can be easily applied in the field or that there are specific attention points in its implementation. For this reason, the fifth sub question was formulated '*What is the practical usability of the OR-Index?'* When answering this question, consideration was given to possible issues, concerns and concessions that had to be made in order to bring the index into practice.

Determining the data sample and time interval

Determining the data sample is not a difficult task. The researcher can determine for example what they want to include or exclude in the dataset. However, the choice of the time interval is an important element. The time interval must be chosen wisely so that the results can actually say something significant over the analyzed data. In principle analyses over a longer period of time are more significant then over a shorter time interval, since outliers can influence a short time interval. The outcomes will be more reliable when more data is being collected over a longer period of time.

Filtering the data

It has been decided to choose as much languages as possible in collecting the metrics amount of conversations, sentiment and reach from the tool Mention. This resulted in a max of 10 languages. This decision has been made in order to calculate the most representative online reputation and so not leaving any possible important messages behind. This choice causes a problem when filtering the data for the conversations and the belonging sentiment. In order to correct for potential errors, the researches must be able to read all the conversations in the 10 languages, which was not possible. The researcher was only able to read English and Dutch conversations. Using a translator could be a solution but translators do not translate all the conversations the correct way, making it not reliable to use a translator. Therefore it is suggested for the future to limit the languages into the languages that the researchers can read.

Merging the data files

The process of merging the filtered data excel file from Mention with the standard excel file was not very practical and useful. The filtered data file consisted of long rows with data about the amount of conversations, sentiment and reach. In order to merge these two data files, sub tabs needed to be created to accurately have insights into the data of each day and the metrics needed to be calculated with a SUM and filter. Conducting this step was very devious. For the future, the possibility of a formula is suggested that easily can calculate the necessary data without creating sub tabs and filters.

Calculating the OR index

A formula has been prepared to calculate the OR-index. It should first of all be noted that the formula has distinguished in the weightings of the various OR Metric. This means that the metrics are not equally important. It is of course possible that there are other (unexamined) metrics that have not yet been designated as an OR metric in this research. Other metrics that could be added to the OR index are the number of followers that the relevant author has that produced the conversation, or the number of comments there were on messages (Vollenbroek, Vries & Constantinides, 2012). This ensures a more accurate OR index. Moreover, out of the Lawshe test, 5 of the 6 metrics do not have content validity and so omitting these metrics from the OR index could be a possibility.

Conducting context analyses

The context analysis demands a lot of manual work. First, all the data in the excel file must be analyzed before it is possible to say something sensible about why a particular phenomenon occurs in the OR index. This process is time consuming. The analysis is, however, necessary because this information can provide insights for the organization into why a there is for example an increase or decrease in the OR index or why a specific other pattern occurs at that time.

Conclusion

The goal of this chapter was answer to two sub questions by exploring the OR-index results of the EIT Digital and identifying how reliable and valid the OR-index is. Out of the results an explosive and crossover pattern occurred. The crossover pattern occurred since certain metrics had such a strong influence that the OR pattern took over this pattern. Besides, the explosive pattern occurred due to a abrupt increase in the OR pattern from

30 to 31 march. This was caused by the high reach amount of neutral conversations on the subject Sillicon Valley. For the OR-index to be quality acceptable, the reliability and validity needed to be ensured. In terms of reliability, it has been checked if 2 observers collected the same data with the same tool at the same time which resulted in a Kappa value of k=1,00 for both tools, meaning the tools can be considered as reliable and therefore reliability of the OR-index is ensured.
To test validity, the CVR value is conducted which looks at the opinions of experts in terms of the essentialness of the metrics selected for measuring the construct online reputation. The Lawshe method has been used and it resulted in a CVR value of 0,99 for the metric Sentiment, and a CVR value of -0,2 for the other metrics. Besides the content validity, construct validity is assumed and criterion validity, generalizability and transparency could not be ensured which is more explained in detail in chapter 6.
Overall, it can be stated that the OR-index is partly quality acceptable since it meets the condition of reliability and construct validity but does not meet the condition of content validity. Moreover, generalizability and transparency could not be ensured. In the chapter 5 alterations are made for the method in order for the index to have content validity and be quality acceptable.

5. Conclusion

In this study an online reputation index was developed. The developed OR-index method was tested on the EIT Digital. However, the developed and used research method is not specific to the EIT Digital and can therefore be applied in other organizations. In this chapter the most important results will be summarized. First of all, the sub questions will be answered briefly and explained (§ 5.1). Next, any changes to the method will be discussed (§5.2). Finally, an answer is given to the research question (§ 5.3).

5.1. Sub questions

In order to answer the main research question, the five sub questions will first be answered. During this report, the various sub questions have already been answered and discussed. The answers to these questions will be explained briefly here.

The first sub question formulated was '*What are the metrics of Online Reputation?*' The focus of the study was to develop an online reputation index and so metrics are selected that measure this construct. First the concept of metrics has been defined. Next, the process of how metrics are selected is explained which eventually resulted in selecting 6 metrics based upon several literature studies and examples of social media monitoring tools. The metrics selected are: Followers, Visitors, Share of Voice, Conversation volume, Reach and Sentiment. These metrics are categorized into three factors that each focus on different elements of measuring online reputation: Activity, Engagement and Presence.

The second sub question was '*What is an Online Reputation Index?*' The index was based on the knowledge from the economic sector, where indexes such as the AEX already are being prepared for a long time to carry out certain analyzes. Mostly, it tries to type patterns within these analyzes to explain for a particular development. For the analysis of the OR-index, such patterns are also relevant. Which patterns can actually be defined from the Online Reputation Index? Based on the economic analyzes, 4 possible patterns were presented in this study, the Crossover, Explosive OR-, Increased or Decreased OR- and the OR-Correlation pattern. For the development of the OR-index, the foundation of a formula with weightings is used from the AEX. So an online reputation index in this study consists of a formula where each metric has their own weighting based on their importance on forming the online reputation multiplied by a scale number.

The outcome of the third sub question '*What is the OR-index of the EIT Digital?*' was recently discussed in chapter four. With the information of the two-sub question and other literature review an OR-index method has been developed. Before establishing the OR-index, a handbook has been made that shows in detail how to conduct each step (that are part of the developed method) in order to establish the OR-index the correct way. With the use of the handbook the OR-index can be conducted for the EIT Digital. It has been chosen to calculate the OR-index for a time interval of 7 days starting at 29-03-17 till 04-04-17. Within this time interval the OR-index is calculated and visualized, which resulted in an explosive/crossover pattern. An explosive increase is visible from 30 to 31 march, followed up by a decrease. The cause of this increase is the high reach of neutral conversations that are about the Startup Europe that comes to Sillicon Valley. The decrease is caused by the decrease in the amount and reach of conversations.

The fourth sub question '*What is the validity and reliability of the OR-index?*' was also answered in the fourth chapter. It has been discussed that in order for the index to be quality acceptable, validity and reliability needs to be ensured by testing it with methods. In total 5 methods have been discussed to asses the validity of the index, but only 1 method was applicable in this research which was the Lawshe method. This method is focused on the content validity and looks at the agreement among experts in terms of how essential a metric is. Out of the results from the Lawshe method a value of 0,99 for the metric Sentiment and a value of -0,02 for the remaining metrics is established. Besides assessing the content validity, the reliability of the data collection measurement tool has also been assessed. The method applicable is the Kappa value. This method looked at the results from the data collected by two observers of both tool. From the conduction, a kappa value of 1,00 is realized, referring to a perfect agreement between the two observers and so the two tools are considered as reliable.

The remaining sub question will be discussed in the following sections.

5.2. Adapted method

The last sub question is formulated as '*Which adjustments must be introduced for the method?*' With the results from the Lawshe and Kappa test and the answers form the sub question on practical usability, this question can be answered. On the basis of this, adjustments are made in order for the index method to be quality acceptable and optimized to be practical usable.

An adaption could be made to the OR formula. A possible solution is to omit the metrics that are judged by the experts as not essential and to add more metrics to the formula in order to still obtain the most accurate representation of online reputation. By doing this, the content validity is ensured. However, with an adjustment of the formula, the reliability and validity of the added metrics should be re-examined. The following adaptation to the formula could be implemented:

INDEXscore= *(Amount of Negative Conversations* scaleNMBR) + (Amount of Neutral Conversations * scaleNMBR) + (Amount of Positive Conversations * scaleNMBR) + (Amount of FollowersOFAuthor * scaleNMBR) + (Amount of MessageReaction * scaleNMBR).*

As mentioned earlier, several metrics may be omitted to the calculation to make the OR index valid and other metrics can be added to make the index richer in score. For example, the number of followers that the author in question has that created the conversation, or the number of comments that appears on such message can be taken into account in the calculation of the Index score. Nevertheless, with each form addition, the weighting of these metrics should be re-considered throughout the formula and the validity and reliability of the metrics needs to be investigated. It is unlikely that the added metrics will have an equally high weighting within the OR index. Additional research must be carried out for this purpose.

This could be concrete method adjustment based on this research. Concrete suggestions and recommendations on follow-up studies will be discussed in section 6.2.

5.3. Research Question

This section will answer the research question as presented at the beginning of this report. Since the purpose of this research was to develop an Online Reputation Index, it was important to know what the requirements were for developing the index and how valid, reliable and practically useful the index was. Therefore, the following research question was formulated "*What is a practical, valid and reliable Online Reputation index method for the Higher Education Network?"*

Based on literature and examples of social media monitoring tools, metrics were selected for measuring and determining the online reputation. Using this literature and examples, a methodology was drawn up that had to make it possible to calculate the Online Reputation by using an Index. Another aspect that was important in conducting this research was the way in which validity and reliability could be ensured in order for the OR index to be quality acceptable. An important step was to see if the data collection measurement tool realized a sufficient Kappa value and if the metrics selected in the index exceeded the minimal value of the Lawshe method. (Boeije, 2008; DeVellis, 2003). The Kappa Value was higher then the minimum value but the Lawshe value was for 5 metrics lower then required. Alterations have been made in the method in section 5.3 resulting in a quality acceptable online reputation index.

The research method was finally assessed for practical usefulness. It is a method that can be applied directly in practice however some steps are devious and suggestions have been made to overcome these problems such as applying only the languages in which the researcher speaks, and to use a formula to easily calculate the metrics in the filtered data file. This research has laid the foundation for Online Reputation Research. Perhaps other online metrics may also have specific effects on the OR index. This should be further investigated in the future.

6. Discussion & Recommendations

This chapter will discuss the research conducted. First of all, the limitations of the research will be discussed (§ 6.1). Then, on the basis of the acquired knowledge about this research, concrete suggestions and recommendations will be made for future research (§ 6.2).

6.1. Limitations

Research sources

In this research, two data collection tools have been used to collect the necessary big (social) data, which is the used as input in this research on developing an online reputation index method for the EIT Digital. One of the tools is Mention. This tool has been used to collect data of the metric amount of conversations, sentiment and reach. It was suggested in chapter 2 to conduct data triangulation for this tool to ensure generalizability. However data triangulation in this process was not possible since automated data collection tools have different sources to which they collect data therefore whenever two tools are compared in the data they collect the results will never be the same. By only using one tool it is not clear whether all relevant sources are taken into account, which limits the reliability of the data collection tool.

Toolings

When using toolings to carry out scientific calculations, it is often also useful to know what the underlying algorithm is doing with the data. Unfortunately, it is often not possible to access this kind of information, as there is a commercial importance associated with the use of these toolings. If it is not possible to see the source code, it is in any case important to indicate whether the underlying function of the researcher is known and what version has been worked out. There is nothing wrong with the use of toolings, as long as it is known whether changes have been made recently in the tooling. This benefits the reliability and validity of the research. In this research, the toolings Mention and Google Analytics were used. For neither one of the toolings the version number or underlying algorithm was known and so it is possible that not all the data is collected with the tools. Therefore making the tools limited in reliability and transparency.

Data collection availability

Another limitation was the data collection availability of the tool Mention. As discussed, data collection availability was an important aspect in assessing criterion validity. To assess criterion validity, data needs to be available for a long time period, (1 year) so results can be compared from the OR-index and a well known other online reputation measurement tool. Mention only offered to collect accurate data no longer then 7 days ago, making it not possible for this research to assess criterion validity.

6.2. Recommendations

This study focused on the development and implementation of an Online Reputation Index. Based on the results of this research, the following recommendations are made for future research.

Extension Online reputation Metrics

This research attempted to lay the foundation for an online reputation research, where different metrics were selected for the input of measuring the online reputation. Perhaps other online reputation metrics can also be taken into account as input for the online reputation index. For example, it could be considered to what extent the number of followers of the author that created the conversation, the number of message responses, or other similar online reputation metrics are involved in the final reputation assessment. Besides the extension of possible metrics, more research could be conducted on the 5 metrics that now are below the minimum Lawshe value. It is possible that whenever more experts are asked for their opinion on the metrics, the content validity of these metrics can be ensured.

Adaption of weightings and formula

In this study the online reputation index is developed for higher education networks. But the index can also be used in other organizations such as industrial organizations, on the condition that the weightings of the metrics and the formula are adapted.

Adaption of tooling

In this research the tool Mention and Google Analytics have been used. As discussed the tool Mention collects accurate data that is available for download up till 7 days ago and so making it not possible to ensure criterion validity. Besides this, the tool does not offer any visible algorithm resulting in a lack of transparency and the sources automated data collection tools take into account differ for each tool, making data triangulation not possible. These limitations lead to an absence of the reliability and validity of the data collection tool Mention. A recommendation is to make use of another tool such as a sort of database that has the necessary big (social) data stored online for a longer time interval. Whenever online stored databases are used, the sentiment for each conversation must be established which can be done by programming languages. A possible programming language could be Python or R. Both are powerful object-oriented programming languages. This alteration of using an online stored database and a programming instrument could potentially ensure criterion validity, generalizability and transparency of the OR-index.

References

Books

Aggarwal, A. (2016). Managing Big Data Integration in the Public Sector. Herbey, PA: Information Science Reference.

Babin, B. and Zikmund, W. (2016). *Essentials of marketing research*. 1st ed. Boston, MA, USA: Cengage Learning.

Balthazar-Jennings, D. (2016). Business Analyses Quick Start Guide.

Bello-Orgaz, G., Jung, J. and Camacho, D. (2016). Social big data: Recent achievements and new challenges. *Information Fusion*, 28, pp.45-59.

Blankson, S. (2004). *How to make a fortune with options trading*. 1st ed. Morrisville, NC: Lulu.com.

Bloem, J., Doorn, M. van, Duivestein, S., Manen, T. van, Ommeren, E. van (2012). Big Social: Gedrag voorspellen met Big Data. Retrieved from Sogeti VerkenningsInstituut

Boeije, H. (2008). Analyseren in kwalitatief onderzoek. Denken en doen. Den Haag: Boom onderwijs, 2008.

Bouchard, M. (2016). *Advances in research on illicit networks*. 1st ed. Oxon: Routledge.

Brown, J. D. (1996). *Testing in language programs.* Upper Saddle River, NJ: Prentice Hall Regents.

Brown, S. (2010). Likert scale examples for surveys.

Bunting, M. and Lipski, R. (2000) Drowned out? Rethinking corporate reputaton management for the Internet. *Journal of Communication Management*, 5(2): 170-178.

Carroll, J. (2013). *Creativity and rationale*. 1st ed. London: Springer.

Chang WL., Chen GR. (2017) Measuring Influence on Social Media: A Sentiment Perspective (An Abstract). In: Stieler M. (eds) Creating Marketing Magic and Innovative Future Marketing Trends. Developments in Marketing Science: Proceedings of the Academy of Marketing Science. Springer, Cham

Cheliotis, G., Lu, X., Song, Y., (2015). Reliability of Data Collection Methods in Social Media Research. Proceedings of the Ninth International AAAI Conference on Web and Social Media

Chun, R., and Davies, G. 2001. "E-Reputation: The Role of Mission and Vision Statements in Positioning Strategy". *Journal of Brand Management* 8(4-5): 315-333.

Christodoulides, G., Jevons, C., & Bonhomme, J. (2012). Memo to merketers: quantitative evidence for change - how user-generated content really affects brands. *Journal of advertising research,* 52(1), 53-65.

Chritton, S. (2014). *Personal branding for dummies*. 2nd ed. For Dummies.

Cottrell, R. and McKenzie, J. (2011). *Health promotion & education research methods*. 1st ed. Sudbury, Mass.: Jones and Bartlett Publishers.

Davis, K., Patterson, D., (2012). *Ethics of Big Data*. Sebastpol, CA. O'Reilly Media, Inc.

Dell'Atti, S. and Trotta, A. (2016). *Managing reputation in the banking industry*. 1st ed. [Cham]: Springer.

Dijkmans, C., Kerkhof, P. and Beukeboom, C. (2015). A stage to engage: Social media use and corporate reputation. *Tourism Management*, 47, pp.58-67.

Dean, J., & Ghemawat, S. (2008). Mapreduce: simplified data processing on large clusters. Communications of the ACM, 51(1), 107-113. doi:10.1145/1327452.1327492

Demchenko, Y., Ngo, C., Laat, C. de, Membrey, P., & Gordijenko, D. (2014). Big Security for Big Data: Addressing Security Challenges for the Big Data Infrastructure. *In: Jonker, W., Petković, M. (ed),*
Secure Data Management. 1st ed.: Springer International Publishing. 76-94.. doi: 10.1007/978-3-319-06811-4_13

Dodge, Y. (2003) The Oxford Dictionary of Statistical Terms, OUP. ISBN 0-19-920613-9

Doh, J. and Stumpf, S. (2006). Handbook on responsible leadership and governance in global business. 1st ed. Cheltenham: Edward Elgar.

Dowling, G. (2006). Communicating Corporate Reputation through Stories. *California Management Review*, 49(1), pp.82-100.

Fenwick, T. (2016). *Materialities, textures and pedagogies*. 1st ed. [Place of publication not identified]: Routledge.

Fombrun, C., & Riel, C.B.M. van (2005). Fame & Fortune: How successful companies build winning reputations. FT Press.

Fombrun, C., & Riel, C.B.M. van (2004). Managing Your Company's Most Valuable Asset: Its Reputation. CRITICAL EYE, sep-oct, 71-74.

Gandomi, A. and Haider, M. (2015). Beyond the hype: Big data concepts, methods, and analytics. *International Journal of Information Management*, 35(2), pp.137-144.

Ghose, A. and Ipeirotis, P. 2009. The EconoMining project at NYU: Studying the economic value of user-generated content on the internet. *Journal of Revenue and Pricing Management*. Vol. 8, 2/3, p.241-246.

Gibson, D., Gonzales, J., Casatnon, J. (2006). The importance of Reputation and the Role of Public Relations. *Public relations quarterly, 51.3,* pp. 15-18.

Golbeck J, Robles C, Turner K. (2011). Predicting personality with social media. *In: CHI'11 Extended abstracts on human factors in computing systems*. Vancouver: ACM; 2011.

Gottschalk, P. (2011). Corporate social responsibility, governance and corporate reputation. 1st ed. Singapore: World Scientific.

Griffin, A., (2008). New strategies for reputation management: Gaining control of issues, crises and corporate social responsibility. Kogan Page. London.

Gunn, M. (2009). *Trading regime analysis*. 1st ed. Chichester, England: Wiley.

Hajli, N. (2015). *Handbook of research on integrating social media into strategic marketing*. 1st ed. Hershey, PA: Business Science Reference, An imprint of IGI Global.

Hemann, C. and Burbary, K. (2013). Digital marketing analytics. 1st ed. Indianapolis, Ind.: Que.

Hennig-Thurau, T., Gwinner, K. P., Walsh, G. & Gremler, D. D. (2004). Electronic Word-of-Mouth Via Consumer-Opinion Platforms: What Motivates Consumers to Articulate Themselves on the Internet? *Journal of Interactive Marketing*, 18, 38- 52.

Highhouse S, Brooks ME, Greguras G. 2009. An organizational impression management perspective on the formation of corporate reputations. *Journal of Management.* 35:1481–93

Humphreys, A. (2016). *Social media*. 1st ed. New York: Oxford University Press.

Information Resources Management Association. (2015). Mobile computing and wireless networks: Concepts, Methodologies, Tools and Applications.

Ishikawa, H. (2015). Social big data mining. 1st ed

Jobs, B. (2014). Guide to the digital industry. Lulu.com

Kietzmann, J., Hermkens, K., McCarthy, I. and Silvestre, B. (2011). Social media? Get serious! Understanding the functional building blocks of social media. Business Horizons, 54(3), pp.241-251.

Kimberlin, C. and Winterstein, A. (2008). Validity and reliability of measurement instruments used in research. *American Journal of Health-System Pharmacy*, 65(23), pp.2276-2284.

Kolb, B. (2015). Entrepreneurship for the creative and cultural industries. 1st ed. London [u.a.]: Routledge.

Kumar, A. (2016). Applied Big Data Analytics in Operations Management. Hersey, PA. IGI Global.

Kumar, A., Dash, M.K., (2015). Fuzzy Optimization and Multi-Criteria Decision Making in Digital Marketing. Information Science Reference

Lamb, C., Hair, J., McDaniel, C., Summers, J. and Gardiner, M. (2013). Mktg 7. Souts-Western College Pub; 7 Edition

Lawshe, C.H. (1975). A quantitative approach to content validity. *Personnel Psychology, 28*, 563–575. doi:10.1111/j.1744-6570.1975.tb01393.x

Lichtman, M. (2006). *Qualitative research in education: A user's guide* (pp. 7-8). Thousand Oaks, CA: Sage Publications.

Lim, M. A., (2016). The handbook of technical analysis: The practioner's comprehensive guide to technical analysis. Singapore: John Wiley & Sons.

Liu, B. (2012). *Sentiment analysis and opinion mining*. 1st ed. [S.l.]: Morgan & Claypool.

Maggino, F. Ruviglioni, E., (nd). Obtaining weights: from objective to subjective approaches in view of more participative methods in the construction of composite indicators.

Maxwell, J. A. (1992). Understanding and validity in qualitative research. In A. M. Huberman & M. B. Miles (Eds.), *The qualitative researcher's companion,* 37-64. Thousands Oaks, CA: Sage Publications (Reprinted from Harvard Educational Review. 1992, 62(3), 279-300).

McHugh, M. (2012). Interrater reliability: the kappa statistic. *Biochemia Medica*, pp.276-282.

Medhi, J. (1992). *Statistical methods*. 1st ed. New York: J. Wiley.

Miller, R. E. (2015). The complete guide to online reputation for small & local business: Everything You Must Know About Managing Your online Reputation (Online Marketing Success) (Volume 1). CreateSpace Independent Publishing Platform; 1 edition

Nasser, T., Tariq, R.S., (2015). Big Data Challenges. *Journal of Computer Engineering & Information Technology, 4:3,* 1-10.

Ohlhorst, F. (2012). Big Data Analytics: Turning big data into big money. Wiley 1st edition.

Olshannikova, E., Olsson, T., Huhtamäki, J. and Kärkkäinen, H. (2017). Conceptualizing Big Social Data. *Journal of Big Data*, 4(1).

Paine, K. (2011). *Measure what matters*. 1st ed. Hoboken, N.J.: Wiley.

Paquerot, M., Queffelec, A., Sueur, I.& Biot-Paquerot, G. (2011). L'e-réputation ou le renforcement de la gouvernance par le marché de l'hôtellerie?. *Revue Management et Avenir,* 45(5), 280–296.

Powell, M. (2015). Increasing the Impact of Social Media & Content Marketing in B2B Markets - B2B International. B2B International.

Power, D. and Phillips-Wren, G. (2011). Impact of Social Media and Web 2.0 on Decision-Making. *Journal of Decision Systems*, 20(3), pp.249-261.

Sabherwal, R. and Becerra-Fernandez, I. (2011). Business intelligence. 1st ed. Hoboken, NJ: Wiley.

Sarker, A., Ginn, R., Nikfarjam, A., O'Connor, K., Smith, K., Jayaraman, S., Upadhaya, T., Gonzalez, G. (2015). Utilizing social media data for pharmacovigilance: A review. *Journal of Biomedical Informatics, 54,* 202-212.

Saxena, A. (2008). *Enterprise contract management*. 1st ed. Ft. Lauderdale, Fla.: J. Ross Pub.

Schmitz, P. (2014). *5 Tools to Monitor Your Online Reputation : Social Media Examiner*. [online] Socialmediaexaminer.com. Available at: http://www.socialmediaexaminer.com/tools-monitor-online-reputation/

Schwaiger, M. (2004) Components and parameters of corporate reputation – An empirical study Schmalenbach Business Review 56 (1):46-71

Schulze Horn I., Taros T., Dirkes S, Huer L., Rose M., Tietmeyer R. , Constantinides E., (2015), Business Reputation and Social Media - A Primer on Threats and Responses, IDM *Journal of Direct, Data and Digital Marketing Practice,* Issue 16, nr .3

Sharpe A., J. Salzman (2004) Methodological Choices Encountered in the Construction of Composite Indices of Economic and Social Well-Being, Center for the Study of Living Standards, Ottawa, CAN. Thurstone, L.L. (1927).

Silverston, L. and Agnew, P. (2011). *The Data Model Resource Book*. 1st ed. Chichester: John Wiley & Sons.

Sinanaj, G., Muntermann, J., & Cziesla, T. (2015). How Data Breaches Ruin Firm Reputation on Social Media! – Insights from a Sentiment-based Event Study, in; Thomas,.O.; Teuteberg, F. (Hrsg.):Proceedings der 12. Internationalen Tagung Wirtschaftsinformatik (WI 2015), Osnabruck, S. 902-916)

Sparks, B. A. & Browning, V. (2011). The impact of online reviews on hotel booking intentions and perception of trust. *Tourism Management* (ERA: A*), 32, 1310-1323.

Spiliotopoulou, L., Charalabidis , Y., (2014). Web 2.0 in Governance: A Framework for Utilizing Social Media and Opinion Mining Methods and Tools in Policy Deliberation. IGI Global.

Stephen, A. and Galak, J. (2012). The Effects of Traditional and Social Earned Media on Sales: A Study of a Microlending Marketplace. *Journal of Marketing Research*, 49(5), pp.624-639.

Strong, C. (2015). Humanizing Big Data: Marketing at the Meeting of Data, Social Science and Consumer Insight. Philidelphia, PA: Kogan Page Limited.

Strauss, J. and Frost, R. (2016). E-marketing. 1st ed. New York: Routledge

Thyer, B. (2010). *The handbook of social work research methods*. 1st ed. Los Angeles: SAGE.

Thomsett, M. (2013). *Options for swing trading*. 1st ed. New York: Palgrave Macmillan.

Thorsen, E. (2014). *Online Reporting of Elections*. 1st ed. London: Taylor and Francis.

Twycross, A., Shields, L., (2004). Validity and reliability- What is it all about? Part 1 validity in quantitative studies. Paediatric Nursing

Young, R.R. (2004). The Requirements Engineering Handbook. Nordwoowd, MA: Artech House, Inc.

Zamanzadeh, V., Ghahramanian, A., Rassouli, M., Abbaszadeh, A., Alavi-Majd, H. and Nikanfar, A. (2015). Design and Implementation Content Validity Study: Development of an instrument for measuring Patient-Centered Communication. *Journal of Caring Sciences*, 4(2), pp.165-178.

Websites

Anon, (2017). *Owned, Earned and Paid media strategy for Healthcare Companies*.
Available at https://www.kunocreative.com/hs-fs/hub/32387/file-2435487518-pdf/docs/Owned,_Earned,_Paid_Media_Strategy_for_Healthcare_Companies.pdf

ArgonMarketing.com. (2017). *Why Online Reputation Management Provides a Great Return on Investment - ArgonMarketing.com*.
Available at: http://www.argonmarketing.com/why-online-reputation-management-provides-a-great-return-on-investment/

Behr (2014). Samenstelling en berekening van de AEX-index.
Available at: http://www.behr.nl/koersen/indices#AEX_Index

Berger, B. (2016). *How to Use Social Media Sentiment Analysis for Listening*. The Mention Blog.
Available at: https://mention.com/blog/social-media-sentiment-analysis/

Berger, B. and Berger, B. (2015). *Mention Features Update: See Reach and Share Data for Mentions - The Mention Blog*. [online] The Mention Blog.
Available at: https://mention.com/blog/mention-features-update-reach-shares/

Broking Faculty. (2015) *Reputation risk in a social media culture: How Well is the insurance market responding?*
Available at http://www.cii.co.uk/media/6834133/reputation_risk_in_a_social_media_culture_1.pdf

Cestone, V., KRON, Ward, E., CNN Newssource. (2016) *New report of Samsung Galaxy's7 catching fire.*
Available at http://kron4.com/2016/11/21/new-reports-of-samsung-galaxy-s7s-catching-fire/

Chen W. (2010) *How to tame big bad data.*
Available at http://blog.magnitudesoftware.com/2010/08/25/tame-big-bad-data/

Cision. (2017). *White Paper: Identify and Understanding Social Media Sentiment | Cision*.
Available at: http://www.cision.com/us/resources/white-papers/understanding-social-media-sentiment/

Davis, J. (2012). *5 Essential & Easy Social Media Metrics You Should Be Measuring Right Now*.
Available at: https://blog.kissmetrics.com/essential-social-media-metrics

Developers Guide. (2017). Google Analytics Integration.
Available at: http://developers.gigya.com/display/GD/Google+Analytics+Integration

DFT (2011). Hoe wordt de AEX-Index berekend? *De Financiële Telegraaf*, 3 juni.
Available at:http://www.telegraaf.nl/dft/beleggingsinstituut/article20163740.ece/

Dunham, K. (2014). *Sentiment Analysis Beginners Guide - Social Media Metrics*. Hootsuite Social Media Management.
Available at: https://blog.hootsuite.com/beginners-guide-sentiment/

Eccles, R.G., Newquist, S.C., Schatz, R. (2007). Reputation and its Risks. *Risk management.*
Available at: https://hbr.org/2007/02/reputation-and-its-risks

Eightytwenty.ie. (2017). *EightyTwenty | Why Increasing and Measuring your Digital Share-Of-Voice Matters!*.
Available at: http://eightytwenty.ie/why-increasing-and-measuring-your-digital-share-of-voice-matters/

En.wikipedia.org. (2017). Earned media.
Available at: https://en.wikipedia.org/wiki/Earned_media#cite_note-1

EY. (2014). *Big data: Changing the way business compete and operate*.
Available at http://www.ey.com/gl/en/services/advisory/ey-big-data-big-opportunities-big-challenges

HowTheMarketWorks Education Center. (2012). *Chart Patterns: Gaps*. [online] Available at: http://education.howthemarketworks.com/advanced/charts-and-patterns/chart-patterns-gaps/

Investopedia. (n.d.). *Analyzing Chart Patterns: Head And Shoulders*.
Available at: http://www.investopedia.com/university/charts/charts2.asp

Investopedia. (n.d.). *Analyzing Chart Patterns: Cup And Handle*.
Available at: http://www.investopedia.com/university/charts/charts3.asp

Jain, A. (2016). *The 5 Vs of Big Data*.
Available at https://www.ibm.com/blogs/watson-health/the-5-vs-of-big-data/

Janssen, C., Langager, C. and Murphy, C. (2011). Technical Analysis: Fundamental Vs. Technical Analysis.
Available from: http://www.investopedia.com/university/technical/techanalysis2.asp.

Ken, D. (2014). *Why Engagement Rate is More Important than Likes on Your Facebook*. Social Media Today.
Available at: http://www.socialmediatoday.com/content/why-engagement-rate-more-important-likes-your-facebook

Kinart, P. (2017). A case study on e-reputation | E-Reputation Law. Arpia.be.
Available at: https://www.arpia.be/ereputation-law/en/index.php

Labaree, R.V. (2009) Research guides: Organizing your social sciences research paper: Quantitative methods.
Available at: http://libguides.usc.edu/writingguide/quantitative

Langager, C. and Murphy, C. (n.d.). *Analyzing Chart Patterns: Double Top And Double Bottom*. [online] Investopedia. Available at: http://www.investopedia.com/university/charts/charts4.asp

Managementstudyguide.com. (n.d.). *What are Metrics and Why are they Important ?*. [online]
Available at: http://www.managementstudyguide.com/what-are-metrics.htm

Marketingworks360.com. (2016). *Measuring Media Share of Voice and What it Means to Your Company | Marketing Works | B2B Marketing and Public Relations Firm*.
Available at: http://marketingworks360.com/2016/02/marketing-tips/measuring-media-share-of-voice/

Marr, B., (2014). *Big data: The 5 Vs everyone must know.*
Available at https://www.linkedin.com/pulse/20140306073407-64875646-big-data-the-5-vs-everyone-must-know

Martinek, L. (2017). *What is big data analytics? - Definition from WhatIs.com*. SearchBusinessAnalytics.
Available at: http://searchbusinessanalytics.techtarget.com/definition/big-data-analytics

Matia, A. (2016). *6 Tools for Monitoring Your Online Reputation*. Entrepreneur.
Available at: https://www.entrepreneur.com/article/277908

Michelle Medeiros´ Blog. (2017). *Why corporate reputation matters*.
Available at https://michellemedeiros.wordpress.com/2011/04/04/why-corporate-reputation-matters/

Monash C. (2010). *Three broad categories of data*.
Available at http://www.dbms2.com/2010/01/17/three-broad-categories-of-data/.

Optimize Smart. (2017). *Learn all about Users in Google Analytics.*
Available at: https://www.optimizesmart.com/understanding-users-in-google-analytics/

Peyok, L. (2015). *How Reviews and Recommendations Influence Purchases | Dowitcher Designs*. Dowitcher Designs.
Available at: http://www.dowitcherdesigns.com/how-reviews-and-recommendations-influence-purchases/

Rankingz. (2017). *EDM Monitor 2013*.
Available at: http://www.rankingz.com/wp-content/uploads/2014/02/Rankingz-EDM-Monitor-2013-Free-Preview-DJs-vs-1.1.pdf

Ratcliff, C. (2014). *What's the difference between paid, owned and earned media?*. Econsultancy.
Available at: https://econsultancy.com/blog/65560-what-s-the-difference-between-paid-owned-and-earned-media/

Reputation institute. (2010). 2010 Global reputation pulse study. *The most reputable companies in the world.*
Available at http://www.huerlimanncc.com/wp-content/uploads/2012/04/2010_Global_Reputation_Pulse_Study-by-huerlimann-creative-communications.pdf

Risi, J. (2015). *Earned media still alive and kicking- and driving influence*.
Available at http://www.prweek.com/article/1377881/earned-media-alive-kicking-driving-influence.

Rogers, B. (2012). The #1 Asset for Growth in New Markets: Your Reputation.
Available at: http://www.forbes.com/sites/ forbesinsights/2012/11/27/the-1-asset-for- growth-in-new-markets-your-reputation.

Shadbolt, P. (2016, October 13). *How can a company repair a damaged reputation?*
Available at http://www.bbc.com/news/business-37630983

Shandwick, W. (n.d.). *The company behind the brand*. [online] webershandwick.
Available at: http://www.webershandwick.com/uploads/news/files/InRepWeTrust_ExecutiveSummary.pdf

Stamoulis, N. (n.d.). *What is earned media and how does it impact SEO?*. Brickmarketing.
Available at: http://www.brickmarketing.com/blog/earned-media.htm

Tam, D. (2012). *Facebook processes more than 500 TB of data daily*.
Available from http://news.cnet.com/

Therre, D. (2013) *Shitstorm gegen Google+ wegen YouTube-Kommentarfunktion, 4 November*.

Available at http://www.noz.de/deutschland-welt/medien/artikel/427842/shitstorm-gegen-google- wegen-youtube-kommentarfunktion.

Union Metrics Help Desk. (2017). *Explaining reach and its importance*. [online] Available at: https://unionmetrics.zendesk.com/hc/en-us/articles/201201776-Explaining-reach-and-its-importance

Villanova University (2013). *What is Big Data?*
Available at https://www.villanovau.com/resources/bi/what-is-big-data/#.WOomk7GiGRs

Woodie, A. (2014). How Big Data Analytics Is Shining a Light on Anonymous Web Traffic. [online] Datanami. Available at: https://www.datanami.com/2014/11/20/big-data-analytics-shining-light-anonymous-web-traffic/

Wijman, O. (2014). *Reputation Risk, a rising C-suite imperative.*
Available at http://www.oliverwyman.com/content/dam/oliver-wyman/global/en/2014/may/ReputationRisk_Final_web.pdf

YouTube. (2009). *United Breaks Guitars*.
Available at: https://www.youtube.com/watch?v=5YGc4zOqozo

Zurich. (2010). *Reputational risk and crisis management.*
Available at http://www.insuranceformovers.net/res/docs/pdf/CrisisManagement.pdf

Appendices

Appendix A: OR-INDEX Handbook

OR-INDEX HANDBOOK

This handbook is made to give more explanation to the observers that conduct the method in this research to assess the reliability and to potential users of the method. Explanation is given on how to conduct each of the steps consisting of the OR-index method.

Step 1: Determine data sample and time interval

- **Data sample**
  The data sample depends on the context to which the data needs to be collected. In this research the method is conducted on the EIT Digital and so this is considered as the data sample.
- **Set time interval**
  Set the time interval on 29-03-2017 till 04-04-2017. Between this time interval the data needed must be collected.

Step 2: Determine data collection needs

- **Data needed**
  Followers, Visitors, Share of Voice, Reach, Sentiment and Conversation Volume

Step 3: Collecting the data

- **Use tools**
  To collect the needed data two tools are used.
  - Google analytics: used to collect the amount of Followers and Visitors
  - Mention: used collect the Share of Voice, Sentiment, Reach and Conversation Volume.

  For each metric the process is described to collect the data.

Metric Followers

- Tool: Google analytics
  - Open your Google Analytics account.
  - Go to Social interaction menu
  - Click on plugins
  - Select Followers as the social action
  - Set the time interval on 29-03-17/04-04-17
  - Click on export
  - Select Excel as export file, file is automatically downloaded to your computer and visible under downloads.

  See Image 26 for an example of what the social interaction overview looks like.

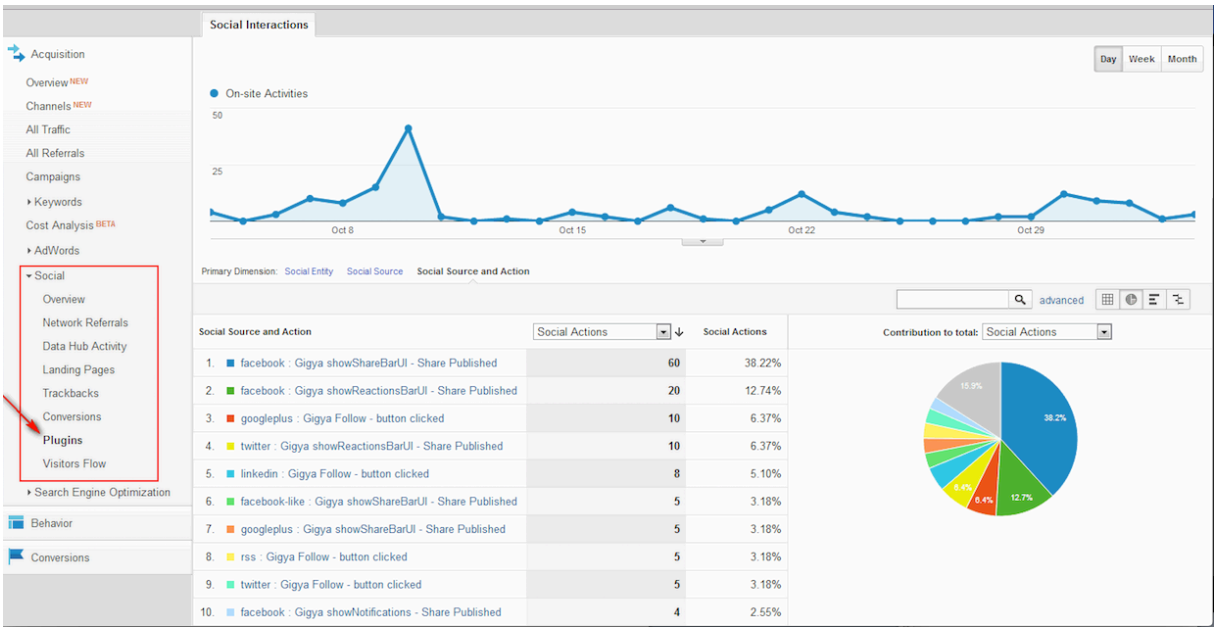


Image 26: Example: Social interaction overview in Google Analytics (Developers Guide, 2017)

Metric Visitors

- Open your Google Analytics account
- Go to audience overview
- Select: amount of users under the title 'overview'
- Set the time interval on 29-03-17/04-04-17
- Click on export
- Select Excel as export file, file is automatically downloaded to your computer and visible under downloads

See image 27 for an example of the audience overview in Google Analytics.

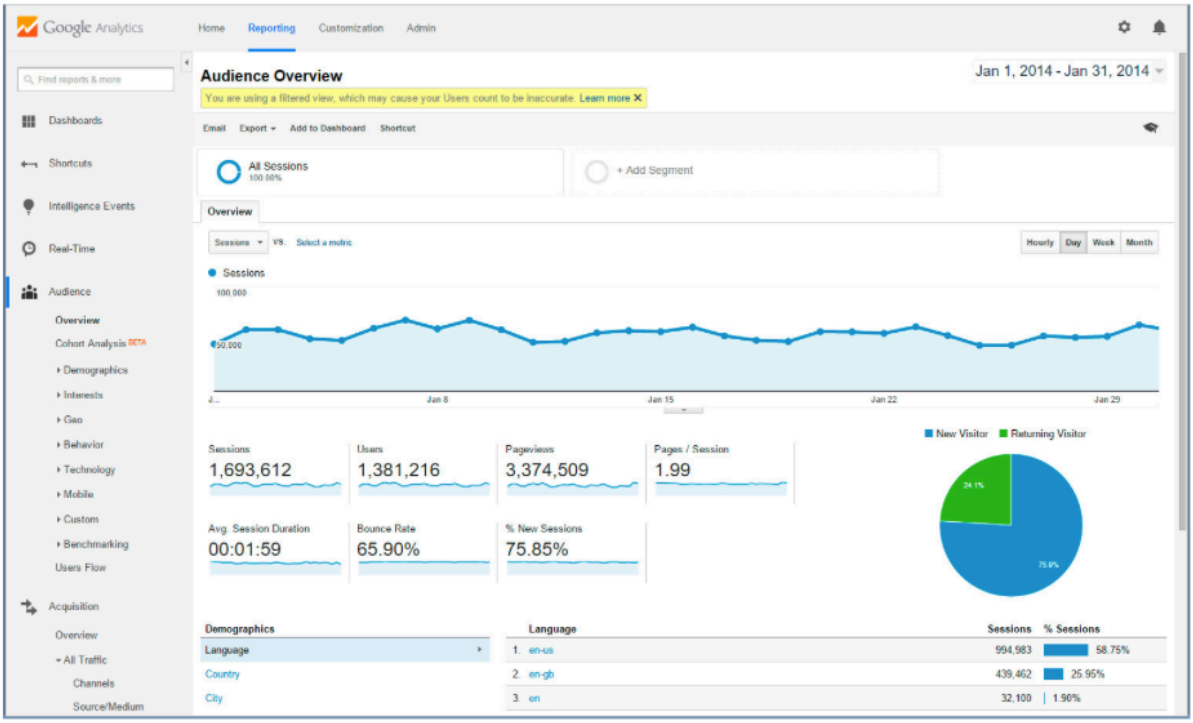


Image 27. Example: Audience overview in Google Analytics

Metric Sentiment, Reach and Conversation Volume

- Go to Mention.com
- Make an account and login
- Choose 'Add alert' at the left side of the site
- Choose option 'My company or product'
- Fill in the name; EIT Digital and click on next step
- Choose 10 languages to monitor: (English, Dutch, French, Spanish, Bulgarian, Italian, Chinese, Swedish, Portuguese and Hungarian) and click submit
- Click on Dashboard and go to listening Analysis.
- Select the right time interval 29-03-17/04-04-17
- Select Excel as export file, file is automatically downloaded to your computer and visible under downloads.

Metric Share of voice

- Go to Mention.com
- Log in to your account
- Create 2 alerts of the main competitors
- Click on 'dashboard'
- Go to 'competitive analyses'
- Select the time interval 29-03-17/04-04-17

- Download the data to an PDF format (Excel is not possible), file is automatically downloaded and visible under downloads

Step 4: Filtering the data

- **Filtering of Sentiment, Reach and Conversation volume**
  - Open the downloaded excel data file
  - Keep the data under the columns: Tone, Published at, Cumulative reach and Description and delete the rest.
  - Divide the remaining data file into subtabs for each day (29-03/30-03/31-03/1-04/2-04/3-04/4-04)
  - Search for errors in the sentiment and correct the errors
- **Filtering of Follower, Visitors and Share of Voice**
  - Insert the downloaded excel data into the standard excel file (this is the final file where all the data will be merged in and which is going to be used for analyses and visualization).

Step 5: Merge the data

- **Calculation of data**
  - Conversation volume
    - Look at the left sides of the sub excel files and see where data in the file stops. This is the amount of conversations of that day.
    - Insert this data number of each day in the standard excel file.
  - Reach
    - Choose the first sub excel file; 29-03
    - Set a filter on Tone
    - Choose 'neutral' in the filter (amount of neutral conversations with the belonging reach is now visible)
    - Use the formula SUM to sum the reach up of the neutral conversations
    - Insert this data number manually in the standard excel file.
    - Repeat this process for each sub excel file and the other two sentiment types.
    - Now the standard excel file is complete

Step 6: Setting scales

- Open the standard excel file
- Choose correct scale for each metric for each day (scales are set in chapter 4)
- Notate the scale number under each metric for each day in the standard excel file

Step 7: Calculating the OR-index

- Open the standard excel file
- Insert the developed formula in the last column of the file
- Delete the letters out of the formula and replace it with the scale number of each metric for the time interval 29-03-17/04-04-17
- The OR-index score will now be visible for each day

Step 8: Visualizing the OR-index

- Go to tableau.com
- Create a free account
- Open Tableau Software
- Connect to the standard excel file.
- Go to worksheets
- Drop the OR-index into the Rows, and Days into Columns. This will show a smooth visualization of the OR-index. See the example below.

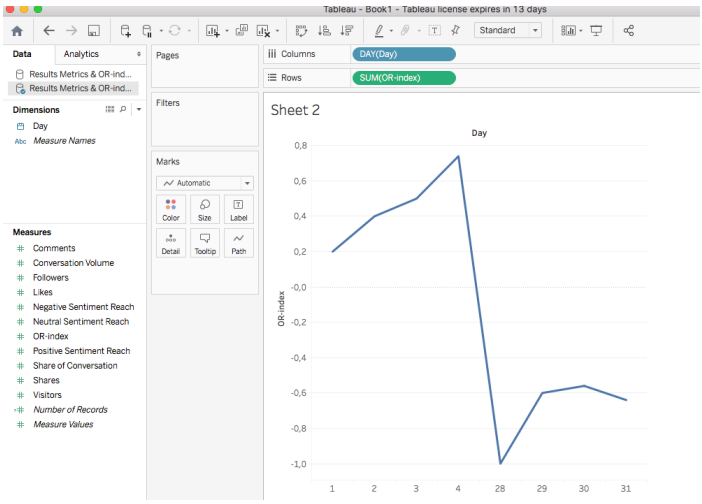


Image 28. Example visualization process by Tableau

Step 9: Analyzing the OR-patterns

- Look at the four possible OR patterns
- To investigate for a cross-over pattern: Separate the OR-index into the individual metrics
- Choose which pattern(s) exists

Step 10: Conducting context analyses

- Open the downloaded excel file of the metrics Sentiment, Reach and Conversation Volume
- Look at the context of each conversation around the day of an exponential increase or decrease in the OR index (for example an increased pattern) in order to see what the potential cause is.

Assessing Reliability & Validity

Reliability

As discussed in chapter 2, reliability must be assessed with the Kappa Value. In order to ensure reliability, the Kappa Value must be at least 0,7. To calculate the reliability use the formula: $\kappa = Pr(a) - Pr(e) / 1 - Pr(e)$. In the formula, Pr (a) stands for the chance of match, and Pr (e) for the chance you would expect based on coincidence. Pr (e) can be calculated by looking at how often two observers would agree if they were to judge randomly.

- **Calculate Pr (a) & Pr (e):**
  - Open excel sheet Kappa Value (see image 29)
  - Fill in the observed data value for each metric column
  - Calcualate Pr (a): Divide the amount of time the observers have the same results with the total amount of metric columns that needed to be observed
  - Calculate Pr (e): Divide the amount of times the observers do not have the same results with the amount of metric columns that needed to be observed
  - Calculate $\kappa = Pr(a) - Pr(e) / 1 - Pr(e)$.

Kappa Value		**Observer 2**							
		Followers	Visitors	Share of voice	Converstion volume	Reach	Positive sentiment	Neutral sentiment	Negative sentiment
Observer 1	Followers								
	Visitors								
	Share of Voice								
	Converstion volume								
	Reach								
	Positive sentiment								
	Neutral sentiment								
	Negative sentiment								

Image 29. Kappa Value excel file

Validity

Validity should be assessed with the Lawshe method. The formula for the Lawshe method is as follows; CVR=(ne-N/2)/(N/2), where CVR= content validity ratio, ne= number of panelists indicating essential and N=total number of panelists

- Open excel file Lawshe method (see image 30)
- Fill in the number of panelist that indicate essential for the metric followers
- Fill in the number of total panelists
- Calculate the Lawshe value
- Repeat this process for each metric

Lawshe method

	Followers	**Visitors**	**Share of voice**	**Sentiment**	**Reach**	**Converstion volume**
Amount of panellist rating essential						
Total number of panellist						

Image 30. Lawshe method excel file

Appendix B: Online reputation matrix

	Metric	Analysis	Data collection Software	Analysis software	Data visualization software	References
	Conversation Volume	Overview of the number of mentions relevant to your brand/company	Mention, Hootsuite, Ifthisthenthat, Falcon, Brand24, Brandseye, Google Alerts	Mx2, Falcon, Brand24, Brandseye	Tableau	Hemann, C. and Burbary, K. (2013). Digital marketing analytics. 1st ed. Indianapolis, Ind.: Que. Davis, J. (2012). 5 Essential & Easy Social Media Metrics You Should Be Measuring Right Now
	Followers	Number of followers or likes on Facebook/Twitter	Google Analytics	Google Analytics	Spss, Tableau	Bassig, M. (2012). Key Metrics for Measuring Online Reputation.
ıple analytics	Web metrics	Traffic sources, New or unique visitors, Returing visitors, Users, Interactions per visit, Value per visit, Cost per conversion, Bounce rate, Exit pages	Google Analytics	Google Analytics	Google Analytic, Tableau	Anderson, Z. (2015). 6 Simple Online Marketing Metrics You Should Track Reputation Loop. Reputation Loop. Daisyme, P. and more, R. (2016). 4 Key Metrics In Repairing Your Reputation Online. Entrepreneur
	Influencer identification	Indentifies the most influencal authors	Mention,Falcon, Brand24, Brandseye, Cision, Snaptrends	Mention, Falcon, Brand24, Brandseye, Cision, Snaptrends	Tableau	Slideshare.net. (2017). Social Media Monitoring Tools and Services Repo 2015 Presentation. Davis, J. (2012). 5 Essential & Easy Social Media Metrics You Should Be Measuring Right Now
	Reachability	Analysis of the potential reach of user conversation	Mention, Falcon, Brand24, Brandseye	Mention, Falcon, Brand24, Bı	Tableau	Davis, J. (2012). 5 Essential & Easy Social Media Metrics You Should Be Measuring Right Now
	Share of Voice	Analysis the amount conversations around the organization compared with the two main competitors	Mention	Mention	Tableau	Hemann, C. and Burbary, K. (2013). Digital marketing analytics. 1st ed. Indianapolis, Ind.: Que.
	Structured theme profiling: *Topic/Theme analysis*	Analysis of the online post and comments around specific topic of interest to indentify key themes	Mention,Google trends	Mention,Google trends	Tableau	Slideshare.net. (2017). Social Media Monitoring Tools and Services Repo 2015 Presentation.
	Structured theme profiling: *Word cloud*	Analysis of the reoccuring topics of conversations	Mention,Google trends	Mention,Google trends	Tableau	Slideshare.net. (2017). Social Media Monitoring Tools and Services Repo 2015 Presentation.
ıtent Analysis	Sentiment	Content analysis	Mention, Hootsuite,Falcon, Brand24, Brandseye, Cision, Snaptrends	Mention, Hootsuite, Falcon, Brand24, Brandseye, Cision, Snaptrends	Tableau	Majerník, M., Daneshjo, N. and Bosá M. (2015). Production management and engineering sciences. 1st ed. CR Press. Slideshare.net. (2017). Social Media Monitoring Tools and Services Repo 2015 Presentation. Kallas, P. (2017). 47 Free Social Med Monitoring Tools to Improve Your Results. DreamGrow.
		Content analysis	Brandseye, Brandspotter	Brandseye, Brandspotter	Tableau	Majerník, M., Daneshjo, N. and Bosá M. (2015). Production management and engineering sciences. 1st ed. CR Press. Slideshare.net. (2017). Social Media Monitoring Tools and Services Repo 2015 Presentation. Kallas, P. (2017). 47 Free Social Med Monitoring Tools to Improve Your Results. DreamGrow.
	Online reviews monitor	Analysis of the reviews on review websites like Yelp, Google, Facebook Tripadvisor.	Reputology, GradeUs	Reputology, GradeUs	Tableau	Reputology.com. (2017). Review Monitoring | Reputology. Bassig, M. (2012). Key Metrics for Measuring Online Reputation.

Appendix C: Standard excel file

Day	Followers	Visitors	S.o.V	Neu.S.R	Pos.S.R	Neg.S.R	Con.Vol	**OR-index**
29-03-17								
ScaleNumb								
30-03-17								
ScaleNumb								
31-03-17								
ScaleNumb								
01-04-17								
ScaleNumb								
02-04-17								
ScaleNumb								
03-04-17								
ScaleNumb								
04-04-17								
ScaleNumb								

Appendix D: Collected data from tool Mention

description	url	published_at	source_type	language	country	favorite	important	tone	source_name	source_url	parent_url	parent_id	children	direct_reach	cumulative_re	domain_
?ole_SC RT @Pole_SC	https://twitter.c	2017-04-03 16	twitter	fr	FR	0	1	positive	CCIcotedazur	https://twitter.c	https://twitter.c	##########	0	12365	12365	
:IT_Dig RT @EIT_Dig	https://twitter.c	2017-04-03 16	twitter	en	NL	0	0	neutral	MarcusHuken	https://twitter.c	https://twitter.c	##########	0	309	309	
rder to ı Redborder to ı	https://twitter.c	2017-04-03 17	twitter	en	FR	0	1	neutral	Poulin2012	https://twitter.c	https://twitter.c	##########	0	6304	6304	
gital Ma EIT Digital Ma	https://twitter.c	2017-04-03 17	twitter	en	FR	0	1	neutral	Poulin2012	https://twitter.c	https://twitter.c	##########	0	6304	6304	
ı_eu #p .@tech_eu #p	https://twitter.c	2017-04-03 17	twitter	en	US	0	1	neutral	siliconvikings	https://twitter.c	https://twitter.c	##########	0	12703	12703	
:IT_Dig RT @EIT_Dig	https://twitter.c	2017-04-03 17	twitter	en	NL	0	1	neutral	LvNistelrooij	https://twitter.c	https://twitter.c	##########	0	6804	6804	
vlindThe RT @MindThe	https://twitter.c	2017-04-03 17	twitter	en		0	1	neutral	chidambara09	https://twitter.c	https://twitter.c	##########	0	2404	2404	
vlindThe RT @MindThe	https://twitter.c	2017-04-03 16	twitter	en	BE	0	0	neutral	scaleup_rt	https://twitter.c	https://twitter.c	##########	0	1181	1181	
:IT_Dig RT @EIT_Dig	https://twitter.c	2017-04-03 16	twitter	en	DE	0	0	neutral	ZFF_CFL	https://twitter.c	https://twitter.c	##########	0	89	89	
g for th Looking for th	https://twitter.c	2017-04-03 16	twitter	en	US	0	1	neutral	MindTheBridg	https://twitter.com/MindTheBridge			2	11851	15436	
ech_eu On @tech_eu	https://twitter.c	2017-04-03 16	twitter	en	FR	0	0	neutral	maya_dan	https://twitter.c	https://twitter.c	##########	0	457	457	
:IT_Dig RT @EIT_Dig	https://twitter.c	2017-04-03 16	twitter	en	BE	0	0	neutral	scaleup_rt	https://twitter.c	https://twitter.c	##########	0	1181	1181	
:IT_Dig RT @EIT_Dig	https://twitter.c	2017-04-03 16	twitter	en	FR	0	1	neutral	EdnaAyme	https://twitter.c	https://twitter.c	##########	0	1629	1629	
aAyme @EdnaAyme	https://twitter.c	2017-04-03 16	twitter	en	BE	0	0	positive	RayTeodora	https://twitter.com/RayTeodora			0	106	106	
_Digital @EIT_Digital	https://twitter.c	2017-04-03 16	twitter	en	FR	0	1	positive	EdnaAyme	https://twitter.com/EdnaAyme			0	1628	1628	
:IT_Dig RT @EIT_Dig	https://twitter.c	2017-04-03 16	twitter	en	FR	0	1	neutral	EdnaAyme	https://twitter.c	https://twitter.c	##########	0	1628	1628	

Appendix E: Filtered file

scription	Published At	Sentiment	Reach
@DigitAlumni: Proud many Alumni joined @EIT_Digital #tech #Conference! Our Board with #WomenWhoLead #womenintech @EITeu. Pics here https://t.co/Vx84bmPMvA	2017-03-29 21:59	neutral	756
:IT_Digital once again dream would remain unfulfilled to b a part of EIT master's school(ITA track)entry-KTH,Exit-TUB without a scholarship	2017-03-29 20:02	neutral	14
:IT_Digital This is the second time I have been given acceptance letter but yet to avail any tuition fees waive off or scholarship.	2017-03-29 19:58	neutral	14
@EIT_Digital: "Stage is set for #Startup Europe Comes to Silicon Valley 2017" https://t.co/tqbHzxMOFa @StartUpEU @MindTheBridge @Medium https://t.co/YfJYgbCJFq	2017-03-29 19:10	neutral	6
@EIT_Digital: This important effort aims at bringing European innovations to market https://t.co/dkKnuDBIR7 #eitdigital17 https://t.co/wPidccmdOd	2017-03-29 19:10	neutral	6
real, first residential house has been printed. https://t.co/Uutxgxqi5I by Roberto Saracco	2017-03-29 17:25	neutral	2
@EdnaAyme: "Todo listo para una nueva entrega de Startup Europe Comes to Silicon Valley" @EIT_Digital @MindTheBridge https://t.co/a02DtLJoWn	2017-03-29 17:15	positive	1185
opese scaleups kunnen zich weer inschrijven voor Startup Europe Comes to Silicon Valley 2017 @EIT_Digital https://t.co/Xub8GJ83vo	2017-03-29 17:10	neutral	1672
do listo para una nueva entrega de Startup Europe Comes to Silicon Valley" @EIT_Digital @MindTheBridge https://t.co/a02DtLJoWn	2017-03-29 17:08	positive	2752
@Alvaro_DLaCruz: Por 3 año consecutivo @EIT_Digital y Mind the Bridge coorganizan #SEC2SV 1er programa para #scaleup europeas en USA: https://t.co/Q8wn6m0y1F	2017-03-29 17:07	positive	162
@Alvaro_DLaCruz: Por 3 año consecutivo @EIT_Digital y Mind the Bridge coorganizan #SEC2SV 1er programa para #scaleup europeas en USA: https://t.co/Q8wn6m0y1F	2017-03-29 16:32	positive	118
@krissyxkd: What's 'Smart Retail'? Fancy fitting rooms & laser shopping | The Memo https://t.co/iF6GYHrDoc via @thememo	2017-03-29 16:30	neutral	804
· 3 año consecutivo @EIT_Digital y Mind the Bridge coorganizan #SEC2SV 1er programa para #scaleup europeas en USA: https://t.co/Q8wn6m0y1R	2017-03-29 16:24	positive	461
@EIT_Digital: "Stage is set for #Startup Europe Comes to Silicon Valley 2017" https://t.co/tqbHzxMOFa @StartUpEU @MindTheBridge @Medium https://t.co/YfJYgbCJFq	2017-03-29 16:17	neutral	162
· Digital Master School student 'reels-in' chance to start anti-phishing business https://t.co/GFPD8HLC4Z #security	2017-03-29 16:07	neutral	941
@EIT_Digital: "Stage is set for #Startup Europe Comes to Silicon Valley 2017" https://t.co/tqbHzxMOFa @StartUpEU @MindTheBridge @Medium https://t.co/YfJYgbCJFq	2017-03-29 16:07	neutral	37
@EIT_Digital: "Stage is set for #Startup Europe Comes to Silicon Valley 2017" https://t.co/tqbHzxMOFa @StartUpEU @MindTheBridge @Medium https://t.co/YfJYgbCJFq	2017-03-29 16:00	neutral	118
ntors' Club @Polihub. #Industry40 the Italian way, with @taischmarco. @EIT_Digital @EITDigitalAccel #DigitalIndustry #smartmanufacturing	2017-03-29 15:49	neutral	17
@EIT_Digital: "Stage is set for #Startup Europe Comes to Silicon Valley 2017" https://t.co/tqbHzxMOFa @StartUpEU @MindTheBridge @Medium https://t.co/YfJYgbCJFq	2017-03-29 15:49	neutral	2179

Appendix F: Letter Online reputation experts

English Letter

Dear (name of person),

My name is Sofie Blankhorst and I am currently studying at the University of Twente.
I am at the last semester of my study, which involves writing a master thesis. Based on a request from my professor I am developing a daily online reputation index. Right now I am halfway the thesis. The index is developed and consists of a formula with 6 metrics that measure the online reputation (the metrics are based on literature). The metrics are; **Followers** (on the owned social media website of the organization), **Visitors** (on the corporate website of the organization), **Reach** (of conversations by people that are mentioning the organization), **Share of Voice** (comparing the organization with the 2 main competitors), **Sentiment** (amount of positive, negative neutral conversations around the organization) and **Conversation Volume** (the amount of conversations online by people).
For my index to be quality acceptable, reliability and validity needs to be ensured. I suggested that in order to ensure validity, the content validity of the measurement instrument must be assessed. In order to assess the content validity, several experts need to be asked for their judgment of the essentialness of the metrics relating to measuring online reputation. Since I read on the Internet that you are an expert in the area of online reputations, I would really appreciate your judgment on the metrics. My question is now, would you be able to rate these 6 metrics based on their essentialness to the construct of measuring online reputation?

Is the metric
—Essential
—Useful but not essential
—Not necessary
In measuring online reputation

Followers:
Visitors:
Conversation Volume:
Share of Voice:
Reach:
Sentiment:

I hope to hear from you and I would really appreciate your co-operation!
Thank you,

Sofie Blankhorst

Dutch Letter

Goedemorgen (bedrijfsnaam/naam van persoon),

Mijn naam is Sofie Blankhorst en momenteel studeer ik aan de Universiteit van Twente.
Ik ben bezig met het laatste semester van mijn studie, wat inhoudt dat ik een scriptie moet schrijven. Gebaseerd op de vraag van een professor, ben ik bezig met een online reputatie index te ontwikkelingen. Nu ben ik halverwege mijn thesis. De index is ontwikkeld en bestaat uit een formule gebaseerd op 6 metrieken die online reputatie meten. De metrieken zijn; **Followers** (op owned social media websites van de organisatie), **Visitors** (op de corporate website van de organisatie), **Reach** (van de conversaties online die de organisatie benoemen), **Share of Voice** (de organisatie vergelijken met de twee grootste concurrenten), **Sentiment** (hoeveelheid positieve, negatieve en neutrale conversaties online omtrent de organisatie) en **Conversation volume** (de hoeveelheid conversaties online omtrent organisatie).
Om de index kwaliteit acceptabel te maken ,moet de validiteit vastgesteld worden. Ik heb voorgesteld om validiteit vast te stellen door experts/bedrijven die gespecialiseerd zijn in online reputatie management te vragen om hun oordeel over de essentialness van de metrieken gerelateerd aan meten van online reputatie. Nu heb ik gelezen dat (bedrijfsnaam/naam van persoon) gespecialiseerd is in online reputatie management en daarom zou ik het op prijs stellen om jullie beoordeling te krijgen op de metrieken. Mijn vraag is, kunt u de 6 metrieken beoordelen op de essentialness gerelateerd in het meten van online reputatie?

Is de metriek
—Essentieel
—Bruikbaar maar niet essentieel
—Niet bruikbaar
in het meten van online reputation

Followers:
Visitors:
Conversation Volume:
Share of Voice:
Reach:
Sentiment:

Ik hoop van u te horen!
Alvast bedankt,

Sofie Blankhorst

Appendix G: List of Experts contacted

Name of Expert	Contacted through	Received answer	Description of answer
Andy Beal	Facebook LinkedIn Andybeal.com	Yes	*'Sentiment is only important in online reputation, but if you want to measure someone's trust/influence, then all the metrics are important'.*
Herman Tumurcuoglu	Facebook, LinkedIn	Yes	*'Certainly these can be measured and are essential in my opinion. Sentiment analysis is perhaps the most difficult one to measure and it has a certain disconnect from reputation. While sentiments change (feeling come and go) there is an association and rationalization about reputation that tends to stay longer'.*
Brian Patterson	LinkedIn	No	
Michael Salavaggio	Facebook, LinkedIn	No	
Logan Chierotti	Facebook, LinkedIn	No	
Todd William	Facebook	No	
Tim Bourquin	Facebook	No	
Susan Blankhorst	Facebook	Yes	*'Analyzing the sentiment is very important when one wants to investigate what the online reputation of an organization is. The rest of the metrics could also be helpful to say something about the online reputation but are in my opinion less useful and essential then the sentiment'.*
Srinivas Sarakadam	Facebook, LinkedIn	No	
Willem van Lynden	Facebook	No	
Pienter	Facebook, info@pienteronline.nl	Yes	*'When we talk about online reputation, we usually analyze how a company is listed online. Herein is the relationship of positive, neutral and negative sentiment, the most important. But the rest of the metrics are also KPIs for companies and always helpful to take into consideration'.*
White Canvas	contact@whitecanvas.eu	No	
Media Maze	Facebook	Yes	*'We limit ourselves in our work to the reputation of companies and individuals in search results. In doing so, we only take into account the sentiment. This is definitely essential for our customers. Since we are only focused on the sentiment it is not possible for us to judge the other metrics '.*
1850 contact center	Facebook	No	
InternetiQ	Facebook	No	

Appendix H: Data set

description	published_at	tone	source_name	cumulative_reach	domain_reach
… Arizona, Charlotte, North Carolina, '	2017-04-04 21:42:28+00:00	neutral	wellsfargojobs.com		
RT @EIT_Digital: What's wrong with v	2017-04-04 21:13:02+00:00	neutral	EdnaAyme	1633	
RT @EU_Startups: European scaleup	2017-04-04 21:12:33+00:00	neutral	EdnaAyme	1633	
Merci @Pole_SCS une start up qui do	2017-04-04 21:10:31+00:00	positive	DataMoove	10105	
RT @EU_Startups: European scaleup	2017-04-04 20:24:12+00:00	neutral	neillricketts	881	
RT @EU_Startups: European scaleup	2017-04-04 19:56:09+00:00	neutral	jjv	3879	
RT @EIT_Digital: For Estonian reader	2017-04-04 19:42:43+00:00	neutral	digiflak	55	
EIT Digital Master School student foun	2017-04-04 19:00:26+00:00	neutral	EITDigitalAcad	956	
RT @SecludIT: C'était aujourd'hui : @	2017-04-04 18:51:28+00:00	positive	therlin	220	
RT @jacquesfayolle: EIT Digital et ANI	2017-04-04 18:10:52+00:00	neutral	sandra_jacquier	32	
New EIT Digital project to provide key	2017-04-04 17:45:13+00:00	neutral	Poulin2012	6365	
- EIT Digital bestows first doctorates a	2017-04-04 17:38:29+00:00	neutral	express-press-release.net		23800
- EIT Digital bestows first doctorates a	2017-04-04 17:37:03+00:00	neutral	express-press-release.net		23800
- EIT Digital bestows first doctorates a	2017-04-04 17:35:41+00:00	neutral	express-press-release.net		23800
- EIT Digital bestows first doctorates a	2017-04-04 17:35:25+00:00	neutral	express-press-release.net		23800
- EIT Digital bestows first doctorates a	2017-04-04 17:35:01+00:00	neutral	express-press-release.net		23800
- EIT Digital bestows first doctorates a	2017-04-04 17:33:12+00:00	neutral	express-press-release.net		23800
RT @jacquesfayolle: EIT Digital et ANI	2017-04-04 16:51:07+00:00	neutral	chgravier	243	
EIT Digital et ANRT signent un accord	2017-04-04 16:45:55+00:00	neutral	jacquesfayolle	1731	
RT @EIT_Digital: Stage is set for #Sta	2017-04-04 16:13:32+00:00	neutral	aonetti	5568	
RT @EU_Startups: European scaleup	2017-04-04 16:04:51+00:00	neutral	aonetti	5568	
RT @SecludIT: C'était aujourd'hui : @	2017-04-04 15:41:33+00:00	positive	OttLegalRebels	46185	
C'était aujourd'hui : @SecludIT était e	2017-04-04 15:35:13+00:00	positive	SecludIT	47699	
RT @EIT_Digital: What's wrong with v	2017-04-04 15:29:15+00:00	neutral	FloodBreda	219	
RT @EU_Startups: European scaleup	2017-04-04 15:16:44+00:00	neutral	BarbaraSani_	261	
The latest The Licciardi Twitter Daily! I	2017-04-04 14:36:16+00:00	neutral	licciardi	262	
RT @EIT_Digital: What's wrong with v	2017-04-04 14:18:55+00:00	neutral	IBN_Berlin	5083	
RT @EU_Startups: European scaleup	2017-04-04 14:15:31+00:00	neutral	bjornhovstadius	112	
RT @EU_Startups: European scaleup	2017-04-04 14:14:12+00:00	neutral	fede_guerrini	23027	
RT @EIT_Digital: #Startup Europe cor	2017-04-04 14:13:22+00:00	neutral	StartUpEU	21800	
RT @EU_Startups: European scaleup	2017-04-04 14:11:19+00:00	neutral	Michael_Mast	393	
RT @EU_Startups: European scaleup	2017-04-04 14:09:54+00:00	neutral	EITDigitalAccel	3304	
RT @EU_Startups: European scaleup	2017-04-04 14:09:24+00:00	neutral	StartUpEU	21800	
RT @EU_Startups: European scaleup	2017-04-04 14:08:13+00:00	neutral	DominikNdN	438	
Voor het derde jaar op rij organiseren l	2017-04-04 14:04:57+00:00	neutral	engineeringnet.nl		0
RT @EU_Startups: European scaleup	2017-04-04 13:58:26+00:00	neutral	ImpactHubVigo	525	
RT @EU_Startups: European scaleup	2017-04-04 13:47:13+00:00	neutral	LaunchHelper	3	
http://bit.ly/2nEOTxj #EIT Digital and #	2017-04-04 13:46:12+00:00	neutral	EIT		
RT @EU_Startups: European scaleup	2017-04-04 13:44:26+00:00	neutral	thestartupeu	3515	
RT @EU_Startups: European scaleup	2017-04-04 13:43:04+00:00	neutral	MindTheBridge	11857	
RT @EU_Startups: European scaleup	2017-04-04 13:42:07+00:00	neutral	Thomas_Ohr	757	
European scaleups: Apply until May 3	2017-04-04 13:40:37+00:00	neutral	EU_Startups	240097	
EIT Digital and Mind the Bridge are cu	2017-04-04 13:27:55+00:00	neutral	www.eu-startups.com		13600
EIT Digital and Mind the Bridge are cu	2017-04-04 13:27:55+00:00	neutral	eu-startups.com		13600
EIT Digital develops entertainment sol	2017-04-04 13:20:29+00:00	neutral	Poulin2012	7875	
RT @EITDigitalAcad: Implement #Clo	2017-04-04 13:14:12+00:00	neutral	dushyantgadewal	3172	
RT @EITDigitalAccel: EIT Digital deve	2017-04-04 13:12:07+00:00	neutral	Alvaro_DLaCruz	1811	
http://bit.ly/2nEOTxj #EIT Digital and #	2017-04-04 13:10:37+00:00	neutral	EIT		
RT @rsaracco: EIT Digital // Flow batt	2017-04-04 12:56:28+00:00	neutral	CabuyaGerman	645	
RT @EITDigitalAcad: Implement #Clo	2017-04-04 12:40:42+00:00	neutral	Julie__Newton	91	
#Horizon2020 : soumettez votre #proj	2017-04-04 12:27:52+00:00	positive	Pole_Systematic	5032	
RT @tech_eu: Tech.eu Podcast #75: F	2017-04-04 12:06:44+00:00	neutral	TommyGivern	2208	
EIT Digital develops entertainment sol	2017-04-04 12:01:06+00:00	neutral	Poulin2012	6343	
RT @Poulin2012: EIT Digital develops	2017-04-04 12:01:06+00:00	neutral	flavien_perier	1202	
EIT Digital develops entertainment sol	2017-04-04 12:00:24+00:00	neutral	EITDigitalAccel	51654	
RT @EIT_Digital: What's wrong with v	2017-04-04 11:33:22+00:00	neutral	pjprendergast	2170	
RT @EIT_Digital: Want to decide who	2017-04-04 11:27:49+00:00	neutral	crowdinsightseu	38	
RT EdnaAyme: Check out EIT_Digital	2017-04-04 11:26:08+00:00	neutral	Poulin2012	6343	
RT @Poulin2012: Sign up for Firstbea	2017-04-04 11:17:03+00:00	neutral	scaleup_rt	1187	
RT @EITDigitalAccel: Sign up for @Fi	2017-04-04 11:16:54+00:00	neutral	scaleup_rt	1187	
RT @EITDigitalAccel: Sign up for @Fi	2017-04-04 11:07:59+00:00	neutral	caring_mobile	2300	
RT @Poulin2012: Sign up for Firstbea	2017-04-04 11:07:41+00:00	neutral	caring_mobile	2300	
Sign up for FirstbeatInfo HRV Summit	2017-04-04 11:05:30+00:00	neutral	Poulin2012	6341	
Sign up for @FirstbeatInfo HRV Sumn	2017-04-04 11:05:09+00:00	neutral	EITDigitalAccel	3300	
Op basis van dit intakeformulier worde	2017-04-04 10:29:43+00:00	positive	innovationquarter.nl		0
RT @EITDigitalAccel: Interview @scib	2017-04-04 09:54:16+00:00	neutral	Luisa_Berlin	430	
RT @EIT_Digital: What's wrong with v	2017-04-04 09:31:10+00:00	neutral	design__murphy	53	
Our Spring Conference report is out, fe	2017-04-04 09:29:45+00:00	neutral	TFInstitute	26	
RT @EIT_Digital: What's wrong with v	2017-04-04 09:18:16+00:00	neutral	quill_rt	323	
RT @EIT_Digital: What's wrong with v	2017-04-04 09:18:16+00:00	neutral	quill_rt	323	
RT @EIT_Digital: What's wrong with v	2017-04-04 09:17:37+00:00	neutral	adwachter947	53	
RT @EIT_Digital: What's wrong with v	2017-04-04 09:17:08+00:00	neutral	DNYSWHYD12	38	
RT @EIT_Digital: Stage is set for #Sta	2017-04-04 09:15:05+00:00	neutral	SzebastianOnne	21142	
RT @EIT_Digital: Stage is set for #Sta	2017-04-04 09:11:19+00:00	neutral	StartUpEU	21791	
RT @EIT_Digital: What's wrong with v	2017-04-04 09:07:00+00:00	neutral	theirelandguide	12318	
RT @siliconvikings: .@tech_eu #podc	2017-04-04 09:02:49+00:00	neutral	robinwauters	50955	
RT @siliconvikings: .@tech_eu #podc	2017-04-04 09:02:49+00:00	neutral	tech_eu	21371	
RT @EIT_Digital: What's wrong with v	2017-04-04 08:53:01+00:00	neutral	SimonCocking	116496	
RT @filicevas: @EIT_Digital @RayTe	2017-04-04 08:37:54+00:00	neutral	mtzaerli	85	

… highlighted by the National Physical	2017-04-04 08:29:00+00:00	neutral	tommyflowersinstitute.blogspot.com		
RT @Poulin2012: New EIT EIT_Digita	2017-04-04 07:34:15+00:00	neutral	GioviQuarella	554	
RT @Pole_SCS: Découvrez notre PM	2017-04-04 07:30:23+00:00	positive	PasTime_EIT	28	
RT @SimonCocking: Inspiring the nex	2017-04-04 07:29:58+00:00	neutral	tcddublin	40506	
RT @Pole_SCS: Découvrez notre PM	2017-04-04 07:29:24+00:00	positive	DataMoove	152	
New EIT EIT_Digital project to provide	2017-04-04 07:25:47+00:00	neutral	Poulin2012	16460	
RT @filicevas: @EIT_Digital @RayTe	2017-04-04 07:20:26+00:00	neutral	Kat_Lotz	46	
RT SimonCocking: Inspiring the next g	2017-04-04 07:20:19+00:00	neutral	Poulin2012	6333	
RT robinwauters: Tech.eu Podcast #7	2017-04-04 07:20:19+00:00	neutral	Poulin2012	6333	
RT @filicevas: @EIT_Digital @RayTe	2017-04-04 07:19:07+00:00	neutral	RayTeodora	108	
EIT Digital levert Europa's volgende g	2017-04-04 07:17:05+00:00	neutral	AdMediaConnect	773	
RT @EdnaAyme: Check out @EIT_Di	2017-04-04 07:07:52+00:00	neutral	fede_guerrini	23001	
habrá usado más de uno de los once	2017-04-04 07:00:00+00:00	positive	degerencia.com		34000
Inspiring the next gen of entrepreneurs	2017-04-04 06:58:41+00:00	neutral	SimonCocking	134780	
<p>We were over in Brussels to cover	2017-04-04 06:46:02+00:00	neutral	Simon Cocking		
Check out @EIT_Digital #Finland Dire	2017-04-04 06:23:13+00:00	neutral	EdnaAyme	24633	
RT @SimonCocking: Featured tmrw @	2017-04-04 06:22:13+00:00	neutral	SimonCocking	94274	
RT @kaf8_marketing: @scaleup_rt Th	2017-04-04 06:16:59+00:00	neutral	scaleup_rt	1188	
RT @SEP_EU: #SEC2SV 2017: #EU	2017-04-04 06:07:59+00:00	neutral	neillricketts	880	
@scaleup_rt This bot delivers you all r	2017-04-04 06:03:08+00:00	neutral	kaf8_marketing	1275	
RT @SEP_EU: #SEC2SV 2017: #EU	2017-04-04 05:58:38+00:00	neutral	aonetti	5565	
RT @rsaracco: EIT Digital // Flow batt	2017-04-04 05:36:20+00:00	neutral	stb1019	72	
RT @petri_malmelin: ... and super spe	2017-04-04 05:23:57+00:00	neutral	mhf1	97	
EIT Digital // Flow battery on a chip htt	2017-04-04 04:59:17+00:00	neutral	rsaracco	968	
- EIT Digital bestows first doctorates a	2017-04-04 04:17:07+00:00	neutral	express-press-release.net		23800
... and super special thanks to EIT Dig	2017-04-04 04:10:00+00:00	neutral	petri_malmelin	242	
- EIT Digital bestows first doctorates a	2017-04-04 02:27:39+00:00	neutral	express-press-release.net		23800
… of data-driven Smart Retail projects	2017-04-04 00:46:06+00:00	neutral	indeed.com		16211200
… of data-driven Smart Retail projects	2017-04-04 00:46:05+00:00	neutral	indeed.com		16211200
… data-driven Smart Retail projects to	2017-04-04 00:46:04+00:00	neutral	indeed.com		16211200
EIT Digital and Mind the Bridge are cu	2017-04-04 00:00:00+00:00	neutral	eu-startups.com		
… by the National Physical Laboratory	2017-04-04 00:00:00+00:00	neutral	tommyflowersinstitute.blogspot.co.uk		
RT @SimonCocking: Featured tmrw @	2017-04-03 21:43:20+00:00	neutral	armstrj2	2186	
RT @EIT_Digital: First year EIT Digita	2017-04-03 21:01:31+00:00	neutral	wpsupporthq	1421	
RT @SimonCocking: Featured tmrw @	2017-04-03 20:47:26+00:00	neutral	Irish_TechNews	32186	
Featured tmrw @pjprendergast @tcdd	2017-04-03 20:20:17+00:00	neutral	SimonCocking	222857	
@EIT_Digital @RayTeodora One wor	2017-04-03 20:15:44+00:00	neutral	filicevas	975	
#75 @tech_eu by @robinwauters: @p	2017-04-03 20:12:04+00:00	neutral	RagaliePetricaD	479	
RT @RayTeodora: NOT a single #won	2017-04-03 20:02:40+00:00	neutral	filicevas	736	
RT @Pole_SCS: Découvrez notre PM	2017-04-03 19:42:00+00:00	positive	SophiAntipolis	9533	
RT @Pole_SCS: Découvrez notre PM	2017-04-03 18:11:33+00:00	positive	CCIcotedazur	12365	
RT @EIT_Digital: Stage is set for #Sta	2017-04-03 18:00:40+00:00	neutral	MarcusHukema	309	
Redborder to expand across Europe w	2017-04-03 17:20:36+00:00	neutral	Poulin2012	6304	
EIT Digital Master School student 'reel	2017-04-03 17:20:35+00:00	neutral	Poulin2012	6304	
.@tech_eu #podcast #75: Picnic + Oo	2017-04-03 17:20:14+00:00	neutral	siliconvikings	12703	
RT @EIT_Digital: Stage is set for #Sta	2017-04-03 17:07:09+00:00	neutral	LvNistelrooij	6804	
RT @MindTheBridge: Looking for the	2017-04-03 17:05:20+00:00	neutral	chidambara09	2404	
RT @MindTheBridge: Looking for the	2017-04-03 16:46:56+00:00	neutral	scaleup_rt	1181	
RT @EIT_Digital: Stage is set for #Sta	2017-04-03 16:43:43+00:00	neutral	ZFF_CFL	89	
Looking for the next generation of #EL	2017-04-03 16:43:13+00:00	neutral	MindTheBridge	15436	
On @tech_eu Tech.eu Podcast:Picnic	2017-04-03 16:22:39+00:00	neutral	maya_dan	457	
RT @EIT_Digital: Stage is set for #Sta	2017-04-03 16:02:03+00:00	neutral	scaleup_rt	1181	
RT @EIT_Digital: Stage is set for #Sta	2017-04-03 15:54:18+00:00	neutral	EdnaAyme	1629	
- EIT Digital bestows first doctorates a	2017-04-03 15:51:52+00:00	neutral	express-press-release.net		23800
@EdnaAyme @EIT_Digital I am glad t	2017-04-03 15:33:53+00:00	positive	RayTeodora	106	
- EIT Digital bestows first doctorates a	2017-04-03 15:31:50+00:00	neutral	express-press-release.net		23800
- EIT Digital bestows first doctorates a	2017-04-03 15:27:56+00:00	neutral	express-press-release.net		23800
- EIT Digital bestows first doctorates a	2017-04-03 15:27:40+00:00	neutral	express-press-release.net		23800
- EIT Digital bestows first doctorates a	2017-04-03 15:25:08+00:00	neutral	express-press-release.net		23800
@EIT_Digital @RayTeodora I'm certai	2017-04-03 15:24:00+00:00	positive	EdnaAyme	1628	
- EIT Digital bestows first doctorates a	2017-04-03 15:23:46+00:00	neutral	express-press-release.net		23800
RT @EIT_Digital: #Startup Europe cor	2017-04-03 15:17:08+00:00	neutral	EdnaAyme	1628	
RT @EITDigitalAccel: Interview @scib	2017-04-03 14:47:00+00:00	neutral	EdnaAyme	1626	
RT @mariuskarma: On @tech_eu:Poc	2017-04-03 14:24:59+00:00	neutral	tech_eu	21365	
RT @mariuskarma: On @tech_eu:Poc	2017-04-03 14:24:59+00:00	neutral	robinwauters	50957	
Many #students of @EITDigitalAcad jc	2017-04-03 14:16:08+00:00	neutral	DigitAlumni	462	
RT @EIT_Digital: #Startup Europe cor	2017-04-03 13:59:30+00:00	neutral	Th_Herren	828	
@RayTeodora @EIT_Digital @EP_Ge	2017-04-03 13:58:36+00:00	neutral	DigitAlumni	462	
RT @Pole_SCS: Découvrez notre PM	2017-04-03 13:58:13+00:00	positive	GwenComte	246	
RT @EIT_Digital: For our Finnish read	2017-04-03 13:52:30+00:00	neutral	migueldiasceo	899	
RT @EIT_Digital: #Startup Europe Co	2017-04-03 13:52:21+00:00	positive	migueldiasceo	899	
On @tech_eu:Podcast #75:Picnic and	2017-04-03 13:36:05+00:00	neutral	mariuskarma	5330	
RT @RayTeodora: NOT a single #won	2017-04-03 13:28:19+00:00	neutral	Kat_Lotz	47	
RT @EITDigitalAcad: Dutch 22-year o	2017-04-03 13:26:46+00:00	neutral	Push_It_Further	4136	
RT @RayTeodora: NOT a single #won	2017-04-03 13:10:18+00:00	neutral	alelerele	176	
RT @RayTeodora: NOT a single #won	2017-04-03 13:01:01+00:00	neutral	A_CMartin	157	
RT @RayTeodora: NOT a single #won	2017-04-03 12:56:33+00:00	neutral	helenetanderup	14	
RT @RayTeodora: @EIT_Digital 1 out	2017-04-03 12:56:09+00:00	positive	helenetanderup	14	
RT @Pole_SCS: Découvrez notre PM	2017-04-03 12:55:04+00:00	positive	PetitesAffiches	1472	
RT @TalentGardenEs: Tech.eu Podca	2017-04-03 12:24:31+00:00	neutral	robinwauters	50957	

RT @TalentGardenEs: Tech.eu Podca	2017-04-03 12:24:31+00:00	neutral	tech_eu	21366
RT @Pole_SCS: Découvrez notre PM	2017-04-03 12:23:39+00:00	positive	EURECOM	557
Interview scibus with cnastar EIT Digit	2017-04-03 12:15:36+00:00	neutral	Poulin2012	6286
Interview scibus with cnastar EIT Digit	2017-04-03 12:15:22+00:00	neutral	Poulin2012	6286
Interview @scibus with @cnastar EIT	2017-04-03 12:15:09+00:00	neutral	EITDigitalAccel	167504
Découvrez notre PME du mois @Data	2017-04-03 12:11:48+00:00	positive	Pole_SCS	36668
@EIT_Digital 1 out of 21 I am glad to s	2017-04-03 11:48:06+00:00	positive	RayTeodora	118
Tech.eu Podcast #75: Picnic and Oodr	2017-04-03 11:36:30+00:00	neutral	TalentGardenEs	920
RT @petebond7: @tomemurtha @Tim	2017-04-03 11:32:18+00:00	neutral	tomemurtha	4698
@tomemurtha @TimMorton2 @peterv	2017-04-03 11:30:59+00:00	positive	petebond7	7550
This bot delivers you all relevant twitte	2017-04-03 11:28:35+00:00	neutral	tomemurtha	4698
RT @petebond7: @TimMorton2 @tom	2017-04-03 11:27:04+00:00	neutral	tomemurtha	4698
@petebond7 @TimMorton2 @peterwa	2017-04-03 11:27:01+00:00	positive	tomemurtha	4698
@TimMorton2 @tomemurtha @peterv	2017-04-03 11:26:40+00:00	neutral	petebond7	7550
Tech.eu Podcast #75: Picnic and Oodr	2017-04-03 11:03:08+00:00	neutral	HRTechStartups	2450
Tech.eu Podcast #75: Picnic and Oodr	2017-04-03 10:36:57+00:00	neutral	seefeld_	1311
Tech.eu Podcast #75: Picnic and Oodr	2017-04-03 10:34:56+00:00	neutral	eupulsenews	9
Tech.eu Podcast #75: Picnic and Oodr	2017-04-03 10:32:07+00:00	neutral	andyabramson	6397
RT @tech_eu: Tech.eu Podcast #75: F	2017-04-03 10:29:23+00:00	neutral	Alvaro_DLaCruz	1810
RT @robinwauters: Tech.eu Podcast #	2017-04-03 10:29:20+00:00	neutral	B2BNewsNetwork	4418
@TimMorton2 @tomemurtha @peterv	2017-04-03 10:27:47+00:00	positive	cwol101	210
Tech.eu Podcast #75: Picnic and Oodr	2017-04-03 10:27:33+00:00	neutral	robinwauters	333640
Tech.eu Podcast #75: Picnic and Oodr	2017-04-03 10:27:33+00:00	neutral	tech_eu	21366
RT @Simplicitly: @TimMorton2 @tom	2017-04-03 10:13:53+00:00	neutral	innovation_rtw	2034
@TimMorton2 @tomemurtha @peterv	2017-04-03 10:13:05+00:00	neutral	Simplicitly	4692
This bot delivers you all relevant twitte	2017-04-03 10:02:15+00:00	neutral	TimMorton2	11381
RT @EITeu: @RayTeodora @EIT_Dig	2017-04-03 09:30:04+00:00	neutral	DigitAlumni	461
@RayTeodora @EIT_Digital @EP_Ge	2017-04-03 09:21:20+00:00	neutral	EITeu	13565
RT @EIT_Digital: #Startup Europe cor	2017-04-03 09:17:35+00:00	neutral	scaleup_rt	25439
The 1st EU Conf on connected driving	2017-04-03 09:03:34+00:00	neutral	Alvaro_DLaCruz	1810
RT @EITDigitalAccel: Redborder to ex	2017-04-03 09:02:06+00:00	neutral	scaleup_rt	1183
RT @EITDigitalAccel: Redborder to ex	2017-04-03 08:53:38+00:00	neutral	Alvaro_DLaCruz	1810
RT @EIT_Digital: Redborder to expan	2017-04-03 08:47:30+00:00	neutral	StartupBulletin	871
RT @Poulin2012: Redborder to expan	2017-04-03 08:47:16+00:00	neutral	indra_eko3	2
RT @EIT_Digital: Redborder to expan	2017-04-03 08:47:10+00:00	neutral	scaleup_rt	1183
RT @Poulin2012: Redborder to expan	2017-04-03 08:47:02+00:00	neutral	scaleup_rt	1183
RT @Poulin2012: Redborder to expan	2017-04-03 08:46:57+00:00	neutral	scaleup_rt	1183
Redborder to expand across Europe w	2017-04-03 08:35:15+00:00	neutral	Poulin2012	6286
Redborder to expand across Europe w	2017-04-03 08:35:08+00:00	neutral	Poulin2012	6286
Redborder to expand across Europe w	2017-04-03 08:35:02+00:00	neutral	EITDigitalAccel	3289
RT @EITDigitalAcad: Implement #Clou	2017-04-03 08:01:09+00:00	neutral	ITCrowdsource	14068
Implement #CloudBasedApplications v	2017-04-03 08:00:17+00:00	neutral	EITDigitalAcad	18280
RT @RayTeodora: NOT a single #won	2017-04-03 07:37:17+00:00	neutral	RayTeodora	104
Chahab Nastar, EIT Digital: Start-ups r	2017-04-03 06:45:10+00:00	neutral	scibus	5028
RT @EITDigitalAcad: Dutch 22-year o	2017-04-03 05:40:51+00:00	neutral	stb1019	69
EIT Digital // Moving to the edges https	2017-04-03 05:29:30+00:00	neutral	rsaracco	250
RT @EITDigitalAcad: Dutch 22-year o	2017-04-03 03:49:59+00:00	neutral	_anthony_seger_	723
… – A Reuters report on emerging tecl	2017-04-03 00:00:00+00:00	neutral	tech.eu	57800
RT @EITDigitalAcad: Dutch 22-year o	2017-04-02 23:29:44+00:00	neutral	stcamber01	472
RT @EITDigitalAcad: Dutch 22-year o	2017-04-02 23:18:03+00:00	neutral	CyberSec__News	12260
RT @EIT_Digital: First year EIT Digital	2017-04-02 20:24:25+00:00	neutral	webjframework	1138
RT @EIT_Digital: First year EIT Digital	2017-04-02 20:24:24+00:00	neutral	natureaffect	1273
RT @EIT_Digital: First year EIT Digital	2017-04-02 20:23:17+00:00	neutral	RedmannKatrin	10538
RT @EITDigitalAcad: Dutch 22-year o	2017-04-02 20:23:11+00:00	neutral	RedmannKatrin	51585
RT @EIT_Digital: People are most imp	2017-04-02 20:22:49+00:00	neutral	RedmannKatrin	466
RT @Clotoo3D: No comment a good c	2017-04-02 17:26:11+00:00	neutral	CraigJo80374965	779
Zie: @gem_Eindhoven – Voor 3e keer	2017-04-02 16:37:33+00:00	positive	sergekornuyt	2006
RT @JulioMiravalls: Bitácora de la ser	2017-04-02 14:37:48+00:00	positive	JulioMiravalls	1128
@kolegraffvclink @MindTheBridge @I	2017-04-02 13:25:06+00:00	neutral	SEP_EU	4472
RT @SEP_EU: #SEC2SV 2017: #EU	2017-04-02 11:47:32+00:00	neutral	SimonCocking	125829
RT @RichardHudsonSB: Chahab Nas	2017-04-02 10:49:19+00:00	neutral	EdnaAyme	1626
NOT a single #woman in ANY manage	2017-04-02 09:40:11+00:00	neutral	RayTeodora	1338
EIT Digital // Read my lips https://t.co/s	2017-04-02 08:04:22+00:00	neutral	rsaracco	250
RT @EIT_Digital: People are most imp	2017-04-02 07:14:09+00:00	neutral	peterlangela	1521
The latest Diario Rafa Serrano followir	2017-04-02 07:02:16+00:00	neutral	falyserrano	2706
RT @cnastar: 3 years on the job and it	2017-04-02 03:44:24+00:00	neutral	andregueziec	2070
Redborder to Expand Across Europe \	2017-04-01 19:42:44+00:00	neutral	AfelioP	130303
RT @Irish_TechNews: EIT Digital aims	2017-04-01 17:53:29+00:00	neutral	parveenjha	599
RT @JulioMiravalls: Bitácora de la ser	2017-04-01 17:22:44+00:00	positive	apuntelego	44
Bitácora de la semana: @EIT_Digital (	2017-04-01 17:22:17+00:00	positive	JulioMiravalls	2300
RT @RichardHudsonSB: Chahab Nas	2017-04-01 17:10:34+00:00	neutral	eerojs	14380
RT @Irish_TechNews: EIT Digital aims	2017-04-01 16:51:44+00:00	neutral	roshan_b	30496
What's 'Smart Retail'? Fancy fitting roc	2017-04-01 16:24:12+00:00	neutral	iDesignCafe	537
Business Developer – @EIT_Digital –	2017-04-01 14:16:16+00:00	neutral	Riye_Creative	8418
RT @cnastar: Spanish: I was interview	2017-04-01 13:56:34+00:00	neutral	Poulin2012	6286
RT @Irish_TechNews: EIT Digital aims	2017-04-01 13:54:59+00:00	neutral	Poulin2012	6286
RT @EIT_Digital: #Startup Europe Co	2017-04-01 13:54:18+00:00	positive	Poulin2012	6286
What's 'Smart Retail'? Fancy fitting roc	2017-04-01 13:04:46+00:00	neutral	t2bLimited	20485
'People form the weakest link in #ITsec	2017-04-01 13:00:07+00:00	neutral	EITDigitalAcad	949
RT @EITDigitalAccel: Redborder to ex	2017-04-01 11:52:26+00:00	neutral	Unimetrik	235

RT @EIT_Digital: For our Finnish read	2017-04-01 11:42:32+00:00	neutral	rashmitweets	15351
RT @EITDigitalAccel: Redborder to ex	2017-04-01 11:36:49+00:00	neutral	jmmaza2	107510
Redborder to Expand Across Europe \	2017-04-01 09:00:10+00:00	neutral	trustpath	1020
Welcome @redborder from Spain to th	2017-04-01 07:26:31+00:00	neutral	EdnaAyme	1626
EIT Digital aims to bring European inn	2017-04-01 07:25:28+00:00	neutral	EdnaAyme	115805
RT @EITDigitalAccel: Redborder to ex	2017-04-01 07:23:04+00:00	neutral	joriwitte	33
RT @SEP_EU: #SEC2SV 2017: #EU :	2017-04-01 06:41:59+00:00	neutral	WillemJonkerNL	491
RT @EITDigitalAccel: Redborder to ex	2017-04-01 06:17:19+00:00	neutral	_ChantalGarnier	549
EIT Digital // They were sort of April's F	2017-04-01 05:23:37+00:00	neutral	rsaracco	250
RT @EdnaAyme: Interview w/ @cnast	2017-03-31 20:36:59+00:00	neutral	GulyasZana	2212
RT @Irish_TechNews: EIT Digital aims	2017-03-31 19:43:23+00:00	neutral	armstrj2	2183
EIT Digital aims to bring European inn	2017-03-31 19:40:04+00:00	neutral	Irish_TechNews	32165
EIT Digital aims to bring European inn	2017-03-31 19:08:47+00:00	neutral	filmplayer	616
RT @Cap_Digital: #JOB @EIT_Digital	2017-03-31 19:00:23+00:00	positive	EdnaAyme	1626
RT @EIT_Digital: Which European co	2017-03-31 19:00:18+00:00	neutral	EdnaAyme	1626
RT @Alvaro_DLaCruz: .@redborder t	2017-03-31 19:00:14+00:00	neutral	EdnaAyme	1626
RT @cnastar: 3 years on the job and i	2017-03-31 19:00:08+00:00	neutral	EdnaAyme	1626
RT @SEP_EU: #SEC2SV 2017: #EU :	2017-03-31 18:59:51+00:00	neutral	EdnaAyme	1626
RT @SEP_EU: Stage is Set for Startu	2017-03-31 18:46:00+00:00	neutral	Funds4Growth	13
RT @EIT_Digital: #Startup Europe Co	2017-03-31 18:07:18+00:00	positive	DigatechSystems	53
RT @SEP_EU: Stage is Set for Startu	2017-03-31 18:02:20+00:00	neutral	EdnaAyme	1626
RT SEP_EU: Stage is Set for Startup I	2017-03-31 18:01:31+00:00	neutral	Poulin2012	6286
RT @Alvaro_DLaCruz: .@redborder t	2017-03-31 17:59:38+00:00	neutral	EITDigitalAccel	3289
RT @SEP_EU: Stage is Set for Startu	2017-03-31 17:58:24+00:00	neutral	EITDigitalAccel	3289
RT @SEP_EU: #SEC2SV 2017: #EU :	2017-03-31 17:57:45+00:00	neutral	EITDigitalAcad	949
RT @SEP_EU: #SEC2SV 2017: #EU :	2017-03-31 17:57:45+00:00	neutral	EITDigitalAccel	3289
RT @EIT_Digital: EIT Digital cited as	2017-03-31 17:52:17+00:00	neutral	opusdigitalis	15531
Redborder to Expand Across Europe \	2017-03-31 17:50:11+00:00	neutral	trustpath	510
RT @Michael_Mast: "Stage is set for S	2017-03-31 17:46:01+00:00	neutral	FedericoGobbi5	13825
RT @MindTheBridge: Europese #scal	2017-03-31 17:44:20+00:00	positive	FedericoGobbi5	13825
RT @MindTheBridge: Voor #scaleups:	2017-03-31 17:44:12+00:00	positive	FedericoGobbi5	13825
RT @SEP_EU: #SEC2SV 2017: #EU :	2017-03-31 17:17:11+00:00	neutral	scaleup_rt	1183
Check out this bit of #IrishTechNews E	2017-03-31 17:10:30+00:00	neutral	digitelip	2154
RT @Irish_TechNews: EIT Digital aims	2017-03-31 17:09:52+00:00	neutral	armstrj2	2183
RT @SEP_EU: #SEC2SV 2017: #EU :	2017-03-31 17:06:01+00:00	neutral	MindTheBridge	11851
#SEC2SV 2017: #EU #scaleups can a	2017-03-31 17:05:50+00:00	neutral	SEP_EU	4472
EIT Digital aims to bring European inn	2017-03-31 16:54:15+00:00	neutral	Irish_TechNews	32165
RT @blaggando: What's 'Smart Retail	2017-03-31 16:49:52+00:00	neutral	minitaxi	307
RT @EIT_Digital: #Startup Europe Co	2017-03-31 16:45:58+00:00	positive	jechifflet	40
RT @EIT_Digital: #Startup Europe Co	2017-03-31 16:23:16+00:00	positive	EdnaAyme	1626
EIT Digital aims to bring European inn	2017-03-31 16:22:35+00:00	neutral	JavaJobsIreland	8102
RT @EIT_Digital: #Startup Europe Co	2017-03-31 16:19:42+00:00	positive	Irish_TechNews	32165
RT @DigitalSkillsEU: The Digital Skills	2017-03-31 16:17:33+00:00	neutral	VUSaskia	23848
RT @MindTheBridge: Europese #scal	2017-03-31 16:17:19+00:00	positive	scaleup_rt	1183
Europese #scaleups kunnen zich inscl	2017-03-31 16:15:08+00:00	positive	MindTheBridge	26859
RT @EIT_Digital: #Startup Europe Co	2017-03-31 16:11:37+00:00	positive	charles09767187	75
Chahab Nastar, EIT Digital: Start-ups r	2017-03-31 16:06:07+00:00	neutral	RichardHudsonSB	447
RT @SEP_EU: Stage is Set for Startu	2017-03-31 16:01:53+00:00	neutral	scaleup_rt	1183
Stage is Set for Startup Europe Come	2017-03-31 16:00:24+00:00	neutral	SEP_EU	115399
RT @EITDigitalAccel: Redborder to ex	2017-03-31 16:00:06+00:00	neutral	sarakarnthi	6229
RT @MindTheBridge: Voor #scaleups:	2017-03-31 15:32:27+00:00	positive	scaleup_rt	1183
RT @EIT_Digital: #Startup Europe Co	2017-03-31 15:31:07+00:00	positive	SimonCocking	94140
RT @MindTheBridge: Voor #scaleups:	2017-03-31 15:28:06+00:00	positive	waltervanuytven	827
RT @EITDigitalAccel: Redborder to ex	2017-03-31 15:27:46+00:00	neutral	TheDaily_Web	1544
RT @EITDigitalAccel: Redborder to ex	2017-03-31 15:27:28+00:00	neutral	Michael_Mast	397
RT EIT_Digital: #Startup Europe Come	2017-03-31 15:27:24+00:00	neutral	Poulin2012	6286
Are you #EU60 national #PhD in #ICT	2017-03-31 15:26:07+00:00	neutral	DigitAlumni	461
RT @EIT_Digital: #Startup Europe Co	2017-03-31 15:24:55+00:00	positive	EITDigitalAccel	3289
RT @EIT_Digital: #Startup Europe Co	2017-03-31 15:24:11+00:00	positive	Michael_Mast	138970
Voor #scaleups: inschrijvingen voor #S	2017-03-31 15:20:29+00:00	positive	MindTheBridge	27686
RT @EIT_Digital: It is said that in 184	2017-03-31 15:17:55+00:00	neutral	VCrowCGS	1273
RT @EIT_Digital: It is said that in 184	2017-03-31 15:17:16+00:00	neutral	MET_Maker	368
RT @EITDigitalAccel: Redborder to ex	2017-03-31 15:16:49+00:00	neutral	EdnaAyme	1626
RT @EIT_Digital: For our Finnish read	2017-03-31 15:16:37+00:00	neutral	EdnaAyme	1626
Startup Europe Comes to Silicon Valle	2017-03-31 15:13:43+00:00	neutral	EdnaAyme	1626
RT @EIT_Digital: New Job: EIT House	2017-03-31 15:11:44+00:00	neutral	x_wolfman	2715
RT @EIT_Digital: For our Finnish read	2017-03-31 15:10:13+00:00	neutral	Harman	12678
RT @EIT_Digital: "Stage is set for #St	2017-03-31 15:07:50+00:00	neutral	SimonCocking	162426
RT @EIT_Digital: It is said that in 184	2017-03-31 15:07:38+00:00	neutral	SimonCocking	97407
RT @EIT_Digital: Interview @scibus w	2017-03-31 15:07:22+00:00	neutral	SimonCocking	94140
RT @EIT_Digital: New Job: EIT House	2017-03-31 15:07:00+00:00	neutral	SimonCocking	94140
RT @cnastar: Welcome @redborder fr	2017-03-31 15:02:09+00:00	neutral	scaleup_rt	1183
3 years on the job and it feels like 3 m	2017-03-31 14:53:23+00:00	neutral	cnastar	268
Welcome @redborder from Spain to th	2017-03-31 14:51:54+00:00	neutral	cnastar	1451
RT @scibus: Chahab Nastar, EIT Digit	2017-03-31 14:27:27+00:00	neutral	Fundraising_AAU	158
Chahab Nastar, EIT Digital: Start-ups r	2017-03-31 14:05:13+00:00	neutral	scibus	5028
RT @EIT_Digital: First year EIT Digita	2017-03-31 13:58:33+00:00	neutral	the_yiayia_girl	1497
RT @EIT_Digital: This important effort	2017-03-31 13:58:25+00:00	neutral	the_yiayia_girl	1566
RT @EIT_Digital: New Job: EIT House	2017-03-31 13:57:55+00:00	neutral	the_yiayia_girl	100298
RT @EIT_Digital: Which European co	2017-03-31 13:57:49+00:00	neutral	the_yiayia_girl	11769

RT @EITDigitalAccel: Redborder to e>	2017-03-31 13:57:38+00:00	neutral	the_yiayia_girl	1497
Redborder to Expand Across Europe \	2017-03-31 13:24:09+00:00	neutral	BigDataBlogs	44132
What's 'Smart Retail'? Fancy fitting ro	2017-03-31 13:16:26+00:00	neutral	blaggando	107
RT @EITDigitalAccel: Redborder to e>	2017-03-31 13:08:18+00:00	neutral	squaire67_d	418
RT @Poulin2012: RT EITDigitalAccel:	2017-03-31 13:02:16+00:00	neutral	scaleup_rt	1183
RT @EITDigitalAccel: Redborder to e>	2017-03-31 13:01:54+00:00	neutral	scaleup_rt	1183
Chahab Nastar, EIT Digital: Start-ups	2017-03-31 13:00:42+00:00	neutral	MarylineFiaschi	106
RT @EITDigitalAccel: Redborder to e>	2017-03-31 12:55:45+00:00	neutral	OttLegalRebels	46145
RT @EITDigitalAccel: Redborder to e>	2017-03-31 12:52:55+00:00	neutral	JoseL_Rosales	291
RT EITDigitalAccel: Redborder to exp	2017-03-31 12:51:23+00:00	neutral	Poulin2012	7469
Redborder to Expand Across Europe \	2017-03-31 12:50:15+00:00	neutral	TungstenBigData	2210
RT @Alvaro_DLaCruz: .@redborder t	2017-03-31 12:48:05+00:00	neutral	PedroSP	3601
Redborder to expand across Europe w	2017-03-31 12:47:31+00:00	neutral	Poulin2012	6286
RT @EITDigitalAccel: Redborder to e>	2017-03-31 12:47:31+00:00	neutral	StartupBulletin	871
RT @Poulin2012: Redborder to expan	2017-03-31 12:47:31+00:00	neutral	ctricot	6342
Redborder to expand across Europe w	2017-03-31 12:47:10+00:00	neutral	EITDigitalAccel	3289
RT @TungstenBigData: Redborder to	2017-03-31 12:30:01+00:00	neutral	NoSQLDigest	19036
RT @EITDigitalAccel: Interview @scib	2017-03-31 12:26:13+00:00	neutral	the_yiayia_girl	1497
@redBorder to Expand Across #europ	2017-03-31 12:09:54+00:00	neutral	financialit_net	4158
Redborder to Expand Across Europe \	2017-03-31 11:53:12+00:00	neutral	TungstenBigData	2155
Redborder to Expand Across Europe \	2017-03-31 11:43:14+00:00	neutral	HotAirNetwork	2077
Redborder to Expand Across Europe \	2017-03-31 11:35:22+00:00	neutral	bynry	1261
Redborder to Expand Across Europe \	2017-03-31 11:33:12+00:00	neutral	IoTBlogs	16089
RT @Alvaro_DLaCruz: .@redborder t	2017-03-31 11:31:59+00:00	neutral	scaleup_rt	1183
.@redborder to expand across Europe	2017-03-31 11:29:24+00:00	neutral	Alvaro_DLaCruz	11509
Redborder to expand across Europe w	2017-03-31 11:28:38+00:00	neutral	Business_infoUS	135
RT @WiseTownProject: We are ready	2017-03-31 11:15:49+00:00	neutral	PersonaAI	14666
RT @BigDataBlogs: PRESS RELEAS	2017-03-31 11:03:58+00:00	neutral	letsbrewlife	994
RT @BigDataBlogs: PRESS RELEAS	2017-03-31 10:43:37+00:00	neutral	EdnaAyme	1626
PRESS RELEASE » Redborder to Ex	2017-03-31 10:38:35+00:00	neutral	BigDataBlogs	135016
PRESS RELEASE » Redborder to Ex	2017-03-31 10:38:15+00:00	neutral	IoTBlogs	32178
PRESS RELEASE » Redborder to Ex	2017-03-31 10:38:13+00:00	neutral	IoTBlogs	16089
RT @TheIoT: Redborder to Expand Ac	2017-03-31 10:27:31+00:00	neutral	TheRealIoT	2845
Redborder to Expand Across Europe \	2017-03-31 10:26:24+00:00	neutral	Muzaffar69	1488
Redborder to Expand Across Europe \	2017-03-31 10:18:08+00:00	neutral	ItalyEconNews	55
Global Cyber Physical System Market	2017-03-31 10:16:14+00:00	neutral	publicistreport	31
PRESS RELEASE » Redborder to Ex	2017-03-31 10:11:01+00:00	neutral	BigDataBlogs	44132
Redborder to Expand Across Europe \	2017-03-31 10:07:38+00:00	neutral	marketcheetah	1129
Redborder to Expand Across Europe \	2017-03-31 10:03:10+00:00	neutral	fxsignals4pips	1659
Redborder to Expand Across Europe \	2017-03-31 10:00:57+00:00	neutral	zyiteblog	1275
Redborder to Expand Across Europe \	2017-03-31 10:00:39+00:00	neutral	italiot	796
Redborder to Expand Across Europe \	2017-03-31 09:58:21+00:00	neutral	fxsignals4pips	1659
Redborder to Expand Across Europe \	2017-03-31 09:55:28+00:00	neutral	TheIoT	77093
#SIA2017 : Avec sa plateforme IoT, EI	2017-03-31 09:55:01+00:00	neutral	Sfabio95	262
RT @EIT_Digital: Which European co	2017-03-31 09:54:12+00:00	neutral	DigitalSalutem	1138
RT @EdnaAyme: Todo listo para una	2017-03-31 09:45:54+00:00	positive	RiminiFuturo	567
RT @EIT_Digital: Which European co	2017-03-31 09:39:18+00:00	neutral	andr_drakos	273
Which European countries put people	2017-03-31 09:36:21+00:00	neutral	Poulin2012	6286
Which European countries put people	2017-03-31 09:35:06+00:00	neutral	EITDigitalAcad	949
#JOB @EIT_Digital cherche un.e #Bu	2017-03-31 09:31:02+00:00	positive	Cap_Digital	32877
RT @EITDigitalAccel: Interview @scib	2017-03-31 09:29:43+00:00	neutral	DominikNdN	437
RT @EdnaAyme: Todo listo para una	2017-03-31 09:22:39+00:00	positive	MindTheBridge	11851
RT @EdnaAyme: Europese scaleups	2017-03-31 09:22:34+00:00	neutral	MindTheBridge	11851
RT @EdnaAyme: La scène est prête p	2017-03-31 09:22:31+00:00	positive	MindTheBridge	11851
RT @WiseTownProject: We are ready	2017-03-31 09:13:30+00:00	neutral	EdnaAyme	1626
RT @the_yiayia_girl: . @EIT_Digital p	2017-03-31 08:33:09+00:00	positive	FedericoGobbi5	13825
La scène est prête pour accueillir l'édit	2017-03-31 08:29:50+00:00	positive	EdnaAyme	1626
La scène est prête pour accueillir l'édit	2017-03-31 08:28:03+00:00	positive	EdnaAyme	15103
Redborder to expand across Europe w	2017-03-31 08:23:25+00:00	neutral	Poulin2012	6286
Europese scaleups kunnen zich weer	2017-03-31 08:23:22+00:00	neutral	EdnaAyme	1626
Europese scaleups kunnen zich weer	2017-03-31 08:22:29+00:00	neutral	EdnaAyme	1626
Todo listo para una nueva entrega de	2017-03-31 08:19:29+00:00	positive	EdnaAyme	1626
RT @TheMemo: What's #SmartRetail'	2017-03-31 05:31:37+00:00	neutral	aVg	10982
RT @DigitalSkillsEU: The Digital Skills	2017-03-31 05:28:33+00:00	neutral	JKarasvirta	69
RT @EIT_Digital: Interview @scibus w	2017-03-31 05:28:16+00:00	neutral	JKarasvirta	69
RT @EIT_Digital: .@PanEuroNetwork	2017-03-31 05:28:00+00:00	neutral	JKarasvirta	69
EIT Digital // 215,000,000,000,000,00(	2017-03-31 05:10:29+00:00	positive	rsaracco	250
RT @DigitAlumni: Proud many Alumni	2017-03-31 02:05:14+00:00	neutral	Tech_Switz	866
RT @Poulin2012: RT DigitAlumni: Pro	2017-03-31 02:03:31+00:00	neutral	Tech_Switz	7152
RT @cnastar: Proud to see EIT Digital	2017-03-30 21:28:11+00:00	neutral	RaphaelAttias	856
RT @cnastar: Proud to see EIT Digital	2017-03-30 21:27:09+00:00	neutral	WillemJonkerNL	1347
RT @DigitalSkillsEU: The Digital Skills	2017-03-30 21:25:22+00:00	neutral	WillemJonkerNL	491
RT @EITDigitalAccel: Sign up for @Fi	2017-03-30 20:06:40+00:00	neutral	erikduyck	19639
Na mijn eerste kennismaking met @M	2017-03-30 18:34:53+00:00	positive	evenck	2261
Tier 1 clippings in #china #poland #est	2017-03-30 18:21:38+00:00	neutral	EdnaAyme	1626
RT @fusi79: #innovazione @MindThe	2017-03-30 17:17:49+00:00	neutral	EdnaAyme	1626
Thank you Marko!!! @fusi79 @MindTh	2017-03-30 17:17:41+00:00	positive	EdnaAyme	1626
RT @EIT_Digital: "Stage is set for Sta	2017-03-30 17:17:12+00:00	neutral	EdnaAyme	1626
RT @DigitalSkillsEU: The Digital Skills	2017-03-30 17:16:23+00:00	neutral	EdnaAyme	1626
RT @EIT_Digital: New Job: EIT House	2017-03-30 16:42:36+00:00	neutral	GulyasZana	318

RT @fusi79: #innovazione @MindThe	2017-03-30 15:50:46+00:00	neutral	MindTheBridge	11851
RT @EIT_Digital: "Stage is set for #St	2017-03-30 15:42:09+00:00	neutral	kambanellas	26
RT @Clotoo3D: No comment a good c	2017-03-30 15:15:24+00:00	neutral	AichaDi62274167	42
RT @fusi79: #innovazione @MindThe	2017-03-30 14:31:54+00:00	neutral	scaleup_rt	1183
@EIT_Digital Helsinki Node is hosting	2017-03-30 14:28:20+00:00	neutral	MariaBoychenko	908
#innovazione @MindTheBridge @EIT_	2017-03-30 14:27:51+00:00	neutral	fusi79	3384
RT @fusi79: #innovazione @MindThe	2017-03-30 14:27:51+00:00	neutral	Businewss_Bot	31850
RT @GulyasZana: Want to #scale and	2017-03-30 14:25:00+00:00	neutral	Poulin2012	6286
RT @EIT_Digital: Interview @scibus w	2017-03-30 14:15:00+00:00	neutral	Poulin2012	6286
RT DigitalSkillsEU: The Digital Skills a	2017-03-30 13:50:15+00:00	neutral	Poulin2012	6286
RT @DigitalSkillsEU: The Digital Skills	2017-03-30 13:45:14+00:00	neutral	EITDigitalAcad	949
RT @WiseTownProject: We are ready!	2017-03-30 13:33:11+00:00	neutral	FIware	10787
RT @EITDigitalAccel: Interview @scib	2017-03-30 13:26:53+00:00	neutral	Alvaro_DLaCruz	1810
RT @WiseTownProject: We are ready!	2017-03-30 13:24:21+00:00	neutral	OpenIncet	465
The Digital Skills and Jobs Coalition w	2017-03-30 13:10:19+00:00	neutral	DigitalSkillsEU	10743
We are ready! "we like #SmartCities, b	2017-03-30 13:04:17+00:00	neutral	WiseTownProject	136
RT @the_yiayia_girl: . @EIT_Digital p	2017-03-30 12:48:53+00:00	positive	MindTheBridge	11851
RT @EIT_Digital: "Stage is set for #St	2017-03-30 12:12:46+00:00	neutral	ElenaVtweets	1067
RT @GulyasZana: Want to #scale and	2017-03-30 12:12:36+00:00	neutral	BerlinObey	755
Want to #scale and #internationalize?	2017-03-30 12:11:33+00:00	neutral	GulyasZana	7359
RT @EITDigitalAccel: Interview @scib	2017-03-30 12:10:51+00:00	neutral	EdnaAyme	1626
RT @the_yiayia_girl: . @EIT_Digital p	2017-03-30 12:02:16+00:00	positive	scaleup_rt	1183
. @EIT_Digital prêt pour #SEC2SV : L	2017-03-30 11:56:52+00:00	positive	the_yiayia_girl	28356
RT @azertyjobs: #Sales : Business De	2017-03-30 11:52:57+00:00	neutral	Trucs2OUF	238
'EIT Digital: example of how Brussels	2017-03-30 11:48:56+00:00	neutral	karinoostt	2201
RT @EITDigitalAccel: Interview @scib	2017-03-30 11:47:33+00:00	neutral	Wittkamper	1362
RT @EIT_Digital: Interview @scibus w	2017-03-30 11:33:18+00:00	neutral	Michael_Mast	397
Interview @scibus with @cnastar EIT	2017-03-30 11:32:56+00:00	neutral	24_7RT	1727
RT @EdnaAyme: Interview w/ @cnast	2017-03-30 11:30:50+00:00	neutral	cnastar	268
Interview scibus with cnastar EIT Digit	2017-03-30 11:30:33+00:00	neutral	Poulin2012	6286
Interview scibus with cnastar EIT Digit	2017-03-30 11:29:07+00:00	neutral	Poulin2012	6286
RT @EIT_Digital: Interview @scibus w	2017-03-30 11:28:19+00:00	neutral	EdnaAyme	1626
Interview @scibus with @cnastar EIT	2017-03-30 11:28:03+00:00	neutral	EITDigitalAccel	3289
RT @EITDigitalAcad: Dutch 22-year o	2017-03-30 11:27:51+00:00	neutral	EdnaAyme	1626
RT @Alvaro_DLaCruz: @StartUpEU (	2017-03-30 11:27:41+00:00	positive	EdnaAyme	1626
RT @azertyjobs: #Sales : Business De	2017-03-30 11:27:32+00:00	neutral	EdnaAyme	1626
https://t.co/qUvP1r5qVT EIT Digital Sc	2017-03-30 11:11:07+00:00	neutral	prpnews	1299
Interview w/ @cnastar of @EIT_Digita	2017-03-30 11:08:53+00:00	neutral	EdnaAyme	1626
RT @EITDigitalAcad: Dutch 22-year o	2017-03-30 11:03:30+00:00	neutral	GulyasZana	318
RT @EITDigitalAcad: Dutch 22-year o	2017-03-30 11:02:24+00:00	neutral	cnastar	268
#Sales : Business Developer – @EIT_	2017-03-30 11:00:57+00:00	neutral	azertyjobs	6165
RT @EIT_Digital: Looking forward to #	2017-03-30 10:51:12+00:00	neutral	EdnaAyme	1626
RT @EIT_Digital: It is said that in 184	2017-03-30 10:51:02+00:00	neutral	EdnaAyme	1626
RT @EIT_Digital: .@PanEuroNetwork	2017-03-30 10:30:41+00:00	neutral	the_yiayia_girl	1497
RT @EITDigitalAcad: Dutch 22-year o	2017-03-30 09:20:22+00:00	neutral	phishermencrew	10
RT @EIT_Digital: First year EIT Digita	2017-03-30 09:20:02+00:00	neutral	phishermencrew	10
RT @Alvaro_DLaCruz: @StartUpEU (	2017-03-30 09:17:16+00:00	positive	MindTheBridge	11851
RT @EIT_Digital: .@PanEuroNetwork	2017-03-30 09:17:00+00:00	neutral	scaleup_rt	4324
@StartUpEU Comes to Silicon Valley :	2017-03-30 08:49:16+00:00	positive	Alvaro_DLaCruz	15287
RT @EITDigitalAcad: Dutch 22-year o	2017-03-30 08:32:17+00:00	neutral	DonaldNdoro	24609
RT @EITDigitalAcad: Dutch 22-year o	2017-03-30 08:31:58+00:00	neutral	chidambara09	2390
RT @EITDigitalAcad: Dutch 22-year o	2017-03-30 08:19:28+00:00	neutral	EITDigitalAccel	3289
read report on #sharingeconomy even	2017-03-30 08:17:54+00:00	neutral	Astratum_	21
thx @EIT_Digital @EITeu 4 havin @la	2017-03-30 08:11:49+00:00	neutral	Astratum_	21
Dutch 22-year old Robert Carosi founc	2017-03-30 08:00:04+00:00	neutral	EITDigitalAcad	949
RT @StartupdateNL: EIT Digital heeft	2017-03-30 07:53:33+00:00	positive	karinoostt	2201
RT @EIT_Digital: "Stage is set for #St	2017-03-30 07:50:00+00:00	neutral	GosseVuijk	268
EIT Digital boss @WillemJonkerNL: Ei	2017-03-30 07:46:48+00:00	positive	karinoostt	2201
RT @WillemJonkerNL: What's 'Smart	2017-03-30 05:23:54+00:00	neutral	pashupatina	626
EIT Digital // In the grey area between	2017-03-30 04:50:10+00:00	neutral	rsaracco	250
RT @DigitAlumni: Proud many Alumni	2017-03-29 21:59:12+00:00	neutral	therlin	7564
@EIT_Digital once again dream would	2017-03-29 20:02:29+00:00	neutral	ikbalaman	147
@EIT_Digital This is the second time I	2017-03-29 19:58:10+00:00	neutral	ikbalaman	147
RT @EIT_Digital: "Stage is set for #St	2017-03-29 19:10:43+00:00	neutral	JKarasvirta	69
RT @EIT_Digital: This important effort	2017-03-29 19:10:14+00:00	neutral	JKarasvirta	69
It´s real, first residential house has bee	2017-03-29 17:25:55+00:00	neutral	DES_Mexico	25
RT @EdnaAyme: "Todo listo para una	2017-03-29 17:15:40+00:00	positive	MindTheBridge	11851
Europese scaleups kunnen zich weer	2017-03-29 17:10:44+00:00	neutral	EdnaAyme	16729
"Todo listo para una nueva entrega de	2017-03-29 17:08:55+00:00	positive	EdnaAyme	27521
RT @Alvaro_DLaCruz: Por 3 año cons	2017-03-29 17:07:52+00:00	positive	EdnaAyme	1626
RT @Alvaro_DLaCruz: Por 3 año cons	2017-03-29 16:32:16+00:00	positive	scaleup_rt	1183
RT @krissyxkd: What's 'Smart Retail'?	2017-03-29 16:30:19+00:00	neutral	TheMemo	8043
Por 3 año consecutivo @EIT_Digital y	2017-03-29 16:24:17+00:00	positive	Alvaro_DLaCruz	4619
RT @EIT_Digital: "Stage is set for #St	2017-03-29 16:17:18+00:00	neutral	EdnaAyme	1626
EIT Digital Master School student 'reel	2017-03-29 16:07:45+00:00	neutral	ClickyBuzz	9417
RT @EIT_Digital: "Stage is set for #St	2017-03-29 16:07:04+00:00	neutral	SanitaLaivina	371
RT @EIT_Digital: "Stage is set for #St	2017-03-29 16:00:25+00:00	neutral	SJSVTours	1182
Mentors' Club @Polihub. #Industry40	2017-03-29 15:49:23+00:00	neutral	PaxPaoloMagni	177
RT @EIT_Digital: "Stage is set for #St	2017-03-29 15:49:15+00:00	neutral	StartUpEU	21790
What's 'Smart Retail'? Fancy fitting roc	2017-03-29 15:33:52+00:00	neutral	so_particular	833

RT DigitAlumni: Proud many Alumni jo	2017-03-29 15:04:25+00:00	neutral	Poulin2012	6286
RT @DigitAlumni: Proud many Alumni	2017-03-29 15:00:05+00:00	neutral	EITDigitalAccel	3289
RT @DigitAlumni: Proud many Alumni	2017-03-29 15:00:05+00:00	neutral	EITDigitalAcad	949
RT @EIT_Digital: "Stage is set for #St	2017-03-29 14:53:20+00:00	neutral	Poulin2012	6286
RT @EIT_Digital: "Stage is set for #St	2017-03-29 14:47:26+00:00	neutral	WillemJonkerNL	491
RT @EIT_Digital: "Stage is set for #St	2017-03-29 14:43:50+00:00	neutral	CarlaMays	5785
RT @EIT_Digital: "Stage is set for #St	2017-03-29 14:42:25+00:00	neutral	MindTheBridge	11851
RT @EITDigitalAcad: First year EIT Di	2017-03-29 14:40:09+00:00	neutral	Secretpositive1	293
RT @EITDigitalAcad: First year EIT Di	2017-03-29 14:39:42+00:00	neutral	EARTOBrussels	4440
RT @DigitAlumni: Proud many Alumni	2017-03-29 14:39:38+00:00	neutral	techcoachinguk	1409
RT @EITDigitalAccel: Sign up for @Fi	2017-03-29 14:35:58+00:00	neutral	EdnaAyme	1626
RT @DigitAlumni: Robert Carosi starte	2017-03-29 14:35:48+00:00	neutral	EdnaAyme	1626
"Stage is set for Startup Europe Come	2017-03-29 14:34:29+00:00	neutral	Michael_Mast	397
EIT Digital ARISE Europe Open Call fc	2017-03-29 14:32:36+00:00	neutral	EU_Funds	3165
RT @DigitAlumni: Proud many Alumni	2017-03-29 14:32:32+00:00	neutral	franzbona	280
RT @DigitAlumni: Proud many Alumni	2017-03-29 14:29:59+00:00	neutral	canar40	89
Proud many Alumni joined @EIT_Digit	2017-03-29 14:29:29+00:00	neutral	DigitAlumni	461
RT @DigitAlumni: Robert Carosi starte	2017-03-29 14:07:59+00:00	neutral	ac12_0307	2493

Appendix I: Data collected from Google Analytics

Followers

EIT Digital Social Media Data

Follower/Likes

	Twitter @EIT_Digital	Facebook EIT Digital	Youtube EIT Digital	Linkedin EIT Digital
29- März-	7.829	3.669	555	4.890
30- März-	7.840	3.673	556	4.891
31- März-	7.850	3.675	557	4.893
1- Apr.-	7.873	3.679	556	4.894
2- Apr.-	7.878	3.680	556	4.899
3- Apr.-	7.877	3.683	556	4.904
4- Apr.-	7.889	3.687	555	4.904

Visitors

(user) statistics

29-03: 910

30-03: 751

31-03: 646

01-04: 245 (weekend)

02-04: 263 (weekend)

03-04: 685

04-04: 670