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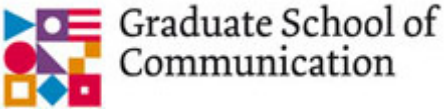

Conceptualization, Knowledge and Potential of Big Data in the context of the PR profession: "PR Professionals' Sense Making of Big Data, in order to create Knowledge and pursue enhanced Decision Making"

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Abstract

The turmoil organizational changes brought by the Big Data phenomenon, and that PR professionals undergo on their day-to-day work, impose a critical and challenging ultimatum for sense-making of the term in the context of the PR profession. PR professionals, have to initially make sense of the alterations that Big Data has brought in their practice, in order to create valuable knowledge, which may eventually lead to an optimal decision-making process. This thesis aimed to explore Big Data in the context of the PR practice, using as a theoretical basis the three interrelated arenas of sense-making, knowledge creation, and decision making. It can be concluded that PR professionals make sense of Big Data as a phenomenon that brought an ecological change to the PR industry due to the input of vast and complex volumes of data, which digitalized the field and provided an enhanced ability to monitor the environment and segment publics of interest. This change guided the creation of knowledge via Big Data analytical tools that provide the practice with advanced environmental scanning capabilities and foster knowledge sharing with the discipline of data scientists. Subsequently, the knowledge derived from Big Data was conceptualized as leading to an enhanced decision-making process. The results provide empirical evidence regarding a shift to a strategic management paradigm of PR, where Big Data may transform PR professionals to capable environmental scanners, able to identify their strategic publics and satisfy their needs. This shift could be considered compelled due to the outburst of social media and the Internet, but it is accompanied by ethical standards. Traditional practices remain constant and incorporated in the practice along with the aid of Big Data technologies.

Keywords: PR, Big Data, Sense Making, Knowledge Creation, Decision Making, Ecological Change, PR professionals, Environmental Scanning, Knowledge sharing, Ethics

Introduction

PR professionals are obliged now more than ever to comply with the outburst of social media, and the inundation of data that was initiated and further incubated by the Internet (Flynn, 2014). Value in the PR practice is added when the organization is in the position of identifying stakeholders and segmenting specific groups while exercising symmetrical communication with them. Big Data technologies could allow for enhanced strategic positioning and audience targeting, by providing insights into stakeholders' needs and desires, while unfolding a range of openings for quantification (Grunig, 2006; 2009; Hung 2002, 2005; Yang, 2005; Yang & Grunig 2005).

The academic and practical potential of the Big Data movement and the "datafication" of science is towering, inaugurating a new era of research questions (Lycett, 2013). Big Data techniques are becoming essential since they offer discernment that could not be obtained in other ways. Computational methods and advanced digital analytics tools, enhance researchers' and practitioners' capability to investigate several datasets, deriving from diverse sources, time points, and locations (Parks, 2014; Mayer-Schönberger & Cukier, 2013). Nevertheless, according to Boyd & Crawford (2012), "*data are not generic*", and this means that the context upon analysis is of crucial importance in order to leverage the value of Big Data (p.671). Although there has been considerable theoretical discussion on the topic of Big Data, deriving from journal articles and academic literature (Weiner & Kochhar, 2011; Cortes & Pedrol, 2016; Grunig, 2009; González-Herrero & Smith, 2008), there is scarce empirical research to date regarding the context of the PR profession.

The turmoil organizational changes brought by the Big Data phenomenon, and that professionals undergo on their day-to-day work, impose a critical and challenging ultimatum for sense-making of the term in the context of the PR profession (Luscher & Lewis, 2008).

This view suggests that PR professionals, have to initially make sense of the alterations that Big Data may have brought in their practice, in order to create valuable knowledge, which may eventually lead to an enhanced decision-making process. Thereupon, PR professionals' personal attitudes towards the changes that Big Data may have brought in their practice will be explored accordingly.

Theoretical Background

This thesis aims to explore the Big Data phenomenon using as a theoretical basis a model suggested by Choo (1996). This model entails three interrelated areas of strategic use of information that aid the formation of an organization, which adapts to change and acts judiciously on its area of interest. These three areas pertain to sense-making, knowledge creation, and decision making.

Sense-making constitutes an effort to create systematic and rational understandings, out of equivocal, ambiguous or confusing cues, that will enable change (Colville, Brown, & Pye, 2012; Maitlis, 2005; Weick, 1995). Consequently, through sense-making, PR professionals will attempt to make sense of the alterations and developments that Big Data may have brought upon their profession to subsequently create knowledge outside of what is currently known.

Knowledge creation can be achieved through environmental scanning and knowledge sharing (Liao, Fei, & Chen, 2007; Liu & Philips, 2011; Grunig, 2009). Therefore, insights from Big Data may create new knowledge for the PR practice, that could be used to forge new procedures or enhance the existing ones.

According to Poleto, Carvalho and Costa (2015), the elicitation of knowledge from Big Data *"makes the decision making process more robust and more reliable"* (p. 19).

Thereupon, through the new knowledge that is being created from Big Data, PR professionals may be able to improve their decision-making process.

Overarching Research Question

"How do PR professionals make sense of Big Data in the context of the PR profession, in order to create knowledge, and pursue enhanced decision-making?"

Big Data and sense-making in the PR profession

According to Weick (1995), sense-making initiates when organizational members attempt to interpret an ecological change in their environment. During this process, they try to reduce the equivocality of the change by excerpting history from the past in order to select and retain a rational scheme of interpretation. This approach to sense making through an ecological change will be utilized in order to assess the sense-making of Big Data by the PR professionals, and the changes it may have brought in the PR practice per se.

Big Data are often characterized by the 3V's, representing "*exploded data challenges in three dimensions: volumes, velocity, and variety*" (Laney, 2001, p. 1). Volume can be conceptualized as the immenseness of the property, velocity as the rate that digital operations can increase the bigness of Big Data, and variety as the new genre and formats of data (Hofacker, Malthouse, & Sultan, 2016). Howbeit, according to Boyd and Crawford (2012), the term Big Data is poor in many ways, as it constitutes *"a socio-technical phenomenon, that can be leveraged as a powerful tool, offering insights to almost every area of interest"* (p. 663). The insights that Big Data may offer in the context of the PR profession could constitute a driver towards an in-depth transformation of the field, depending on how PR professionals make sense of it in their real-life practices. This view may dynamically reinforce the strategic management function of PR that embraces change, breeds bonds with

its stakeholders, and transforms the organization synchronically with its evolving social environment (van den Bosch and van Riel, 1998; Grunig, 2009).

The strategic management paradigm entwines PR with a management function that depicts its objectives in managing the relations between organizations or publics. It reinforces PR's function to initially segment and understand an audience, and from there to construct and establish a favorable impression towards this audience (Harlow, 1976; Hutton, 1999; Verčič et. al., 2000; L'Etang, 2013). On the contrary of this paradigm, traditional PR focuses more on a one-way, asymmetrical communication, where the organizations buffer from their environment and disseminate information as favorable impressions without any dialogue with their publics. Consequently, PR is viewed as a messaging, publicity, and media relations activity, aiming to control and persuade the publics, while halting any changing process (van den Bosch and van Riel, 1998; Grunig, 2009; Yi, 2005; Grunig & Grunig, 1992; Cutlip, 2009). During the last decade, with the onset of digital media, the inflow of data is so immense that the idea of control over messaging and publics sounds utopian (Grunig, 2009; 2006). Internet-based technologies have provided stakeholders with unprecedented power through the electronic Word of Mouth (eWoM), influencing the PR firms' attempts to monitor their environment (González-Herrero & Smith, 2008). The emergence of the Big Data phenomenon constitutes a great opportunity for the PR craft to be conceptualized as a bridging activity, once data practices are espoused by the practitioners (Berger, 2015). Nevertheless, according to the researcher's knowledge, there is scarce empirical evidence regarding the ways in which PR professionals make sense of Big Data. Therefore, this thesis aims to answer the following research question:

RQ1: "How do PR professionals make sense of Big Data in the context of the PR profession?"

Big Data and Knowledge Creation in the PR profession

Knowledge Creation via Environmental Scanning

The expansion of information and communication technologies (ICT's), requires new types of knowledge for assessing, and making value out of Big Data. This knowledge may bring out potential for the PR practice, once it is incorporated by a behavioral, strategic management paradigm of PR (Grunig, 2009; 2011).

Environmental scanning, as the first stage of a strategic management process of PR, pertains to research in order to identify those publics that are in the position of restraining or reinforcing the organization's ability to seek its goals and to design communication programs (Grunig, 2006). By identifying its strategic publics, the PR practice can act proactively before the decision-making process initiates, and influence a final decision that may affect them or the organization's reputation. Furthermore, nowadays most organizations are restricted by time and resources, to foster rapport with everyone, and therefore segmenting their audience into publics of interest can be really useful towards this direction. Finally, the organization can be in the position of identifying potential crises, designing tangible objectives for communication programs, and evaluating them effectively (Grunig 2009; 2014; 2011).

Traditional environmental scanning entails the monitoring of media and political procedures, or public opinion polls (Stoffels, 1994). Nowadays, many PR practitioners make use of the opportunities offered by digital media in the base of a traditional, asymmetrical model but this is only because they lack the knowledge or the necessary tools to scan their environment and create useful knowledge (Grunig, 2009). Big Data through a variety of tools and methods, could be ideal in order to create knowledge from the immense input of information, by scanning the cyberspace environment. Promising tools for knowledge

creation pertain to machine learning and Artificial Intelligence (AI), where "intelligence" stands for knowledge creation with mining algorithms (Poleto, Carvalho & Costa, 2015). Sentiment analysis could provide insights into behavioral trends. Google alerts, or Search Engine Optimization (SEO), could be used via keywords related to emerging issues that will create knowledge useful for the next stage of decision making. The current study aims to assess the ways in which the range and use of these analytical tools for environmental scanning, may have changed the creation of knowledge for the PR practice.

Knowledge creation through knowledge sharing

In today's highly competitive business environment, knowledge sharing is crucial to a firm's success (Grant, 1996). The dynamics theory, suggested by Nonaka and Takeuchi (1995), suggests that organizational knowledge creation can be attained through the interdependent liaison between tacit and explicit knowledge, and through those social mechanisms that transform individuals' tacit knowledge into explicit. In the Big Data era, apart from being able to assess and coordinate the inflows of data, practitioners must also be able to transform it to create knowledge. Information literacy and processing are crucial within the competency of Big Data processing, in order to filter, extract value and create knowledge (Dede, 2010; Finegold & Notabartolo, 2010). However, there is scarce empirical evidence regarding the PR professionals' level of knowledge in Big Data analytics, and the possibilities that new knowledge may be created through knowledge sharing within the PR industry or in cooperation with other disciplines.

To assess possible changes in the process of knowledge creation via Big Data in the context of the PR practice, this thesis aims to answer the following research question:

RQ2: "In which ways has Big Data changed the creation of knowledge in the context of the PR profession?"

Big Data and Decision Making in the PR profession

Decision making can be defined as strategic decisions toward successful problem solving; it constitutes a complex process, and it is related to issues that are substantial for the survival and potential of the organization. (Dean & Sharfran, 1996; Mintzberg *et al*. 1976; Habermas, 1998; Schwenk 1988). What is more, decision making mirrors the interrelation between an organization and its environment and illustrates how the organization addresses this relationship (Ginsberg, 1988).

With the outburst of digital media, the social environment is composed of turbulent forces, and PR firms depend on various parties with diverse objectives and interests, while aiming to gain legitimacy for their actions (Grunig, 2009). Thereupon, PR professionals need to be open to a dialogic relationship with their stakeholders and continuously provide accountability and transparency for their decisions (Vos & Schoemaker, 2011). According to the strategic management paradigm, the most excellent PR departments engage in participative decision-making, by scanning their social environment, listening, and providing their strategic publics with a voice (Miller, 2006; Grunig, 2014). In traditional PR, decisions are executed in a top-down manner, and practitioners disseminate the messages of the decisions after those are made (Mathis, 2007; Mykkänen & Vos, 2015).

Organizations that use a structured view of information may enhance their decision-making process, and Big Data offer this opportunity (Poleto, Carvalho & Costa, 2015). Big Data technologies may support the decision making process by using the online communications ecosystem and Internet-based technologies, to quickly analyze different

types of data (i.e. videos, interactions, images), in order to create a stream of knowledge (Berman, 2013). Depending on the adoption of the appropriate tools, this knowledge may facilitate the monitoring of the organization's environment in order to reach strategically important publics and from there schedule and evaluate programs or identify potential issues, that may affect the decision making process. Tools pertain to business intelligence tools (BI), that provide advanced analytics, ensure the integration of data and are used to facilitate the discovery of chances for enhanced decision-making (Grunig, 2006; Grunig, 2009; González-Herrero & Smith, 2008; Poleto, Carvalho & Costa, 2015). The challenge lies in the actual practice of PR and the ways in which professionals envisage a change in their decision making processes via Big Data.

RQ3: "In which ways Big Data change decision making processes in the context of the PR profession?"

Methodology

Research Method

To answer the research question, this study adopts a grounded theory methodology to explore problems of why and how in a systematic way, and build a theory grounded in real-life data (Glaser, 1998). Another reason for choosing the grounded theory approach is the flexibility it provides concerning data collection and analysis (Glaser & Strauss, 1967).

A commonly used and well-suited data collection technique in grounded theory is the employment of interviews. For this paper's purposes, in-depth, semi-structured interviews were employed, as this method corresponds to a flexible interview process, and allows the interviewer to delve deeper into the concepts under investigation (Bryman, 2012). An interview guide with open-ended questions and fairly specific topics was provided to the

participants, offering a considerable leeway in their way of replying (DiCicco-Bloom & Crabtree, 2006).

Theoretical sampling and sample characteristics

This study employed a theoretical sampling method, based on the grounded theory approach, where data are collected to generate theory (Glaser & Strauss, 1967). It is an ongoing process where the emerging theory controls the process of data collection with the aim to reach theoretical saturation, which signifies that data collection is complete (Bryman, 2012; DiCicco-Bloom & Crabtree, 2006; Strauss & Corbin, 1998). For this research, the data collection and coding took place synchronously with the analysis. Twenty interviews (N=20) were needed to reach theoretical saturation and stop the process of data collection since at that point no new data emerged regarding the categories.

Theoretical considerations guide the selection of participants in theoretical sampling (Bryman, 2012). Therefore, to assess the PR context under investigation it was decided that the participants should be PR professionals, with a minimum of 6 months' experience in the field, so that they be able to provide meaningful insights. The nationality and position of the interviewees in the PR industry were taken into consideration, to ensure variation in the sample and safeguard the generalizability of the thesis (Patton, 2002). The participants derived from six different nationalities, their companies span across four nations, and they represented various levels of seniority in the PR practice (table 1). The PR professionals were approached through invitations on their social media channels, and through the attendance of the researcher in PR conferences in order to establish rapport. An explicit form of ethical consent was provided in advance to the interviewees in order to be informed about the nature of the study, and to reassure their voluntary participation, their right to disengage at any time, and the confidentiality of their personal data.

All interviews were executed through online video and audio applications, due to time and distance restrictions. The interview guide consisted of four categories. The first category pertained to general questions (name, experience and current position in the PR industry), and the other three were formulated in accordance to the sensitizing concepts of the research (Big Data and Sense making, Knowledge Creation, and decision-making). The interviewer followed the guide but was also able to follow topical trajectories that may have deviated from the main questions whenever considered necessary, in order to elucidate the concepts under investigation. The interview and transcribing period lasted from the 1st of December 2017 to the 10th of January 2018. All interviews were audio-recorded digitally via the Quick-time application, and their average duration was approximately 35 minutes. At a subsequent step, each interview was manually transcribed into a Word document to be used for further analysis.

Table 1.

Composition of the sample

Number of Participant	Nationality	Years of experience	Position of interviewee
1	Greek	6 years	PR for governmental political party in Greece
2	Dutch	31 years	Owner of PR agency in the Netherlands
3	Dutch	9 years	International PR specialist based in the Netherlands
4	Russian	10 years	10 years/ Communications

			Officer and PR Consultant in the Netherlands
5	Dutch	25 years	Owner of PR agency in the Netherlands
6	Greek	5 years	PR expert in financial technology press in London
7	American	5 years	Public Relations Officer in Greek Private Bank
8	Ukrainian	4 years	PR consultant at an advertising agency and IT communications for the EU commission. Based in Berlin
9	Greek	2 years	PR agency employee based in Greece
10	German	1 year	Junior PR consultant IT communications for the EU commission. Based in Berlin
11	Greek	7 years	PR colsultant at the communication department of a Greek NGO and a reputable private foundation
12	German	10 years	Global Head of PR (Responsible

			for 70 countries). Based in Berlin
13	German	5 years	PR and Marketing manager. PR firm based in Berlin
14	Greek	2 years	PR intern in the Hellenic Broadcasting corporation
15	Greek	8 years	PR, Marketing and communication manager in Greek Startup
16	Greek	2 years	Account executive at a financial technology consultancy and PR company, based in London
17	Greek	5 years	PR employee specialized as a copywriter at an advertising agency, based in Greece
18	Greek	1 year	PR professional at advertising agency specialized in holistic PR, based in Greece
19	Danish	3.5 years	PR and Communication Specialist in a Dutch based tech medium company

20	Greek	3 years	Senior PR Assistant in a Fashion and Arts PR Agency based in London

Analysis

The analysis was based on guidelines from the grounded theory methodological literature (Glaser & Strauss, 1967; Strauss & Corbin, 1998; Charmaz, 2006). All interview transcripts were carefully read and subsequently analyzed with MAXQDA18, a qualitative data analysis software, in order to make the process more systematic, less time-consuming, and allow for flexibility in the revising of the analysis (Tesch, 1989).

Initially, an open-coding method was employed (Strauss & Corbin, 1998), during which each transcript was broken down in segments, and thematic codes were assigned to each, aiming at a higher level of categorization. The interview guide was utilized as an open schema for these thematic codes, which were based on the sensitizing concepts (Sense Making, Knowledge Creation, and Decision Making). Nevertheless, the participants' experiences were coded without a priori categories. The coding was based on constructed codes which pertained to wordings of the interviewees – in vivo codes (e.g. "in my firm…"), created by the researcher codes (e.g. "Need for capital"), and literature codes ("Ecological Change"). Eventually, 101 codes out of 469 segments emerged.

After completing the open coding, the method of focused coding was employed (Glaser & Strauss, 1967), in order to identify "*the most frequent or significant initial codes*", search for central codes or codes relationships, and build categories around them (Saldana, 2013, p. 264). In terms of this analysis, a concept-indicator model was developed around the sensitizing concepts of "Big Data and Sense-Making, Knowledge Creation, Decision-making", with the analogous three dimensions representing different conceptualizations of Big Data per category. Each dimension was denoted with particular indicators, which were

supported by quotes from the interviewees, elucidating that the concept-indicator model is grounded in data. For example, one indicator of the sense-making dimension of Big Data was the "vast and complex volumes of data", grounded on Participant's 8 quote: "*…Big Data is like an aggregation of plenty and complex data that companies use to gain insights"*.

Validity and Reliability

Internal validity (or credibility: Lincoln & Guba, 2000), was assessed by the following measures. Firstly, memo-writing was employed, in order to record anything that attracted the researcher's attention during the analysis, detect biases, and elucidate properties or gaps on the emergent theory (Glaser & Strauss, 1967; Glaser, 1978). Secondly, the characteristics that constitute the theoretical outcome "grounded" were emphasized (e.g. interviewees' quotes). Thirdly, by establishing a prolonged engagement with the PR professionals and by persistent observation of the PR field. For that, the researcher attended PR conferences and events organized by the professionals, in order to establish rapport with them and explore the field from within. Thirdly, by the use of respondent validation, which was achieved by providing the PR professionals with an account of the findings in order to ensure the correspondence with their perspectives.

Transferability – (parallel to external validity: Lincoln & Guba, 2000), was obtained through a "thick description" of the professionals' comprehension and experiences within and in regards to the PR context under examination, for theoretical generalization to eventuate. Through keeping an accessible audit trail via a detailed chronology of all research activities, influences during data collection and analysis, selection of participants, analytic memos and interview transcripts, the process through which the findings emerged can be repeatable across time, researchers and techniques, and dependability (parallel to reliability) could be assessed (Gasson, 2004; Bryman 2012; Morrow, 2005).

Confirmability (or objectivity: Lincoln & Guba, 2000), referring to the degree of the researcher's neutrality and consequently to the lack of bias, motivation, or interest on her behalf, was obtained through the aforementioned audit trails, through the establishment of rapport, trust and reciprocity with the participants, and through reflexivity. Reciprocity was established by being willing to support professionals' PR events and by sharing content from their projects on social media, that equally fostered rapport and trust. Reflexivity was achieved through the development of a private reflexive journal as proposed by Lincoln and Guba (1985), where methodological decisions, reasons for them, and reflection upon personal values were recorded, aiming to catharsis. The authenticity of this research was obtained through the criteria of fairness since the diverse viewpoints on the usefulness of Big Data for PR were fairly represented by the professionals.

The interview guide, the list of codes, and the concept-indicator model can be found in the appendix. The recordings of the interviews are carefully guarded and will be destroyed as research ethics precept (DiCicco-Bloom & Crabtree, 2006), upon this thesis evaluation.

Results

Through the open and focused coding procedure, a conceptual model emerged elucidating the main concept of Big Data in the context of the PR profession. The three dimensions that emerged correspond to the three interrelated processes of: sense-making, knowledge creation, and decision making. Some indicators appeared common in more than one dimensions and will be discussed in depth.

RQ1: "How do PR professionals make sense of Big Data in the context of the PR profession?"

PR professionals' sense-making of Big Data produced four indicators: PR inundated by vast and complex volumes of data, digitization of PR, enhanced monitoring and targeting of publics, and early stages of analytical processing in-house.

PR inundated by vast and complex volumes of data

The interviewees made sense of Big Data as an input of vast and complex volumes of data, which makes it impossible for them to process manually. They emphasized in the contrast to the data they had to handle in the past, which created the need for advanced analytical tools for processing. Participant8 conceptualized Big Data as follows: "*For me, Big Data is collecting and processing large amounts of data. So larger datasets than before, larger than what you would be able to put on an excel file or any manual collection of data*". In the same respect, Participant2 said: "*...by nature it's an amount of Data that you would need additional tools to analyze*".

Digitization of PR

The vast and complex input of data, deriving mainly from social media channels, made the interviewees make sense of Big Data as a phenomenon that provoked the digitization of the PR practice. They mentioned the need to process data deriving from digital media, in contrast to the past when they just had to process the circulation of the press or television programs.

Participant2 described how he makes sense of this change: "*You had feedback of some very fragmented information. Like if you had some clippings or if you had some results on a certain magazine or newspaper, you would look at the circulation of the newspaper and you would know an estimate of the number of people who were potentially able to see it. The same for television, you could have the general figures of how many people watched a certain program at night, and that's the data you had to work with. As soon as online came on, things started to change. You got figures like the number of unique visitors of a certain website on a certain period, and you could even start including pixels on pages to see how many people were actually seeing a page, you could get information on the CTR's, so you could start building your media strategy on different figures*".

Enhanced monitoring and targeting of publics

In terms of the uprising of digital media, PR professionals also mentioned the ability that is offered now to easily monitor their environment and target their publics of interest. In this respect, they made sense of Big Data as a medium that facilitates the identification of behavioral trends and real-time engagement with the stakeholders that matter the most for the organization. As Participant4 mentioned: "*Big Data makes it possible to monitor and analyze conversations and the public a lot more efficiently and on a bigger scale. Because a large part of PR is to monitor things, and this has definitely been transformed by Big Data*". Participant3 added the value of Big Data in providing easier access to journalists and media: "*Before you had to go to all the websites and editorial pages to find journalists which were not always updated and that was a lot of manual work. Now with the online databases you just type in a random topic and you get both a list of the media that are relevant to that and the relevant list of journalists… You can target your content to the right people and thus Big Data help you to be more specific which helps the PR profession*".

Early stages of adoption for analytical processing in-house

Despite the conceptualization of Big Data as a phenomenon with potential to alter the PR profession, the interviewees made sense of it as being at an early stage of adoption for many PR firms. They reported the limited capacity of the current PR firms to make value out of Big Data, in terms of confined technical resources or technical know-how. The adoption of analytical processing in-house was found to be the case for a few firms that work for large audiences and have the capital to invest on it. Participant2 said in this respect: *"If you are dealing with companies who have big audience like consumer companies, if you are doing PR for the Trump campaign it makes sense to use Big Data to continuously measure sentiments, to continuously measure reach, to also measure your results (...) You do a lot of market research to see if you messaging is really reaching out to people. But that's only for such a limited group of companies that it makes sense. From Big Data you get a lot of information or Data points for a lot of people from your audience. If you are doing B2B marketing or PR you have a far more limited group…You will find only very few PR firms that are using Big Data but it is becoming more and more stronger"*. Accordingly, Participant18 explained that her company was trying to process immense inputs of data, but was lacking the technical expertise to derive useful insights out of it: "*I think Big Data has changed the PR function a lot but I do believe we haven't realized yet what happened. I was just an intern but I could realize that we were handling data not really relevant for us and our daily job. They hadn't really found a way to really access their data. I think they will find a way to optimize Big Data and extract value from it because it's really their time right now.*

RQ2: "In which ways has Big Data changed the creation of knowledge in the context of the PR profession?"

The PR professionals reported that Big Data is changing the creation of knowledge for their practice mostly due to the outburst of social media that facilitate a two-way communication with their stakeholders. They considered this change as facilitating rather than impeding knowledge creation. Four indicators emerged signifying the knowledge that is now being created via Big Data technologies: publics' segmentation, tangible insights, knowledge sharing with data specialists, and sensitive data.

Publics' Segmentation

The ability to segment publics was considered by the interviewees both a way to make sense and create knowledge from Big Data. They reported that new knowledge is now being created through digital analytics tools (Sistrix API, Search Engine Optimization – SEO among the mentioned ones), which aid the identification of strategic publics. Once again social media were considered the main source of data that need to be processed in order to efficiently segment important publics. The participants argued that Big Data technologies facilitate the identification of behavioral trends, that in turn help them adjust their messaging activity accordingly. Participant12 explained: "*The more information you get for your target group by free Google tools (Google trends, Google analytics), the more you know your personas and the audience you want to talk to and then you can target your stories better… It's more an audience targeting knowledge like you can segment your publics easier. If you target everybody then you target no one and now you are able to break it down to more concrete audiences*". In the same perspective, another interviewee (Participant11) added the accomplishment of more targeted campaigns. He said: "*…if you take into consideration Facebook or Google analytics then you can understand how Big Data can make your campaign more targeted. So you might be more able to reach your preferred audience*".

Tangible Insights

Here the PR professionals reinforced the ability they are now being provided through Big Data, to create knowledge about their publics or the performance of their activities, via tangible insights. Even though relationships were identified as the most important intangible asset of PR, the practitioners reported that with the advent of Big Data this conduct has changed, and measurable objectives are needed in order to develop or support these relationships to clients or the management. An interviewee (P2) mentioned that clients of his firm are not willing to settle with intuition but instead they need to be provided with numbers, that support the adoption of a certain strategy: "*…There is no such thing as: "Let's do it that way because I have a feeling it will work". Customers hardly ever take that as a good answer. They don't want a feeling, they want to see some figures, they want to see a reach. For example, how many people did we reach with that message, how many people did we reach with this website"*. Similarly, Participant12 said: "*…in the end everything goes down to ROI*". PR professionals consider Big Data to create knowledge that can be measured through the use of specific software: "*We use the software AINO to check through key words the quantity of mentions compared to our rivals or to see how well our posts performed"* (Participant17), or visualizations: *"Where words used to be enough now visual is at the forefront. We have to make info-graphics to explain complex situations to audiences, even in very complex industries like IT, health care and telecom. B2B communications are jumping to info-graphics and visualization which become more important"* (Participant4). Other professionals like Participant7, mentioned predictive analytics: *"I use predictive analytics, risk scoring and generally my knowledge is based on facts"*, Google Analytics: "*if you manage to get a backlink to your website from an online article you can then track with Google Analytics how many people clicked on this link and went to our site"* (Participant3), or specific web platforms: "*I am currently using Similar Web…to scan everything online in a*

short time and to provide some reports to my colleagues regarding how many people are able to reach our products" (Participant19).

Knowledge sharing with Data specialists

The majority of the interviewees pertained a limited or basic level of knowledge regarding the processing of data via Big Data technologies, such as digital analytics, machine learning, Natural Language Processing (NLP), sentiment analysis or artificial intelligence (AI). Nevertheless, it was found that most of the interviewees cooperate with IT specialists or data scientists, in order to derive value out of Big Data, since they are endorsing its importance for their practice. Thereupon, new knowledge is being created from Big Data through a process where data experts share their tacit knowledge with PR professionals, while this knowledge becomes explicit through reports and exploited in a daily fashion. In this perspective, P12 explained: "*We compile our own report internally. We have a full-time data analyst who compiles weekly reports, from where we can take the most successful campaigns. We evaluate each campaign in-house with our own tools combined with external tools to see how successful was each campaign. Also, he (the data analyst) extracts travel data from our meta-search engine for us to create new stories. Everybody receives this weekly report. Since we handle 60 different countries, every country manager is responsible for the accuracy of his country's data and he has to double check and take out the conclusions of these data to create new stories"*. The same issued for Participant16 who has limited knowledge of Big Data analytics but her firm cooperates with an IT department: *"Machine learning and deep learning are implemented by IT specialists. They aggregate trades and then provide them as insights"*.

Sensitive Data

This indicator pertains to a barrier to the creation of knowledge through knowledge sharing among PR professionals since the interviewees mentioned that they avoid sharing

databases with their colleagues in order to protect their clients' sensitive data. Creating knowledge out of Big Data requires special operations which in the past were not needed, and has to be handled carefully in order to protect their clients' privacy. The professionals reinforced their effort to process data generated by this growth through online communication and social media while maintaining an ethical PR practice that doesn't put clients' personal data at stake. Participant11 said: "*We don't use shared databases because we pay attention on how to collect data and how to use it. Especially with the new legislations that will be applied this year. We do more ethical PR and stick to the law"*. Another participant (P7), working for a reputable bank described the type of data she handles, and the measures taken in order to be safeguarded even within her organization: *"The type of data is a variety of data for KYC (Know Your Customer), all the data about the clients, the services, the data of transactions, the personal data etc. We always use Chinese walls when we share databases. The use of Big Data must be done under the umbrella of safety. There are so many safety barriers when you use data"*.

RQ3: "In which ways Big Data change decision making processes in the context of the PR profession?"

The findings showed that the PR professionals envisage potential from Big Data in the management of their decision-making strategy, due to the acquired knowledge regarding their publics of interest. Three indicators emerged elucidating the analogous changes in the decision making processes: velocity, accuracy, and proactivity of decisions; enhanced evaluation of performance; equal importance of the insights deriving from PR professionals and data.

Velocity, Accuracy, Proactivity of decisions

The interviewees considered Big Data crucial in acquiring knowledge about their publics of interest. This knowledge was in turn mentioned as a driver for faster and more accurate decisions since they know their target audience and they can adjust their decision making strategy accordingly. Participant8 explained by adding a comparison to traditional PR practices: "*Decision making is much faster. Actually, to take a decision you need to analyze the data and it's all done digitally, it's all online, it's all available and it's easy…I also think that decisions nowadays are much more accurate than they used to be. So we know exactly who the target audience is, we know exactly their patterns, we know exactly what they need and exactly how to reach to them. Before it was too vague. Now it's fast, concrete and accurate"*.

In the same perspective, the interviewees reported that Big Data technologies offer useful insights that help them judge all the alternatives during the decision-making process, and act proactively before a final decision is reached. Participant19 said: *"I think that one thing that has changed decision making is when the decision is being made. Now you can see what you are doing well so you can speed up the process. You can act proactively and during the decision-making process"*. Furthermore, the professionals mentioned that Big Data analytics enhance proactivity when having to make decisions in crisis management. One of them *(Participant4)* explained that by having access to publics' data enhances her agility in preventing or better tackling crisis situations that can easily be sparkled on social media and threaten the firm's reputation: "*The decision making process depends on being alert and being on top of the news…Big Data and accessibility of data is crucial for the development of this process. For example, responding to a crisis on social media which can potentially damage the reputation of a company. You need to have your crisis communication strategy in*

order to tackle that and respond immediately. So you have to be really agile and jump on the conversation online and offline to have your key messages on board. If you have access to online data then you can easily address these crises".

Enhanced Evaluation of performance in decision making processes

It was found that PR professionals consider Big Data as a useful tool towards strategic decision making since the measurable knowledge they can gain, helps them evaluate better the outcome of their decisions, and provide accountability to their clients, which enhances the quality of their decisions. Participant13 said: *"I think the performance is something that you can measure more easily now so you can make better and more precise decisions based on Big Data"*. In terms of accountability, another interviewee (Participant5) mentioned that by being able to evaluate the outputs of his campaigns helps him better support his decisions to his clients: *"A big advantage for PR professionals is that it will help them show their accountability because it is now less difficult to show what the output of your campaigns can be. This is also a big threat for some PR professionals because they try to shy away from accountability a little bit sometimes. For me (as a consultant) it helps to prove what I do and what my advice is but also helps to achieve your objectives".*

PR professionals' and data insights equally important for the decision making process

Despite the potential that PR professionals acknowledge in Big Data enhancing the decision making process, it was also found that their insights are considered equally important for them in reaching strategic decisions. The interviewees emphasized on their sense making of PR as a two-way communication activity, aiming to create mutually beneficially relationships with publics. Towards this perspective they supported a decision making process that incorporates insights from both the human versatility and Big Data.

Participant19 said: *"The human factor is also needed in the era of Big Data. A big element of working with PR is to understand the market and to be able to read through the lines, to create relationships and to know what is important. Data is just a step on the way but is not going to take you all the way. As a conclusion, I think that gut feeling and data driven decisions have to go hand in hand"*.

Conclusion

This thesis aimed to investigate the change brought by Big Data in the context of the PR profession, through the interrelated processes of sense-making, knowledge creation, and decision-making (Choo, 1996). Three research questions were set to analyze the thoughts and opinions of PR professionals, in order to reach the conclusions outlined hereafter.

Big Data and Sense Making in the context of the PR profession

The research conducted towards the first research question attempted to discover how PR professionals make sense of Big Data in the context of the PR profession. According to Weick (1995), sense making initiates with an ecological change to the organizational environment during which individuals draw history from the past to make sense of the change and reach from there a common scheme of interpretation. The results of this research align with this view and extend it for the sense-making of Big Data in the context of the PR practice since PR professionals make sense of Big Data as a phenomenon that brought an ecological change to the PR industry. This was based on the input of vast and complex volumes of data, which digitalized the field, and provided an enhanced ability to monitor the environment and target publics of interest.

Previous research (Phillips & Young, 2009; Grunig, 2009;2006), argued that with the outburst of digital media PR professionals will be unable to control the inflow of data, and this will change radically the PR practice. According to Grunig (2009; 2006), if digital media

are exploited as a bridging activity in which PR professionals build links with the publics in their environment, then PR will be transformed in a strategic, dialogical, and socially responsible function. The results ascertain empirically this theory since PR professionals make sense of Big Data as an immense input of data deriving from the outbreak of social media which constitutes a linkage to their social environment and their publics. This outcome supports a transformation of the PR practice per se in a strategic, two-way and interactive paradigm. Nevertheless, it was also found that despite the conceptualization of Big Data's potential to change the PR field, the adoption of analytical processing in-house, is still at an early stage for small PR firms, while only a few reputable corporations are able to adopt or afford it.

Furthermore, according to George et al. (2014), there is little management and organizational research regarding the sense-making of Big Data as "big" rather than "smart" - meaning the valuable insights that can be derived from the immense volume of data. This research provides empirical evidence towards a conceptualization of Big Data which goes beyond its plain characterization as "big", adding the aspect of "smart" data, that lead to helpful insights on behavioral trends and real-time engagement for publics of interest.

Big Data and Knowledge Creation in the context of the PR profession

The second research question looked to discover the ways in which Big Data change the creation of knowledge in the PR profession. It was found that PR professionals use Big Data analytical tools to process data from digital media and facilitate the creation of knowledge regarding their strategic publics' preferences, engagement, and behaviors, in order to segment them and adjust their message accordingly. This finding concurs with theory from previous studies according to which data analytic techniques applied to online materials can create knowledge about PR firms' publics of interest by measuring online content (Grunig &

Huang, 2000; Grunig, 2002; 2009; Hon & Grunig, 1999).

Another finding is that Big Data help PR professionals acquire tangible insights by creating measurable and quantifiable knowledge through specific applications or databases. Visualizations, infographics, and reports, help them compare with the competition and evaluate their short-term programs. This knowledge is also used as research evidence, for clients or managers that may ask for quantitative evidence (Chang, 2000; Stoffels, 1994). This finding extends previous research by Hon and Grunig (1999) - who argued that PR practitioners need different tools and techniques in order to measure relationships - since it was found that Big Data facilitate the creation of measurable knowledge by providing tangible insights for the relationships of the organization with its publics, helping to *"show the overall ROI"* of the PR practice (Grunig, 2006, p.167).

A key finding regarding the creation of knowledge is that PR professionals acquire new knowledge from Big Data through knowledge sharing with the discipline of data scientists. Since the participants' knowledge in terms of data processing was found to be limited, data experts' know-how is exploited and becomes explicit through reports which include the results of data processing, and that are communicated to the PR professionals. This finding aligns with an extensive number of studies regarding knowledge management, that highlight the importance of knowledge sharing for ameliorated firm performance and innovation competency (Liao, Fei, & Chen, 2007; Liu & Philips, 2011; Berger, 2015). Furthermore, it concurs with Nonaka's (1994) knowledge creation theory, according to which, new knowledge can be created when individuals share their tacit knowledge with other organizational members, by converting it to explicit, which can be easily communicated.

Moreover, this finding sheds light on the interplay between sense-making and knowledge creation through interdisciplinarity (Siedlok & Hibbert, 2014). According to Davies et al. (2011), in a profession that is based in online media - sense-making and interdisciplinarity

are considered part of crucial interrelated skills for the future. PR professionals cooperate with data scientists in their attempt to make sense and create knowledge out of big data, integrating two different disciplines and bodies of knowledge to produce a more powerful meaning or outcome (Rhoten & Pfirman, 2007). Since the need for sense-making and creation of knowledge out of Big Data crosses the context of the PR profession, further research may explore the interdisciplinarity of the PR field with the data science.

Another key finding that emerged, was the sensitive character of the data, which inhibits knowledge sharing among PR professionals constituting a barrier to the creation of knowledge. In practice, they have to handle carefully the vast input of data in order to protect their clients. Despite the measures taken, they are reluctant in sharing explicit knowledge through shared databases with other PR professionals. Howbeit, this finding provides empirical evidence to Grunig's (2006) theoretical edifice and the literature of Corporate Social Responsibility, which support a shift to an ethical PR practice. Consequently, PR in strategic management should be able to promote ethics, and legitimize its activities, in case they want to incorporate publics in the function (Capriotti & Moreno, 2006; Lee & Carrol, 2011). The interviews shed light on these theories since the measures in terms of personal data protection provide an ethical barrier to the knowledge that can be derived from Big Data, protecting equally the interests of the publics and the organization. This finding provides an opportunity for further research on the creation of knowledge via Big Data in PR, regarding the General Data Protection Regulation (GDPR), which is expected to bring many changes in the processing of publics' information.

Big Data and Decision Making in the context of the PR profession

The third research question attempted to investigate the ways in which Big Data change decision-making processes in the context of the PR practice. An Excellent PR practice

involves publics in participative decision-making, and PR professionals act as *"accountable disseminators"* and *"interpreters of the decisions"* (Mykkänen & Vos, 2015, p. 8). Similarly, this study showed that PR professionals make use of Big Data analytical tools, like visualizations, infographics, reports, and machine learning to evaluate the outcome of their decisions and provide accountability to their clients, the publics or the management. This finding provides empirical evidence regarding a shift to a strategic management function of PR, which incorporates perspectives from the environment to the decision-making process, in contrast to the top-down decisions of the traditional PR practice.

According to Chang, Hsu and Shiau (2013), the knowledge that is being created from the smart processing of data, aims to enhance decision making processes by optimizing the accuracy and minimizing the time spent on the decisions. This appeared to be the case for the PR professionals who participated in this research and declared that the stream of knowledge acquired by Big Data technologies, enhanced the velocity and the accuracy of their decisions. By using Big Data tools and identifying publics of interest, PR professionals could strategically design communication programs and were able to identify and code concepts such as issues, constraints, or emerging crises, which in turn were communicated to management during or after the decision-making process. Grunig (2006), suggested that PR professionals in strategic management who identify strategic publics involved in their decisions need tools for scenario building in order to predict issues. The results provided evidence that Big Data technologies equip PR professionals with these tools in order to act proactively, before and during the decision-making process, and enhance agility when issues or crises emerge. This finding provides an opportunity for further research on Big Data and scenario building in the context of the PR profession.

Finally, it was found that PR professionals consider insights from PR professionals and

Big Data technologies, equally important towards an enhanced decision-making process. This outcome is in line with Poleto, Carvahlo, and Costa (2015), who argued that Big Data may add value to the decision making process once it is used appropriately, but it will not guide the decision or juxtapose alternatives. Therefore, the "*tacit knowledge, perceptions, and personalities*" of the decision makers are important (p. 20). This research provided empirical evidence towards this assumption in the context of the PR profession. The PR professionals reported that the versatile nature of human-beings is still needed, in a profession that mainly relies on establishing and maintaining relationships, and therefore, decisions cannot be solely data-driven.

Discussion

To answer the overarching research question, the Big Data phenomenon was approached through the three interrelated arenas of sense-making, knowledge creation and decision-making, in order to investigate how PR professionals leverage its potential. For the first arena of sense making, it was found that PR professionals make sense of Big Data as a phenomenon that brought an ecological change in their practice due to the input of vast and complex volumes of data, which digitalized the field, and provided an enhanced ability to monitor the environment and segment publics of interest. This change guided the transition to the next arena where it was found that Big Data analytical tools facilitate the creation of knowledge by providing the practice with advanced environmental scanning capabilities and by fostering knowledge sharing with the discipline of data scientists. Subsequently, it was found that the knowledge derived from Big Data helps PR professionals evaluate their performance and be proactive during the decision-making process, leading to faster and more accurate decisions.

This research provides empirical evidence to the literature which supports a shift to a

strategic management paradigm of PR (Phillips & Young, 2009; Grunig, 2009;2006; Grunig & Huang, 2000; Hon & Grunig, 1999), since it was found that Big Data may transform PR professionals to capable environmental scanners, able to identify their strategic publics and satisfy their needs. This shift could be considered compelled due to the outburst of social media and the Internet but was found to be accompanied by ethical standards. Traditional practices remain constant and incorporated in the practice along with the aid of Big Data technologies. Future research could provide further empirical evidence regarding the knowledge that can be derived from Big Data through the interdisciplinarity of the PR field with the data science, and the ethical barriers to the elicitation of knowledge from Big Data due to the General Data Protection Regulation (GDPR). Future research could also investigate further Big Data and scenario building for strategic decision making in the context of the PR profession.

Limitations

A limitation for the generalizability of the findings could be considered the sample upon investigation which was segmented to the PR profession. However, further research can compare it with the findings of other researchers in the PR field, and some features may emerge as comparable to a wider set of professionals and call for "*moderatum generalizations*" (Williams, 2000, p. 215). Furthermore, the PR context was common ground for all the participants but this was not the case for their cultural backgrounds and native languages. This diversity invoked minor difficulties during the interviews and the transcription of the recordings, but in general, it could be considered a challenge for the transferability of the study. Future researchers could expand this study and utilize the approach of triangulation as well as the quantitative method of surveys to result in greater confidence for their results (Webb et al., 1966; Deacon et al., 1998). Moreover, the fact that

little prior empirical research was conducted regarding this topic, did not allow for this research to build upon solid scientific findings.

Practical Implications

This research has shown that Big Data has changed the PR profession and professionals envisage potential from the rigorous insights that can be derived from it. According to Grunig (2009), many PR practitioners make use of the opportunities offered by digital technologies in the base of a traditional, asymmetrical communication model because they lack the knowledge or the necessary tools to scan their environment and create knowledge out of it. Howbeit, this research showed that there is potential both in the realization of the importance of Big Data technologies, and its adoption in the base of a two-way symmetrical model - even if this adoption is at an early stage for small PR agencies. Sistrix API, Search Engine Optimization (SEO), Google Analytics, Gorkana, and Fashion GPS were among the reported analytical tools while the data science is entering the PR field. The early adopters of Big Data technologies will be the first to reap real-life benefits by transforming "Big" to "Smart" Data, leading the shift to a management paradigm in the PR industry.

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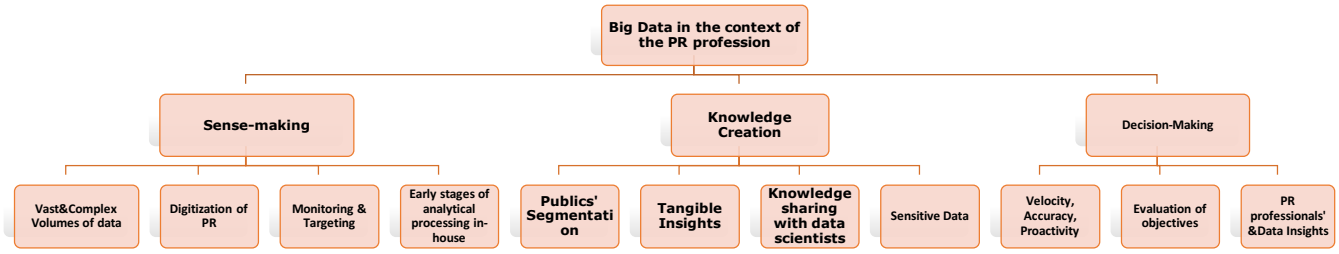
Appendix

Concept – Indicator model

Big Data in the context of the PR Profession



Code Alias

Color	Parent code	Code	Coded segments of all documents
●	ECOLOGICAL CHANGE via BD	DEFINITION OF BIG DATA	13
●	Sense-making of BD	ECOLOGICAL CHANGE via BD	13
●		DECISION-MAKING	19
●	DEFINITION OF PR	Free publicity	2
●	Audience targeting	Easier Access to Journalists/Contacts	6
●	Measurable/tangible feedback/Insights	Strategy development	2

●	Digitalization of PR/Automation of data processing	Social Media	9
●	Measurable objectives	Assimilation of BD to traditional PR	4
●	Segmenting Publics	Trending topics	3
●	DECISION-MAKING	Predictability/Proactivity	8
●	Accuracy/Efficacy	Adaptability	2
●	Social Media	Online PR	3
●	KNOWLEDGE SHARING OF BD	Protection of clients' data	1
●	PR PROFESSIONALS" KNOWLEDGE OF BD	Good Knowledge	4
●	DEFINITION OF PR	Awareness	1
●	KNOWLEDGE CREATION	Velocity	2
●	Crisis management	Agility	1
●	Limited	So we know how to talk about it and we know what it can potenti	1
●	Monitoring	One main thing that has been transformed by Big Data is being a	1
●	Social Media	Internet	1
●	Predictability/Proactivity	Big Data facilitate decision making. If you understand exactly	1
●	Message engineering	you might be better prepared in order to not create misconcepti	1
●	DEFINITION OF BIG DATA	Machine Learning/NLP/Deep Learning	2
●	Velocity	Also make decision faster. So it's going to accelerate the deci	1
●	So you can make things more visible but there is still no onlin	Competition	1
●	Competition	In Germany if we have one big competitor in order to collect da	1
●	Evaluation of objectives/performance	I think the performance is something that you can measure more	1
●	Processing (Automated)	What you have to do when you are processing Big Data is to find	1
●	Human & Data insights	Data is just a step on the way but is not going to take you all	1
●	Sense-making of BD	DEFINITION OF PR	12
●	Accuracy/Efficacy	Targeting and Segmenting audiences	12
●	DEFINITION OF PR	Relationship building/Interaction#traditional PR	14
●	KNOWLEDGE CREATION	PR PROFESSIONALS" KNOWLEDGE OF BD	1

●	DEFINITION OF BIG DATA	Processing (Automated)	4
●	PR PROFESSIONALS" KNOWLEDGE OF BD	Limited	11
●	KNOWLEDGE SHARING OF BD	Digital analytics	1
●	Targeting and Segmenting audiences	Message engineering	2
●	Segmenting Publics	Monitoring	5
●	Audience targeting	Monitoring	4
●	Measurable objectives	Evaluation of objectives	4
●	DECISION-MAKING	Accuracy/Efficacy	11
●		Sense-making of BD	15
●	Measurable/tangible feedback/Insights	Visualizations	1
●	Crisis management	The decision making process depends on being alert and being on	1
●	Predictability/Proactivity	Crisis management	2
●	Processing (Automated)	I think Big Data is any amount of information that you can gath	1
●	ECOLOGICAL CHANGE via BD	Need for capital	1
●	Velocity	Big Data facilitate decision making. If you understand exactly	1
●	Social Media	we had to pull all that data out with 24 hours otherwise they w	1
●		KNOWLEDGE CREATION	20
●	Measurable objectives	Support with Data	1
●	PR PROFESSIONALS" KNOWLEDGE OF BD	BASIC	6
●	KNOWLEDGE CREATION	KNOWLEDGE SHARING OF BD	0
●	DEFINITION OF BIG DATA	Vast and complex volumes of data	16
●	Audience targeting	Landscape analysis	2
●	Segmenting Publics	Targeted messaging	5
●	KNOWLEDGE SHARING OF BD	Knowledge sharing	18
●	DECISION-MAKING	Velocity	11
●	Measurable/tangible feedback/Insights	ROI	1
●	DEFINITION OF BIG DATA	Sensitive Data	6
●	ECOLOGICAL CHANGE via BD	The basic principles remain the same but the digital communicat	1
●	Digitalization of PR/Automation of data processing	When you were comfortable thinking that you could send out pres	1
●	Social Media	For example, when we have fashion week events we have to monito	1

●	DECISION-MAKING	Human & Data insights	7
●	KNOWLEDGE CREATION	Engagement	2
●	KNOWLEDGE SHARING OF BD	Social Media	4
●	DEFINITION OF PR	Persuasion	5
●	DEFINITION OF BIG DATA	Big Data is about aggregating and analyzing a lot of data. For	1
●	Audience targeting	Real time Engagement with audiences	1
●	ECOLOGICAL CHANGE via BD	Early stage of adoption	9
●	Segmenting Publics	In the past it was not based on real knowledge and what you see	1
●	Measurable/tangible feedback/Insights	If you see that your campaign is not working well you could be	1
●	Social Media	I think it's the social media that really made change to us. Wh	1
●	DECISION-MAKING	Complete process	1
●	ECOLOGICAL CHANGE via BD	Measurable objectives	8
●	KNOWLEDGE CREATION	Creativity	2
●	DEFINITION OF PR	Messaging activity/Traditional PR	5
●	DEFINITION OF BIG DATA	Information	10
●	Measurable/tangible feedback/Insights	But it's also in the perception of the customer that they would	1
●	Segmenting Publics	It's kind of weird how a set of numbers has to do with press re	1
●	DECISION-MAKING	Evaluation of objectives/performance	11
●	DEFINITION OF PR	Firm reputation/Build trust	9
●	DEFINITION OF BIG DATA	Volumes, velocity, variety of data	3
●	KNOWLEDGE CREATION	Adaptability	1
●	ECOLOGICAL CHANGE via BD	Digitalization of PR/Automation of data processing	7
●	Segmenting Publics	It's more an audience targeting knowledge like you can segment	1
●	Measurable/tangible feedback/Insights	In traditional PR you would get figures like the estimated adve	1
●	KNOWLEDGE CREATION	Segmenting Publics	26
●	DECISION-MAKING	Accountability	1
●	DEFINITION OF BIG DATA	Prediction tool	2
●	ECOLOGICAL CHANGE via BD	Intelligence	1
●	DEFINITION OF BIG DATA	Awareness	1
●	KNOWLEDGE CREATION	PR is free publicity not marketing	1

●	DECISION-MAKING	Digital based profession/ Data driven decisions	3
●	ECOLOGICAL CHANGE via BD	Velocity	3
●	KNOWLEDGE CREATION	Marketing team for BD analytics	1
●	DEFINITION OF BIG DATA	Tool for strategic decision-making	4
●	ECOLOGICAL CHANGE via BD	Audience targeting	27
●	KNOWLEDGE CREATION	So you can make things more visible but there is still no onlin	1
●	ECOLOGICAL CHANGE via BD	Content creation	4
●	KNOWLEDGE CREATION	Measurable/tangible feedback/Insights	15
●	KNOWLEDGE CREATION	If for example I get an interview with my director in a hard co	1

Frequency of codes

	Frequency	Percentage	Percentage (valid)
Large volumes of data/Vast databases	16	80.00	80.00
Audience targeting	15	75.00	75.00
SENSE_MAKING OF BD	15	75.00	75.00
DEFINITION OF BIG DATA	13	65.00	65.00
ECOLOGICAL CHANGE via BD	12	60.00	60.00
Relationship building/Interaction#traditional PR	12	60.00	60.00
DEFINITION OF PR	12	60.00	60.00
Firm reputation/Build trust	9	45.00	45.00
Information	9	45.00	45.00
Social Media	8	40.00	40.00
Digitalization of PR/Automation of data processing	7	35.00	35.00
Measurable objectives	7	35.00	35.00
Messaging activity/Traditional PR	5	25.00	25.00
Processing (Automated)	4	20.00	20.00
Persuasion	4	20.00	20.00
Early stage of adoption	4	20.00	20.00
Sensitive Data	4	20.00	20.00
Content creation	3	15.00	15.00
Assimilation of BD to traditional PR	3	15.00	15.00
Evaluation of objectives	3	15.00	15.00
Volumes, velocity, variety of data	3	15.00	15.00
Velocity	3	15.00	15.00
Tool for strategic decision-making	3	15.00	15.00

Free publicity	2	10.00	10.00
Machine Learning/NLP/Deep Learning	2	10.00	10.00
Prediction tool	2	10.00	10.00
Big Data is about aggregating and analyzing a lot of data. For	1	5.00	5.00
Awareness	1	5.00	5.00
The basic principles remain the same but the digital communicat	1	5.00	5.00
When you were comfortable thinking that you could send out pres	1	5.00	5.00
What you have to do when you are processing Big Data is to find	1	5.00	5.00
Intelligence	1	5.00	5.00
Need for capital	1	5.00	5.00
Awareness	1	5.00	5.00
I think Big Data is any amount of information that you can gath	1	5.00	5.00
Support with Data	1	5.00	5.00
DOCUMENTS with code(s)	20	100.00	100.00
DOCUMENTS without code(s)	0	0.00	-
ANALYZED DOCUMENTS	20	100.00	-

	Frequency	**Percentage**	**Percentage (valid)**
KNOWLEDGE CREATION	19	95.00	95.00
Segmenting Publics	19	95.00	95.00
Knowledge sharing	13	65.00	65.00
Limited	10	50.00	50.00
Measurable/tangible feedback/Insights	9	45.00	45.00
BASIC	6	30.00	30.00
Monitoring	4	20.00	20.00
Targeted messaging	4	20.00	20.00
Social Media	4	20.00	20.00
Trending topics	3	15.00	15.00
Good Knowledge	3	15.00	15.00
Online PR	3	15.00	15.00
Engagement	2	10.00	10.00
Creativity	2	10.00	10.00
Strategy development	2	10.00	10.00
Velocity	2	10.00	10.00
So you can make things more visible but there is still no onlin	1	5.00	5.00
Competition	1	5.00	5.00
Protection of clients' data	1	5.00	5.00

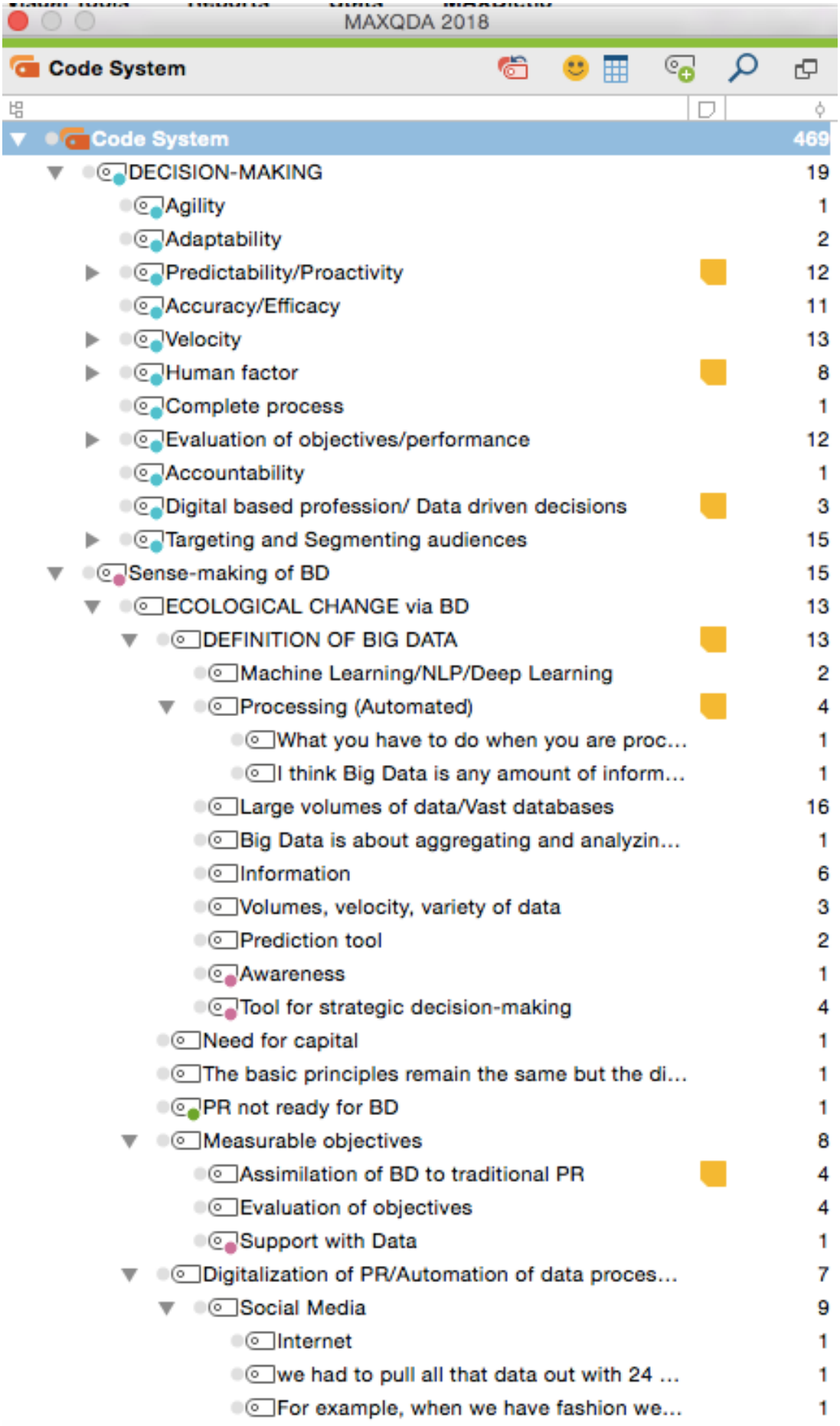
It’s more an audience targeting knowledge like you can segment	1	5.00	5.00
In the past it was not based on real knowledge and what you see	1	5.00	5.00
PR is free publicity not marketing	1	5.00	5.00
Adaptability	1	5.00	5.00
It’s kind of weird how a set of numbers has to do with press re	1	5.00	5.00
If for example I get an interview with my director in a hard co	1	5.00	5.00
In traditional PR you would get figures like the estimated adve	1	5.00	5.00
Marketing team for BD analytics	1	5.00	5.00
But it’s also in the perception of the customer that they would	1	5.00	5.00
Digital analytics	1	5.00	5.00
ROI	1	5.00	5.00
PR PROFESSIONALS" KNOWLEDGE OF BD	1	5.00	5.00
In Germany if we have one big competitor in order to collect da	1	5.00	5.00
If you see that your campaign is not working well you could be	1	5.00	5.00
Visualizations	1	5.00	5.00
KNOWLEDGE SHARING OF BD	0	0.00	0.00
DOCUMENTS with code(s)	20	100.00	100.00
DOCUMENTS without code(s)	0	0.00	-
ANALYZED DOCUMENTS	20	100.00	-

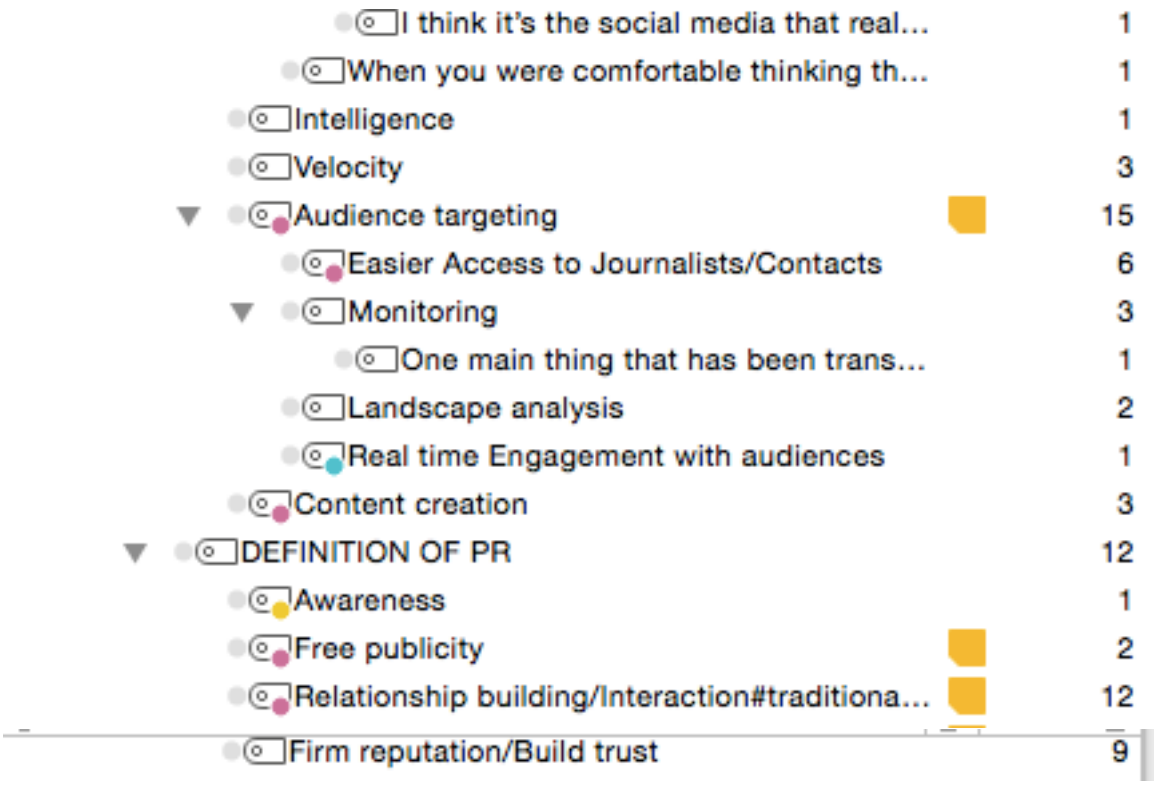
	Frequency	**Percentage**	**Percentage (valid)**
DECISION-MAKING	19	95.00	95.00
Targeting and Segmenting audiences	12	60.00	60.00
Evaluation of objectives/performance	11	55.00	55.00
Accuracy/Efficacy	9	45.00	45.00
Velocity	9	45.00	45.00
Predictability/Proactivity	8	40.00	40.00
Human & Data insights	7	35.00	35.00
Digital based profession/ Data driven decisions	3	15.00	15.00
Message engineering	2	10.00	10.00
Adaptability	2	10.00	10.00
Crisis management	2	10.00	10.00
The decision making process depends on being alert and being on	1	5.00	5.00
Big Data facilitate decision making. If you understand exactly	1	5.00	5.00
Data is just a step on the way but is not going to take you all	1	5.00	5.00

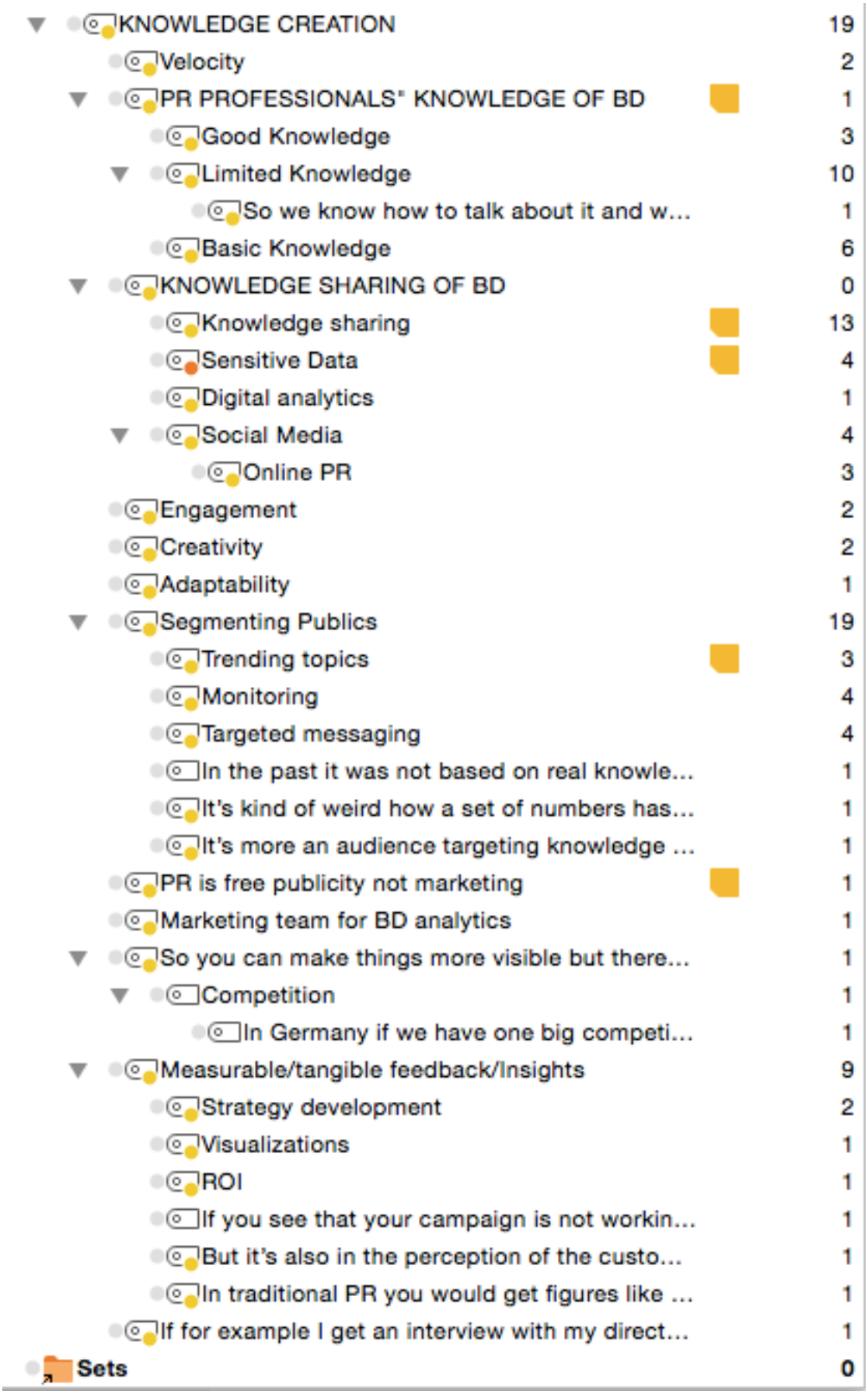
Accountability	1	5.00	5.00
Complete process	1	5.00	5.00
you might be better prepared in order to not create misconcepti	1	5.00	5.00
Agility	1	5.00	5.00
Also make decision faster. So it's going to accelerate the deci	1	5.00	5.00
Big Data facilitate decision making. If you understand exactly	1	5.00	5.00
I think the performance is something that you can measure more	1	5.00	5.00
DOCUMENTS with code(s)	20	100.00	100.00
DOCUMENTS without code(s)	0	0.00	-
ANALYZED DOCUMENTS	20	100.00	-

Document group

	Frequency	Percentage	Percentage (valid)
	20	100.00	100.00
TOTAL (valid)	20	100.00	100.00
Missing	0	0.00	-
TOTAL	20	100.00	-


MAXQDA 2018
Code System
Code System 469
DECISION-MAKING 19
Agility 1
Adaptability 2
Predictability/Proactivity 12
Accuracy/Efficacy 11
Velocity 13
Human factor 8
Complete process 1
Evaluation of objectives/performance 12
Accountability 1
Digital based profession/ Data driven decisions 3
Targeting and Segmenting audiences 15
Sense-making of BD 15
ECOLOGICAL CHANGE via BD 13
DEFINITION OF BIG DATA 13
Machine Learning/NLP/Deep Learning 2
Processing (Automated) 4
What you have to do when you are proc... 1
I think Big Data is any amount of inform... 1
Large volumes of data/Vast databases 16
Big Data is about aggregating and analyzin... 1
Information 6
Volumes, velocity, variety of data 3
Prediction tool 2
Awareness 1
Tool for strategic decision-making 4
Need for capital 1
The basic principles remain the same but the di... 1
PR not ready for BD 1
Measurable objectives 8
Assimilation of BD to traditional PR 4
Evaluation of objectives 4
Support with Data 1
Digitalization of PR/Automation of data proces... 7
Social Media 9
Internet 1
we had to pull all that data out with 24 ... 1
For example, when we have fashion we... 1


I think it's the social media that real... 1
When you were comfortable thinking th... 1
Intelligence 1
Velocity 3
Audience targeting 15
Easier Access to Journalists/Contacts 6
Monitoring 3
One main thing that has been trans... 1
Landscape analysis 2
Real time Engagement with audiences 1
Content creation 3
DEFINITION OF PR 12
Awareness 1
Free publicity 2
Relationship building/Interaction#traditiona... 12
Firm reputation/Build trust 9


KNOWLEDGE CREATION 19
Velocity 2
PR PROFESSIONALS' KNOWLEDGE OF BD 1
Good Knowledge 3
Limited Knowledge 10
So we know how to talk about it and w... 1
Basic Knowledge 6
KNOWLEDGE SHARING OF BD 0
Knowledge sharing 13
Sensitive Data 4
Digital analytics 1
Social Media 4
Online PR 3
Engagement 2
Creativity 2
Adaptability 1
Segmenting Publics 19
Trending topics 3
Monitoring 4
Targeted messaging 4
In the past it was not based on real knowle... 1
It's kind of weird how a set of numbers has... 1
It's more an audience targeting knowledge ... 1
PR is free publicity not marketing 1
Marketing team for BD analytics 1
So you can make things more visible but there... 1
Competition 1
In Germany if we have one big competi... 1
Measurable/tangible feedback/Insights 9
Strategy development 2
Visualizations 1
ROI 1
If you see that your campaign is not workin... 1
But it's also in the perception of the custo... 1
In traditional PR you would get figures like ... 1
If for example I get an interview with my direct... 1
Sets 0

Interview guide

A. General questions

1. Can you provide me with your name?
2. Which is your professional experience in PR and which is your current profession?

B. Big Data and sense-making

1. Which is your definition of PR?
2. Which is your definition for Big Data?
3. How do you think the PR field has been transformed by the emergence of the Big Data phenomenon and in which ways?
4. Can you think of some traditional PR techniques that have been replaced –or will be replaced in the near future- by Big Data technologies?

C. Big Data and knowledge creation

1. How do you think Big Data changed the way you create knowledge about your projects/campaigns, your clients and the PR practice overall?
2. What type of new knowledge do you think is being created now with Big Data in the context of the PR profession?
3. Which is your personal knowledge regarding Big Data technologies? (e.g. digital analytics, machine learning etc.).

   Follow-up questions: Do you share this knowledge with your colleagues and in which ways (e.g. do you make use of shared databases)? What types of data do you use and how much is documented?

D. Big Data and decision making

1. In which ways do you think that the use of Big Data tools changed decision-making in the PR practice?