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Managing Change in the Public Relations Industry: The Impact and Potential of Big Data.

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Abstract

Big Data is a disruptive technology that is reshaping the way we do business. By gaining more personalised insights into public interests; businesses are able to remodel their practices to become more efficient and offer a more personalised service generating additional value for the customer. It was found that there was a lack of literature looking into the potential of Big Data for PR agencies, and as a consequence, the purpose of this research was to analyse how Big Data will change the PR Industry in the future. We set out to study a broad cross-section of PR agencies operating within the PR Industry in Northern Europe, so as to draw conclusions which were as generalisable as possible. Our analysis was therefore based on 18 interviews with PR professionals working at 5 agencies in 3 different countries (Denmark, Sweden and the U.K).

Our research shows, through an analysis of relevant literature and our own empirical data, that Big Data is indeed on course to change this industry and the methods used by PR professionals in their day-to-day work. Those working within the industry are aware of the potential value that the technology can bring to their client service and their concerns regarding ethical or practical roadblocks to using Big Data are limited. We were also able to show how agencies are preparing for this disruptive technology in different ways, the most effective of these being to hire a member of staff responsible for advising and educating other professionals about the potential of Big Data. Finally, this research was able to show that agencies are similar in their outlook towards Big Data, regardless of which of the 3 countries included in this study they base their operations. In fact, the main hindrance for individual agencies in adopting Big Data practices was the knowledge and demand of their clients for a data driven approach to the changing PR landscape.

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1. Introduction

1.1 Purpose & Background

The purpose of our thesis is to analyse how Big Data will change the Public Relations (PR) Industry in the future. For the scope of this research, we define the 'PR Industry' as the marketplace of PR agencies operating as third-parties on behalf of, but separate from, their client organisations.

Understanding the changing needs and desires of customers in order to maintain existing business and find new opportunities is the lifeblood of any company operating within a competitive environment. The phrase, '*get to know your customers*', is therefore one which undoubtedly reverberates around the boardrooms of the smallest local companies, up to the largest multi-national corporations, as managers everywhere strive to stay ahead of their competition.

PR professionals play an important role in this competitive marketplace. By acting as an intermediary between the organisation they serve and the general public, PR agencies work to add value for their clients by finding the best way in which to communicate products, services, values and identities to the consumer base. This function therefore requires PR professionals to have a comprehensive knowledge of who they need to communicate with, what needs to be transmitted and how it should be said. Getting to know a company's customers is arguably of the same - if not greater - importance for the PR professionals responsible for communicating with the public as it is for any employee in the client organisations that they serve.

Sense making of customer characteristics is therefore one of the primary roles of anyone working within the PR Industry. However, the good news for the wary PR professional is that customers are now generating more information about themselves than ever before; all of which has the potential to be used to understand how best to efficiently communicate messages with the public.

In the age of near-constant connectivity, internet connected populations now leave a digital footprint in everything they do; from the first time they check their email in the morning, to the bus they take to work, the websites they visit during the day, the items they buy in the supermarket, and the tweets they send at night, people now create a comprehensive digital impression of their behaviour and preferences. What is more, the variety and volume of data being collected will only increase as the constant march of internet connected technology leads to an ever-more interconnected world.

The amount of data being produced and stored as a result of our connected lives is often hard to comprehend. By 2019, it is estimated that more data will be transmitted over the internet in a single year than has been transmitted in each and every year combined since the inception of the internet in 1985 (CISCO, 2015). By 2020, the amount of data being produced is predicted to increase at a rate of 4300% each year and, significantly, some 70% of this data will be created by individual people as they go about their normal day-to-day lives (CSC, 2012). Furthermore, 80% of total data will be stored and managed by commercial enterprises (CSC, 2012). It is therefore unsurprising that the term 'Big Data' has emerged as the go-to phrase used to try and encapsulate this trend.

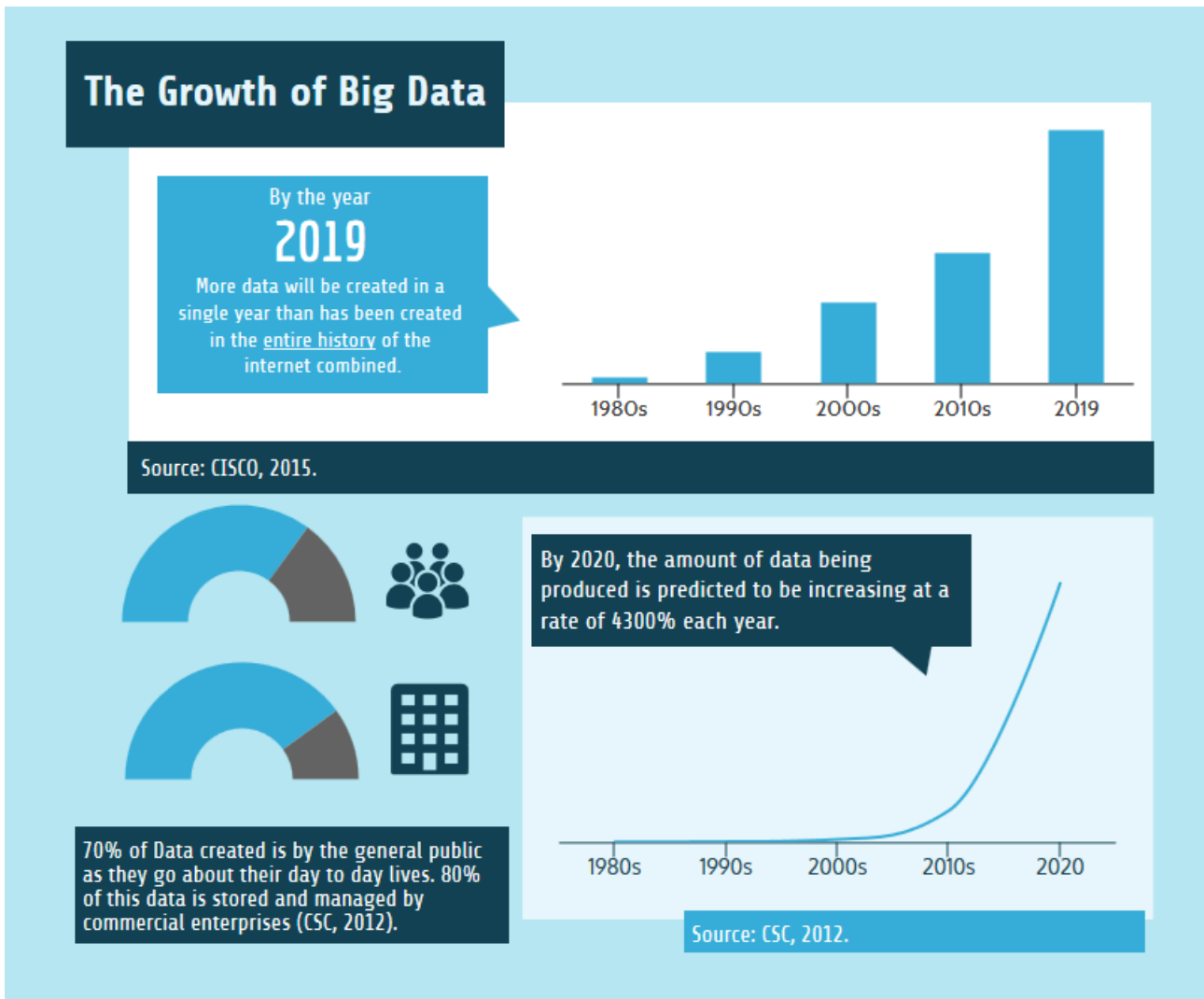


Figure 1: The Growth of Big Data.

As can be observed from these statistics, a huge amount of data regarding the behaviour of customers is not only being created, but is also being stored by the very companies who want to get to know their customers in more detail. With the right technology, knowledge and vision, PR agencies therefore have the potential to combine sets of data, analyse patterns, and make predictions about customers which will allow them to greatly increase the accuracy and value of the PR campaigns that they create.

This thesis will therefore analyse how the advent of Big Data will change the PR Industry in the future by looking at the opportunities, management challenges and practical hurdles presented by the explosion of Big Data.

This first chapter will describe the significance of our study, give a brief summary of the research questions we address in this thesis before outlining our methodological approach. It will then critically reflect on the assumptions and limitations of this project, in order to highlight these to the reader so that he or she is aware of such factors whilst proceeding to consume our research.

1.2 Significance

Before embarking on this research project we conducted a thorough literature review with the aim of exploring the topic of Big Data, its applications and its potential usages in the PR Industry. Our analysis of the available literature can be found in *Chapter 2*.

As can be expected with research surrounding new technological trends such as Big Data analytics, the literature in this subject area is young but growing rapidly. Our literature review therefore begins promptly with a discussion regarding the definition of Big Data itself, so as to state our own understanding of the terminology before proceeding with the rest of the thesis. Available research is broad when it comes to the wider study of Big Data, but becomes more narrow when searching for peer-reviewed material which studies its 'real-world' applications, particularly in the PR Industry. There are a handful of journal articles and research papers which do look at the topics surrounding the use of Big Data in PR, but the literature in this area only seems to be scratching the surface.

What is significant for this thesis is that, to the best of our knowledge at the time of print, no research has been conducted which sets out to explore the attitudes and understanding of Big Data amongst practitioners working in PR agencies. In other words, this thesis provides a unique, qualitative study of personal attitudes towards technological change within the PR Industry which has not been undertaken before.

We therefore see this thesis as an addition to the academic literature in this area, and also as a valuable report for PR professionals to use in order to understand the opportunities and challenges which Big Data brings to their day-to-day work, as well as their industry as a whole.

1.3 Research Questions

Big Data terminology is a relatively recent phenomenon that has attracted significant media attention because of the constantly evolving applications of data analytics (Ward & Barker, 2013). The increasing availability of vast information streams is making it possible for businesses to create new business models, improve business services and reduce costs and risks (Mauro, Greco & Grimaldi, 2015). This has led to Big Data being implemented into a number of industries successfully, noticeable in political campaigning, where the technology is credited in helping Barack Obama retain the American presidency in 2012 (Dalton, 2016; Hellweg, 2012; Scherer, 2012). However, data analytics is not a simply concept to grasp, and as of yet, its uses have not been thoroughly applied in the PR Industry. We therefore believe that there is a gap in both the literature and in business practice which has presented an opportunity for further research. As a consequence, and to focus our research, this thesis will analyse how the use of Big Data will change the PR Industry through the following 3 research questions:

- 1) *How will Big Data allow agencies operating within the PR Industry to provide more informed and accurate campaigns for their clients?*
- 2) *How are PR agencies best advised to prepare for changes in their business models and workflows to adopt Big Data practices?*
- 3) *How will unique agency characteristics affect the ability of agencies to adopt Big Data practices?*

Further justification for these research questions - and their linkage to the purpose of this thesis - will be provided in *Chapter 3, Methodology*.

1.4 Research Design

Informed by the literature review contained in *Chapter 2*, we aim to build upon existing knowledge with regards to technological change in the PR Industry by conducting a study of the perceptions of PR professionals towards Big Data. This will allow us to study how this technology will change their industry in the words of those in the best position to judge the reality.

Our literature review will aim to highlight to the reader the potential uses (and drawbacks) of using Big Data to inform PR campaigns. It will also act to provide context to our qualitative research, which will then set out to discover the attitudes of PR professionals to these new methods and technologies within their industry. The data generated by our research will therefore allow us to gain insights and answer questions about how the technology and methods outlined in the literature will change the PR Industry on the ground, in 'real-world' settings. Qualitative research of this sort will also allow us to observe levels of preparedness in PR agencies, as well as unique characteristics of different firms, which may also affect the uptake of Big Data methodology.

Our research primarily consists of qualitative data collected through semi-structured interviews conducted at 5 PR agencies located in Denmark, Sweden and the UK. The participating agencies were; Ehrenberg Kommunikation (Copenhagen), GK Nordic (Copenhagen), FEW (Malmö), Augur (London) and Hotwire (London). We are grateful for the time, interest and assistance given to us by each agency.

At each company we attempted to interview a cross-section of the agencies' employees, with each individual harbouring a unique level of knowledge regarding Big Data and its applications. This allowed us to collect ample data to facilitate the analysis contained in this thesis. Our analysis of this qualitative data will therefore allow us to contribute to, and critically reflect upon, the literature review contained henceforth, as well as our own personal experiences of using Big Data in other industries.

Again, a full description and justification of our research design and methodology can be found in *Chapter 3*.

1.5 Assumptions, Limitations & Scope

1.5.1 Assumptions

Before beginning this research we formulated a series of basic assumptions which, once justified, provided relevance to our thesis topic. Firstly, we assumed that PR agencies are interested in remaining ahead of their competition, and resultantly, look to improve the services they provide. This was vindicated by the high-degree of positive interest we received from 5 companies in response to our initial acquisition email (*see Appendix 1*). The email, which explained how Big Data analytics may further enhance their business, facilitated positive initial discussions, which illustrated a high level of interest in this area from PR managers. The level of initial interest confirmed our assumption regarding the desire of PR agencies in staying ahead of their competition. Secondly, as our thesis relies on the accuracy of the qualitative data, we assumed that all participants answered honestly. This was rationalised by making the employees aware at the start of the interview that they could anonymise any information given, and that their

participation was voluntary. Thirdly, we assumed that the sample interview solved the research questions and the purpose of the thesis as a whole. We managed to confirm this assumption by firstly conducting a pilot interview with Ehrenberg Kommunikation, which led us to make small adjustments to the interview questions to ensure their relevance to the purpose.

1.5.2 Limitations

Similar to most research topics, whilst writing our thesis we encountered a number of limitations that impacted on the breadth of our results. To begin with, due to the intensity and time constraints of this project, we were limited in our ability to acquire more than 5 PR agencies for interviews. In addition, the agencies were all located in either Scandinavia or in London, which limits our ability to draw universal conclusions. However, this does provide an opportunity for future research of greater scale, as a larger scope of companies in a wider geographic area, may lead to further understandings on the potential use of Big Data in the PR Industry. The final limitation is that we were only able to gain access to PR agencies rather than in-house PR departments operating within a larger parent organisation. A study of such a department is another branch to this research which could be interesting to explore given the greater access to a company's owned data that an in-house PR department would have. This thesis therefore refers to the 'PR Industry' as PR agencies, working in a cross section of national markets. Despite these limitations, it is hoped that this thesis will guide managers within the PR Industry towards the potential of Big Data.

1.6 Structure

The thesis will now proceed with *Chapter 2* which contains a thorough literature review, as discussed above. *Chapter 3* will then justify our methodological approach to this research as well as our research design. *Chapter 4* will present our empirical data before *Chapter 5* conducts an analysis of this data. We then present our conclusions about how Big Data will change the PR Industry in *Chapter 6*.

2. Literature Review

2.1 Overview

As mentioned in the introduction, the overall purpose of our literature review is to highlight to the reader the potential uses (and drawbacks) of using Big Data to inform PR campaigns. While completing the literature review, we found the overarching idea of Big Data to be a relatively modern concept and, as a result, it is a topic that is evolving all the time. This presented an opportunity to identify gaps in the literature and to be able to offer new perspectives to those working in the PR Industry who are looking at potential uses of Big Data in their field.

Within this chapter, we will analyse the available literature in 4 areas;

- Definitions of Big Data
- Applications of Big Data analytics in industries other than PR
- Big Data's potential in PR
- Possible drawbacks of using Big Data

We decided upon these 4 categories as they each serve a unique role in providing a context for the reader before he or she assesses our qualitative research.

2.2 Definition of Big Data

Since the term's inception in 2001 (Laney, 2001), the understandings around the term Big Data have been rapidly evolving. With the apparent validity of Moore's Law, which highlights the constant doubling of computer processing power (Crawford, Miltner, & Gray, 2014); the subject of Big Data is likely to be very different tomorrow from what it is today. Regardless of this challenge, a rather simple understanding of the term was characterised by Microsoft, who saw Big Data as the task of using serious computing power, aligned with machine learning and artificial intelligence, to process high levels of complex data sets (Ward & Barker, 2013).

Despite its relevance, the Microsoft definition has seemingly been underused by scholars who have tried to academically polish the term over time. The commonly used, early account of Big Data was proposed by Doug Laney (2001, p1), who credited E-commerce with "exploding data management challenges along 3 dimensions: Volume, Velocity and Variety". Laney (2001) explained how the soaring use of online marketplaces enlarged the depth of available data, increased the point of interaction speed, and escalated the variety of non-aligned data structures. Laney (2001) concludes his assessment of the technology by illustrating its underlying value; which is to yield solutions to increasingly specific industry challenges.

Many scholars have added into the Big Data debate over a short space of time, but it is interesting to note that, in many cases, Laney's '3 V's' remain prominent (Stonebreaker, 2013; Ward & Barker, 2013; Gandomi & Haider, 2015). This indicates the strength to Laney's initial assessment, yet there have been justifiable developments that have since taken place. For example, Laney could not have predicted the continued rise of Social Media tools such as Facebook or Twitter. The significance of these communication channels is acknowledged by Djicks (2013) and Gandomi & Haider (2015) who include an additional V - Veracity - in their Big Data definitions. Such authors feel that, because much of the data is based on human reasoning, it should be addressed using sound methodology and analytical tools.

What is more, Mauro, Greco and Grimaldi (2015) look deeper into the benefits of the technology, which include: new cultures of decision making, improvements in business operations and processes and a reduction in costs and risks. Once again this is something acknowledged by Gandomi and Haider's (2015) understanding of Big Data, with Value also being included as an additional 'V'. They believe that data in its raw form is of low value, but once transformed and clustered it can provide high value insights (Gandomi & Haider, 2015). This appears to be an important aspect of Big Data, which has been developed through time, as data can generate valuable patterns into individual behaviours and characteristics.

It is somewhat explicit in the above paragraphs that Big Data is a complicated subject, with multiple information streams potentially yielding insights into consumer interests and behaviours. This has led to multiple scholars explaining how companies need to have the available resources to manage this technology and to maximise its value. Academics agree that companies should be investing in analytical techniques, such as; hiring specific employees, investing in faster computer processing power or organising training (Mauro, Greco & Grimaldi, 2015; Stonebraker, 2013; Biesdorf, Court & Willmott, 2013; Chen, Chiang & Storey, 2012). This is a significant element to Big Data that is seemingly missed in its definitions, as many academics are still focussed on the numerous 'V' concepts rather than some of the practical business challenges.

Moreover, because of the large variety and scope of the different definitions presented above, we decided that we should ourselves state what we believe to be a functional definition of Big Data. It was felt that such a definition was required so as to make our viewpoint on Big Data clear to the reader as well as to the PR practitioners who we would encounter during our data collection. Given the literature reviewed above, we felt the need for an academic definition which offered examples into the variety of data streams, the need for new technology to analyse the data, and the '3 V's' in one understandable definition. Throughout our extensive review, we were unable to find an existing definition that was both adequately academic and easily comprehensible. We therefore propose the following definition:

'Big Data is the combination and cross analysis of 2 or more existing data sets, such as Social Media data, web browsing behaviour and population registers, to discover new insights and create value for the owner. The data is large in volume, highly varied, created at high velocity and therefore requires new technology for it to be successfully analysed.'

2.3 Applications for Big Data in Other Industries

For the inquisitive business reader it is not enough to simply define Big Data and its uses, it is also important to demonstrate examples of the technology's successes. By doing so, this section will give legitimisation to conducting a thesis in Big Data and PR, as the evidence of successes in one industry, is likely to yield favourable results in another.

While searching for the impact of Big Data on other industries, the common result was to find the positive affect Big Data had on Barack Obama's presidential campaign in 2012. In advance of the election, Obama's team hired a company called Catalyst who looked at voter intentions, consumer spending, et cetera, to create a ranking system for who was most likely to attend a polling station and how they were likely to vote (Dalton, 2016). This was not a simple task and it took Obama's team 18 months to merge all the relevant databases together, which resulted in a new era of refined campaign tactics (Hellweg, 2012; Scherer, 2012). For example, the campaign learnt that some voters were more likely to donate if they received personalised emails from specific people, and so influential citizens such as Michelle Obama became more involved in such voter

communications (Scherer, 2012). It is therefore apparent that by utilising Big Data, Obama's team were able to benefit from more detailed voter insights, and remodelled their campaigns accordingly. However, within the Obama strategy, academics profoundly agree that the positive result were based on 2 influential components that are not always available. Firstly, the data was readily available to be analysed, and secondly, Obama's team understood the technology and were willing to adopt it in its entirety (Dalton, 2016; Hellweg, 2012; Scherer, 2012).

In addition to politics, Big Data is also having an impact on online sales and marketing. Academics are in agreement that predictive analytics is making it possible for businesses to further understand their customers' buying intentions, which they can then market to accordingly (Jobs, Aukers & Gilfoil, 2015; Spiess et al, 2014). By optimising online campaigns to focus on customer experiences and interests, firms are now more capable than ever before of providing a complete service (Spiess et al, 2014). For example, if a client regularly visits a website to purchase a specific brand, the page can now track this information so the next time the customer is online, he or she is directed to the product without the stress of browsing. As a result, Big Data is bringing to the online customer the sort of in-store experience which has not even been fully realised in physical stores. Thus, with the potential of analysing vast amounts of data, companies are being presented with the opportunity to enhance their customer experience and stay ahead of the competition.

Furthermore, another engaging aspect of Big Data was found in the Video Game Industry, with analytics being used to target customers and adapt their in-game experience to ensure that the players remain highly engaged. This results in gamers spending more time and income on games thus increasing developers' returns on investment (Siranosian, 2015).

What is more, Big Data is also being used in the medical industry where the technology is able to offer wider societal benefits. This was noted by Belle et. al. (2015) who explained how the grouping of medical documents can help doctors to spot anomalies by finding algorithms within the data. Despite the ethical concerns around the wider impact of using people's personal data, this once again illustrates how Big Data can help by reducing time and costs whilst deriving new value from existing material.

Evidently, by assessing the available literature on the uses of Big Data in multiple industries, it is noticeable that academics agree that this technology is valuable and its applications are widespread. Therefore, the literature in this section has given legitimation to the assumption that our thesis is a plausible subject, with Big Data highly likely to impact on other industries (including PR).

2.4 Potential for Big Data in Public Relations

As demonstrated above, the use of Big Data analytics has great potential when it comes discovering valuable patterns in the behaviour of groups of individuals. However, it is only when one looks at the basic functions of PR departments, agencies and practitioners, that the potential for this technology in the PR Industry starts to become apparent.

Harlow (1976) provides a basis for the modern understanding of the PR function through his study of 65 PR leaders and their definitions of PR. He defined PR as a specialised body of knowledge, skills and methods - utilised by practitioners - who fulfil a specific management function. Harlow defines this management function as one which manages, "the relations between 2 or more organisations or publics, both national and international, creating the kind of relations desired or used by those organisations or publics" (1976, p.36). To do this, Harlow (1976) continues, the

practitioner must research and understand audiences (and their changing attitudes) in order to maintain favourable impressions of the organisation through two-way interaction with the chosen public.

Although academics have tried to finesse definitions of PR over the years since Harlow's study was published, there are 2 key commonalities in all the definitions that we have encountered; namely, that the function of PR is to first identify and understand an audience, and second to build and maintain a favourable impression of an organisation amongst that chosen audience (Hutton, 1999; Verčič et. al., 2000; L'Etang, 2013). Whilst debates surrounding the core definition of 'PR' are outside the scope of this thesis, for the purpose of this research we accept any definition which encompasses the understanding of - and communication with - a specified audience. These elements are also reflected in the working definitions of PR used by trade bodies, such as the Chartered Institute of Public Affairs (2016) and the Public Relations Society of America (2012).

Therefore, with the underlying importance in any PR setting of understanding audiences and how to communicate messages, the potential value of using Big Data to derive valuable insights about groups of people begins to become apparent. As we demonstrated in *Section 2.3* above, other industries are beginning to realise the potential of using the data people generate in order to build better, more informed political campaigns. This is also true in the PR Industry where there is evidence, both in academia and in practice, which shows that the potential of using Big Data is beginning to become realised.

In recent years a number of scholars have highlighted the obvious linkages between the underlying management function of PR organisations, and the potential of using Big Data analytics to improve understanding and communication between organisations and their publics (Yanki & Göztaş, 2015; Weiner & Kochhar, 2016; Holtzhausen, 2016). Not only is there obvious linkage between the potential uses of Big Data analytics and the core functions of PR organisations, it is also the case that the ability to better comprehend huge volumes of information generated in the internet age is being actively called for by PR managers. Berger (2015) found in his survey of 137 PR executives that, '*dealing with the speed and volume of information flow*' was the top concern identified when participants were asked to name the most important issue for PR leaders today. Therefore, Big Data analytics should not only be seen as a potential method by which PR managers can improve how they meet the core demands of their industry, but also as a way to improve their ability to make sense of the speed and volume of information they are required to consider everyday.

To demonstrate how this potential can be translated into reality, it is informative to look at a number of case studies which show how forward-thinking PR organisations have been using Big Data analytics to add value to their work, create new insights and guide their PR strategy.

Take, for example, the case of Mastercard. Since 2011 the global payments company has been actively shifting its public image away from its primary history as a business to business financial services company, towards a more consumer-focused payments company (Weiner & Kochhar, 2016). One of the ways that the company planned to do this was by pioneering the technology required for consumers to make contactless, 'tap to pay' transactions. As Weiner & Kochhar (2016) explain, in order to better understand consumer impressions of their new contactless payment services, the company created The Conversation Suite to listen, analyse and visualise online conversations about Mastercard across numerous online channels. The Conversation Suite is not only monitored by the company's PR teams around the world but is visualised on 40 foot screen at Mastercard's head office as a way to give employees from all departments a focus on the conversations being had about their company's brand.

Investment in the technology and skills to work with Big Data in this way has opened doors for Mastercard and allowed them to derive value from data that was previously going unused. Using The Conversation Suite to analyse public perception about their emerging mobile payment technology, the company was able to identify 85,000 conversations about their service and some of the main themes contained within these online conversations (Abramovich, 2013). The company was therefore able to identify particular concerns surrounding limited acceptance of mobile payments by retailers and a lack of customer support from Mastercard. The company then used these insights to tailor the media messages pushed through earned, owned and paid media during subsequent technology launches (Abramovich, 2013; Weiner & Kochhar, 2016). Not only did this allow the company to tailor its messaging in its future media presence to address the audience's concerns, but it also allowed for a more accurate picture of who the audience was, and how best to influence them (Abramovich, 2013). By integrating Big Data into their existing PR function, Mastercard achieved real results in building a positive public reception to their mobile payment technology. In 2014, 81% of online conversations by consumers discussing contactless payment using Mastercard indicated successful adoption of the new technology compared to only around 30% the year before (Weiner & Kochhar, 2016).

Through this new technologically driven methodology, Mastercard has not only found new value in existing data but has also focussed its employees' minds on individual customers, facilitating the company's aim of transforming from a business to business financial services company to a consumer focussed payments company. As their Vice President for Worldwide Communications, Marcy Cohen, has noted;

Before [The Conversation Suite], we were doing some Social Media listening and engagement but it was nothing like what we are doing today. Today, almost everything is rooted in insights... Implementing an initiative like this has really helped making a cultural change. There's so much more collaboration (Cohen in Abramovich, 2013).

Another real-world situation where Big Data has been applied in the PR Industry is to measure the success of campaigns. The PR Industry is one which has historically struggled to quantify the return on investment provided by its work, with the main reporting mechanism usually being in the form of press clippings rather than quantitative proof of the value created (Rockland, 2012). Measurement of PR activities has obvious applications for PR agencies (rather than in-house PR departments of larger organisations) given the challenge faced by agencies of finding and retaining clients.

Gorkana, a London based PR agency, demonstrated the effectiveness of measuring return on investment in PR activities whilst working with their client GlaxoSmithKline (GSK) (Hender, 2014). Gorkana planned a PR strategy to promote one of GSK's children's toothpaste brands amongst parents with young children through 3 distinct media events spread over an 8 month period. As Hender (2014) explains, in order to measure the value of their activity, Gorkana worked closely with GSK's own data insights team to design PR measurements which were easily comparable to other variables, such as those used by GSK to measure the effectiveness of their Marketing and Advertising activities. Not only did this integrated approach allow Gorkana to point to the value of their campaign, but it also demonstrated that their PR activity provided a greater return on investment (£4 in sales generated for every £1 spent on PR activity) compared to other activities such as direct advertising (Hender, 2014).

By way of a final example of Big Data being used to improve the function of PR organisations we can look towards the PR team at Facebook. In the days after the company's acquisition of Instagram in 2012, there was an increase in negative press coverage focussed on the deal

(Elsasser, 2014). Whilst many companies may have looked at crises communication methods to stem the flow of bad press coverage, Facebook analysed the user data they had available to them to see that the negative coverage was not cutting through to wider public. This allowed them to avoid an overreaction, which may have only provided oxygen to the poor press coverage (Elsasser, 2014).

Looking at the examples provided here, as well the evidence of the 'fit' between the functions of PR organisations on one hand, and the power of Big Data analytics on the other, it is evident that this technology has huge potential for the PR Industry. The recognition of this potential by those working within the PR Industry, and to what extent its potential will be realised over the coming years, is something which will be explored further during our qualitative research outlined and analysed in the coming chapters.

2.5 Drawbacks of using Big Data

As demonstrated in the previous sections of this literature review, Big Data and its analysis has a great deal of potential to reveal insights and create value. There are, however, a number of concerns with the use of this emerging technology.

One of the major concerns surrounding the use of data and analytics to derive insights about populations is that of privacy. Of course, debates surrounding privacy of personal data open doors to entirely separate avenues of academic study, however, it is relevant to note some of the implications for our area of research.

Martin (2015) aptly demonstrates some dichotomies which could occur through different uses of the same Big Data sources. For example, collection of health data could be used to study the spread of diseases and help find cures, or it could equally be misused to raise the health insurance premiums of those identified to be living in areas prone to particular illnesses (Martin, 2015). Questions of privacy are ultimately driven by people's differing viewpoints on what accounts to consensual provision of data. In an age where so many aspects of our lives are digitised, many may not realise that they are parting with so much information about their patterns of behaviour (Mai, 2016). This is particularly the case given that much of the legal framework which dictates what amounts to 'consent' is still rooted in the analog age (Mai, 2016). The debate surrounding privacy of personal data is beginning to emerge more and more in the popular press given recent high profile data security breaches (Collins, 2015), which highlight to the public what information is routinely stored by data collecting organisations.

Questions of ethics and privacy therefore form an interesting and emergent field of study outside of the scope of this thesis. However, what will be taken into account during our qualitative research is how concerns about such issues are perceived by those working in the industry, and to what extent such issues may hinder the implementation of Big Data analytics into PR work. After all, an overzealous use of data by a company can easily lead to a negative public reaction, something which PR agencies themselves are best advised to avoid.

There are also a number of practical concerns when it comes to utilising Big Data. The first of these is a methodological one. Big Data, as has been demonstrated, has the potential to derive value from spotting patterns in the behaviour of large numbers of people. What the technology fails to explain is *why* people are behaving in such a manner. This is a problem touched upon by Rasmussen and Hansen (2015) who highlight the need for caution when businesses are dealing with Big Data out of context. Indeed, the authors propose that businesses should use 'Thick

Data' (that created by anthropologists to understand the humankind) alongside Big Data as defined earlier in this section (2015).

A final practical problem with using Big Data concerns the ownership of available data that can be used for analysis. Whilst more and more data is made publically available by governments, internet search engines and Social Media sites, the fact remains that data is largely still owned by private corporations with their own interests. This data is obviously of great value to those who own it (and their associated PR organisations), but will cause an increasing divide between those who are 'data rich' and 'data poor' (Boyd & Crawford, 2012). Without making efforts to retain ownership of their own data, organisations may in the future find it difficult to lay their hands on independently curated data which can be analysed objectively. Organisations in that position may therefore fall behind in the race to harness the value of Big Data (Parks, 2014).

2.6 Summary of Literature Review

This literature review has looked at the academic debate surrounding Big Data itself and has critically analysed this material in order to inform the reader of our own understanding of the term 'Big Data'. It then proceeded to examine ways in which Big Data analytics is being utilised in a number of different industries before moving forward to look at the potential this technology has to improve the work of those working in the PR Industry. Finally, to ensure a balanced level of debate, this chapter covered literature surrounding the drawbacks of using new and evolving Big Data techniques.

This review of relevant literature has shown that, if PR organisations have the vision, resources and means to successfully implement this technology, there are valuable benefits to be reaped. A greater understanding of audiences, richer communication with their publics, more accurate measurement of return on investment and guidance during periods of crisis are all valuable tools to the PR professional.

This thesis will now move forward to add to this field of study by outlining our qualitative research which has been designed to explore attitudes within the PR Industry towards Big Data and its potential. By combining this review of the literature with our research looking at the knowledge and opinions of those working in the industry, we will be able to contribute a more detailed picture of how, and to what extent, Big Data will change the PR Industry in the years to come.

3. Methodology

3.1 Research Approach & Design

In order to fulfil the purpose of this thesis, we have aimed to design a piece of research which builds upon the existing literature base by conducting a qualitative study of the knowledge and opinions of those working within the PR Industry. This will firstly allow us to assess practitioners' knowledge of technological developments in their industry. Secondly, it facilitate an analysis of the extent to which Big Data can be integrated into their workloads, and thus bring about change in the PR Industry. This section will therefore justify the methodological choices we have made in the design of this research, so as to demonstrate the integrity of our study.

With this thesis we have designed a qualitative, interpretivist study to gain an understanding of a subject area based on the views of those working within the PR Industry (Burrell & Morgan, 1979). As demonstrated in *Chapter 2*, our pre-existing knowledge of this subject area is drawn from academic literature demonstrating how Big Data is already being used to bring about change in some areas of the PR Industry. Given that the design of our qualitative research will utilise this existing knowledge, this thesis can be said to utilise an element of deduction from existing theory (showing the applications of Big Data in the PR Industry), with inductive sensemaking about the actual impact of this new technology as a result of our empirical observations. We see this as a common sense approach that avoids the potential pitfall of trying to classify this research as strictly inductive or deductive for the sake of simplicity. After all, as Bryman and Bell highlight, "just as deduction often entails an element of induction, the inductive process is likely to involve some deduction" (2011, p.25).

Our design of an interpretivist study is of course indicative of our epistemological and ontological approach to the research of the social world. By studying the opinions and knowledge of those working within the PR Industry, we are aiming to understand the reality of the social world through the perceptions of actors, whose experiences will all be uniquely dependant on time and context (Eriksson & Kovalainen, 2015). Ontologically we therefore maintain a constructivist approach, which recognises our understanding of the social world as an emergent process created by the sharing of assumptions and meanings between social actors (Burrell & Morgan, 1979).

This constructivist ontology therefore informs our epistemological standpoint regarding the acceptable knowledge that is available and useful in conducting this research. Here, given that the aim of this research is to analyse the knowledge of PR actors regarding the complex factors impacting on their changing industry, it can be said that we harbour an interpretivist epistemology. This is because of our belief that, in order to study a complex, socially constructed subject as contained in this thesis, it would not be appropriate to view the social world in the same, positivistic way as we would the natural world (Bryman & Bell, 2011). By looking at the full complexity of human sense-making surrounding this subject area, rather than focussing on a predefined set of variables, this philosophy allows us to focus on understanding the impact of Big Data on the PR Industry rather than simply trying to explain the phenomena (Bryman & Bell, 2011; Eriksson & Kovalainen, 2015).

By way of design, we have been careful to structure this research in such a way that is logical to the reader. From our stated purpose at the beginning of *Chapter 1*, we derived 3 research questions (RQ's) to help us focus on key areas which would enable us to build a greater understanding of how Big Data will change the PR Industry. These research questions are stated in *Section 1.3*.

It became clear through our literature review that the potential of Big Data analytics to improve PR practices is real and is already being utilised. What we wanted to explore with empirical data was how exactly this technology will change the industry outside of those organisations which have become early adopters of these new techniques. RQ1 therefore looks to explore the potential and drawbacks of Big Data in the work of PR organisations by examining the real-life knowledge of current practitioners. RQ2 aims to investigate some of the more practical aspects of this technological change to assess if there are any organisational issues which may need to be addressed by PR agencies. Finally, RQ3 examines whether there are unique attributes harboured by different agencies which will make them more or less adaptable to change in the age of Big Data.

These 3 research questions were then used during the design of our data collection interviews, subsequent analysis and final conclusions in order to give a clear path from the purpose of this thesis through to its conclusion.

3.2 Interview Design

Given that the purpose of this thesis is to analyse change across a large industry, it was important for us to gain as broad a set of data as possible in order to allow us to be able to draw generalisable conclusions (See *Section 3.4*). Due to the relatively large number of interviews which we were due to conduct in the short time scale available, we needed to find a data collection method which was able to balance the need to collect sufficient data, whilst at the same time ensuring that the data was collected in such a way as to remain manageable during analysis.

We therefore decided to collect our empirical data through the use of a semi-structured interview. It was felt that this method would allow us to design an interview which ensured we gave each interview subject the opportunity to answer the same set of questions required for analysis, whilst also creating opportunities for unique and spontaneous insights to be offered by interview subjects (Merriam, 2002). The use of a semi-structured interview also allowed us to design an interview which could be conducted in 30 minutes or less, so as to ensure we could interview a broad spectrum of PR professionals in the time available.

During the design of this interview, we remained aware of the need to ensure that each question asked to participants was relevant to at least one of our RQs and, through them, the purpose of our thesis (Kvale, 1996). A description of our interview questions, and their connection to the research questions used to structure this research, are presented in *Appendix 2*.

A large number of PR agencies were approached to participate in this study and 5 were identified in 3 different countries. These agencies are introduced in *Chapter 4*. Participants from each agency were identified to represent a cross-section of the organisational hierarchy to ensure that our empirical data captured the knowledge of those working at all different levels of the PR Industry. Of course, we had to remain flexible given the operational requirements of each agency on the day of our interviews, but we believe the selection of participants represented in our empirical data lends reliability, generalisability and validity to this study, as demonstrated in *Section 3.4*.

All interviews were conducted sequentially with just one subject at a time, and in each interview we alternated the role of Interviewer and Interview Assistant. The purpose and scope of the thesis was presented at the start of each interview so as to ensure informed consent from each subject

participating in the data collection. Subjects were also given the opportunity to mark data which they wished to remain anonymous, although this opportunity was not taken by any of the subjects.

3.3 Data Analysis Process

Given that this thesis is one of the first we have identified to look at the potential of Big Data in the PR Industry, it was vital that the data analysis process was comprehensible and accurate. As a consequence, we decided upon a thorough, threefold process to analyse our empirical data.

Firstly, we digitally recorded the conversations, as this allowed the Interviewer to ensure that the exchange was 'self-communicating' and a story in itself without the need for note-taking (Kvale, 1996). What is more, by recording the dialogue, the Interview Assistant was able to focus on scribing the most interesting and telling observations, instead of the whole conversation (Wolfinger, 2002). This proved to be a critical decision, as observations by the Interview Assistant provided early, major themes and patterns to organise the data around.

Secondly, after completing the interviews, we chose to transcribe the data (*see Appendix 3*) to ensure we were not overlooking any valuable contributions from the participants. We acknowledged that transcribing has potential pitfalls in terms of accuracy, interpretation and time spent (Gibbs, 2007), but we felt that the benefits gained by creating transcriptions were important for accurate coding and analysis.

The final stage of the data analysis process involved coding the data along major themes and patterns, which were used to gain a deeper understanding of the topic so as to answer our research questions (Bui, 2014). For the coding system, we decided to adopt a Broad Coding approach, where one opens up the interviews so that the thoughts, ideas and meanings within the text can be exposed (Houghton et al, 2015). Within this concept, we decided to go through the transcripts and label the different topics, following the framework of finding themes that connected with the literature, the commonalities within the multiple interviews, and the observations noted by the Interview Assistant. Following this process, we then aligned the data across 7 coded themes;

- Big Data's potential in PR
- Ethical and practical problems
- Statistical background of interviewee
- Methods used to personalise PR campaigns
- Available training, support and investment plans
- Differences in clients

These codes were carefully selected as they each relate to a research question, which helps the authors to find patterns in the data to support any conclusions made. These themes will be further developed in the analysis presented in *Chapter 5*.

3.4 Reliability, Generalisability & Validity

In order to provide reliability to the results, we set out to make the qualitative research as far-reaching as possible and conducted 18 interviews, consisting of 11 males and 7 females. After completing our first set of 3 interviews at Ehrenberg Kommunikation, we decided to add 2 interview questions (QA & QB) to our interview guide (*see Appendix 2*), before conducting interviews at the remaining 4 companies. This was done so as to structure data which we found was being offered voluntarily by interview subjects at Ehrenberg but outside of our formal interview questions. The

interviews at Ehrenberg also allowed us to make some minor revisions to the wording of our interview questions so they were more easily understood by upcoming interview subjects. Nonetheless, the changes were minor and we therefore view the Ehrenberg interviews as remaining valid for analysis.

Moreover, to safeguard the generalisability of the thesis, we continued with our aim of making the qualitative research sources highly diverse. The companies selected spanned across 3 nations, while the 18 interviewees represented various levels seniority (see *Appendix 4*). This ensures that the thesis reached many areas within each PR agency, which in turn gives a wider insight into the industry as a whole.

The thesis results also include a strong level of validity, as the interviews were all conducted within 8 days, which shielded the data from further levels of external influence. In addition, the varying types of job roles ensured that the results were representative of the wider spectrum within PR agencies, whereas a more targeted group of employees may have skewed the results.

3.5 Limitations

As to be expected of a 10 week thesis project, there are several limitations that were encountered during the data collection processes. The most obvious being the numbers of companies included in this study, as well as the locations of these businesses. More time would have enabled the authors to contact and acquire more agencies, from a wider geographic area. However, as Big Data is a technology that requires large amounts of machine processing power, this limits the targetable countries, due to the finances needed to invest in analytical technologies by agencies and their clients alike. Additionally, this thesis focusses solely on PR agencies and does not cover other areas of PR, such as in-house departments, which is a potential area for further study.

Moreover, there are also limitations resulting from adopting semi-structured interviews that include the large amounts of time it took to complete the interviews, as well as the time it took to analyse what was, or was not, relevant in the data. We opted for a balance between quantity and quality of data, whereas a survey for example may have allowed for a greater quantity of data to be collected. Also, there is the additional limitation in that there is no way of knowing if the participants were telling the truth, yet, we wholeheartedly believe they were truthful given that they each attended voluntarily and were able to anonymise any data they wished.

4. Empirical Data

The empirical data collected through our semi-structured interviews was obtained over a 7 day period between 11 April 2016 and 18th April 2016. The 18 interviews conducted at 5 different PR agencies provided us with over 6 hours of audio data which transcribed into 68 pages of qualitative material for analysis. Both the recordings and our transcriptions are available to the reader online through the information provided in *Appendix 3*. As stated in the methodology contained in *Chapter 3*, the participating PR agencies represent a broad cross section of the industry in terms of their size, age, location and client base. We will now proceed with an introduction of each agency in the order of which the interviews were conducted.

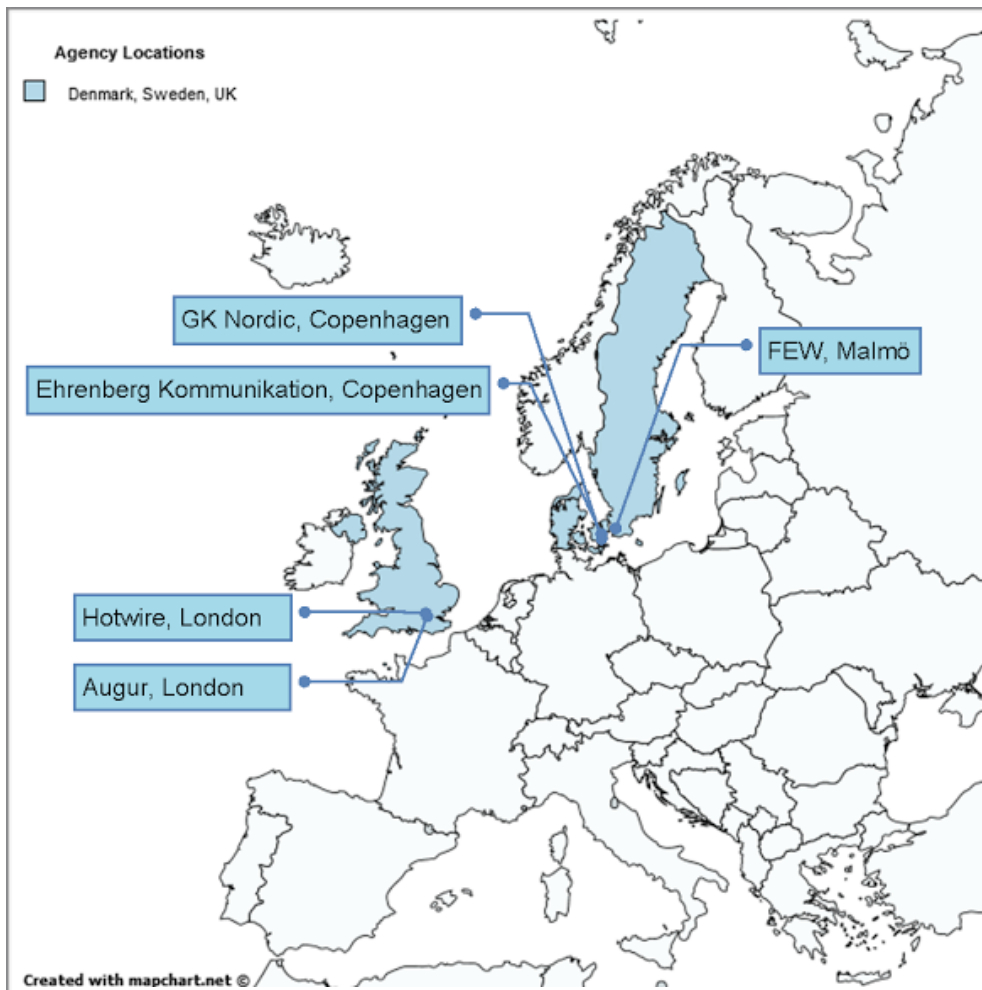


Figure 2: Agency Locations.

4.1 Ehrenberg Kommunikation - Copenhagen, Denmark

Ehrenberg Kommunikation are a PR, Communications & Public Affairs agency with offices in Denmark, Sweden, Norway and Germany serving clients in the transport, tourism and lifestyle sectors (Ehrenberg, 2016). Founded in 1993, the company now employs approximately 30 people who are responsible for managing up to 50 clients at any given time. We visited Ehrenberg on 11th April 2016 and conducted research interviews with 2 PR Consultants and one Junior PR Consultant.

4.2 Geelmuyden Kiese (GK Nordic) - Copenhagen, Denmark

Formed over 25 years ago, GK Nordic is a wide-ranging PR & Communications agency with clients spanning technology, pharmaceutical, shipping, lifestyle and education (GK Nordic, 2016). With a presence in Oslo, Stockholm, Copenhagen and Brussels the company has over 150 staff at its disposal. During our visit on 12th April 2016 we had the opportunity to interview the company's Digital Director, Nordic IT Manager, 2 Senior Advisors and 3 Consultants.

4.3 FEW - Malmö, Sweden

FEW were formed within the last year following the merger of 3 PR agencies (First Flight, Eight & Wonderleap) to form what is now Southern Sweden's largest PR agency (FEW, 2016). The company offers a full suite of PR and communications services to its growing client base which, at the time of our visit, stood at around 50 clients. Again, these clients represent a large number of sectors including tourism, retail, education and sport, amongst many more. From the 55 staff employed at FEW we were invited to interview 5 employees on 13th April 2016; the Chief Creative Officer, 2 PR Consultants, a Content Writer as well as the company's in-house Data Analyst.

4.4 Augur - London, U.K.

Augur is a London based PR agency formed in August 2013. The business performs duties on behalf of new technology start ups and, at the time of interview, had 4 retained clients. Augur currently has 2 full time employees, with an additional member expected to be employed shortly. During our visit to Augur on 18th April 2016, we were fortunate to interview the Managing Director of the agency.

4.5 Hotwire - London, U.K.

Established in 2000, Hotwire are primarily a business to business PR agency, with 75% of their work serving such clients. The agency offers a wide range of services and is currently representing clients in: software and services; IT and Infrastructure; Fin Tech; Marketing, Mobile and E-commerce; Consumer; Consumer Tech; and Clean Tech (Hotwire, 2016). Hotwire has an international presence with 22 offices around the world, and, at the time of our visit, had 65 employees in their London offices alone. During our visit on 18th April 2016, we interviewed the Deputy Managing Director for Hotwire U.K., as well as an additional U.K. Director.

5. Analysis

The coding of our interview data revealed a number of interesting themes which will now be discussed in detail. Each theme helped us to develop an understanding about how Big Data will change the PR Industry in reality, building on the existing academic literature presented in *Chapter 2*. The understandings drawn from our empirical data therefore facilitates an analysis in-keeping with the purpose of this thesis. A summary of the themes discussed in this chapter are displayed below in *Figure 3*.

Purpose	RQ1: <u>Theme 1:</u> PR Professionals are well aware of the potential of Big Data. But not always to its full extent.
	<u>Theme 2:</u> Ethical or Practical problems with Big Data are recognised in the industry but are not a barrier to technological change.
	RQ2: <u>Theme 3:</u> Employees have a history of statistical or analytical experience but a more data specific awareness is necessary.
	<u>Theme 4:</u> Employees are aware of freely available data resources but more needs to be done to expand this knowledge.
	<u>Theme 5:</u> Employees are already capable of adopting Big Data practices into PR campaigns.
	<u>Theme 6:</u> Agency readiness is heavily dependent on in-house support and training opportunities.
	RQ3: <u>Theme 7:</u> An agency's clients have a significant impact on their ability to integrate Big Data analytics into their campaigns.
	<u>Theme 8:</u> Location isn't the problem but the clients are.

Figure 3: Summary of themes identified from the empirical data.

Each theme was uncovered by a set of interview questions designed to extract data relevant to one or more of our Research Questions. We have therefore grouped the themes by Research Question so as to maintain the continuity of this structure throughout our research design and into this analysis.

5.1 Research Question 1 - How will Big Data allow agencies operating within the PR Industry to provide more informed and accurate campaigns for their clients?

5.1.1 Theme 1: PR Professionals are well aware of the potential of Big Data. But not always to its full extent.

Through our earlier literature review we were aware of some of the ways in which Big Data analytics can be used to improve the work of PR professionals through better research of audiences, more personalised messaging, better measurement of campaign value and even for assistance during crisis communication tasks. Through our coding process we were able to note from the interview transcripts which interview subjects noted any potential for Big Data in their PR function and how many time each theme was mentioned. The results of this coding process are displayed in *Appendix 5*.

One of the major patterns noted in our empirical data was that every participant recognised the potential of Big Data to be able to conduct better quality research about the people which their clients looked to target. This is significant given that it demonstrates the understanding and willingness by PR professionals to adopt new technologies, which can help them to improve one of the main tenants of the PR function; to identify and understand an audience.

When asked for their understanding of Big Data and its potential for their work, PR professionals commonly offered answers along the lines of:

I could benefit from knowing firstly, what media to target and secondly, what media is our target group reading, as actually I don't know... that's one way to gain from data analytics.

Mads Keilberg Johansen, GK Nordic.

Or, put simply:

If you know the customer better you can improve PR work. The future is going to be so.

Elin Ekstedt, FEW.

The identification of the research potential that Big Data analytics can bring to their industry is significant, as it shows that professionals recognise the capacity to improve this aspect of their work. This may be in part because, as we noted at a number of stages during our interviews, PR agencies are generally moving away from targeting traditional demographics (e.g. Women between the ages of 18 - 30) and looking towards the identification of broader 'interest groups'. This more specialised targeting does and will continue to require an ever more detailed picture of the target audience.

One example of such 'behavioural' targeting was given during our time at GK Nordic in Copenhagen who represent the travel deals website, Secret Escapes. Here, GK Nordic were finding ways to identify groups by their personal travel aims, for example those who want to relax on holiday or those who want to visit cultural attractions, regardless of age, gender or background. This is a deviation from traditional PR techniques in the area which would have looked to identify the best channels through which to communicate with those of a certain age or those looking to visit particular destinations. At present, however, the agency were using a traditional survey to identify these new target groups, as the interview subject noted:

But this is based on a survey of 1000 respondents, 50% male and female. So this is by no means covering what we could achieve if we had more insights.

Bettina Vestergaard Færgeman, GK Nordic.

In the years to come, as the use of Big Data analytics advances across the board, PR professionals will likely find that their ability to derive more advanced insights will increase dramatically. However, the key to deriving value from these insights will be in the implementation of campaigns which can successfully communicate with the groups identified by data driven research.

It is at this implementation stage where the knowledge of PR professionals about how to use the insights that can be derived from Big Data begins to falter. Our thematic coding identified that the number of instances whereby PR professionals identified the means by which they could use Big

Data to actually personalise campaigns to specific interest groups dropped by around 40% (n=43) compared to the number of times they identified research potential of Big Data alone (n=72). This may suggest a discrepancy in the visions of PR professionals about how to use new, data driven insights to increase the value of the campaigns which they design.

There are a number of possible reasons for the drop in awareness between how to research audiences using Big Data and how to communicate with those audiences using the same technology. As will be explored later in this analysis chapter, possible reasons include the pre-existing focus on 'offline' press channels in the day-to-day work of those in the PR Industry as well as the influence clients themselves have on their appointed PR agents.

Those who were aware of the potential uses of Big Data to derive value through more personalised audience communication noted that an understanding of how different types of people consume news gave them the potential to create more effective, personalised messaging:

We have our own listening tool which is called Listening Post which allows us to identify and map out a network of influencers or end users and basically map out what they are talking about, see what they're sharing, favouriting, all that sort of stuff. So from that we see what they're interested or not interested in and where they go to and who they will be influenced by. So we can create a bit of content which is engaging to them and we can send it to them directly through social [media] and we can also put it in their favourite places to hang out and we can personalise that to different audiences.

Matt Cross, Hotwire U.K.

The ability to build more engaging campaigns targeting the right group of people will, if done correctly, allow PR agencies to demonstrate a better return on investment to new and existing clients - as was demonstrated during our literature review in *Chapter 2*. What our analysis shows, however, is that even fewer PR professionals included in this study were able to identify the potential that better measurement of their campaigns will bring to the PR Industry.

Indeed, throughout our interview data the potential of Big Data to measure PR campaigns was only identified on 24 occasions. Furthermore, around a third of professionals failed to recognise any potential of using Big Data to better measure the return on investment which they can offer to their clients. When the potential of greater measurement is realised, we found that PR agencies begin to use the data they are able to collect surrounding their previous campaigns and use this to demonstrate the value of their work when pitching to new customers. However, as will be explored in the later sections of this analysis, the effectiveness of using Big Data analytics to measure campaign success depends on the receptiveness of clients who often fail to grasp the concept of scientifically measuring PR activities. One of the participating agencies, GK Nordic, have therefore taken to presenting clients with data from much simpler 'Small Data' sets from single sources so as to introduce their clients to the potential insights that could be drawn by combining multiple data sources and conducting analysis of the resulting Big Data set. As the company's Digital Director explained:

So we have a lot of customers who really can't understand how to structure their business on Big Data but they can understand 'Small Data' and that you can target a target group with interests on Facebook. You can show them the analytics on Facebook to show them that if we target a woman in Copenhagen who is interested in furniture then we sell furniture.

Benjamin Rud Elberth, GK Nordic.

This analysis section has thus far noted how all PR professionals included in this study recognised the potential for Big Data analytics to be used to better understand the audiences with which they try to communicate. However, PR practitioners have a lower degree of understanding about the ability of Big Data analytics to help them in producing more personalised campaigns and measuring their effectiveness.

One final application for Big Data in PR that was identified during our Literature Review was its potential to provide insights to inform crisis communication strategies. Interestingly, this application was conspicuous by its absence in our empirical data. Throughout our interviews the potential of Big Data analytics to measure PR damage caused by crises, and inform decisions about recovery strategies, was only identified on a single occasion.

This analysis of the level of knowledge that PR professionals currently harbour towards the uses of Big Data suggests that its potential is likely to become realised in the industry in several stages. First, given universal recognition of the potential to improve audience research using Big Data, this is likely to be the area of PR work which will see the early influence of technological developments. Once practitioners start to see the results of harnessing the power of Big Data to understand their audience in more detail then their confidence in using data driven approaches to creating and analysing campaigns is likely to increase. Finally, once a greater integration of Big Data is observed in the day-to-day workflow of PR agencies, practitioners will be able to better foresee applications for the technology in more specialist fields such as crisis communications.

5.1.2 Theme 2: Ethical or Practical problems with Big Data are recognised in the industry but are not a barrier to technological change.

Our empirical data identified knowledge amongst practitioners of 3 potential drawbacks to using Big Data in PR. Namely; Privacy issues, concerns surrounding consent as well as practical obstacles. The number of times these issues were identified by the interview subjects is provided in *Appendix 6*.

Firstly, there was some awareness of the debates surrounding privacy when using Big Data to research audiences and target them with personalised messages. As was noted in our literature review, this is a debate which has been attracting more and more attention both in journalism and in academia. One interesting case which was noted during our interviews was that of the American retailer Target who used data about an individual to inadvertently give away personal information without her consent:

I heard this story about Target. Target uses consumer data to foresee how the consumer behaviour will change and they saw that this girl was pregnant before her parents knew. So they saw that she was pregnant or about to be pregnant, based on her consumer preference, so they tried to target her with discounts with Zinc tablets etc and so her father was furious and sued Target when he found out she was pregnant.

Petter Claesson, FEW.

Concerns around privacy were often interrelated to debates surrounding consent that individuals give to private organisations to collect and store data regarding their behaviour. Simply put:

If you answer a mail about your last holiday or something like that, you don't automatically think it will be used for an article about travelling patterns.

Fie Vedsmand, Ehrenberg Kommunikation.

However, what we noted through our analysis of the data collected was that, although PR professionals were aware of debates surrounding privacy and consent, these debates act as warnings of how not to work with Big Data, rather than arguments against using the technology altogether. PR professionals generally identified the risks of a Big Data driven campaign going wrong but did not see these as being risks big enough to prevent them using the technology in the future:

Well as long as [the data] is from a credible source, because whenever you use this you have to stand guard on behalf of your agency and your client because the media could potentially come and ask you where you have these insights from. So as long as you have proof that people gave their consent to use the material. Of course, if that's not the case then we can't use it.

Bettina Vestergaard Færgeman, GK Nordic.

Similarly;

As long as you aren't down to one specific person's information, I don't see any real problems with learning about specific target groups and I don't really see a point in fighting Big Data as it's a fight you're going to lose.

Matilda Hellmann, Ehrenberg Kommunikation.

Other practitioners recognised some of the practical constraints of using Big Data. One such concern is that, the more personalised PR campaigns become, the more time will need to be spent by staff crafting different messages for different people. Another practical concern identified was that, in the future, an over reliance on Big Data may start to lead the PR Industry to become 'de-humanised' as practitioners neglect their instincts about human behaviour and feelings. This observation goes some way to confirm the viewpoint of Rasmussen and Hansen (2015) outlined in *Section 2.5*, who argued the need for Big Data to be accompanied by 'Thick Data' which includes human interpretations of the behaviour of others.

Despite problems with privacy, consent and practicalities being identified by the participants of our research, the number of those identifying these issues was relatively small. In total, only 50% of the PR professionals in this study identified concerns regarding privacy, 55% identified potential

problems with consent whilst 61% identified a practical problem with utilising Big Data in PR. This lends some statistical weight to our observation that PR professionals, on the whole, do not see these issues as insurmountable barriers to Big Data bringing about change in the PR Industry.

One further interesting observation by the Managing Director of Augur PR based in London was that the ethical problems facing the PR professional remains the same, regardless of the method or technology used to fulfil the function. At the end of the day, he argued, the biggest ethical question relates to the client you represent and their impact on society:

There's a whole ethical question to PR anyway because it's got a real iffy history... if you look at an awards ceremony then it's all these really fast moving goods brands and they've made more people buy cigarettes, then there's a whole ethical question. But in what we're doing, helping IT managers buy better software which will make them look good at their job, then it's so boring I don't think it can be unethical.

Max Tatton-Brown, Augur.

5.1.3 Research Question 1 - Summary

From our analysis of the themes identified in connection to our first research question we therefore see that PR professionals do, to some extent, recognise the potential of Big Data to change their industry for the better. Furthermore, practical and ethical problems are understood within the industry but are not significant enough to prevent further implementation of Big Data analytical techniques in PR.

5.2 Research Question 2 - How are PR agencies best advised to prepare for changes in their business models and workflows to adopt Big Data practices?

In conjunction with its focus on the potential uses of Big Data, the literature review in *Chapter 2* also revealed what companies need to have in place, in order to best utilise the technology. For example, Mauro, Greco and Grimaldi (2015) suggest that those working with analytics and Big Data require a specific skill set, which is hard to find in today's workplace. Moreover, Chen, Chiang and Storey (2012) advocate for businesses to invest in I.T. education, ensuring that staff have the ability to succeed in a data centric environment. This provoked interest from both authors to ask the question; can PR agencies meet these organisational challenges?

5.2.1 Theme 3: Employees have a history of statistical or analytical experience but a more data specific awareness is necessary.

Despite the claim above surrounding the lack of skilled workers, the interviews initially offered an alternate assessment with 89% of employees having encountered statistics or analytics on at least one occasion in their careers (*Appendix 7*). This suggests that those involved within the PR industry have the experiences to work with data in some way, but are failing to find opportunities include it in their current work:

It's hardly ever used in PR... Statistics are few and far between in my experience.

Steven George Hilley, Hotwire.

Similarly,

[Statistics] Not really, not much. I try to avoid it!

Fie Vedsmand, Ehrenberg Kommunikation.

However, if statistics and analytics can visibly contribute towards a campaign, some PR agents are willing to try its uses. Mads Keilberg Johansen from GK Nordic touches upon this:

We do [statistics] in the pharmaceutical industry. I'm not that much of a statistics type of guy, but it is mostly about prices, how diseases spread, and how it looks today compared to 10 years ago when we invested many millions into it.

Mads Keilberg Johansen, GK Nordic.

This immediately catches one's attention, as it illustrates the need for companies to be more coherent with their employees in their approach to changing technologies and demonstrate the potential uses of data analytics in the PR Industry. Uniquely, FEW in Malmö has already begun this process by hiring a full time, in-house analyst, who described her role below:

I interpret and make use of data for our customers so they can make strong decisions in communications and marketing.

Elin Ekstedt, FEW.

Hiring analytical professionals is a start to a greater understanding of the potential of data analytics in PR, but nonetheless, agencies must go a step further and find a way to create an environment where everyone can learn from their colleagues' collective knowledge. This stops dependency on individuals, with better integration being key to ensuring that all employees are capable of seeing ways to improve their campaigns by using Big Data. Nevertheless, hiring someone with skills and insight in this area is a valuable start.

5.2.2. Theme 4: Employees are aware of freely available data resources but more needs to be done to expand this knowledge.

To create more thorough and targeted campaigns, it is important for employees to be aware of the data sources that are readily available to them to facilitate the integration of data driven insights into their PR campaigns. Not all data has to be paid for, which means a campaign can be instantly enhanced without the burden of having to invest capital. From the coding of our interview data looking at the knowledge of such available data sources, only one participant was unable to name any examples of these (see Appendix 8). However, what is salient within the data is 61% of participants were unable to name more than 2 sources. A couple of typical responses were as follows :

Yeah there are of course some, if you think more broadly, and not just media based, there are some statistics databases that we use when we try to find angles for stories. So the national danish statistics collection. You can use that to see, if you have a specific target group, how they have answered for different subjects. I can't really come up with anything else.

Louise Wendelbo Pedersen, GK Nordic.

Also;

No. It's still too granular, I'd still just use google.

Lars Lyberg, FEW.

This limited awareness implies that staff are still seeing data analysis from a 'Small Data' perspective, with the focus being on gathering information that is easy to understand and straightforward to locate. Nevertheless, the fact that employees are considering customer patterns at all, suggests that personalisation is becoming more important in the industry.

Moreover, when comparing the results, it was found that the geographic location of the agency, had little impact on the ability of the participants to list available data sources. GK Nordic, Copenhagen, had the highest mean average (3.2 sources identified per employee) of all agencies, whilst Ehrenberg Kommunikation, also Copenhagen, scored the lowest (1.0) (*Appendix 8*). Instead, the data suggested as one might expect, that those who work regularly with analytics and statistics, scored highest when asked to identify available data sources. For example, Benjamin Rud Elberth' at GK Nordic who was able to identify a large number of sources because of his digitally focussed position within the company:

I'm Digital Director of GK. I work with political and digital communication and lifestyle brands and selling on Facebook and Twitter, and influencing stakeholders on Twitter and digital media. Using Small Data not Big Data, or what I define as Small Data.

Benjamin Rud Elberth, GK Nordic.

The above analysis therefore demonstrates, similar to our findings under Theme 3, that agencies need to put more emphasis into educating the whole business as to what data sources are available to staff to help them better understand and connect with audiences. A greater degree of education will ensure that knowledge is far reaching, thus reducing the internal pressures on the experts within agencies who are already 'in the know'.

5.2.3.Theme 5: Employees are already capable of adopting Big Data practices into PR campaigns.

As a development continuum, much of the potential of Big Data in PR is the ability to find valuable patterns that yield insights into public interests, behaviours and values. It is based on these insights that campaigns can then be personalised to reach your target audience. As a consequence, employees are going to have to learn how to best employ insights from Big Data throughout their campaigns.

When approached with the questions posed to investigate specific knowledge of the methods that could be introduced to facilitate greater degree of personalisation to their content, the results were somewhat surprising. As our coding revealed in *Section 5.2.2* above, a large proportion of employees failed to note more than 2 online data sources that could be used for a Big Data approach to personalisation. Given the level of knowledge harboured by practitioners about the data sources available to them to customise their campaigns, one would expect traditional press to have a still have a significant presence in the PR toolkit as a way of connecting with audiences without using any form of data analytics. Instead we found that personalisation of traditional press was the least popular method to personalise a campaign, although it was still highlighted by some professionals;

If it was something I should write to get their interest then I would use a trade magazine and reach people through that.

Fie Vedsmand, Ehrenberg Kommunikation.

The immediate connection that can be made using this observation was that the participants were aware that other methods that are more effective for personalising content. This was again evident in the coding with Social Media being identified by a number of professionals (see Appendix 9), as epitomised below:

A housing developer wanted to come closer to their consumer group of those who wanted to buy affordable homes, so we did experimenting through Facebook and LinkedIn to function their interests.

Henrik Skyggebjerg, GK Nordic.

Henrik's quote explains how personalisation is becoming enhanced by online mediums, with people's increasing use of Social Media delivering valuable insights. However, Social Media was not the preferred choice of the PR agents at this stage in time. Instead, simply using analytics to gain an initial understanding of a target audience was the preferred method to gain customer insights, regardless of the medium used to communicate a story. Using analytics in this way was mentioned on 24 occasions (Appendix 9). For example:

We would probably asked external consultants, we work closely to Kairosfuture Analytics, and would probably ask them to see if they have any input on it. Also the statistic central bureau. This gives more info for tailored target groups.

Jonas Grönlund, FEW.

The combination of both analytical research of demographics and Social Media personalisation, amounted to 88% of all mentions when PR professionals were asked to identify the methods they currently use when creating a data driven campaign for a client. This suggests that PR agencies are well equipped to further adopt the benefits of using Big Data to gain a better understanding of their audiences, as they will simply be building upon their current practices.

5.2.4 Theme 6: Agency readiness is heavily dependent on in-house support and training opportunities.

When it comes to the current and future plans of the agencies to prepare for Big Data, each company was found to be implementing their own unique model. However, 2 systems are clearly preferred, with in-house support being the most popular system (see Appendix 10). FEW are a catalyst for this method, with 83% of their staff identifying the support they have available in the form of Elin, their full time data analyst:

We just employed Elin to help us with [Data Analytics].

Petter Claeson, FEW.

Similarly, at GK Nordic, 55% of all participants identified the support offered to them by a specific 'data-responsible' colleague:

I would go to Benjamin and his [digital] team to ask for their experience.

Bettina Vestergaard Faergeman, GK Nordic.

On a different tangent, Ehrenberg Kommunikation clearly feel that in-house support for Big Data projects is not currently needed, as such methods remain relatively unknown to their clients. Resultantly, if a PR agent was expected to use Big Data, Ehrenberg are more likely to offer training to their existing staff, a theme identified 67% of the time in the interview transcripts:

I would say I haven't experienced it so I can't say for sure but I would say that if the client is big enough and put in enough money I would say maybe we could get some education in Big Data. But actually as I'm aware we don't have any employees here who know about Big Data and could use it for a client.

Morten Kalum, Ehrenberg Kommunikation.

Comparably, coding of the interview data from Hotwire and Augur also suggests that they believe education is the best preparation for Big Data developments at this stage in time:

We try to build a library [of resources] to try and learn how to get the basics out of data and use more formulas in excel which other agencies are so far behind on. And probably building that foundation before we start going into really in depth courses and that kind of thing.

Max Tatton-Brown, Augur.

Evidently, training and in-house support are the 2 methods agencies prefer when asked about how they are preparing for technological change within their industry, which aligns with the previous themes discussed within this research question. Agencies are relying on their employees to demonstrate the ability to learn and apply the necessary skills, required from Big Data analytics. Nevertheless, by neglecting other options such as outsourcing of Big Data analytics, investments in new technology, and wider restructuring of their organisations, agencies are demonstrating a lack of awareness of the ultimate preparations that may need to take place to fully integrate this technology into their businesses. Investments need to be made in order to purchase analytical technology and software, or at the very least, companies need to be entering into partnerships with external analytics firms:

It takes a lot of manpower and skill to do [Big Data] but it's what we're aiming for in the future. But realistically it'll have to be a partnership.

Lars Lyberg, FEW.

5.2.5 Research Question 2 - Summary

It is visible from the 4 themes presented in this section that agencies view employees as the key to adapting to the changes of Big Data. FEW and GK Nordic have adopted the method of bringing in analytic specialists, whereas, the remaining agencies believe in re-training their current employees to meet the challenges of the Big Data age. These are both viable systems, however, when it comes to training, it is vital that education is given to all employees to ensure that Big Data is integrated throughout the agency rather than remaining siloed within particular departments. If this

fails to take place, agencies may be left behind, and only the select few who have integrated an analytical approach to their industry will be able to benefit from the more focussed insights that new technology can bring for their clients.

5.3 Research Question 3 - How will unique agency characteristics affect the ability of agencies to adopt Big Data practices?

5.3.1 Theme 7: An agency's clients have a significant impact on their ability to integrate Big Data analytics into their campaigns.

A major driving force behind the service an agency offers is of course the demands their clients place on them. One theme which reoccurred throughout our empirical data was that PR professionals often feel restrained by their client's desire to see results in the form of 'offline' press clippings from newspapers, magazines, TV and radio:

The CEO is really contented if he has something in the classical press but he can't really see the value if he gets an engagement rate of 36,000 people seeing a Facebook post. Then he says, "Where are my press clippings"... They just want to see things in classical media.

Benjamin Rud Elberth, GK Nordic.

However, some clients served by the PR agencies included in this study were beginning to look for more data driven approaches to their PR operation. It was often the case that the clients who were most in-tune with the possibilities of using more data in their PR campaigns were those involved in consumer product PR or internet commerce:

I've just got a new client that's in fast moving consumer goods, so product PR... and that company is so much more interested in analysing the data that they have, like how do people find our website, where do they go. This is something that our other clients haven't yet figured out or is not even in their knowledge base. Product PR is much further advanced and more into it.

Matilda Hellmann, Ehrenberg Kommunikation.

What appeared to be the greatest challenge for PR professionals when considering the integration of Big Data analytics into their campaigns was the large variation in what their different clients demand. This poses a challenge to agencies whose staff are caught between the new methods being demanded by their more data-savvy clients and the demand for traditional PR services from their more conservative customers. This was a theme which was identified a significant number of times during our data collection:

We've got players like Google, who are top of the game, then NGOs who hardly know how to put up a Facebook ad. This challenges our advice to the different clients, we pretty quickly need to know what they know, and how much they use digital communication in their campaigns. Depending on their knowledge, this changes the clients expectations as to what they expect [from us].

Henrik Skyggebjerg, GK Nordic.

Some suggested that the variation in their clients was not necessarily about the size, budgets or industries represented by their different customers, but simply by the attitudes their clients held to experimenting with data driven approaches to PR:

It doesn't really have any reason to be honest. There are small clients and you might think they have less money or less interest and you might find people in there who are really up for it or really against it. And similar for massive clients. Just because you've got the budget, doesn't necessarily mean you want to do it.

Matt Cross, Hotwire.

A final interesting observation connects back to the potential that was identified by some professionals of using Big Data to measure the effectiveness of PR campaigns. During our data collection it was apparent that some PR practitioners saw the possibility of challenging their conservative clients with evidence of success from the data driven campaigns conducted on behalf of their more technologically advanced clients:

[Data] could be a way to challenge our clients because very often they have a way of traditional views, seeing themselves in papers... even if they are targeting 18-25 years old, and yet we end up doing it because we know that pleases them. Even though we know only 80,000 read it and the demographic is plus 65, yet it's still a really good success for the client which is stupid but I don't have a way of explaining that to the client. So hopefully this is a way to challenge the client but also improve targeted channels.

Louise Refsgaard Petersen, GK Nordic.

In all, 56% of interview subjects noted that their clients were very varied in their demands for data driven solutions to their PR campaigns. Of the remainder, some 23% of subjects believed that the majority of their clients were still satisfied with a 'traditional' approach to their PR campaigns. Such analysis suggests that the varied, often low-tech, demands of clients are a significant barrier to potential technological change in the PR Industry. The coding of this theme is presented in *Appendix 11*.

5.3.2 Theme 8: Location isn't the problem but the clients are.

An interesting aspect of this study was that the empirical data was collected across 3 different national markets. This therefore allowed us to analyse whether or not these different markets were more or less receptive to change in the PR Industry driven by Big Data analytics.

When looking at the different levels of awareness of the potential of Big Data across national markets, little variation was observed between countries.

Country	Average mentions in each transcript
Denmark	8.8
Sweden	6.0
U.K.	7.3

Figure 4: Average number of mentions of potential applications of Big Data by interview subjects (Calculated from Appendix 5).

As can be observed, on average, PR professionals in Denmark identified with some form of potential Big Data application in the PR Industry 8.8 times during each interview. This number decreased to 6 in Sweden and 7.3 in the U.K. Although PR professionals in Denmark were therefore able to identify more potential uses for Big Data in PR, a range of 2.8 between the different markets is not large enough to show a significant variation in knowledge between countries given the size and scope of this study.

We also decided to analyse whether or not PR professionals in different countries had varying levels of pre-existing experience or knowledge of using statistics in their work. Again, we were able to observe a very similar level of statistical experience between countries, as detailed in *Figure 5* below.

Country	Average mentions in each transcript
Denmark	1.5
Sweden	1.2
U.K.	1.3

Figure 5: Average number of times interview subjects identified with having experience of using statistics or analytics (Calculated from Appendix 7).

In the U.K our interview subjects had worked with statistics, on an average of 1.3 times in their career to date, this decreased slightly to 1.2 for Swedish PR professionals but rose to 1.5 in Denmark. This suggests very little difference in the statistical experience of those working in the 3 different markets. Furthermore, when asked for their knowledge of Big Data sources that are available to be utilised in campaigns, Swedish PR professionals identified an average of 2.2 different available sources compared to 2 amongst UK professionals and 2.5 in Denmark.

Country	Average identifications in each transcript
Denmark	2.5
Sweden	2.2
U.K.	2.0

Figure 6: Average number of data sources identified by subjects (Calculated from Appendix 8).

Finally, in terms of professionals' perceptions of the differences their clients harbour towards adopting a more data driven PR approach, 60% of Swedish interview subjects described their clients as highly varied in their technological outlook. This fell to 50% amongst Danish PR professionals but rose to 66% in the U.K.

Country	% of PR professionals identifying their client base as 'highly varied' in terms of their technological outlook.
Denmark	50%
Sweden	60%
U.K.	66%

Figure 7: Percentage of interview subjects identifying their client base as 'highly varied' in terms of their technological outlook (Calculated from Appendix 11).

As can be seen in *Figure 7* we do see a slightly larger range, particularly when looking at the responses of Danish practitioners who were more pessimistic about their clients' knowledge of data driven approaches to PR. However, as one subject explained, the Danish market may undergo a period of evolution over the coming years:

We have customers... who are a little younger than me, about 30 years in age, there's a good chance that they can see the benefit of using digital media and numbers and crunching numbers. So you'll see a whole different Denmark in 5 years time because then we have younger CEOs of big companies in Denmark. The CEO in Denmark is still an old school CEO right now.

Benjamin Rud Elberth, GK Nordic.

Through our interviews covering 3 different markets, and our subsequent thematic coding and analysis, we can observe that there is little variation in PR professionals' recognition of Big Data potential across the Danish, Swedish and British markets. The same is true when it comes to practitioners' pre-existing knowledge and experience of handling statistics in their careers. We do, however, observe some variation in country-by-country perceptions regarding client's technological approach to using Big Data analytics in PR. Given that our study was only able to incorporate 3 different national markets it could be interesting for future researchers to expand such an analysis across a wider geographic area.

5.3.3 Research Question 3 - Summary

The 2 themes identified in this section arguably show that the most salient agency characteristic which will hinder the adoption of Big Data practices in PR agencies is the receptiveness of individual clients towards these new approaches. It is apparent that, across the 3 international markets included in this study, there are similar levels of understanding about the potential of Big Data to change the PR Industry as well as pre-existing knowledge about how to handle statistics and identify data sources. The only difference identified between the different markets were the Danish practitioners' concerns regarding the conservative homogeneity amongst their clients approach to new techniques. This is a further demonstration that it is not the location of the agency which will make the difference when adapting to change in the Big Data age, it is the clients who are found in that location.

6. Conclusion

With this research we set out with the purpose of investigating how Big Data will change the PR Industry in the future. This began with a deductive analysis of the literature surrounding definitions of Big Data, its potential applications, as well as the drawbacks of using Big Data analytics. From this analysis we were able to construct a picture showing the theoretical and real-world applications of this technology to add value to existing business models, both in PR and elsewhere. To build on this picture, we then developed a qualitative study designed to interpret the views of those within the PR Industry towards new technological methods and show how the industry is likely to change in reality, on the ground, over the years to come. In order to reach the conclusions outlined henceforth, we set out to answer 3 research questions by analysing the thoughts and opinions of PR professionals working within the industry.

Our first conclusion is that Big Data will indeed change the PR Industry by introducing a new age of methodology allowing for richer communication between agencies and their chosen publics. The key question surrounding the greater integration of Big Data into the PR Industry now appears to be 'when' not 'if'. There is recognition from those working within the industry that they will find themselves with an increasing set of tools, which will allow them to meet the key functions of their roles to an ever-greater degree of effectiveness. The basis of this conclusion is founded within the existing literature but is strengthened by the empirical data we have collected to investigate our first research question. This research question looked to discover how Big Data will allow PR agencies to provide more informed and accurate campaigns for their clients.

Here we found that there is universal recognition amongst the professionals included in this study about the ability of Big Data analytical techniques to allow them to better understand their audiences. Furthermore, there were a significant number of professionals who identified the desire to use Big Data to personalise their campaigns to a greater degree or to measure the value of their work. We also collected and analysed data to show that there were no barriers to the integration of Big Data in terms of practitioners' concerns about ethical or practical drawbacks of using this technology in their industry. We therefore draw our first conclusion that Big Data will introduce new methodology into the PR Industry. This is based on evidence of its current adoption by trend setters in a number of industries and the evident interest of PR practitioners to integrate the new methods available to them.

Our research conducted towards Research Question 2 looked to discover how agencies are best advised to prepare for changes in their business models and workflows to adopt Big Data practices. Within the agencies themselves, we found that Big Data is unlikely to change the composition of the firms too severely in terms of large staffing or organisational changes. This is based on a current lack of intention by agencies to invest in analytical technologies or data storage capabilities to bring analytical processing in-house. Instead we uncovered preferences to either enter into corporate partnerships with established analytical institutions, hire a single data expert or build on the knowledge of their current staff through training when required.

As discussed above, our research shows that PR professionals do have knowledge about Big Data and its potential applications, and so it would appear to be a rational approach to simply build on this existing knowledge rather than risk the expense of hiring new staff. Where we did see investment in new staff with specific backgrounds in using data to derive insights (at GK Nordic and FEW) we discovered a clear knowledge amongst staff about who within the organisation was best to contact for advice. Hiring a staff member in such a position is therefore a sensible, short-

term recommendation to allow agencies to develop their knowledge of Big Data applications amongst their staff.

Finally, our research of 5 different agencies across 3 different countries allowed us to take a broad view of the PR Industry in Northern Europe. Here, in connection to the research conducted around Research Question 3, we looked to discover if unique agency characteristics would have an effect on the adoption of Big Data methods. Through a cross-country comparison we demonstrated that the difference between attitudes & knowledge of PR professionals was minimal. We did however show that the biggest concern for agencies when it comes to using Big Data in their work is that their clients are at different stages of their relationship with data. This therefore makes it difficult for agencies to develop coherent approaches to using new analytical techniques. A further study of an agency with a high number of data aware clients would provide additional insights into this area, as would research surrounding the client side opinions of using Big Data in their PR operation. A summary of the conclusions drawn from our research are displayed in *Figure 8* below.

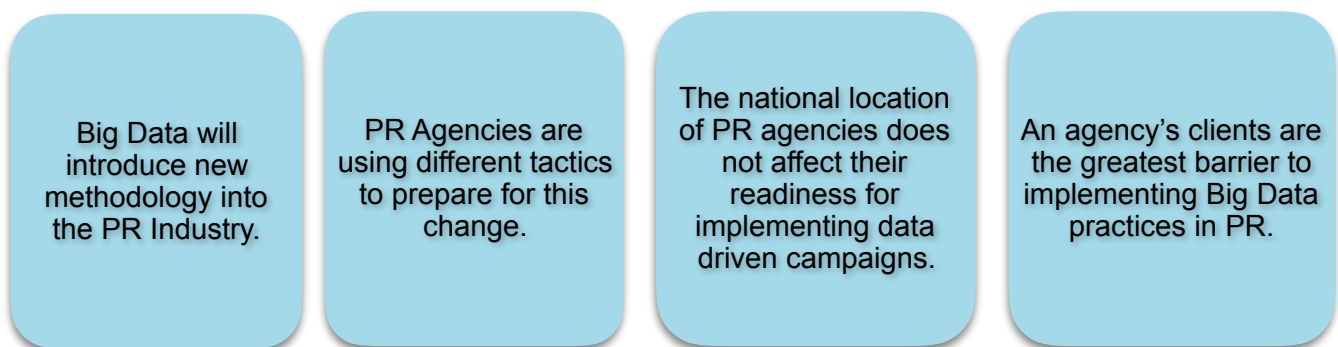


Figure 8: Overview of Conclusions

In summary, this research has shown that Big Data will change the PR Industry by providing practitioners with new tools to better understand and communicate with any given audience. The constant march of data creation, increasing computer power and a better understanding of the value that can be derived from data driven insights is already driving change in all kinds of industries. This is recognised by those in the PR Industry who are willing and able to adopt Big Data practices. We have also shown that attitudes towards integrating Big Data in PR are very similar across Northern Europe.

In the short term, however, the casual observer is unlikely to see any radical structural changes to the industry or the way in which agencies operate. Agencies often find themselves constrained by their clients who are not willing to adopt, or invest in, a Big Data approach to PR at this stage in time. Nonetheless, agencies appear to be best advised to create a position within their organisation who can advise other staff on data driven approaches to PR. This will ensure that agencies are prepared for their clients' future demands for more personalised communication campaigns.

As in every walk of life, the internet is changing the ways we live and interact. We now communicate in ways which would have been unimaginable just a decade ago. PR agencies are still finding their feet in the declining world of the traditional press and are being faced with a larger variety of media through which they can now communicate with their audiences. Those who see the potential of a data driven approach to navigate this complex landscape will be able to reap the benefits of the changing PR Industry, whilst those who do not lay the foundations for a new data driven methodology in PR are likely to be left behind.

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8. Appendix

Appendix 1 - Agency Acquisition Email

Hi [Contact Name],

We are two masters researchers from Lund University School of Economics and Management looking to offer [Agency Name] the chance to receive an in-depth, personalised report focussing on how your agency can stay ahead of the competition and harness the potential of 'Big Data' in future campaigns.

We are looking for an agency to use as a case study to form the base of this research looking into the future benefits that Big Data can bring to the PR Industry. In return for [Agency Name]'s participation in a few interviews between us and your staff, you would receive a comprehensive report focussing on the potential this technology has for your company.

Many of your clients will be collecting vast amounts of data about their customers from websites, search engines, Social Media and consumer research. This data has the potential to be analysed by PR professionals to:

- Create personalised, targeted content for effective communication with stakeholders
- Analyse the effectiveness of ongoing campaigns and actively refine audiences
- Predict 'flash-points' amongst a customer base to prevent future crises

The use of Big Data in PR and Communications therefore has huge positive potential for the industry and we hope to bring some clarity to what is currently a rapidly evolving subject.

We hope that this is a topic you would be interested in discussing further. We are currently available in London on Monday, 18th April and would be happy to set up c. 30 minute interviews with you and/or your team at that time.

Best wishes,

Jack Docherty & Hugh Corbett

Appendix 2 - Interview Guide and Justification of Interview Questions

Question Number	Asked to:	Question	Type of Question	Relevant to Research Question:
1	All Subjects:	Can you provide us with your name?	Introductory	N/A
2	All Subjects:	What's your career background?	Introductory	2
3	All Subjects:	What is your role here?	Introductory	2
4	All Subjects:	Can you give us an idea of a normal day for you?	Introductory	2
5	Management*	How many staff do you have in total?	Introductory	2,3
6	Management*	How many clients are you managing at the moment?	Introductory	2,3
7	All Subjects:	Looking at your career and educational background, can you think of a time when you worked with any statistics or data analytics?	Introductory	2
8	All Subjects:	Have you heard of the concept Big Data? If yes, ask for definition. If no, our definition was provided.	Direct Question / Follow up Question	1,2,3
9	All Subjects:	If one of your clients asked you to create a campaign focussed on a specific group of people, what methods would you use to fulfil such a request?	Probing Question	2
10	All Subjects:	In what ways do you think that your current campaigns could be improved if you had the ability to personalise content to the target audience?	Specifying Question	1
11	All Subjects:	To what extent do you clients differ in terms of their technological ambitions with regards to their campaigns?	Direct Question	3
A**	All Subjects:	Can you give us an idea of some common demographics your clients look to target?	Probing Question	1
B**	All Subjects:	How do you currently gain insights about the behaviour of people within these demographics?	Follow - Up Question	1
12	All Subjects:	What other aspects of PR work do you think think could be developed using data analytics?	Probing Question	1

13	All Subjects:	Thinking of data that would enable you to target a specific set of customers, can you give some examples of what data sources are freely available to your and your clients on the internet or in public databases?	Probing Question	2
14	Staff***	If you were asked by a client to create a targeted PR campaign based on data analytics, could you tell us what support or training opportunities are offered to you by [your agency] to assist with such a project?	Direct Question	2
15	Management*	Do you have any plans to make any investments or changes to make this agency more prepared for the use of data analytics in your work? If yes, what?	Probing Question / Follow Up Question	2
16	All Subjects:	What practical or ethical problems can you foresee with using Big Data analytics to create more accurate and informed PR campaigns?	Probing Question	1

'Types of Interview Questions' drawn from Kvale (1996).

Notes

Questions were presented sequentially in each interview.

*Questions asked to the most senior subject at each agency.

**Questions asked after first round of interviews with Ehrenburg Kommunikation

***Questions asked to all subjects other than the most senior subject at each agency.

Appendix 3 - Interview Recordings and Transcripts

All original interview recordings, as well as the transcriptions used for our analysis, are publicly available on Google Drive when using the following link:

<https://goo.gl/6hwR5i>

Appendix 4 - Names and Job Titles of Interview Subjects

Agency	Country	Name	Position
Ehrenberg	Denmark	Morten Kalum	Junior Consultant
Ehrenberg	Denmark	Fie Vedsmand	Consultant
Ehrenberg	Denmark	Matilda Hellman	Consultant
GK Nordic	Denmark	Mads Johansen	Consultant
GK Nordic	Denmark	Henrik Skyggebjerg	Consultant
GK Nordic	Denmark	Louise Wendelbo Pederson	Consultant
GK Nordic	Denmark	Louise Petersen	Senior Advisor
GK Nordic	Denmark	Bettina Faegeman	Senior Advisor
GK Nordic	Denmark	Markus Vickery	Nordic IT Manager
GK Nordic	Denmark	Benjamin Rud Elberth	Digital Director
FEW	Sweden	Elin Ekstedt	Analyst
FEW	Sweden	Petter Claeson	PR Consultant and Planner
FEW	Sweden	Jonas Grönlund	PR Consultant and Advisor
FEW	Sweden	Lucero Garcia	Content and Communication Writer
FEW	Sweden	Lars Lyberg	Chief Creative Officer
Augure	U.K.	Max Tatton-Brown	Managing Director
Hotwire	U.K.	Matt Cross	Deputy Managing Director
Hotwire	U.K.	Steven George Hilley	UK Board Director

Appendix 5 Research Question 1, Theme 1 Coding

n = Number of times interview subjects identified potential applications of Big Data in the PR Industry. Coding conducted using the transcripts of interview questions 8, 10, A, B & 12.

Country	Agency	Subject No.*	Personalisation of Campaigns (n)	Research of Demographics (n)	Measurement of campaign value (n)	Crisis Communication (n)
Denmark	Ehrenberg	1	2	3	1	0
Denmark	Ehrenberg	2	1	2	0	0
Denmark	Ehrenberg	3	2	2	0	0
Denmark	GK Nordic	4	4	7	3	0
Denmark	GK Nordic	5	4	11	1	0
Denmark	GK Nordic	6	4	3	1	0
Denmark	GK Nordic	7	4	5	1	0
Denmark	GK Nordic	8	0	1	0	0
Denmark	GK Nordic	9	8	2	8	1
Denmark	GK Nordic	10	2	5	0	0
Sweden	FEW	11	4	4	0	0
Sweden	FEW	12	0	3	1	0
Sweden	FEW	13	0	4	3	0
Sweden	FEW	14	1	6	0	0
Sweden	FEW	15	1	2	1	0
U.K.	Augur	16	2	4	2	0
U.K.	Hotwire	17	3	6	1	0
U.K.	Hotwire	18	1	2	1	0
		Total n:	43	72	24	1

* Order of subjects at each agency has been randomised

Appendix 6 - Research Question 1 - Theme 2 Coding

n= number of times interview subjects identified specific potential drawbacks of using Big Data in the PR Industry. Coding conducted using the transcripts of interview Question 16.

Country	Agency	Subject No. *	Privacy (n)	Consent (n)	Practical (n)
Denmark	Ehrenberg	1	0	1	0
Denmark	Ehrenberg	2	0	0	1
Denmark	Ehrenberg	3	1	0	0
Denmark	GK Nordic	4	1	0	3
Denmark	GK Nordic	5	0	1	0
Denmark	GK Nordic	6	1	0	0
Denmark	GK Nordic	7	0	0	3
Denmark	GK Nordic	8	0	0	0
Denmark	GK Nordic	9	2	3	1
Denmark	GK Nordic	10	0	1	1
Sweden	FEW	11	0	0	0
Sweden	FEW	12	1	0	0
Sweden	FEW	13	1	1	0
Sweden	FEW	14	1	1	0
Sweden	FEW	15	0	1	1
U.K.	Augur	16	0	1	0
U.K.	Hotwire	17	1	0	0
U.K.	Hotwire	18	0	0	1
% of subjects who identified each potential drawback of Big Data			50%	56%	61%

* Order of subjects at each agency has been randomised

Appendix 7 - Research Question 2, Theme 3 Coding

n= Number of times interview subjects identified occasions when they had previously worked with statistics or analytics. Coding conducted using the transcripts of Interview Questions 2 & 7.

Country	Agency	Subject No. *	Number of times working with statistics or analytics in career (n).
Denmark	Ehrenberg	1	1
Denmark	Ehrenberg	2	2
Denmark	Ehrenberg	3	0
Denmark	GK Nordic	4	1
Denmark	GK Nordic	5	1
Denmark	GK Nordic	6	2
Denmark	GK Nordic	7	3
Denmark	GK Nordic	8	2
Denmark	GK Nordic	9	2
Denmark	GK Nordic	10	1
Sweden	FEW	11	2
Sweden	FEW	12	1
Sweden	FEW	13	1
Sweden	FEW	14	1
Sweden	FEW	15	1
U.K.	Augur	16	2
U.K.	Hotwire	17	2
U.K.	Hotwire	18	0
% of subjects who have worked with statistics or analytics at least once in their careers			89%

* Order of subjects at each agency has been randomised

Appendix 8 - Research Question 2, Theme 4 Coding

n= Number of times interview subjects identified sources of freely available data that could be used to research or target audience. Coding conducted using the transcripts of Interview Question 13.

Country	Agency	Subject No.*	Number of data sources identified (n).
Denmark	Ehrenberg	1	1
Denmark	Ehrenberg	2	2
Denmark	Ehrenberg	3	0
			Agency Average = 1.0
Denmark	GK Nordic	4	4
Denmark	GK Nordic	5	5
Denmark	GK Nordic	6	1
Denmark	GK Nordic	7	2
Denmark	GK Nordic	8	4
Denmark	GK Nordic	9	5
Denmark	GK Nordic	10	2
			Agency Average = 3.2
Sweden	FEW	11	2
Sweden	FEW	12	3
Sweden	FEW	13	4
Sweden	FEW	14	1
Sweden	FEW	15	1
			Agency Average = 2.2
U.K.	Augur	16	2
			Agency Average = 2
U.K.	Hotwire	17	3
U.K.	Hotwire	18	1
			Agency Average = 2

* Order of subjects at each agency has been randomised

Appendix 9 - Research Question 2, Theme 5 Coding

n = Number of times interview subjects identified available methods to personalise their campaigns. Coding conducted using the transcripts of interview Question 9

Country	Agency	Subject No.*	Traditional Press	Social Media	Analytics & Research
Denmark	Ehrenberg	1	1	0	0
Denmark	Ehrenberg	2	0	0	1
Denmark	Ehrenberg	3	1	0	1
Denmark	GK Nordic	4	1	2	1
Denmark	GK Nordic	5	0	4	3
Denmark	GK Nordic	6	1	2	1
Denmark	GK Nordic	7	0	0	3
Denmark	GK Nordic	8	0	0	2
Denmark	GK Nordic	9	0	1	1
Denmark	GK Nordic	10	0	0	2
Sweden	FEW	11	0	0	1
Sweden	FEW	12	0	0	2
Sweden	FEW	13	0	0	2
Sweden	FEW	14	0	1	0
Sweden	FEW	15	0	0	1
U.K.	Augur	16	0	1	1
U.K.	Hotwire	17	0	0	1
U.K.	Hotwire	18	1	1	1
Totals (n) and percentage of total mentions.			5 (12%)	12 (29%)	24 (59%)

*Order of Subjects at each agency has been randomised

Appendix 10 - Research Question 2, Theme 6 Coding

n= Number of times interview subjects identified a type of support available to them if required by a client to use Big Data analytics in PR campaigns. Coding conducted using the transcripts of interview Questions 14 & 15

Country	Agency	Subject No.*	Training Opportunities	In-House Support	Outsourcing	Investments	Restructuring
Denmark	Ehrenberg	1	0	0	0	0	0
Denmark	Ehrenberg	2	1	1	0	0	0
Denmark	Ehrenberg	3	1	0	0	0	0
		% of mentions	67%	33%			
Denmark	GK Nordic	4	0	0	0	0	0
Denmark	GK Nordic	5	1	1	0	0	0
Denmark	GK Nordic	6	0	1	0	0	0
Denmark	GK Nordic	7	0	0	0	0	0
Denmark	GK Nordic	8	0	1	1	0	0
Denmark	GK Nordic	9	0	1	1	1	0
Denmark	GK Nordic	10	0	2	1	0	0
		% of mentions	9%	55%	27%	9%	
Sweden	FEW	11	0	1	0	0	0
Sweden	FEW	12	0	1	0	0	0
Sweden	FEW	13	0	1	0	0	0
Sweden	FEW	14	0	1	0	0	0
Sweden	FEW	15	0	1	0	1	0
		% of mentions		83%		17%	
U.K.	Augur	16	1	0	0	0	0
		% of mentions	100%				
U.K.	Hotwire	17	3	1	0	1	1
U.K.	Hotwire	18	0	0	0	1	
		% of mentions	43%	14%		29%	14%

*Order of Subjects at each agency has been randomised

Appendix 11 - Research Question 3, Theme 7 Coding

n = Mentions of how varied clients at each agency were in terms of their technological ambitions with PR. Coding conducted using the transcripts of Interview Question 11.

Country	Agency	Subject No.*	Highly Varied	Varied	Limited Variation (High Tech or Low Tech)	No Variation (High Tech or Low Tech)	Don't Know
Denmark	Ehrenberg	1	0	0	1 (No indication)	0	0
Denmark	Ehrenberg	2	0	0	1 (Low Tech)	0	0
Denmark	Ehrenberg	3	0	0	1 (High Tech)	0	0
Denmark	GK Nordic	4	0	0	0	1 (Low Tech)	0
Denmark	GK Nordic	5	1	0	0	0	0
Denmark	GK Nordic	6	0	0	0	0	1
Denmark	GK Nordic	7	1	0	0	0	0
Denmark	GK Nordic	8	1	0	0	0	0
Denmark	GK Nordic	9	1	0	0	0	0
Denmark	GK Nordic	10	1	0	0	0	0
Sweden	FEW	11	0	0	1 (Low Tech)	0	0
Sweden	FEW	12	1	0	0	0	0
Sweden	FEW	13	0	1	0	0	0
Sweden	FEW	14	0	0	0	0	1
Sweden	FEW	15	1	0	0	0	0
U.K.	Augur	16	1	0	0	0	0
U.K.	Hotwire	17	1	0	0	0	0
U.K.	Hotwire	18	0	0	1 (Low Tech)	0	0
% of total mentions			50%	5.5%	17% (LT), 5.5% (HT), 5.5% (NI)	5.5% (LT)	11%

*Order of Subjects at each agency has been randomised