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# BIG DATA AND TRADITIONAL MARKETING RESEARCH: COMPARING METHODOLOGICAL APPROACHES

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## 1. INTRODUCTION

The current global economy has made organizations around the world to deal with complex environments. This reality implies deeper analysis of the relevant issues which affects them, such as: economic, social and technological contexts. Recently, technological contexts develop a great role on organization's practices.

"The tools we are using will always shape our understanding, so if our tools suddenly grow and change, then so will our capacity to understand the world" Strong (2015 p.14-15). For the author, information technology has such impact, although it is not yet clear how it will change the way we understand the world, it will allow measuring it with an ease never before imagined.

One of these recent technological contexts, which impacts society, organizations and business in general, is the arrival of big data (Schwab, 2016; Kitchin, 2014b; George, Hass & Pentland, 2014). For management, big data offers opportunities in organizational research, by examining the strategies and dynamics of how business processes evolve, with real time accuracy (George, Hass & Pentland, 2014). Therefore, big data represents new means to leverage profit, productivity, competitiveness, and market knowledge (Kitchin, 2014b).

But what exactly is big data? Davis (2012) points out that historically, organizations always utilized data for management of activities, however, the main characteristic related to big data, concerns the larger data volume, variety, and velocity available for organizations and society.

Sheng, Amankwah-Amoah and Wang (2017), confirm these three elements previously mentioned as part of big data. The same authors also highlight, that the quantification of data takes different forms and assume various analytics features. Claverie-Berge (2012) also adds the feature of veracity, which represents the presence of uncertainty, incompleteness or ambiguities in big data, and the respective models based on it.

Humans have always attempted to "datafy" the world (via experiments, forecasting or censuses), but what has changed is the degree to which modern Information Technology (IT) systems have facilitated this process (Strong, 2015 p.14). The advancement of IT and computational systems provided the foundations for big data, increasing the complexity of information to manage, also bringing new ethical questions into the organizations, which concerns controlling, security and data privacy (Davis, 2012).

In marketing research, big data represents a new reality and it has increasingly gaining attention within the academia (Wedel & Kannan, 2016; Sheng, Amankwah-Amoah & Wang 2017; Chintagunta, Hanssens & Hauser, 2016; Strong, 2015; Xu, Frankwick & Ramirez, 2016; Erevelles, Fukawa & Swayne,2016; McDowall, 2018).

From a methodological standpoint, gathering longitudinal data is expensive. So, big data has the potential to transform our ability to look at consumer behavior and marketing practices over time (Strong, 2015). Meanwhile, traditional marketing analysis, generally deals with transversal studies, that is, local and small fixed-scale data sets, which are not easily replicable (Xu, Frankwick & Ramirez, 2016; Malhotra, 2001).

Therefore, starting from the following research problem: *what are the methodological advances that big data could offer to marketing research?* The aim of

this theoretical essay is to discuss what methodological advances big data could offer to marketing research by comparing the big data approach to traditional marketing research methods.

This paper is structured as follows: after this introduction, next topic presents a brief revision on traditional marketing research context, analyzing which are the most common approaches and techniques; following, the aspects of big data and marketing research are discussed; in sequence, the comparisons between traditional marketing research and big data context are presented and the last topics, present respectively, the final considerations of this paper and the references cited in this essay.

## 2. TRADITIONAL MARKETING RESEARCH

By providing important information to identify and analyze needs, size and competition in the market, traditional marketing research links consumers to marketers through information that could be used to identify and define marketing opportunities and problems. As well as generate, refine, and evaluate marketing actions; monitor marketing performance; and improve the understanding of marketing as a process (Churchill & Iaccobucci, 2009; Malhotra, 2001).

In this sense, traditional market researchers identify an opportunity, collect the needed information, then formulate an appropriate sales strategy. As Malhotra (2001 p.46) states, traditional marketing research can be classified in two types:

i. **Research for problem identification:** aims on identifying problems that may not appear on the surface but are existent or will probably exist in the future (e.g.: research on potential markets; market share; company image; market characteristics; business trends and forecasting).
ii. **Research for problem solving:** aims on reaching a solution in which findings are used to make decisions that will solve specific marketing problems (e.g.: research on market segmentation; product and service portfolio; pricing; promotions and; distribution channels).

As for data collection, marketing research can be classified into primary and secondary (Wonderflow, 2015; Sarstedt & Mooi 2014; Aaker; Kumar & Day, 2001). Primary data collection includes the most frequent techniques that do not use any information already available on existing sources, that is, it is usually designed from scratch, and it is tailor made and aims to answer to both quantitative and qualitative questions. On the other hand, secondary data collection includes less frequent techniques that use only already available information both form public and private sources. Such type of research is usually faster and cheaper than primary techniques, however this accuracy relies on the quality of the available dataset. Figure 1, displays the pros and cons of both types of data collection:

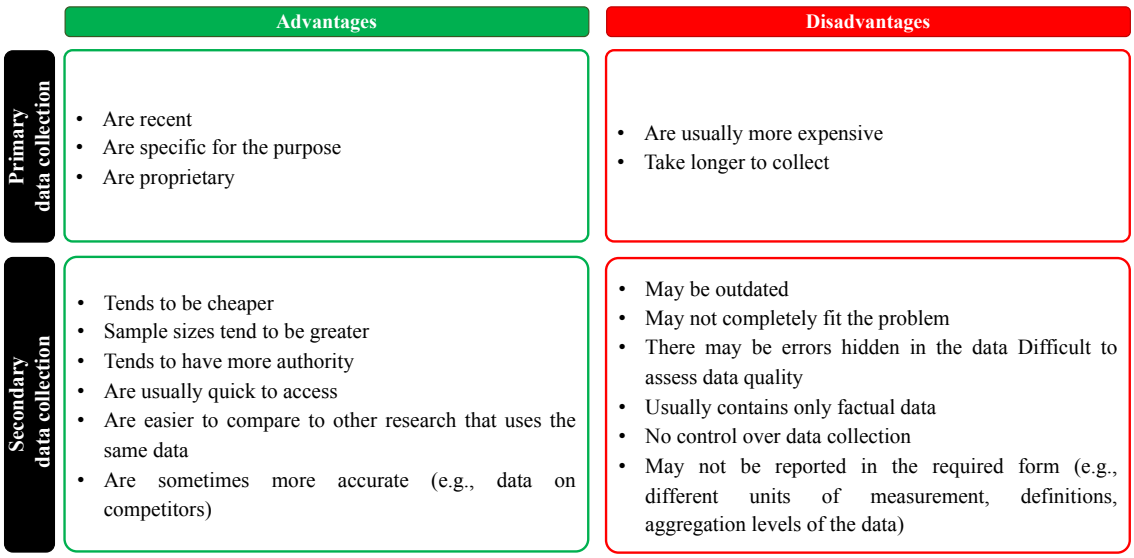


Figure 1. Advantages and disadvantages of primary and secondary marketing research
Source: adapted from Sarstedt and Mooi (2014, p.29) and Aaker, Kumar and Day (2001, p.132).

Furthermore, marketing research can also be divided regarding the type of information that the researcher wants to gather, that is: qualitative or quantitative (Aaker, Kumar, Day, 2001; Malhotra, 2001). As for qualitative research the aim is to analyze opinions and feelings of customers, identifying not only what customers like and dislike, but also "the reason why". On the other hand, quantitative research aims on analyzing the frequency of actions and behaviors of a group of customers with the goal of identifying "how often", "where" or "when" customers make certain things (Wonderflow, 2015; Malhotra, 2001).

As Aaker, Kumar and Day (2001) states, a combination of these research approaches can also be used. Once as pointed out by McDaniel and Gates (2003), the joint use of qualitative and quantitative research offers better understanding of the participants' opinions, judgments and evaluations. For Malhotra (2001), combining qualitative and quantitative research can provide a rich understanding that can assist in the formulation of successful marketing strategies.

It is also worth mentioning data gathering for marketing research must take into account the length of time for gathering the needed data. As Malhotra (2001) points out, marketing studies can be divided into cross-sectional (transversal) and longitudinal studies.

Cross-sectional studies are a type of research that involves collecting information from a given sample only once; such studies may be unique (single sample and single data collection) or multiple (two or more samples and the information for each is obtained only once) (Malhotra, 2001 p.109). On the other hand, longitudinal studies are considered as the gold standard for any social science researcher (Strong, 2015). According to Malhotra (2001 p.111) longitudinal studies are a type of research involving a fixed sample which is measured repeatedly overtime, thus providing a vivid timeframe illustration of the situation and the changes that are occurring. For Strong (2015, p.41), understanding how a consumer operates overtime across different contexts is enormously valuable. However, obtaining such data can get very expensive.

When it comes to the techniques for collecting data, many different methods can be applied for both primary and secondary sources in both qualitative and quantitative approaches. Sartedt and Mooi (2014) summarized the main used techniques and those are depicted on Figure 2; additionally, the most relevant ones – shaded in grey – are detailed in the sequence, inspired by Wonderflow (2015).

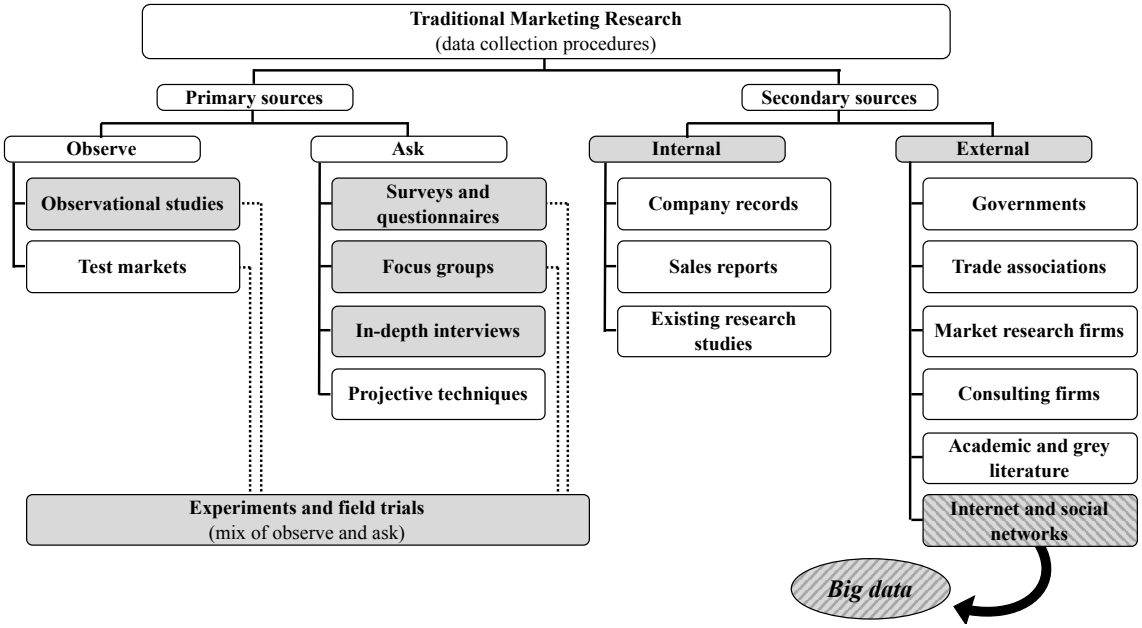


Figure 2. Traditional marketing research data collection procedures
Source: adapted from Sarstedt and Mooi (2014, p.48) and Wonderflow (2015).

Regarding the primary sources for data collection, Sarstedt and Mooi (2014) highlight that this kind of investigation is guided by observing phenomena; asking questions or both. The most recurrent techniques in primary sources are:

- **Observational studies:** Normally used to understand "what" people are doing, rather than "why". Such studies work well when people find it difficult to express with words what they are doing. They provide important insights on behavior that are not available through other market research techniques. Most observational studies use video recording equipment, or trained researchers, who observe what people do unobtrusively (Sardstedt & Mooi, 2014 p.58-59; Malhotra, 2001 p.193-194).
- **Surveys and questionnaires:** Predetermined set of questions applied to a sample (probabilistic or not) normally carried out via written, telephone, web or, intercept forms. It is made of at least one sample, a method of data collection (e.g., questionnaire) and individual questions or items that become data that can be analyzed statistically (via descriptive or multivariate analysis). Good sample selection is key as it allows findings' generalization (Wonderflow, 2015).
- **Focus groups:** Commonly used for exploration, but also for deep dives after a survey, focus groups are a set of interviews conducted among a number of respondents at the same time and led by a moderator. They work well with issues that are important socially or which require spontaneity and are also useful for developing new ideas. Companies and universities often have special conference rooms with equipment like one-way mirrors, built-in microphones, and video recording devices for conducing the sessions (Sardstedt & Mooi, 2014 p. 79-80; Wonderflow, 2015).
- **In-depth interviews**: Qualitative (unstructured, semi-structured or structured) conversations with participants about a specific topic or issue. Are often used to investigate "means-end" issues in which researchers try to understand what ends consumers aim to satisfy and which means (consumption) they use to do so. Depth interviews are unique in that they allow for probing on a one-to-one basis,

fostering interaction between the interviewer and interviewee (Sardstedt & Mooi, 2014 p. 78).

- **Experiment and field trials:** procedure carried out to verify, refute, or establish the validity of a hypothesis, providing insight into "cause-and-effect" by demonstrating what outcome occurs when a particular factor is manipulated. Experiments vary greatly in goal and scale (being divided into: pre-experiments; true-experiments; quasi-experiments and; statistical-experiments), but always rely on repeatable procedure and logical analysis of the results (Wonderflow, 2015; Malhotra, 2001 p.216).

When it comes to secondary data sources, Malhotra (2001) states that they can be derived both from internal and external sources to the company.

In the case of the former, they might be 1) ready for use or 2) demand further processing. In any case, the main sources of internal secondary data are: company records; sales reports and; existing research studies (Sartedt & Mooi, 2014).This kind of source is very useful for companies operating specific businesses in which the company has strong knowledge (Wonderflow, 2015).

Regarding external sources, data is collected by other organizations or people, and refer to events happening outside of the company; usually brands access these sources using a structured/controlled process to extract data (Wonderflow, 2015). For Sartedt and Mooi (2014) the main sources here are: governments; trade associations; market research firms; consulting firms; academic and grey literature and; internet and social media.

As Sartedt and Mooi (2014 p.48) states, it is worth emphasizing that "a popular term in the context of internet and social media data is *big data*". For the authors, "there is not one commonly accepted definition but it is clear that *big data* is quickly emerging. Big data is not unique to market research but spans boundaries, often including IT, strategy, marketing, and other parts of organizations".

In this sense, while big data emphasizes extracting predictive information about customers and sales from large databases (relying solely on information that is already available), traditional marketing research focuses on identifying factors that influence the buying decisions of households and organizations via both primary and secondary data sources (Hall, 2018). Following, the main aspects of big data applied on marketing research are discussed.

## 3. BIG DATA AND MARKETING RESEARCH

As Strong (2015 p.20) points out "there has been so much written about big data elsewhere that there is little point in dwelling on definitions" however as emphasized on a literature survey conducted by Kitchin (2014a p.1-2), big data is characterized by being:

- **Huge in volume:** consisting of terabytes or petabytes of data;
- **High in velocity:** being created in or near real-time;
- **Diverse in variety:** including both structured and unstructured data;
- **Exhaustive in scope:** striving to capture entire populations or systems;
- **Fine-grained in resolution:** allowing the understanding of very granular, intimate behaviors;
- **Relational in nature:** containing common fields that enable the conjoining of different data sets;

- **Flexible:** flexible, holding the traits of extensionality (can add new fields easily) and scalability (can expand in size rapidly).

In 2013, big data appeared as a relevant research theme for social sciences business and management. The papers have used mostly techniques of clustering, classification, and prediction of data (Akoka, Comyn-Wattiau & Laoufi, 2017).

Big data has applications for analysis both to traditional and structured data as to unstructured ones such as: text, images, audio, and video. Unstructured data represents the main constitution of the big data. Today, big data is extracted from new sources, e.g.: social media, mobile and machine devices (Gandomi & Haider, 2015).

Marketing and consumer behavior studies are benefited from the sheer amount of data produced by all online social media. This element makes standard analysis procedures computationally unworkable (Liu, Singh & Srinivasan, 2016). So it is necessary to develop new computational tools for analyzing large data sets (Braun & Damien, 2016).

Gandomi and Haider (2015) described a method for obtaining insights from big data from two phases: the first one refers to data management (acquisition and recording, extraction, cleaning and annotation, integration, aggregation and representation). The second phase is the analytics (modeling, analysis and interpretation).

Big data can have a huge impact for brands, reducing costs, enhancing efficiency and generating a much greater understanding of their customers (Strong, 2015). In marketing, big data could represent for organizations, a larger access to all kinds of consumer's information (demographic, affinities etc.), at any time. These tools can optimize targeting and delivery to consumers (McDowall, 2018). Big Data will ultimately produce an understanding of behavior and marketing approaches that are unknown today (Wedel, & Kannan, 2016).

On a large scale big data represents the possibility of transforming cultural artefacts into data. Methodologically, despite its larger volume, big data does not need to cover all population, and it is better used, when adapted for different research contexts and data nature (Strong, 2015).

Claverie-Berge (2012) presents the contributions that big data can provide to marketing with the use of the following methods and purposes: optimization (e.g.: forecasting, predictive algorithms, decision trees, linear regression); matching (e.g.: personalized message, matching algorithms, matrix computations, single value decomposition); segmentation (e.g.: clustering; scoring; feature selection, associations) and; consolidation (e.g.: clickstream, transactions, events, CRM, support calls).

In marketing, big data offers granular insights and deliver in quasi-real time critical insights into customer needs and behaviors that drive marketing decisions (Schwab, 2016).

The development of big data as a research field demands interactions among distinct areas, such as: machine learning and large-data statistics. In marketing, big data applications and studies could provide new structures and theories for organizations (Chintagunta, Hanssens & Hauser, 2016).

In this sense marketing research could benefit of the technology advances, it might be possible to foresee some more enduring trends and focus research on future issues rather than on past issues(Shugan, 2004).

Sheng, Amankwah-Amoah & Wang (2017), in a review paper demonstrated that big data has several applications on management. In the field of marketing, the authors identified the main areas of studies on which big data can be applied: consumer behavior (e.g.: user behavior, social media, online community); consumer sentiment

(e.g.: online reviews; online ratings); marketing strategy (e.g.: recommendation systems, market analysis, electronic word-of-mouth, brand analysis and advertising & targeting).

Netflix is an interesting empirical example of big data in marketing research, the company analyzes over 2 billion hours of video each month to understand its customers in order to improve its organizational strategies (Xu, Frankwick & Ramirez, 2016; Sartedt & Mooi, 2014). Walmart, by connecting information from many sources, proactively suggest products and services to its customers (Sartedt & Mooi, 2014). Other examples of big data in marketing research are: purchase predictions; consumer preference; advertising and customer acquisition; and brand perceptions (Jacobs, Donkers & Fok, 2016; Huang, Luo, 2016; Schwartz, Bradlow, & Fader, 2017; Culotta & Cutler, 2016).

Wedel and Kannan (2016), described directions in marketing research and analytical method from big data: (a) optimizing marketing mix (b) analytics for personalization, and (c) analytics in the context of customers' privacy and data security. In sequence, traditional marketing research and big data context are jointly discussed.

## 4. TRADITIONAL MARKETING RESEARCH AND BIG DATA: ARE THERE METHODOLOGICAL ADVANCES?

Marketing research is constantly evolving towards a data environment through artificial intelligence and big data (McDowall, 2018). In this sense, for East & Ang (2017), a huge volume of data is becoming predominant into the social science context, which leads to the need of constructing a relationship between marketing factors or even the formulation of new marketing theories in this recent field of data environment.

The main transitions observed into the business research are described on Table 1. While traditional research deals mainly with structured data and analysis, big data is more iterative and exploratory, dealing with semi-structured and unstructured datasets which therefore requires more complex analyzes. The applications vary from traditional surveys (primary source on traditional marketing research) to brand sentiment perception (prescriptive structural model).

**Table 1.** Distinctions and features of traditional and big data approaches in business

| *APPROACHES* | **Traditional Approach**<br>*Structured & Repeatable Analysis* | **Big Data Approach**<br>*Iterative & Exploratory Analysis* |
|---|---|---|
| *Information Technology* | Structures the data to answer that question | Delivers a platform to enable creative discovery |
| *Business user* | Determine what question to ask | Explores what questions could be asked |
| *Main Applications* | Monthly sales reports<br>Profitability analysis<br>Customer surveys | Brand sentiment<br>Product strategy<br>Maximum asset utilization |

Source: Adapted from Claverie-Berge (2012 p.7-8).

Innovations may rise from this perspective, as long as consumers act as data generators and new product creators. Also, in this new reality, products are in an open format and it became easier to modify, because consumers have access to their digital form (Rindfleisch, O'Hern & Sachdev, 2017). Wedel and Kannan (2016) present the aspects of data and analytics in marketing research, varying from a descriptive to a

prescriptive approach according to nature of data and respective methods mostly used; as showed in Figure 3.

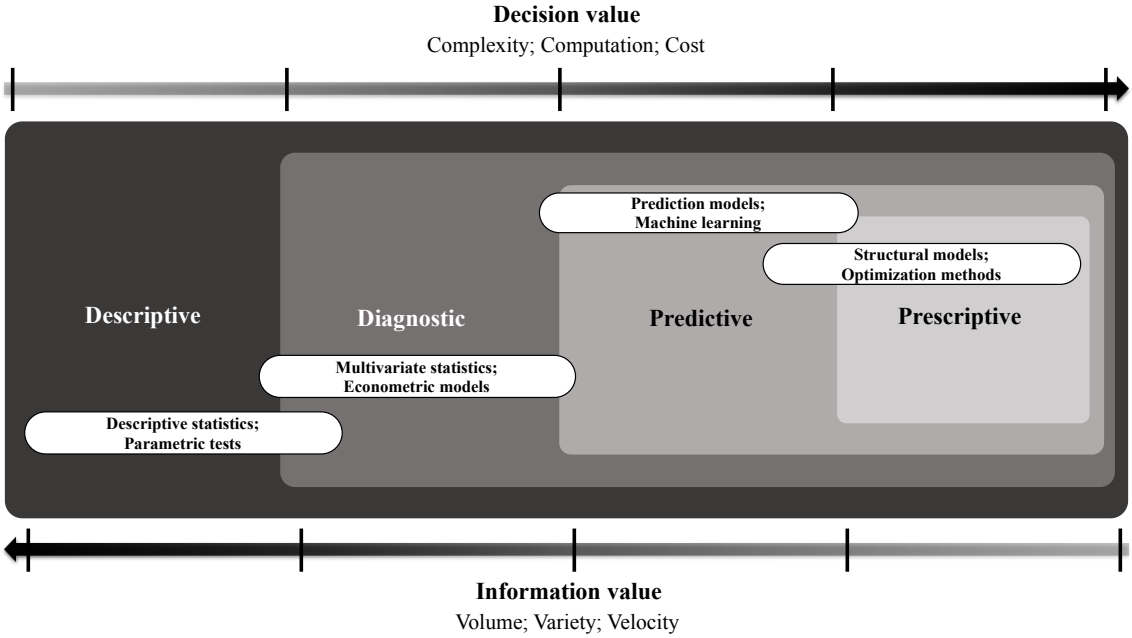


Figure 3. Aspects of data analytics on marketing research
Source: adapted from Wedel, & Kannan, (2016 p.22).

As depicted on Figure 3, information value of the data grows as its volume, variety and velocity increases (Strong 2015; Kitchin, 2014a), but that the decision value derived from analytical methods increases at the expense of increased complexity and computational cost of models (Wedel & Kannan, 2016).

In practice, we are rapidly entering a "post digital" world in marketing, where the siloed thinking that divided marketing into "digital" and "traditional"(or everything else) is being replaced. Instead, we are at a point in practice where digital marketing is just marketing, simply because almost all marketing activities a firm might consider now can have some kind of digital aspect (Lamberton & Stephen, 2016).

When compared to traditional methods in marketing research, big data, is typically squishy by its nature and can be viewed as the opposite of panel data. That is, the data triggers a marketing strategy response among those supplying the data, thus evidencing superiority over panel data (Van Auken, 2015). In this sense according to Katal, Wazid and Goudar, (2013) the most use of big data is for the social media and customer sentiments with big data helping organizations to get customer feedback.

Considering the marketing analytics as evolutive, it is possible to state that big data will become an integrative part of marketing research. When compared with the contexts of the traditional research, as far as the data volume and variety increases, the more complex are the methods and software to analyze them (Wedel and Kannan, 2016). These information is depicted on Figure 4.

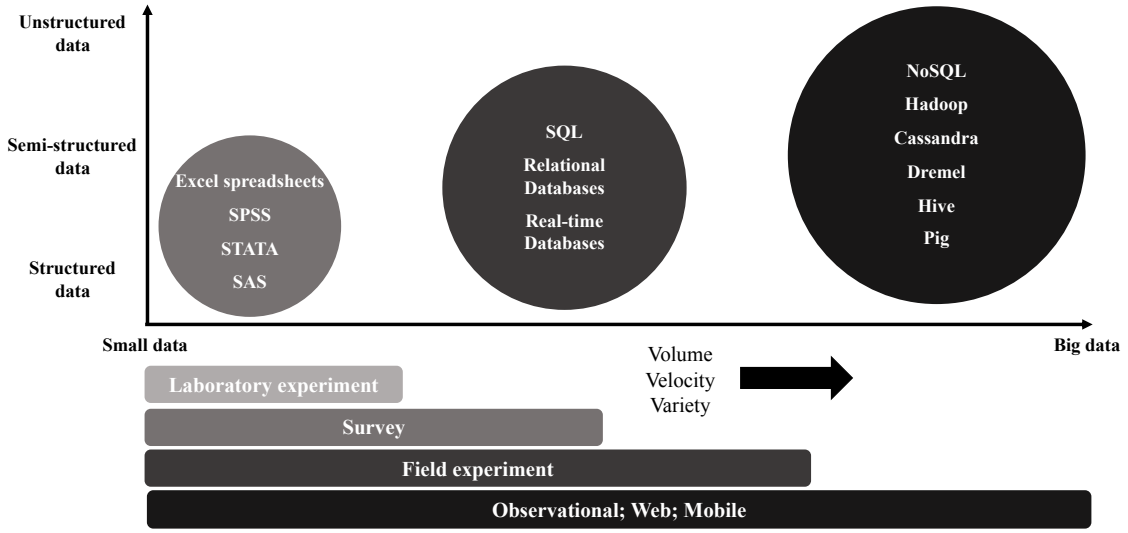


Figure 4. Different software array for processing data in Marketing Research
Source: adapted from Wedel and Kannan (2016 p.17).

As Figure 4 shows, traditional research methods are more adequate to structured data and require less complex statistical analysis software and techniques. The bigger the data set gets, less structured data will likely be, in this sense, more robust statistical analysis and software are required for analysis. Gandomi & Haider, (2015), highlight the need to devise new tools for predictive analytics for structured big data. The statistical methods in practice were devised to infer from sample data.

Another major implication of big data is allowing managers to perform value creation. In marketing research, big data enables customizable real time market segmentation (Wamba et al., 2015). In this sense recent technology advances helps capture massive volume and variety on primary data of consumers at real time. (Erevelles, Fukawa & Swayne, 2016). However Strong (2015), points out that there is questioning whether the massive gathering of personal data could effectively bring up a linear and more accurate consumer loyalty to brands. The author highlight that this relationship in not necessarily linear and social and cultural factors of consumers could interfere on it.

It is also worth mentioning that, one argument in favor of big data usage in marketing research is that – in many occasions – big data could be cheaper and more efficient than traditional primary and secondary methods (Golder & Macy, 2014; Strong, 2015; Sheng, Amankwah-Amoah &Wang, 2017). For instance, when it comes to the gathering of:

- **Social data:** big data gives opportunity to examine social relationships without having the constraints of previous methodologies (such as: interviews and observation) when it comes to sampling and difficulty to get properly unbiased answers. New methods and capabilities also lead to impacts; logit models, Mouselab, Bayesian methods, machine learning, deep learning, and many other tools have opened or are opening new applications, new ways to identify phenomena, and new ways to test theories (Hauser, 2017).
- **Longitudinal data:** while using traditional methods, the gathering of this type of data can get very expensive. Now, however, big data allows looking at the way in which individuals behave very easily by looking back on their on-line trajectory over time. For Rust, & Huang (2014), the availability of big data makes personalization increasingly feasible and cost efficient. Therefore firms can

collect more accurate and detailed customer information at the individual level for a very narrow and specific segmentation.

- **Breadth of data:** we now have access to a world of immensely granular information about our lives that we could not hope to collect in any other way, both from the internet but also from huge data banks owned by governments and corporates. According to Malthouse, & Li (2017), many big data consist of networks, text, images, audio, and video. Methods for analyzing such data are advancing quickly, and there are opportunities for researchers to explore it. One example is Netvizz a platform used to collect data from social media (Rieder, 2013).
- **Real-time data:** big data means that it is now possible to see exactly when each activity has taken place and, whenever necessary, with whom and what was communicated. Big data are often available on a real-time basis (velocity) enabling marketing science models that customize marketing instruments to consumers; such as: consumers search for information, compare prices or make purchases (Chintagunta, Hanssens & Hauser, 2016).
- **Unobtrusive data:** be being a secondary data source, big data is collected "passively", that is, respondents do not need to be engaged in the process (as in case of primary sources); therefore, bias from both parts (respondent and researcher) are likely to be minimized. According to Fan, Han and Liu (2014) big data hold great promises for discovering subtle population patterns and heterogeneities that are not possible with small-scale data.
- **Retrospective data:** digital activity can be recorded with perfect accuracy and it is long lasting. Therefore past-lived situations can be reconstructed allowing retrospective analysis to be very complete and precise when compared to other traditional marketing research means. For Tellis (2017), in marketing most phenomena are dynamic and looking at them statically may result in wrong inferences.

It is worth clarifying however, that primary data sources such as surveys, interviews and experiments are still important and relevant and big data should not replace them (Strong, 2015). Thus, such methods are bound to have new roles in the era of big data. Since, as pointed out by Moe and Ratchford (2018), the technology industry is constantly finding new ways to collect data and inventing new platforms to engage consumers. For the authors, while this can be exciting, it also means that research that takes years to conduct, can quickly become obsolete.

Finally, we need to consider new kinds of data. As Moe and Ratchford (2018) states, quantitative data is relatively easy to work with, and recently we've made great strides in our ability to analyze textual data. However, consumers' behavior are evolving to generate data filled with images and videos; which data scientists are collecting it all. Still according to the authors, with so much of the consumer's voice being expressed through memes, snapshots, selfies, and videos, marketing researchers need to figure out how to extract relevant insights from this type of data.

Therefore, this entire context presented show that marketing science could benefit from big data approach. A degree of evolution on the traditional marketing research is expected (Chintagunta, Hanssens & Hauser, 2016). Next topic presents the final considerations of this essay.

## 5. FINAL CONSIDERATIONS

By aiming at understanding what methodological advances big data could offer to marketing research, the present theoretical essay attempted to compare the big data approach to traditional research methods in marketing research.

While traditional marketing research can gather data from both primary and secondary sources, Hall (2018) states that big data emphasizes extracting predictive information about customers and sales from large databases (relying solely on secondary sources: mainly internet and social media).

In this sense, Kitchin (2014a) characterizes big data as being: huge in volume; high in velocity; varied in nature (structured and unstructured data); exhaustive in scope; fine-grained in resolution; relational in nature; flexible and; scalable. Therefore, such elements make standard analysis procedures (commonly used in traditional marketing research) computationally unworkable (Braun & Damien, 2016; Liu, Singh & Srinivasan, 2016). Therefore, as pointed out by Lamberton and Stephen (2016) the siloed thinking that divided marketing into "digital" and "traditional" is indeed being replaced, since marketing activities now have some kind of digital aspect.

Furthermore, considering the marketing analytics as evolutive, it is likely that big data will become an integrative part of marketing research. As pointed out by McDowall (2018); Wedel and Kannan (2016) and Wamba et al. (2015), for marketers – when well applied – big data is likely to lead the charge in terms of, value creating, personalization, advertising, pricing, targeting, and marketing automation as a whole.

As Strong (2015) states, primary data sources are still important and big data should not replace them, however, such methods are bound to have new roles in this new digital era. Therefore, for the author, big data could improve marketing research, through a large volume and variety of data. However, "data overload" could be a result of big data context and may represent a possible side effect on consumers' decisions. This could happen mainly due to difficulties concerning consumer decision process from a large volume of information available in big data

Big data is constituted mainly by unstructured data in a massive volume: e.g.: text images and videos. This reality implies new computational methods. However, big data also brings up the need of improvement on traditional statistical methods (Gandomi & Haider, 2015; Fan, Han, & Liu, 2014; Liu, Singh & Srinivasan, 2016). Future studies could verify the impact of big data on traditional methods e.g. surveys, interviews and lab experiments.

We can also infer that longitudinal studies can be enhanced by the use of big data, since 1) it deals with a large volume and variety of data, 2) advancements in computational algorithms might promote more detailed and accurate analytical techniques (e.g.: machine learning; neural networks, etc), and 3) might incur in lower costs of such analysis.

As big data deals with both structured and non-structured data, such approach might be useful to address both types of marketing research as depicted by Malhotra (2001): 1) problem identification and 2) problem solving research. We hypothesize that most of the marketing research to be carried out with the use of big data, is likely to be aimed at problem solving. However further studies are need to confirm or refute such hypothesis.

Also worth mentioning is that in many occasions, big data could be cheaper and more efficient than traditional primary and secondary methods (Golder & Macy, 2014; Strong, 2015; Sheng, Amankwah-Amoah &Wang, 2017), however further studies must be carried out in order to validate such hypothesis.

At last (but not least) one final hypothesis we draw is that, consumers' impressions and statements (sentiments) collected through big data can minimize bias on research gathered by primary sources (e.g.: surveys; focus groups and interviews) thus, further studies are also needed to validate or refute this proposition (since rebound effects might be present, such as: herd effects in social media posts).

As for limitations, we point out that as the literature in the field of big data and marketing research evolves very rapidly it is not possible to encompass all the factors that interfere in the research context. Also, be being a theoretical essay the present study needs validation in the proposed hypothesis, therefore empirical studies must be carried out.

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