

Big Data and Data-Driven Marketing in Brazil

Finger, Vítor^a; Reichelt, Valesca^b and Capelli, João^c

^aDepartment of Business Administration, Escola Superior de Propaganda e Marketing, Brazil, ^bDepartment of Business Administration, Universidade Luterana do Brasil, Brazil

^cDepartment of Business Administration, Escola Superior de Propaganda e Marketing, Brazil.

Abstract

The main purpose of this article is the understanding of which marketing strategies related to big data are being implemented by Brazilian companies in different sectors, in addition to assessing these actions within an already established construct. To reach the proposed objectives, an exploratory, qualitative research was conducted using the multiple case study method. Thus, data were collected through bibliographical, documentary and semi-structured interviews, with the intent of formulating the construct by which the companies are studied. The study unit interviewed consisted of market professionals and big data specialists. As the main result, it was widely noticed the application of strategies related to big data by the companies surveyed. The classification of these actions within an already established construct, however, was not possible, since it was understood the existence of distinct stages of adoption for this technology, and it was not possible to label these companies as users of big data.

Keywords: *Big Data; Digital Marketing; Data-Driven Marketing.*

1. Introduction

As time progressed and online interactions evolved, the amount of data and information over the network has grown exponentially. There are currently more than three billion people connected to the Internet (Emarketer, 2017), generating e-mails, having financial transactions and buying products on a daily basis. If analyzing data was a competitive advantage, it is now a matter of survival.

This increasingly extensive and multifaceted set of data that grows progressively, coming not only from new sources but also in new shapes, characterizes a new stage of data analysis that the marketing world is experiencing: the big data (Lohr, 2012). More than this, the modern marketing professional must follow the dispersive evolution of existing channels: the internet that was previously accessed through the computer, can now be reached on cell-phones, watches and even the consumer's glasses. Terms such as Internet of Things and Omnichannel will be increasingly present in the life of these professionals (Ashton, 2009). The complexity created by the amount of information on the network, and the different channels of access to it, makes working with it a barely superhuman task - and that is where programmatic marketing suits perfectly. Marketing automation provides technologies that leverage consumer intelligence systems, optimize interactions across channels, and monitor changes in customer behavior.

Thus, the present article aims to present the concept of big data, highlighting its main characteristics and utilities, in order to analyze the application of data-driven digital marketing. In this way, it is intended to identify the practices of big data adoption, within the cases studied, and to compare them with those found in the literature, pointing out similarities, contradictions and possible actions to circumvent such gaps. However, the literature on the subject is still limited, so this work contributes to the construction of scientific knowledge in the area.

2. Big Data Adoption

In partnership with Saïd Business School, from Oxford University, IBM Institute for Business Value developed in mid-2012 a study with 1144 professionals from 95 countries and 26 industries that aimed to identify how innovative companies have effectively used big data, seeking results focused on the client and taking advantage of the data present in its information ecosystem (Schroeck, Schockley, Smart, Romero-Morales, & Tufano, 2012). In order to avoid biased results, it was sought to have a sample that is active in different areas, among entrepreneurs and information technology professionals.

Their study understands big data as the convergence of four of its dimensions: volume, variety, velocity and veracity. In light of this concept, it is also established the perspective

of "big data adoption", a term used to represent the natural evolution of elements needed to create competitive advantage in the current global marketplace - such as data, sources, technologies and skills (Schroeck et al., 2012).

Based on these concepts and the study carried out, five common trends were found: a) usage of big data focusing on consumer centricity; b) demand of an extensible and scalable information management system to develop big data; c) exploitation of internal data for the first efforts in the area; d) the need for great analytical capacity in order to obtain greater data value; e) identification of four stages of big data adoption (Schroeck et al., 2012).

Regarding the four described stages, a construct is born by which the evaluation of corporations within their level of involvement with big data is possible, identifying where the company is in the trajectory of full-scale implementation. Based on the description of the level of big data activities developed in their organizations, four stages of adoption and progression were suggested: Education, Exploration, Engagement and Execution (Schroeck et al., 2012). The first stage of Education has its main focus on the dissemination and development of knowledge within organizations. According to the authors, at this time companies study the potential benefits of big data analysis and technologies. In the next stage of Exploration, the organization structures a roadmap to develop big data. As explained by Schroeck et al. (2012), here begins the discussions about how to use big data to solve important business challenges.

Therefore, the third stage concerns the organization's effective Engagement with big data, initially proving its real business value. At this moment there is work to understand, technologies to test and skills needed to capitalize on new data sources (Schroeck et al., 2012). Finally, the Execution stage emphasizes the vast operationalization and implementation of analytical capabilities and big data within the company. Having the smallest share observed in the IBM study, this stage embraces big data's market leaders, which are the first ones to implement big data as a way of transforming its business and extract the highest value possible from the information obtained (Schroeck et al., 2012).

3. Methods

For this study, it was conducted an exploratory research, ideal for problems that seek to foster ideas or clarification (Malhorta, 2005). The line of research was qualitative, commonly linked to the exploratory research. Qualitative analysis is important for the interpretation and understanding of how big data is being introduced and adopted by companies in the Brazilian market. The study was conducted in two stages: the first consisted of interviews with specialists and the second in a study of multiple cases.

The first stage of the research had interviews conducted with seven specialists: three managers of companies related to digital marketing, identified with the letter "G", and four big data specialists, identified with the letter "E". The latter are composed by market professionals, data scientists and university professors experts in the subject under study. The interviews were conducted in each professional's own workplace. The techniques used for analyzing the collected data were category analysis and content analysis.

In the second stage of the research, four business cases of companies from different sectors that use data-driven marketing techniques were studied, in order to identify if big data practices were introduced - this assessment was conducted through a construct already validated by Schroeck et al. (2012). Multiple case studies fit on this study due to its understanding of theoretical and literal replications (Yin, 2015), which turn it into a tool for checking the results obtained in previous cases. Four companies that excel in the use and analysis of data to obtain information about their customers were selected and analyzed, being a retail store (company 1), an e-marketplace (company 2), a wine e-commerce (company 3) and an airline company (company 4).

This study also used bibliographical and documentary research to investigate and increase the quantity and quality of the data about the subject. Although it is a business sector somewhat debated by the bibliography, the most specific object in study - big data - is not yet widespread in the academic world. Thus, reports and other documents, from recognized organizations or entities, were necessary, which helped to enrich the repertoire under study, in order to better support the research and, consequently, its results.

4. Results

Through the interviews, it was realized that big data still has countless meanings, varying between huge amounts of data, generation of useful information and advanced analytical capacity. Although there are small differences, much of what was seen at the academy also appeared in the interviews conducted for the study - interviewees E02 and E03, for example, quoted Laney's (2001) view of big data's three dimensions. In an attempt to unify the different concepts among the respondents into a single one, and based on what was predominant in the answers, it is possible to understand big data as the ability to deeply analyze a large amount of data, these being transformed into useful information.

As Taurion (2012), who defines big data as the understanding of an immense amount of data responsible for emphasizes the obsolescence of current technology, most interviewees mentioned "volume" within their definitions as another particularity of the concept. Although this is the biggest appeal of big data, since data increment becomes more important than the efficacy of a predictive model (Dumbill, 2012), volume was often

viewed as the differential, but not the purpose. The concept of Zikopoulos, Deross, Bienko, Buglio, and Andrews (2015) it's supported by interviewee E04, when both evidence the big data's ability to perform complex analyzes never seen before. In other words, what can be done with such an immense amount of data worth more than the fact that it is voluminous.

Besides its definition, it is interesting to analyze the thought of professionals and experts interviewed about the usefulness of big data. Not only it's been talking about large-scale jobs that can not be done on a smaller scale, the purpose of these is to extract new ideas and create unique forms of value, changing markets, organizations and even the relationship between citizens and governments (Cuckier & Mayer-Schönberger, 2013). Among the answers provided during the interviews, the two main points commented were the personalization of user experience and predictive actions regarding demands and behaviors.

Thus, big data is strongly associated with relationship marketing in the stage of mass customization, advocated by Costa (2013). According to Peppers and Rogers (2014), the advantage of obtaining information about the company's public is to create the possibility of treating differently different consumers, as exemplified by the answers provided during the interviews. Likewise, the brand seeks to understand its client and his life moment to adapt to its needs (Peppers & Rogers, 2004), which supports the second big data utility. In short, as identified in the interviews, the characteristics to define big data are: the three dimensions (volume, velocity, and variety), the ability to analyze this immensity of data and the generation of useful information from them. On the other hand, its usefulness is to personalize the experience that users will have and predict future behaviors.

Seen that, the cases studied are analyzed through a broad bias, which instead of seeking a full adoption of big data, called by Schroeck et al. (2012) as the stage of Execution and which contains the smallest share of companies in this movement, seeks to identify practices used to understand the concept development within organizations. In other words, before turning big data into a single concept that involves a binary "yes or no" response to its adoption, it must be understood that it encompasses a number of strategies and actions that may be used in whole or in part by companies. Like Schroeck et al. (2012) clearly demonstrated, there are several stages of engagement with big data practices, and their adoption is progressive.

Regarding the volume needed to consider data analysis as big data, the cases studied showed different results. Schroeck et al. (2012) points out that the definition of what constitutes a large amount of data varies according to the industry studied, and the present cases are from four different ones. All cases, however, have volumes starting from millions of users, with Company 2 having a database with more than 132 million contacts. If for Dumbill (2012) the data increment becomes more important than the predictive model, and Cavoukian and Jonas (2012) explain that the great change is in the maximization of

information, sources and competitiveness, it is understood that the volume used by the studied firms fits into such descriptions, since results of revenue and performance evidence the advantages gained from their work.

On the subject of variety of data and its sources, especially on unstructured data (Dumbill, 2012), the studied companies still have a small development. Although Company 2 uses different data sources to control its results, and Company 4 crosses data from behavioral and transactional sources, these data are still possible to work with traditional analysis tools. The big data differential, according to the interviewee E04, is the possibility of crossing unstructured structured information such as messages, texts, voices and the Internet of Things.

Even though it does not fit as a proof of data diversity, the analysis and crossover work carried out by Company 4 shows another important side of the big data: the need for large analytical capacity to obtain higher data values (Schroeck et al., 2012). By crossing behavioral data, such as personal preferences and lifestyle, with transactional, like flight history and main destinations, the airline reaches a unique understanding of its consumers, applying on them correct strategies and meeting their individual expectations. If big data's usefulness is based on thousands of variables and information that are cross-referenced and analyzed to generate one-to-one communication (E01), we have an example of how this is being done.

Schroeck et al. (2012) notes in his research the trend of using internal data as the first effort in the area, aligning with works found in Company 2. The execution of analyzes based on users origin allowed segmentation according to the customer's country, creating specific approaches for each nationality and culture. Another interesting use of internal analysis is the cross of new names with those already in the company's database, making it possible to identify the gender of a person and the kind of communication from that.

A final point advocated by Schroeck et al. (2012), and that is seen in the studied cases, relates to customer centricity. According to the interviewee G01, the use of data to customize and optimize user experience is the main aspect to be worked with big data, and Company 1 understands and applies this concept in its communication strategies. Through automated programs, and according to consumer interactions, the brand manages to work the customer's lifecycle and deliver the right message at the right time and to the right person. This work is so greatly done that, in 2015, the company received a Markie Awards in the Consumer Centricity category for customer-focused decision making.

The comparisons made in this chapter highlight the work done by the studied companies in relation to the concepts defended by experts and scholars on the subject. In this way, it became possible to approach the solution of the proposed research problem. The final

considerations touch the subject so that the reader has an understanding of the result obtained with the present study.

5. Discussion

The characterization of big data, as evidenced both in literature and interviews, takes place in different ways. Seen this, it was not created a unique concept which, taken as truth, defines how within the universe of big data is certain action. However, it was possible to identify relevant aspects for its characterization.

Through the alignment between theoretical reference and data collected, it was noted that the three dimensions used as the definition for big data in its conception remain in vogue, since interviewees and authors have listed volume, velocity, and variety of data as essential aspects for the characterization of the term. Also, it was understood that not only the storage, but also the ability to analyze this immensity of data is vital for the work to have meaning in its realization, generating information useful to those who develop it. Synthesizing, the characterization of big data takes place both in the technical aspects and in the real use of data, through the personalization of experiences that the user will have and prediction of future behaviors of the same.

The four companies studied, each with its own differentiating aspects, evidenced to work its data in a continuous and progressive way, from the collection to the extraction of value. Understanding the customer lifecycle and customizing communications based on consumer preferences and history are some of the techniques used by companies during the study.

It was also found initiatives related to databases crossing, in order to enrich analyzes carried out and the value of information obtained. In this matter, Company 2 uses this technique to cross new contacts with those already existing in its base and Company 4 identifies the correct platform to get in touch with the client.

Although a certain part of big data conceptualization has been covered by the companies' actions in their data and communication works, there are points defined as essential by interviewees and scholars who were not mentioned. The use of semi-structured and unstructured data, such as voice messages, photographs and Internet of Things, constitutes an important gap for the full acceptance of companies in the big data universe. Likewise, the ability to forecast future trends and behaviors was little touched by companies, evidencing the lack of action in this regard. In short, it is possible to recognize the existence of strategies geared towards big data - advanced data extraction and analysis - in Brazilian companies, but they cannot be classified as big data users.

References

- Ashton, K. (2009). That ‘internet of things’ thing. *RFiD Journal*, 22 (7), 97-114.
- Cavoukian, A., & Jonas, J. (2012). *Privacy by Design in the age of big data*. Retrieved September 08, 2015, from https://privacybydesign.ca/content/uploads/2012/06/pbd-big_data.pdf
- Costa, G. C. G. (2013). *Negócios Eletrônicos: uma abordagem estratégica e gerencial*. Curitiba: InterSaberes.
- Cuckier, K., & Mayer-Schönberger, V. (2013). *Big data: como extrair volume, variedade, velocidade e valor da avalanche de informação cotidiana*. Rio de Janeiro: Elsevier.
- Dumbill, E. (2012). *Big data now: 2012 edition*. Sebastopol: O’Reilly Media.
- Emarketer. (2017). eMarketer Updates Worldwide Internet and Mobile User Figures. Retrieved May 23, 2017, from <https://www.emarketer.com/Article/eMarketer-Updates-Worldwide-Internet-Mobile-User-Figures/1015770>
- Laney, D. (2001). *3D Data Management: Controlling Data Volume, Velocity and Variety*. Stamford, CT: META Group. Retrieved February 20, 2001, from <http://blogs.gartner.com/doug-laney/files/2012/01/ad949-3D-Data-Management-Controlling-Data-Volume-Velocity-and-Variety.pdf>
- Lohr, S. (2012, February 12). The Age of big data. *The New York Times*.
- Peppers, D., & Rogers, M. (2004). *Managing customer relationships: A strategic framework*. New Jersey: John Wiley & Sons.
- Malhorta, N. K. (2005). *Introdução à pesquisa de marketing*. São Paulo: Prentice Hall.
- Schroeck, M., Schockley, R., Smart, J., Romero-Morales, D., & Tufano, P. (2012). *Analytics: The real-world use of big data. IBM Institute for Business Value*. Retrieved November 03, 2015, from https://www.ibm.com/smarterplanet/global/files/se__sv_se__intelligence__Analytics_-_The_real-world_use_of_big_data.pdf
- Taurion, C. (2012). *Você realmente sabe o que é big data?* IBM Developer Works. Retrieved September 10, 2015, from https://www.ibm.com/developerworks/community/blogs/ctaurion/entry/voce_realmente_sabe_o_que_e_big_data?lang=en
- Zikopoulos, P., Deross, D., Bienko, C., Buglio, R., & Andrews, M. (2015). *Big data Beyond the Hyper: a guide to conversations for today’s data center*. Mc Graw-Hill, Retrieved November 20, 2015, from https://www-01.ibm.com/marketing/iwm/iwm/web/signup.do?source=sw-infomgt&S_PKG=ov28197&dynform=11707
- Harness the power of big data - The IBM big data Platform*. (2013). Mc Graw-Hill. Retrieved September 10, 2015, from <http://www-01.ibm.com/software/de/big-data/pdf/assets/Harness.PDF>