DOI: 10.5902/19834659 22046

MARKETING METRICS, BIG DATA AND THE ROLE OF THE MARKETING DEPARTMENT*

Métricas de marketing, Big Data e o papel do departamento de marketing

Submission: 29/04/2016
Accept: 27/02/2018

Carla Freitas Silveira Netto[1]
Luiz Antonio Slongo[2]

ABSTRACT

Marketing metrics are a way of proving the result of marketing efforts and ensure its relevance inside companies. Big Data can be an opportunity for marketing to gain even more importance since access to a greater volume of information makes possible to develop new metrics. The present paper verifies if this is a reality on marketing departments, if the department is involved in developing or reporting metrics, and in the use of Big Data. To achieve this goal, first, we develop premises from the literature so that, after, we can confront it with reality, captured by interviews with marketing practitioners that work on different economic sectors. We intend to present possibilities for future research and to foster discussion about the marketing department responsibility to present metrics about the results of its actions.

Keywords: marketing metrics, Big Data, business intelligence

* The first author expresses her gratitude for the doctoral scholarship received from CNPq - National Council for Scientific and Technological Development – Brazil.

1 Ph.D. marketing candidate at the Federal University of Rio Grande do Sul (UFRGS), Brazil. She was a visiting Ph.D. student of the Department of Econometrics & Business Statistics at Monash University, Australia. E-mail: carla.netto@gmail.com
ORCID: https://orcid.org/0000-0002-3458-4257

2 Professor at the Business School of Federal Univesity of Rio Grande do Sul (UFRGS), Brazil. At the Business School, he teaches and researches in the Masters and Doctoral Programs in Business (PPGA). He holds a doctorate in management from University of São Paulo (USP).
E-mail: luiz.slongo@ufrgs.br. ORCID: https://orcid.org/0000-0002-8269-4338

RESUMO

Métricas de marketing são vistas como uma forma de comprovar os resultados do trabalho da área, validando sua importância, dentro das organizações. Já Big Data se apresenta como uma oportunidade para as empresas terem mais acesso a informações sobre os clientes, possibilitando a criação de novas métricas, comprovando resultados que antes não se conseguia, sendo então uma oportunidade para a área ganhar ainda mais importância. O presente artigo questiona se a realidade atual dos departamentos de marketing envolve o desenvolvimento e acompanhamento de métricas, assim como o uso de Big Data. Para isso, busca formar premissas a partir da literatura e indícios dessa realidade através de entrevistas com profissionais de marketing de diferentes setores. O objetivo da pesquisa é levantar possibilidades para pesquisas futuras na área e incentivar uma discussão sobre a responsabilidade do marketing de apresentar indicadores de suas ações.

Palavras-chave: *métricas de marketing, Big Data, inteligência de mercado*

1 INTRODUCTION

Access to information is increasing in volume, variety, and speed – the Big Data's three V's, according to Taylor, Schroeder, & Meyer (2014) – giving the marketing department an opportunity to take the lead and deliver metrics that are valued by the executive board. Therefore, this should be an opportunity for marketing professionals to gain relevance, as they are used to analyzing market data and consumer behavior, translating them into action.

Marketing is an applied science, and as much as theory advances, it is important that these advances contribute to society and, in the case of marketing, to organizations, to the market as well. The present paper proposes to discuss the current role of marketing as a department within these organizations. Despite having a wider role in society than the one discussed here, we will specifically address the importance and responsibility of marketing to justify the outcome of its actions within organizations.

McDonald (2009) published a paper in the Journal of Marketing Management on how to revert the current marketing situation. According to the author, a change in marketing practice is needed in order not to lose relevance as a department and as a science, as it is losing influence on corporate strategies. The author states that professionals from other areas do not understand marketing's importance and role, which evidences a gap between academic research and practice, damaging the companies' perception of the influence of marketing in the results.

Within this scope, McDonald (2009) also highlights the results of a survey conducted by Deloitte with European companies. It shows that executive boards do not fully understand the value of marketing, its role in the company as a theory or as a department, or even perceive its influence and responsibility for business growth (for more details on the research, see Deloitte, 2008).

The disbelieve on the marketing department's importance intensifies at the same time access to data is increasingly abundant. Ease of access makes analyzing such data less likely to be a differential for businesses, but much more a necessity, which means that investment in analytics and Big Data must grow. An investment that also implies recruiting qualified people who, if not found in the marketing department, will be hired form other fields. This evidences the importance for marketing graduates to be prepared to work with metrics already in use by companies, and those that need to be developed with the access to Big Data.

Therefore, our paper's goal is to question if this is the current reality of marketing departments, in Brazil. Is the department presenting metrics of its results? Moreover, is the department prepared to work with Big Data? This paper first looks at the literature on the current state of marketing to develop premises. After, we sought to confront this to reality, in Brazil,

through interviews with marketing professionals from different sectors. The goal of our paper is exploratory and aims to raise possibilities for future research, encouraging a discussion about the responsibility of marketing to present indicators of its actions.

In this paper, the theory about marketing metrics and the use of data is the basis for propositions over the participation of the marketing department in the development of metrics and data analysis. Then, through interviews with professionals from Brazilian companies, the propositions (theory) are contrasted with what was exposed by the companies and, finally, possible gaps are explored in both literature and marketing practice and topics are proposed for future research. This study intends to contribute to the discussion of the role of the marketing department as well as the opportunities and challenges of the current focus on Big Data.

2 MARKETING METRICS

If metrics are not lacking in marketing departments, to have a set of standard metrics is (Stewart, 2009). Metrics that can be used and compared across companies, studies, or periods (Petersen et al., 2009). There are established metrics in marketing literature and that are used in practice (*i.e*. customer lifetime value - CLV), however not performance measures of marketing actions. Those are measured in different ways by different companies and by different departments within the same company. Marketing also needs metrics that are explicitly linked to financial performance (McDonald, 2009; Stewart, 2009). Among the reasons mentioned for justifying the need for metrics to be financial are: "finance is the language of business"; "companies disclose publicly and are evaluated by financial metrics"; "it is a way of answering about the ideal marketing mix," among others (Stewart, 2009, pp.636-637).

According to Stewart (2009), the marketing department does not lack metrics - for a review of existing metrics see Petersen et al. (2009) and Srinivasan & Hanssens (2009) - but there is a disappointment of the executive board with the existing metrics. The author states that the greatest satisfaction among marketing directors is with metrics that are related to marketing activities that bring instantaneous results and that are easy to measure, such as those of direct marketing, email marketing, online campaigns, and telemarketing. However, those that bring less satisfaction are branding and advertising metrics, for example, and it is in these topics that companies invest most of its resources and researchers have focused most of their time (Stewart, 2009).

A study conducted in Brazil regarding B2B (business-to-business) market, by Sampaio, Simões, Perin, & Almeida (2011), concluded that 66% of respondents were familiar with metrics and used more than one of them. However, among the most well-known and used are the number of customers, the number of complaints and customer satisfaction metrics, probably because those are easy to measure. These metrics, however, were not evaluated as the most important by the same respondents. Among the most important, but not widely implemented, the authors found: sales volume, ROI (return over investment) and market share.

Proposition 1: Companies focuses on developing metrics that are easy to measure.

Petersen et al. (2009), Stewart (2009), McDonald (2009) and consulting companies such as Marketo (2011), seek to establish a process for the development of these metrics. These processes involve establishing goals, searching for data, linking marketing activities, marketing metrics (intermediary), and financial performance metrics, seeking a backward view (consumer satisfaction) as well as forward view (sales forecasts).

Measuring the impact of marketing on company performance is a complex challenge, requiring reliable aggregate market data from external sources and attitudinal data, as well as

statistical analyses, assumptions about the future, and estimates of customer value and profitability of a segment (Barwise & Farley, 2004). It is also difficult, expensive, time-consuming, requiring resources, and the ability to identify activities that occur today, linking them to their effects at some point in the future (Stewart, 2009). Even so, this type of analysis should be routine in the marketing department and undergraduate marketing students should learn this type of analysis since, as Stewart (2009) states, if marketing professionals do not take responsibility for this, it will be imposed on them by the executive board or taken from them by other professionals.

Stewart (2009) also points out that many data do not have temporal and local synchronization with marketing activities and with what happens in the market, making it difficult to link activities and results. Therefore, the possibility of access to real-time data would facilitate the development of metrics, since first companies need to be able to capture the appropriate market and customers' data to develop different metrics (Petersen et al., 2009).

Proposition 2: Access to data and skilled professionals influence the participation of marketing department in the process of developing the metrics.

3 ANALYTICS AND BIG DATA

The concept of Big Data is defined as a change in the scale and scope of the sources of data and in the tools to manipulate those new sources that became available (Taylor et al., 2014). Big Data, like analytics, extracts intelligence from data and translate into business advantage. However, Big Data has three differences, according to McAfee, Brynjolfsson, Davenport, Patil, & Barton (2012) volume (increasingly larger databases), variety (data from different sources), and velocity (real-time or near real-time).

Big Data can be considered highly multidimensional in terms of the number of variables per observation, the number of observations, or both (Taylor et al., 2014). The term is also used to describe more detailed data about consumer behavior (Taylor et al., 2014). Or even as a broader concept that stands for all advanced technology trends that enable a new approach to understand the world, and make decisions (Lohr, 2012). It concerns not only a greater volume of data but new information that was not available before in such a volume. Examples are location, pulse, temperature, humidity, or chemical changes in the air (Lohr, 2012). The sources of such new data are those provided by new technologies such as smartphones and Internet-connected products (internet of things).

Leeflang, Verhoef, Dahlström, & Freundt (2014) identified that the companies that are applying these tools are those that are part of the "subscription" or signature business, however, the authors identified that 80% of the companies that participated in the study did not have fine-grained consumer data (i.e. Big Data) or the ability to link that data to product sales or service use. Rogers & Sexton (2012) found similar results, although all marketing professionals surveyed by the study believed that successful brands use consumer data to make decisions, only 29% of respondents still use very little or no consumer/customer data.

Rogers & Sexton (2012) conducted their study with professionals of mostly B2B market, regarding the use of metrics and the adoption of Big Data, as well as other digital tools. They identified a need for improvements in data use and in the estimation of marketing returns. In this survey, 39% stated that the data of the companies where they work are collected rarely or not in real time. In addition, 51% say the lack of data makes it harder to measure marketing ROI effectively. The authors also claim that all professionals want to have Big Data and use data in their analyses, but many still do not collect the data they need (Rogers & Sexton, 2012).

Some challenges in implementing Big Data and other analytics tools may be the reason for the lack of use by some companies. According to Taylor et al. (2014), with the exception of more sophisticated companies, many firms have databases and know about their potential, but do nothing with them because they have no idea what to do.

Proposition 3: Companies still have difficulty accessing customer data and do not yet have access to Big Data.

This is due in part to the lack of professionals with the ability to analyze these data (Kerwin, & Zmuda, 2013; Leeflang et al., 2014). According to Leeflang et al (2014), university programs have so far given little attention to quantitative and decision-making skills, and the increasing prevalence of Big Data requires a stronger focus on the development of analytical skills and in the use of data in marketing (Leeflang et al., 2014). The authors caution that if marketing professionals do not gain familiarity with such tools, they may begin to lose space for professionals from other areas, such as IT (information technology).

Brynjolfsson, Hitt, & Kim (2011) conducted a study on the effect of data-based decisions on company performance, however, it is interesting that the authors' definition of "data-based decisions" is based on how much the company invests in IT. On one hand, this choice may appear to be a weak point of the study, once they do not consider the role of marketing in the interpretation and use of data from these technologies. Another perspective is that it may portray how other departments are perceiving marketing's contribution and skill to use such data and apply it to the process of decision-making at the companies. That is, perhaps the marketing department and its professionals, being unfamiliar with the analysis of these data, are, as proposed by Leeflang et al (2014), beginning to have difficulty in fulfilling their responsibilities, which are being incorporated by other areas.

While universities do not adjust curricula to ensure the training of marketing professionals with higher analytical skills, companies are looking to economists to take up the challenge. According to Taylor et al. (2014), economics researchers are working out of academia at companies such as Google, Amazon, e-Bay or HP, where they have access to new and privileged data sources. However, the challenge for those companies remains, since, although these professionals have quantitative and analytical skills, they lack marketing theory and practical knowledge. This can cause glitches in the interface between marketing and analytics (Leeflang et al., 2014).

Some companies have tried to solve this by outsourcing this function, hiring specialized consultancies, however, Leeflang et al (2014) caution that, as analytical skills became strategical for companies, outsourcing becomes a dangerous solution.

In addition to the challenge of having qualified staff, companies need to redesign processes for the implementation of these analytical tools (Leeflang et al., 2014). According to Leeflang et al. (2014), many companies do not have the data organized properly. While data is becoming cheaper and prices for analytical tools are not prohibitive, even with some open source options, these technologies require skills that are new to many IT departments, requiring a lot of work to integrate all internal and external data sources (McAfee et al., 2012).

Proposition 4: The difficulty of finding marketing professionals with analytical skills causes companies to outsource the storage and analysis of data or give this responsibility to other departments.

The study conducted by Germann, Lilien, & Rangaswamy (2013), linking the use of marketing analytics and performance, shows that the impact exists and is greater when the sector is characterized by strong competition, and when consumer preferences change frequently. They also identified that the support of the executive board support and an analytical culture are essential for the company to benefit the most from the use of marketing analytics (Germann et al., 2013).

Petersen et al. (2009) warn that, in most cases, the implementations of this type of technology in companies fail, and that this is strongly influenced by the real intention of the company to base their decisions on the analyzes that are done with the support of the technology adopted. It is important that companies not only start collecting customer data but that they adopt technology and a process of data collection that is aligned with company culture (Petersen et al., 2009).

Proposition 5: Analytical culture and support from the executive board influence the use of data.

4 METHOD

To explore the propositions based on the literature, interviews were conducted with executives of Brazilian companies from different sectors (see Table 1). Each respondent answered the interview about the reality of their own company. The semi-structured interview script (see Appendix A) was based on the questionnaires used by Rogers & Sexton (2012), as well as the questionnaires used by Sampaio et al. (2011), Germann et al. (2013) and Brynjolfsson et al. (2011). During the interviews, the talk concentrated over the topics, however not being overly strict to the order or the way the questions were written. The questions were mainly introduced while the respondents explained the processes of their departments, with many of the topics being brought naturally, during this explanation.

The interviews were conducted during the months of June and July 2015, and took, in duration, between 30 minutes and one hour and a half of each respondent time. They were carried out with marketing professionals or, when indicated by our contact person in the company, with professionals of the department called "business intelligence". In order to choose the companies for participation in this research, we took into account their representativeness within their sectors and the availability to respond to the research. One of the respondents, a company that provides services in analytics, was added by indication of one of the companies interviewed. The number of interviews was determined by saturation criteria, when the responses began to be repetitive and no longer bring new information, the field was ended. However, a larger number of companies interviewed could bring more detailed information, which should be considered a limitation of this work.

Table 1 - **Description of Participating Companies.**

Sector	Respondent department	Number of employees	Year of establishment	Market	Description
B2B – automotive	Business Intelligence (1 respondent)	More than one thousand	1967	Worldwide	Largest specialist in steering systems in Latin America.
Footwear (industry and retail)	Marketing (1 respondent)	More than 800	1945	Worldwide (18 countries)	Manufacturer and retailer of footwear with several brands.
Hotels	Marketing (2 respondents)	Approximately 5 thousand	1999	Brazil and Uruguay	Hotels focused on the business sector.
Technical and higher education	Business Intelligence (2 respondents)	Approximately3 thousand	1946	Brazil	A mixed economy education institution that offers higher education, technical, and free courses.
Beverage e-commerce	Business Intelligence (1 respondent)	Approximately300	2008	Brazil	The largest wine e-commerce in Latin America, the 7th most innovative company in Brazil.
Analytics service provider	Account manager (1 respondent)	More than 100	1996	Brazil	Provides marketing cloud services: CRM tools; e-mail marketing; sponsored links; analysis of the customer's life cycle, and other services.

Source: Authors (2019)

The criteria for choosing the companies was that they give access to the marketing professionals and therefore have the department or function in their staff, be headquartered in Brazil and performed well in their markets. The choice of companies mapped out a variety of sectors including industry, commerce, services, as well as B2B and B2C companies. Through this action, we tried not to benefit companies more likely to use data, such as those based on subscription, but to have a more heterogeneous perspective, that could make possible to identify different uses and challenges. The goal was that, with the market inherent differences, it would be possible to complement or even contrast what was identified in the theoretical review.

From all the companies contacted, six agreed to participate. It was also evident, during the field research, the need to talk to a service provider, since two companies mentioned using their services. At the request of the companies, they were not identified.

The interviews were recorded, transcribed and then analyzed using qualitative data analysis software (NVivo). A content analysis was performed, where interviews were grouped and classified according to the assumptions raised in the literature, that is, in the following topics: ease of measurement; access to data; access to Big Data; professionals' ability; and analytical culture. In order to ensure the validity of the results, when doubts arose, these were clarified, formatting a summary of the results, containing only the respondent's company information, and sent to them, by email, requesting that they confirm if the understanding of what was exposed by them was correct.

5 RESULTS

In this section, we present the analysis of each proposition, based on the answers of the respondents.

5.1 Easy-to-measure metrics

The companies studied focus on easy-to-measure metrics, as Sampaio et al (2011) observed in their study. The main metrics cited were related to the return of email marketing actions (click rate, conversion in e-commerce), actions in social media (likes, reach, sharing), website ads (clicks, conversions), online sales channels (heatmaps, clicks, visits, conversion) and programmatic media (clicks, visits, conversion). These metrics are reported in a way that directly links them to the company's performance, differently from what the literature says it usually happens (McDonald, 2009; Stewart, 2009). Respondents also cited sales volume, ROI and market share metrics:

> and then, for example, in the case of programmatic media, what are the results that we look at? First we look at how much we paid, always when we buy printing, it is priced at CPM [cost per thousand impressions, in Portuguese, as in "custo por mil"], we look at the CPR, which is the click-through rate of every 100 impressions, conversion rate, which is the number of visits generated by those clicks that generated conversion. And then we'll look at [...] from the conversions what the average revenue was, so it's all based on data. [...] After that, another data that we analyze a lot here is the lifetime value, which is how much the customer generated in revenue not only in the first interaction but in all the interactions he made later in the site (Beverage e-commerce).
>
> It is like this: Did you sell more than last year? How much more? Okay, so it worked out (Footwear).
>
> We always wrap marketing actions up [with metrics report] and we do market comparisons, even for our internal customers, that is our hotels, to understand, to know the campaign's performance [...] we are able to know the revenue that was generated, [. ..] we are able to compare and say to the hotel this is not relevant, this here is relevant (Hotels).

> We control the points of sale that participate in the actions and whether they increase sales in the next 3 months or not. It is just sales and market share. We do not have metrics to control the institutional part (Automotive).

According to the company that provides analytics services, "conversion rate is the metric that customers [business] focus on. The focus is always on booking [in the case of hotels], generating demand. And the ROI on sponsored links, which is the conversion rate at e-commerce".

In only one of the surveyed companies, from footwear sector, there is no control by metrics, no measurement processes, and no reports to the rest of the company of its results. However, the respondent said that marketing actions are focused on generating sales and, with this, "we can only see the financial result through the sale [...] if there is a return of 15 to 20% more than the same period of the previous year, then it was efficient" (Footwear). The education institution also uses sales as a metric, although, divides it into a record of interest and enrollment (sale), "but other variables, besides the campaign enter into the analysis [of the return], competitors' actions, the market".

In addition, metrics such as brand image and reputation are also being measured by data coming from online sources: "we can measure the brand image today through social media [...] if the customer is speaking positively or negatively [...] how is the little face in the Complain Here website [Reclame Aqui, in Portuguese]" (Footwear).

In this way, we can see a predominance of metrics for short-term actions, mainly online, that are planned and controlled based on the return they bring: "a campaign that has a bad result, we will want to allocate that budget in the next month or in the next week for another type of campaign" (Beverage e-commerce).

In addition, it is possible to observe not only a preference for performance-related metrics but also for marketing actions that allow traceability and measurement. For that reason, "what is being cut off the budget are the non-measurable investments. Those we do not know how to analyze the return [...] we cannot even measure how the ad performed [...] it's more for brand reinforcement" (Hotels). These non-measurable actions would be those that generate brand awareness, such as those in traditional media, for example, which are seen as costs, but are necessary:

> any company, if we analyze a startup, for example, in any way [the metrics] are going to be super bad, because it has the branding issue that is much harder for you to measure, but it has a gigantic impact on all the metrics. So, for example, today the [company] is going to make a campaign, as it is a super well-known brand in the market now, it has a better result than if it was the same campaign by a brand without having any brand awareness [...] then, in the end, you generate a virtuous cycle, the more the company is known, the better the metrics get, and better the quality of the data collected, and it ends up having a bigger budget too, which increases brand awareness, and improves results" (Beverage e-commerce).

As regard to the standardization of metrics among companies, as observed by Stewart (2009), we noticed that, in describing the metrics they use, respondents are not clear if what they are measuring results in a correct way, or whether there is a pattern of how to do it or, even are not aware of the possibility to measure some actions, as in the case of actions in traditional media.

> I think our ROI is not so real, because real ROI considers the investment made, [...] then it is revenue, number of stays and number of reservations" (Hotels).
> We followed this [media that motivated the enrollment], but this is for the enrollment and not for a specific campaign. To know that it would be necessary to do research after the campaign and, as research is very expensive, it is preferred not to invest in it (Education).
> We do email marketing, but we cannot measure its return (Footwear).

Only the beverage e-commerce mentioned that it has trouble to standardize the metrics used by the different departments: "there are several people here who create metrics in a way to make it optimal for their department [...] each one generates [..] in a way that they can have control over it, and, sometimes, it is not the best way for the company as a whole". Nevertheless, as discussed above, the respondents reported measuring actions in a fairly similar way, as well as the type of actions measured.

5.2 Marketing involvement in defining metrics

In the interviews conducted, respondents reported that metrics are established in strategic planning, but the marketing department does not actively participate in this process. It was noted that the two respondents actually from the marketing department act as support to the sales department or are focused on communication. They explained their tasks as being mostly operational, consisting of creating campaigns, and controlling communication budgets and suppliers. The marketing departments communicate metrics, however, do not participate in its development or even in the definition of its goals: "we have a system that is the finance department that manages and set the goals of each store" (Footwear).

In other respondents' companies, the marketing department directed our interview to the department of "business intelligence," which is responsible for providing strategic support to the CEO and other company's departments. In these three companies, the department reports directly to the CEO, providing information for the development of the strategic planning, supporting the definition and monitoring metrics of all departments of the company, including the marketing department:

> we support the company's strategic planning through the development of a planning book [report with information about the economic scenario, divisions performance, competitors' information, updates on the different sectors of activity, student profile, SWOT analysis]. We decide based on data and facts [...] analysis of competition, market data, internal performance, and we propose changes, and we also support the setting of metric's goals in a conjoint work with the pedagogical department. Now we are implementing portfolio management analysis, product margin analysis, the return over that investment. And that allows you to focus efforts, whatever it is – hiring human resources, marketing actions, training - for those products that will help the company achieve its strategic goals (Education).

The business intelligence department in the education institution assists in strategic planning and goal setting, which will support the yearly decisions over investments and budget setting for the companies' divisions. After the work of the business intelligence department is done, it is sent to divisions that will go through negotiation rounds with corporate management. At the end of those rounds, they sign a contract that establishes the goals and budget agreed for the next year. In partnership with the departments of quality control and IT, business intelligence created an index to monitor the performance on the goals agreed in the contracts. This index is published on an internal website and, in case of poor performance, divisions need to provide written justification and plan of action to fix it.

In the automotive company (B2B), the marketing department no longer exists. The company changed its structure after they mapped all processes. Marketing department's tasks and responsibilities were incorporated by other departments. Strategic support (market information, competitors, market share, SWOT matrix, diagnostics, control over actions, and goal setting) is now the responsibility of the business intelligence department. The sales process, as it is called, incorporated promotion related tasks, and human resources process incorporated internal marketing tasks.

In the companies studied, access to the data came before the possibility and the need to develop metrics or to "do something with the data". In the beverage e-commerce, for example, there was already a "willingness to store information, even if they were not being used" (beverage e-commerce), even before structuring a department to be responsible for the analysis of this data. The same was stated by the hotels' respondents, they already had a database, because the hotel guests have to fill out a check-in form with their information, "we already had the information, we only needed the tool [..] and we have many metrics to use in this system" (Hotels).

In the education institution, the use of formalized metrics emerged after data access already existed, stimulated by the regional director and his willingness to certify the company in quality control awards such as PGQP (in Portuguese, Programa Gaúcho de Qualidade e Produtividade, a regional prize for quality) and PNQ (in Portuguese, Programa Nacional de Qualidade, a national prize for quality) "and the metrics were one of the main control tools of top management". However, the use of data has been expanded, gained importance and investments during this process.

The footwear company is still in a previous stage, where the data is collected, but the use is still very limited, without deeper analysis, that leads to segmented actions or the development of specific metrics for these actions, for example:

> we use clients' records to do some actions by SMS [...] we filter customers who have a limit and send them [...] but we do not have a CRM [customer relationship management] plan to specifically work with the membership card client (Footwear).

5.3 Difficulties in having access to data and no access to Big Data

Different from what was reported in the literature (Rogers & Sexton, 2012; Taylor et al., 2014), the companies interviewed have access to data. Customer data is collected and stored in systems, then analyzed, disseminated within the company or used in marketing actions that are then measured and return as information to improve future actions. That is, the companies have data, link them to sales, and they facilitate the development of metrics.

Besides that, this data goes beyond demographic profile and sales history, including data on frequency of product use (seasonality, months of the year, days of the month or week when customers use the most), media that motivated the company choice, satisfaction surveys, research on product/service improvements or new offers they would like to receive. It also goes beyond internal data, including some external sources, such as Facebook, sponsored links, unions and associations surveys, or government official sources (in the case of the education institution, Census data from the ministry of education, for example, provides information on the production, i.e. the enrollment numbers of each competitor). The data analyzed by the respondents also includes informal sources such as other companies, from different sectors, that supply for the same customers (in the case of the automotive company) or front-line employees: "they are the ones who are there to listen to the customer. Therefore, if the customer says that this collection is not good, [...] they talk, they bring this information to us" (Footwear).

A single company mentioned that they did not have access to customer data, only being able to "have more complete data from those who have the membership card from the loyalty program" (Footwear). Other customers would have to fill in a form, and the respondent does not think they are willing to do it, consequently, it is also the only company that mentions not having defined metrics.

Regarding the use of Big Data, only e-commerce uses it, specifically to purchase programmatic media:

> basically, we have several types of data here, both structured and unstructured. With regard to structured data, we have sales data, customer history [...] and we use this information for segmentation [...] and, for example, stocking products, [...] based on what we sell the most [...], in which ones are trending, which type of product is growing, which category is growing, which one is declining [...] And then we have the purchase of programmatic media, in which we use both primary data, which are our data, and [...] of a company that provides customer browsing data. Therefore, for example, the moment you are browsing, for example, on the Terra website, there is a negotiation at that moment, an auction to see who will buy that visualization of yours. [...] Some companies sell these data that have your information, based on your browsing. It is stored, based on cookies, all this information and they know that you have a certain age, some kinds of interests and then they sell these data to advertisers to buy that media [...] The moment you hit enter to go to Terra website, we bought this information. [...] Therefore, we are willing to bid higher at the real-time auction, to show you advertising of the [company]. This is super-based on data (beverage e-commerce).

5.4 Outsourcing or participation of other areas in data analysis

The lack of qualified professionals for data analysis was mentioned by all companies as a challenge, making hiring more difficult and expensive, "because we need people [...] with skills [...] it is necessary to have a person who thinks about communication, but who is also a statistician" (Footwear). The beverage e-commerce mentioned that it is investing in training current employees to mitigate this difficulty.

It is not just a lack of analytical skills that affect data analyses quality. Training and awareness of front-line employees are also a concern for the companies studied since failure to register customers correctly affects the quality of data inputs, integration between systems, and consequently brings less reliability to metrics generated from them:

> last year we ran a campaign because through CRM we can control the quality of data that we have in our system. So, we ran a campaign to incentive them to meet data quality goals [...] we traveled around the hotels giving CRM training and letting them know how important it is for them to enter the correct information on the system and everything. Because it is from this information that marketing can work with more segmented actions and consequently bring more results (Hotels).
>
> Today the effectiveness of the data depends on the human assertiveness at the front-line and since there are many divisions, with a high level of turnover, and with many data inputs to be filled, it is not a very friendly process [...] This leads to some data not being filled or being poorly filled, which later impacts on data analysis (Education).

Besides the lack of qualified professionals to work with data and metrics, according to the company that provides analytics services, high turnover is also a challenge for companies because "a lot of information and training is lost when people leave." With outsourcing, this is attenuated, since the information stays with the company: "we have a lot of strength over our competitors because we are specialists in hospitality [...] we have the information, we are the reference. This creates a dependency on customers and hinders the entry of a competitor." This statement also shows that by outsourcing, the supplier has access to a strategic part of the companies and makes them dependent on that service.

Additionally, in the companies that the marketing department was interviewed, we noticed that the analysis of data and performance are not the department's responsibility. An example is the footwear company, in which "the commercial manager, depending on the outcome of the campaign, compiles the reasons why it may not have worked out and takes it forward". In companies that business intelligence staff was interviewed, this became even more evident, since the marketing department did not even feel capable to answer the questions of the present study.

Another major difficulty encountered by respondents seems to be the integration of data sources: "the IT system that hotels use, which merges the guest's file [...] and it does not happen in a correct way. Therefore, the system itself has been disrupting the operation of the CRM and information get lost" (Hotels). This difficulty, as the company providing analytics services states, is in the integration of the system used by the hotels with the CRM system, in combining the data that comes from different sources, involving a number of different departments. The automotive company had the help of a consultancy company over one year and involved about 20 professionals, "it took a lot of work to integrate the processes and even the systems [...] it involved a lot of operational work regarding the systems, but the staff was motivated to do it".

The education institution brought up another difficulty, being able to create personalized visualizations in a simpler way. The institution feels the need to hire the services of software companies every time they have to control a new metric, which greatly increases costs. This is necessary because the IT department does not have enough resources and skills to meet this demand internally.

5.5 Analytical culture and board support

We can state by the respondents' explanations regarding their processes that executive board support is essential. For example, the automotive company argues that the most difficult part of the implementation of metrics was to motivate people to contribute with information:

> you do not arrive from one moment to the other and say: now we have these business intelligence products and they will be the guiding principles of the company. No. You go and ask, and build it slowly. However, one of our most effective actions was, first, to set it a top-down policy [...] if you do not have it, forget it. If business intelligence process does not come from the CEO, forget it. This is so true that today, I report directly to him (Automotive).

In the education institution, it was the regional director's decision to participate in quality certifications that structured a department responsible for data in the company. In the hotels, the respondents stated that executive board support was not the only determining factor. Other factors played a role in it, such as "the market need [...] they were already thinking about it, and the opportunity to make the investment arose, and the [coordinator] and the [manager] already had knowledge and skills" (Hotels).

The respondents also mentioned the market as one of the influences to use data and, consequently, to have more metrics or not:

> There is no pressure to report it because things happen naturally. We know how much we invest in marketing actions and how much it returns. If we did not do it [marketing actions] they know that it would be much worse, so there is no such pressure [for using more data, analysis, and metrics] [...]our consumers, they are very easy, in our business it is very easy to be assertive (Footwear).
> Usually, the great difficulty within other companies is to be able to justify the importance of this [having metrics and data to report results]. Because we are in e-commerce this is an easier problem to overcome than to those in the offline world. Our data necessity is much higher than that of an off-line business (beverage e-commerce).

Regarding the analytical culture, the automotive company mentioned that the business intelligence process has the support of "agents" from other processes, mapped with the help of the staff responsible for human resources processes (HR department). These agents help in specific analyzes by bringing information that they have access to, writing reports along with

business intelligence staff and attending the board meetings. They see this involvement and presence in the meeting as a reward, since they "know that their work will influence an organization's decision" (Automotive).

6 DISCUSSION

By analyzing the interviews, it can be seen that not all the propositions based on the literature were found in the reality of the companies studied (see summary in Table 2). Although this paper presents exploratory research, it is possible to identify some possible gaps in the literature or even in marketing practice, which need further investigation in future research. On one hand, in practice the use of data is more advanced than is stated in the literature, however, on the other hand, the marketing department is kept even more distant from the process of data analysis and establishment of metrics than academia could predict. Also, unlike what was identified in the literature, companies do have access to data, link them to sales, and use them to develop metrics. Regarding Big Data, although less used, it was mentioned by one of the companies.

Table 2 - **Summary of results.**

	Proposition 1	Proposition 2	Proposition 3	Proposition 4	Proposition 5
Theory	Companies focus on developing metrics that are easy to measure.	Access to data and skilled professionals influence the participation of marketing department in the process of developing the metrics.	Companies still have difficulty accessing customer data and do not yet have access to Big Data.	The difficulty of finding a marketing professional with analytical skills causes companies to outsource or give this responsibility to other departments.	Analytical culture and support from the executive board influence the use of data.
B2B – automotive	It focuses on easy-to-measure metrics such as sales	Marketing is not responsible for the metrics	It has access to data (not Big Data)	Business intelligence has the responsibility for data and metrics	Executive board support was essential to get support from employees
Footwear (industry and retail)	It focuses on sales volume, without defined metrics	Marketing only reports metrics when requested by other areas	It does not have access to customer data	It does not have metrics. The department lacks the ability and does not have the pressure to analyze data or develop metrics	There is no pressure on the executive board and, therefore, no encouragement to use metrics
Hotels	It focuses on easy to measure metrics, mostly of CRM actions	It outsources the development and monitoring of metrics	It has access to data (not Big Data)	Outsourced company has the responsibility for data and metrics	Marketing managers with analytical skills stimulated the use of metrics
Technical and higher education	It has a set of indicators that includes easy to measure metrics, as well as some customized metrics	Marketing is not responsible for the metrics	It has access to data (not Big Data)	Business intelligence has the responsibility for data and metrics	The decision of the company's regional director was decisive for the creation of a department responsible for metrics
Beverage e-commerce	Automated metrics such as ROI and conversion rates (sales)	Marketing is not responsible for the metrics	It has access to data and Big Data	Business intelligence has the responsibility for data and metrics	The need of the market in which they operate was decisive
Analytics service provider	Automated metrics, focusing on conversion rates	It is an outsourced company that develops metrics for customers	It has access to customer data (did not mention Big Data)	It is an outsourced company that performs this service for other companies	It is a company specialized in metrics

Source: Authors (2016)

Marketing metrics and actions are focused on the short term, which seems to confirm the literature and what Webster (2002) had already identified, namely that managers pressured to show results prefer the more evident ability to report effects of short-term promotions than face the problem of study the long term effects of advertising in branding strategies (Webster, 2002). However, it is important to highlight that one of the companies recognized the role of advertising in traditional media for the success of other actions, since, in its view, only companies with well-known brands are able to get a result in short-term actions. Even thou acknowledging this importance, none of the companies mentioned having metrics for actions with long-term effects.

With respect to the difficulties of developing metrics, the main one is the lack of knowledge on how to measure some actions. The difficulties to use data are the quality of these; access to technology for different data sources' integration; better data visualization tools; costs of technology; and availability of skilled professionals. Faced with these difficulties, all companies transferred this responsibility to other companies or departments, not being a function of the marketing department no longer. This reality was identified in the literature review (Leeflang et al., 2014). Literature has also warned that removing this responsibility from marketing can cause problems, because professionals from another field, although they have the analytical knowledge, don´t have domain knowledge. This lack of knowledge can lead to erroneous conclusions, that does not take into account competitors and customers behavior. Besides that, when these processes leave not only the marketing department but also the company, via outsourcing, there is a risk of the firm becoming a hostage of another company to be able to establish its own strategy.

According to Webster (2002), the main responsibility of the marketing department should be to provide knowledge about the firm's customers. Now, as well as other marketing functions, such as quality control and communication that have already been transferred to other departments, this responsibility is also been relocated and gaining its own department - the business intelligence department. Thus, in the companies studied, marketing in one of them was once again functioning as a support for sales. In another lends its name to the communication department. Finally, in others we identify, at least in part, a similar structure as the one Webster (2002) suggested: customer orientation as top management responsibility; strategic management as a responsibility of a team of analytical specialists; and demand stimulus (promotion and sales), a responsibility of the sales department.

7 CONCLUSION

The present paper is exploratory and the assumptions formulated were intended to summarize the present state of the literature and not to create hypotheses to be tested. The interviews were conducted to look for examples that could complement literature, and, possibly, bring new questions to be investigated in future studies. Even in a preliminary way, we hope to have contributed to the literature, highlighting possible gaps, as well as proposing a reflection on marketing practice and its role.

Some limitations of the study, however, need to be mentioned before proposing future studies. The first is the number of companies that accepted to participate, as well as the number of respondents in each company. Although companies have different marketing structures, related both to the functions performed, and to the size of the departments, it is necessary to study other realities to complement the perspective presented in this paper. Companies from other sectors, sizes, or regions, may offer different or complementary realities from what has been

exposed here. In addition, no attempt was made to evaluate the ability of professionals to work with metrics objectively. The respondents were asked over their thoughts about the difficulties for the development of metrics and lack of skills was one of the main causes mentioned. This is a reality not only in Brazil, as it can be identified in the literature reviewed. Business graduate courses all over the world are also undergoing adaptations to better prepare students.

In the present study, we could identify that the relationship proposed by Germann et al. (2013) between executive board support and the employees' ability (see Figure 1) is confirmed since, in companies in which the board is involved, people hired to work with metrics are reported to be more skilled. In addition, in the same companies, there are tools (systems) that help to organize and document the process, as in the cases of companies in the automotive and education sectors, which also establishes the relationship between executive board support and use of tools, suggested by the authors. Regarding the analytical culture, it seems to be related to the support of the board, but it is also necessary to motivate staff so that it is maintained, either by giving rewards for filling the data correctly (as in the example of the hotel) or by the personal satisfaction of being a part of management meetings (as in the automotive company).

In companies where analytical culture, skills, and tools were more frequently mentioned and that seemed to be more structured, are also the ones that mentioned reporting marketing related metrics. We can, therefore, observe some support to Germann et al. (2013) propositions. Future studies could further confirm these relations and expand or review the framework proposed by the authors. According to what was identified in the interviews, at least in the Brazilian context, it would be necessary, firstly, to understand better how the use of analytics influences the use of metrics by marketing related to performance (Figure 1). This relationship was not clear in the results of the present study, since, unlike what was stated in the literature, only after access to data were the metrics developed. Thus, access to data may precede the support of the executive board, suggesting a revision of the model presented in Figure 1.

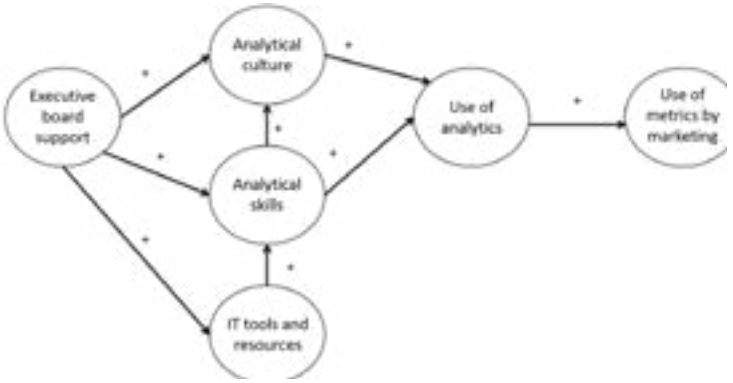

Figure 1: Framework to be reviewed.
Source: Adapted from Germann et al. (2013)

The framework in Figure 1 is based on what has been presented so far, that is, it is necessary to have metrics in marketing and for this data is needed. Therefore, having access to data, developing tools, and training staff positively influences the development of metrics, as well as the company's analytical culture and resources (skills and tools). It can also be established that companies that have marketing metrics and use analytics will tend to have more performance-related metrics and thereby the company's board of directors will be more satisfied. However, according to what was observed in the interviews, the executive board of some companies does not

rely on marketing to access information or to report metrics, which are responsibilities of other departments, such as business intelligence.

It is understood that it is necessary to further investigate how companies are structuring themselves to work with data and to develop metrics since, through the interviews made for the present study, we can identify that this responsibility is leaving the hands of the marketing department and being relocated to another: the business intelligence department. New studies should, therefore, seek a better understanding of the antecedents of data usage and of metrics' development. It is also important to investigate further the changes over marketing department responsibilities in practice, what are the functions and importance it is playing in companies' strategies.

REFERENCES:

Barwise, P., & Farley, J. U. (2004). Marketing metrics: Status of six metrics in five countries. *European Management Journal*, *22*(3), 257–262.

Brynjolfsson, E., Hitt, L. M., & Kim, H. H. (2011). Strength in numbers: How does data-driven decisionmaking affect firm performance? *Available at SSRN 1819486*.

Deloitte. (2008). *Marketing in 3D*. Retrieved from http://www.deloitte.com/assets/Dcom-Sweden/Local%20Assets/Documents/se_marketing_in_3d_060208.pdf

Germann, F., Lilien, G. L., & Rangaswamy, A. (2013). Performance implications of deploying marketing analytics. *International Journal of Research in Marketing*, *30*(2), 114–128.

Kerwin, A., & Zmuda, N. (2013). Ad-exec of the future? Big-Data draper. *Avertising Age*, *84*(11), 32.

Leeflang, P. S., Verhoef, P. C., Dahlström, P., & Freundt, T. (2014). Challenges and solutions for marketing in a digital era. *European Management Journal*, *32*(1), 1–12.

Lohr, S. (2012). The age of big data. *New York Times*, *11*(2012).

Marketo. (2011). *Marketing metrics & Analytics*. Retrieved from http://www.marketo.com/definitive-guides/marketing-metrics-and-marketing-analytics/

McAfee, A., Brynjolfsson, E., Davenport, T. H., Patil, D. J., & Barton, D. (2012). Big data: the management revolution. *Harvard Business Review*, *90*(10), 60–68.

McDonald, M. (2009). The future of marketing: brightest star in the firmament, or a fading meteor? Some hypotheses and a research agenda. *Journal of Marketing Management*, *25*(5–6), 431–450.

Petersen, J. A., McAlister, L., Reibstein, D. J., Winer, R. S., Kumar, V., & Atkinson, G. (2009). Choosing the right metrics to maximize profitability and shareholder value. *Journal of Retailing*, *85*(1), 95–111.

Rogers, D., & Sexton, D. (2012). Marketing ROI in the Era of Big Data. *The 2012 BRITENYAMA Marketing in Transition Study*.

Sampaio, C. H., Simões, C., Perin, M. G., & Almeida, A. (2011). Marketing metrics: Insights from Brazilian managers. *Industrial Marketing Management*, *40*(1), 8–16.

Srinivasan, S., & Hanssens, D. M. (2009). Marketing and firm value: Metrics, methods, findings, and future directions. *Journal of Marketing Research*, *46*(3), 293–312.

Stewart, D. W. (2009). Marketing accountability: Linking marketing actions to financial results. *Journal of Business Research*, *62*(6), 636–643.

Taylor, L., Schroeder, R., & Meyer, E. (2014). Emerging practices and perspectives on Big Data analysis in economics: Bigger and better or more of the same? *Big Data & Society*, *1*(2), 2053951714536877.

Webster, F. E. (2002). Marketing management in changing times. *Marketing Management*, *11*(1), 18.

Appendix A - In-depth interviews' questions

Do you get involved or have knowledge about how marketing metrics are determined?
Does the marketing department report metrics? What kind of metrics? How does marketing measure the return of its actions? How is this report?
Does the executive board expect/pressure marketing to have more metrics, a more analytical contribution?
How is the process of collecting consumer data? Does your company use customer information to base its decisions? Is the marketing involved in this process?
Is data collection linked to metrics reported by marketing?
What are the tools for collecting data?
Is there any attempt to use Big Data?
What are the difficulties in accessing and using data? What is the main challenge for the company today regarding these issues? What about metrics?