Data-driven services marketing in a connected world
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Abstract
Purpose – The purpose of this paper is to provide insights into the benefits of data-driven services marketing and provide a conceptual framework for how to link traditional and new sources of customer data and their metrics. Linking data and metrics to strategic and tactical business insights and integrating a variety of metrics into a forward-looking dashboard to measure marketing ROI and guide future marketing spend is explored.

Design/methodology/approach – A detailed synthesis of the literature is conducted and contemporary sources of marketing data are categorized into traditional, digital and neurophysiological. The benefits and drawbacks of each data type are described and advantages of integrating different sources of data are proposed.

Findings – The findings point to the importance and untapped potential of data in its ability to inform tactical and strategic marketing decisions. Future challenges, including top management support, ethical considerations and developing data and analytic capabilities, are discussed.

Practical implications – The results demonstrate the need for executive service marketing dashboards that include key metrics that are service-relevant, complementary and forward-looking, with proven linkages to business outcomes.

Originality/value – This paper provides a synthesis of data-driven services marketing and the value of traditional and contemporary metrics. Since the true potential of data-driven service management in a connected world is still largely unexplored, this paper also delineates fruitful avenues for future research.

Keywords Services marketing, Data management, Customer measures, Customer metrics, Dashboard, Data-driven marketing, Services, Digital, Neurophysiological, Neuroscience, Measurement

Paper type Research paper

1. Introduction
One of the biggest challenges facing marketing managers today is the lack of credibility in the boardroom, with 73 percent of CEOs reporting a lack of trust in the marketing department’s ability to generate sales and increase customer conversion, demand and market share (The Fournaise Marketing Group, 2011). In recent years however, there is broad agreement among corporate marketers and marketing researchers that utilizing data to drive marketing decisions can help change the perception of marketing from a cost center to a value generating center. In fact, a recent study conducted by Columbia Business School and the New York American Marketing Association found that 91 percent of marketing leaders and 100 percent of chief marketing officers (CMOs) believe that in order to be successful, brands need to make data-driven marketing decisions (Rogers and Sexton, 2012). Despite the overwhelming desire to be data-driven, according to the above study, 29 percent of marketing leaders report that they have little or no customer data to implement this desire. Among those
that are collecting large volumes of data, 39 percent report that they are unable to convert their data into actionable insights.

The explosion of data from various digital sources such as e-mail marketing, online content (web sites, podcasts, blogs), social networks (Facebook, Twitter), and internet and mobile ads has added to this challenge for marketers (Larivière et al., 2013). In the last decade, the use of neurophysiological data to measure marketing ROI and brand equity has emerged as another paradigm shift in data-driven marketing, with neuroscience data being increasingly referred to as the new “scanner” data (Venkatraman et al., 2012). As a result, there has been an increasing trend in the number of neuromarketing companies offering proprietary neurophysiological toolkits and traditional market research firms entering this space with companies such as Nielsen Research investing in NeuroFocus (Well, 2010).

The profusion of these different data sources has made it difficult to identify which sources matter, how to integrate the different data sources and identify which insights they can each be used for (Olafsson et al., 2008). According to the 2012 study among corporate marketers (Rogers and Sexton, 2012), 77 percent reported that effectively combining their traditional and digital marketing is a critical business objective due the challenge faced in integrating channel-specific metrics such as the number of Facebook “likes” with more universal metrics and key performance indicators (KPIs). Further, although marketers understand the importance of basing their marketing budget on ROI analysis, 57 percent of those surveyed were not doing so and 37 percent indicate using “brand awareness” as a universal metric to measure marketing ROI. Additionally, only 14 percent of the companies that use social media marketing are evaluating these efforts with forward-looking metrics such as customer lifetime value (CLV) (Rogers and Sexton, 2012). As with digital data, the integration of neurophysiological and traditional data is a key challenge for firms. A panel of practitioners agreed that adopting a multisource approach offered by the triangulation of neurophysiological and traditional data is important to understanding the “why” and the “what” in marketing research, however, there was less agreement on how to integrate these sources of consumer insights (Dubois and Isaac, 2011).

In response to these challenges, there are four key purposes to this paper:

1. link traditional and new sources of customer data and their metrics;
2. link data and metrics to strategic and tactical business insights;
3. integrate a variety of metrics into a forward-looking dashboard to measure marketing ROI and guide future marketing spend; and
4. delineate future research directions in data-driven marketing.

This paper’s objective can be achieved through the use of customer relationship management (CRM) as a foundation. As Boulding et al. (2005) state, CRM includes building relationships and using systems to collect and analyze data, as well as, integrate activities across firms, linking them to customer value along the value chain while creating shareholder value. The use of data and metrics from CRM, are only as beneficial as they are linked with the objectives and performance of a firm; both of which should be directly connected to the value creation process (Boulding et al., 2005).

2. Data-driven services marketing

The American Marketing Association (2008) defines marketing as “the activity, set of institutions, and processes for creating, communicating, delivering and exchanging
offerings that have value for customers, clients, partners, and society at large.” Data-driven service marketing refers to the use of data to inform and optimize the ways through which these activities are carried out. Beyond promoting a service, the goal of services marketing is to foster a mutually beneficial relationship between a firm and its customer(s) and, if possible, also society.

It is through relationships that service providers are offered the opportunity to listen to, understand, and often times evolve with a customer’s needs to better differentiate service offerings (Van Riel et al., 2013). In turn, differentiated or even customized service offerings help enhance customer-firm relationships (Coelho and Henseler, 2012). The ever-advancing digital landscape has allowed companies to amass a wealth of customer data, and to have a better understanding of their customers’ product usage, purchasing decisions, service positioning, and to offer a bundle of services tailored to their needs. With evolving technology, data storage has become easier as well, with costs dropping from $1,000 per gigabyte 20 years ago to $0.08 in 2012 (Stein, 2012). Monitoring interactions between a brand and customer gives companies the ability to tap into the mindsets of the market, capture the moods and sentiments of the buyer, and glean buyer motivation (Wirtz et al., 2013).

The use of systems and models that assist marketers in their decision-making processes is not a new trend. In fact, academics have been arguing for the use of such systems since 1966 when Kotler (1966, p. 70) first started discussing the “marketing nerve center” whose goal was to “improve the accuracy, timeliness and comprehensiveness of executive marketing information services.” Little (1979, p. 11) further developed this idea with the introduction of the “marketing decision support system” concept, which he defined as a “coordinated collection of data, systems, tools and techniques with supporting software and hardware by which an organization gathers and interprets relevant information from business environments and turns it into an environment for marketing action”. The same concept later transformed into “marketing management support systems” that included:

[...]

Lilien et al. (2004) have shown in a laboratory setting that managers who used model-based decision support systems made better decisions than the ones who were only allowed to use basic software. To this date though, decision support systems are still limited in their adoption within the marketing field despite their potential benefits. Companies that have adopted the use of such systems improved their decision making as well as further developed their analytical capabilities (Davenport et al., 2001). For instance, with their “intelligent display” technology, Macy’s is able to gather data on what customers view on the company web site and decipher which categories of products they are most interested in. The data is then used to support the decision of managers of Macy’s on what to display as an ad that corresponds with the catalog search. Marketers can reach out to customers using different channels (e.g. pop-up ad, banner ad) and send out customized messages, thus transforming their digital space into a tailored offering to each customer’s tastes. The proliferation of customer data has thus greatly enhanced the way in which marketers approach services marketing.
Data-driven services marketing is not synonymous with automatic decision-making where the human element is no longer relevant. On the contrary, it requires that companies consider fact-based decision making as a part of their culture by hiring employees with analytical and business skills, and share data within the organization (Rogers and Sexton, 2012). It requires a data culture aimed at generating insights through continuous experimentation and learning and a significant investment in information technology with the goal of collecting, sharing and merging data, ideally in real-time. This idea that data should be used to support marketing decisions is well summarized by marketing executives like Barry Beracha, former CEO of Sara Lee: “In God we trust, all others bring data” and by Jeff Bezos, CEO of Amazon who underlines: “We never throw away data”.

3. Contemporary sources of marketing data and metrics
This paper categorizes contemporary sources of marketing data into three groups: traditional, digital, and neurophysiological (Figure 1). The sources of marketing data are ordered by the volume of data (sample size) in Figure 1. Digital data is considered to have the highest volume since the largest number of individual interactions can be tracked on the internet. In comparison, neurophysiological data has the lowest volume since sample sizes are limited due to expensive data collection technologies. However, the order based on volume of data can change in the future due to the development of tools tracking different types of data.

3.1 Traditional data
Traditional sources of customer data including surveys, focus groups, experiments, interviews, observations, and transactions (scanner data), have existed for a
considerable time in marketing research and practice, prior to the age of internet marketing. Many of the traditional data sources now overlap with digital data since they can be sourced over the internet as well. For example, observational data collection takes place when consumer behavior is recorded through direct and contrived observation, physical trace measures, and behavior recordings devices (Aaker et al., 2012). Such observation of consumer behavior can take place in a physical setting such as store, or an online setting such as online brand community, thus bridging both categories of data. A detailed discussion of the traditional sources of marketing data is covered in previous literature and is beyond the scope of this paper (refer Aaker et al., 2012 for an overview of traditional data sources). The following sections focus on the integration of newer sources of data including digital and neurophysiological sources. The metrics and measures that apply to the three data sources are delineated in Table I.

3.2 Digital data
This paper defines purely digital data as the data produced through human interaction with services provided by the internet (e.g. search and clickstream data), and human interaction with others on the internet (e.g. data from social media, blogs, community forums, and incentivized referrals). Search engine queries are important for marketers looking to boost their presence on search engines by paying attention to keywords that are being used to search for services that they offer (Skiera and Abou Nabout, 2012). Keyword monitoring gives the marketers the opportunity to edit the keywords attached to their ads to ensure maximum search engine exposure. Clickstream data is generated by cataloging the clicking behavior of a customer once they access a webpage. Analyzing clickstream data can provide the opportunity to understand

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Table I. Summary of data sources, sample methods, measurement, and metrics
visitor traffic by collecting a plethora of information on customer behavior; including but not limited to number of page views, visit frequency, characteristics of items viewed and visit duration (Moe and Fader, 2004).

Social media is among the topics at the forefront of marketing with 85 percent of marketers across industries marketing through their own brand accounts on social networks (Rogers and Sexton, 2012) and it is most popular among Generation Y (Bolton et al., 2013). Social media is a powerful tool that can be used to generate buzz and inform consumer about a service; however, marketers are working to understand how they can harness the vast amounts of information found in social media and target it to meet the needs of their brand. As social media is among the newest frontiers of marketing, a major barrier for implementation is the understanding that a well-run, successful social media campaign is dependent upon linking efforts such as seeding strategies to firm performance measures (Hinz et al., 2011). When a campaign is data-driven, the metrics being used to measure its success are aligned with the overall goals of the business (i.e. if the primary goal awareness, conversion, etc.). Take, for example, American Express’ sync campaign, executed in 2012. The AmEx Sync campaign is a prime example of a successful social media campaign since it aligned with AmEx’s strategic goal: to increase customer spend. AmEx incentivized its customer base by offering coupons from partner companies (McDonalds, Whole Foods, Best Buy, etc.) if customers synced their AmEx card to their social networking accounts (Twitter and Facebook). The coupons were automatically loaded onto the customers’ AmEx card each time the customers tweeted an AmEx specified hashtag or liked a predetermined Facebook page, thus offering a service incentive that was valuable for both the customers and the company (Patel, 2012).

Another issue for integration is identifying which of the social networks is home to a firm’s current and potential customers. Understanding the benefits and possibilities of the individual platform that customers are using, is a key to social media’s integration into the overall marketing plan because it determines where online marketing efforts should be focused and how to best use the firms resources. For example, when Universal Studios Orlando (USO), was looking for ways to market the experience and get the word out about the new Wizarding World of Harry Potter attraction, they turned to seven Harry Potter super-fan bloggers. The blogs, which served as the primary media outlets were especially good for reaching the attraction’s customer base and went on to spread the word to an estimated 350 million fans, a feat that would have cost several million dollars in a traditional marketing campaign (Scott, 2011). Instead, by virtue of mining social media and evaluating personal blog sites, it costs USO a mere fraction of that amount.

The power of social media goes beyond its ability to serve as a media platform that can be used to execute marketing campaigns (Blazevic et al., 2013). In the context of service marketing, it is also a space wherein a firm can learn more about their customers, how their customers are using their services, and also how (if necessary) the service can be improved. Such detailed insight can be garnered from community forums which can be a great resource for firms because they provide access to discussions of the firms’ offerings and can reveal to marketers which service aspects should be emphasized in communication with customers. For instance, if an airline is seeking to compare their current frequent flyer perks to those of the industry, they could look at the online forum like Flyer Talk [1], a community built around a service. Forums can also be formed around enthusiasm for a product, as in the case of Mac Forums, a web site which touts itself as “The ultimate source for your mac” [2], or around an industry such as consumer...
electronics web site Cnet.com[3], which has a forum as well as product reviews, ratings, news, forums, and a marketplace. When marketers are looking to see which customers are using their products and how their products are being used, forums permit deep insight into the minds of the consumer. Observing and participating in forums allows firms to see if the actual consumer and product usage aligns with the company’s objective.

An additional aspect of social media is the incentivized referral. In the case of one German bank referral program, Schmitt et al. (2011) found that customers who made referrals brought in people who liked the bank’s products, services, location, hours, and fees (relative to competitor banks). They also found that the new customers brought in by the referral program are more likely to find and pay for features they want and such customers “require fewer marketing efforts than non-referred new customers, so they generate more revenue at a lower cost” (p. 30).

3.3 Neurophysiological data
Figuratively and literally speaking, getting inside the customer’s head to know what they are thinking has become the Holy Grail of marketers in this age of marketing accountability (Bendycki, 2009). As a result, neurophysiological tools are becoming increasingly popular in marketing research despite cost and ethical considerations. Table I lists non-invasive, physiological and neurological tools used in marketing with their measures and metrics.

Eye tracking records the movement of the eyes, which include short rapid movements and short stops called “saccades” and motionless gaze called “fixation”, is considered a valid tool for measuring visual attention (Ohme et al., 2011). In marketing, eye tracking data has mainly been used in advertising research, e.g. to examine visual attention and evaluation of outdoor advertising (Maughan et al., 2007), and visual complexity of print advertising (Pieters et al., 2010). To develop better brand equity metrics based on a brand’s attention-getting impact, Chandon et al. (2009) used eye tracking data in combination with purchase data in an in-store retail environment. Their study found that eye tracking was more effective in capturing actual visual attention to brands in a supermarket shelf than consumers’ self-reports.

Facial electromyography (fEMG), skin conductance response (SCR), and electrocardiography (EKG) offer related physiological measures of emotion, arousal, and engagement and are often integrated. fEMG measures muscle activity in the face through small electrodes that track the contraction of muscle fibers from two main facial muscle groups – the corrugator supercilli group (associated with frowning) and the zygomaticus group (associated with smiling) (Larsen et al., 2003; Sato et al., 2008; Peacock et al., 2011). In the area of marketing, this method has been used chiefly to measure continuous emotional valence (positive and negative affect) in response to advertising stimuli (Barocci, 2011) and media engagement (Peacock et al., 2011).

SCR or galvanic skin response measures subtle changes in the electrical conductance of the skin as a result of sweat produced on the skin when the sympathetic autonomic nervous system is activated (Martini and Bartholomew, 2003; Ohme et al., 2011). SCR captures the extent of arousal but cannot determine the valence of emotion as fEMG does. Similar to SCR, EKG captures the extent of arousal (but not valence) by measuring heart rate and variability in heart rate through electrodes attached to the wrist, ankles, and chest (Hernandez and Minor, 2011). In the context of
service marketing, the combination of SCR and fEMG have been effective in measuring consumers’ emotional response to service recovery behaviors (Boshoff, 2012) and consumer-brand relationships (Reimann et al., 2012).

The neurological tools, electroencephalography (EEG), magnetoencephalography (MEG), Functional Magnetic Resonance Imaging (fMRI) offer related measures of temporal changes and regions of brain activity in response to stimuli and events. EEG measures the frequency of electrical currents in the brain (reflective of neuronal activity) through electrodes placed on the surface of the scalp that can detect temporal changes in neural activity (Morin, 2011; Ohme et al., 2011). The method however, suffers from poor spatial resolution since the electrodes on the scalp cannot accurately pick up the precise location of firing neurons (Morin, 2011).

Similar to EEG, MEG measures brain activity continuously by amplifying the magnetic field created by the neuronal activity (Morin, 2011). The method offers excellent temporal resolution and spatial resolution that is superior to EEG (Shiv et al., 2005). The best spatial resolution is offered by fMRI, which uses powerful magnetic fields to image brain areas that are active by measuring the change in blood oxygen level dependant (BOLD) signals, since active brain areas receive more oxygenated blood flow and give off stronger signals (Shiv et al., 2005; Morin, 2011). The trade-off of this method however lies in its lower temporal resolution. Neurological methods have been increasingly applied in marketing in combination with traditional and physiological tools in the areas of branding research (Venkatraman et al., 2012), advertising, media and product research (Fugate, 2007), and most recently service recovery research (Boshoff, 2012).

In summary, each of the aforementioned tools comes with its own set of benefits and drawbacks. The main limitation is that these methods tend to be very expensive despite their limited sample size (Dubois and Isaac, 2011). They also constrain the multimodality of the consumption experience to the study of visual and olfactory stimuli, particularly in the case of fMRI (Woodward and Shiv, 2012). Yet, thought leaders in neuroscience and marketing believe that the answer lies in integration – using neurophysiological tools to complement traditional market research tools, in areas where traditional tools have limitations. For example, neurophysiological tools provide better measures of customers’ emotion, and automatic responses, which cannot be assessed effectively by explicit questions in traditional tools, and hence these novel tools can be used to capture consumer responses to marketing stimuli free from interference of the conscious, rational mind (Woodward and Shiv, 2012). In the same vein, neurophysiological tools also offer direct measures of fluency, attention, comprehension, implicit memory, and engagement, which are outside of conscious awareness and hence cannot be assessed effectively by explicit questions in traditional tools.

In addition to circumventing the cognitive biases, neurophysiological data is less susceptible to the social biases such as the social desirability bias that is inherent in traditional self-report research (Well, 2010; Dimoka et al., 2012). Further, some of the neurophysiological tools offer the critical advantage of temporarily-sensitive data that can be collected continuously in real-time as a service experience unfolds (Boshoff, 2012), allowing for the identification of causal relationships among marketing constructs (Dimoka et al., 2012). Most importantly, thought leaders believe that the biggest contribution of these novel tools to marketing is the generation of conceptual models of consumer behavior that are derived and supported directly from the workings of the human brain, offering the potential to change our understanding of consumer behavior (Woodward and Shiv, 2012).
4. Tactical and strategic decision-making

The importance of data is tied to its ability to inform tactical and strategic marketing decisions; this section highlights how these insights are informed by each type of data. Traditional and digital data provide a great deal of information on market trends, market transitions and customer segmentation among others, which inform strategic decisions of companies. Paying attention to market transitions for example, can lead a company to new business opportunities. In John Chambers’ 2008 “Cisco Sees the Future” interview, the Cisco CEO explains how knowledge of transitions can sometimes lead to a business-model shift (Fryer and Stewart, 2008). Up until the early 1990s, administering customer support via telephone was the standard practice in US business. However, Cisco listened to its customers and saw an opportunity to provide an easy way for customers to have their questions answered by posting solutions to technical problems on their website. This is a case where data from customer feedback surveys informed a strategic business-model switch in customer service strategies.

While traditional and digital data sources can drive a business’ overall strategy, it can also have a huge impact on tactical business operations. Markey et al. (2009) published an article which discussed the importance of customer feedback in the Charles Schwab organization. Each morning Charles Schwab’s branch manager, Cheryl Pasquale, read the daily customer feedback report and was able to pinpoint specific issues that were impeding her branch’s ability to meet customer needs – difficulty with in-branch information kiosks and a particular bank form. This information provided Pasquale with the opportunity to address the respective problems with her frontline employees and fellow branch managers, and brainstorm ideas on how to better serve customers. This example is indicative of the agility and tactical advantage offered by traditional data, which often allows a firm to tweak or fine tune day-to-day operations, identify and target micro-markets more efficiently, and eventually define the steps that are necessary to achieve strategic marketing and business goals.

The nuanced information collected through neurophysiological data naturally lends itself to tactical decision-making; however, the ability of neural data to inform and enhance strategic decisions such as market segmentation has been highlighted in a recent study (Venkatraman et al., 2012). Neural data can capture affective and cognitive processes employed in consumer decisions, enabling neural market segmentation to explain added heterogeneity, which in turn “can improve the matching of consumers with products beyond traditional demographic and benefit approaches” (p. 143). The study provides an illustration of behavioral market segmentation in which the largest market segment relative to others does not show significant differences in the behaviors. An fMRI experiment enables the identification of neural differences in cognitive processing that lead to the same observed behavior, providing insight into sub-segments within the larger segment. Thus, neural market segmentation can provide novel approaches to segmenting the market, which may not emerge from traditional segmentation.

Furthermore, neurophysiological data enables marketers to read the emotional response of the customer and provide more accurate and scalable emotional insights. Interpublic Group’s Shopper Science unit used the neuroscience technology to provide quantitative data about shoppers’ experiences[4]. By using Affectiva Q Sensors, a small wearable device which captures skin conductance response (SCR), marketers were able to observe when a shopper is frustrated (e.g. long check-out lines, rude sales clerk) and excited (e.g. price promotion) the most. As in-store observation of experience...
provides insights beyond the customer-response data collected by surveys, marketers can leverage this information to optimize marketing resources and implement different marketing strategies in service industry.

With respect to tactical decision-making, neural effects of marketing campaigns such as those that trigger emotion versus cognition based responding or heuristic versus deliberated responding can create valuable insights for companies and avoid costly marketing mistakes. A recent article (Penenberg, 2011) reported that when David Ginsberg joined Intel in 2009 as director of insights and market research, he was faced with an interesting problem: a large percentage of consumers knew and liked the Intel brand, but it received a low ranking among leading tech companies. In order to understand what consumers felt at a deeper level, Ginsberg applied neuroscience to see what words consumers associated with the Intel brand. EEG readings revealed that the word “achieve” prompted the most intense response from women, while men responded most intensely to the word “opportunity”. Based on these insights on how consumers perceive the brand, Intel has reinvented its advertising to reflect a brand that offers people opportunities and helps people achieve.

5. An “executive” services marketing dashboard

The plentitude of data sources and tools available to marketers also translates into a complex array of metrics and KPIs. Marketing dashboards have been identified as a means of solving this issue by “bringing the firm’s key metrics into a single display” (Pauwels et al., 2009, p. 175) and therefore avoiding potential problems such as data overload, scattered data locations, managerial biases, lack of transparency and accountability, as well as the need for firm-wide integration (Pauwels et al., 2009). Data is only as useful as it can inform metrics, which are later combined to provide the insights managers desperately need.

There are many popular marketing metrics currently in use. Kumar and Reinartz (2006) list them in three categories:

1. traditional marketing metrics;
2. primary-customer based metrics; and
3. strategic customer-based value metrics.

Traditional marketing metrics include market share and sales growth, which are both aggregate views of company performance. Primary-customer based metrics include customer acquisition, customer activity, and customer win-back. Although these metrics can aid managers in determining the value of each individual buyer, they do not necessarily reveal the total value that a single customer can provide a firm. Third, there are other strategic customer-based value metrics (Kumar and Rajan, 2012) such as recency, frequency and monetary value (RFM), share of wallet (SOW), and past customer value (PCV).

While each of these metrics are important, the metrics mentioned above do not provide much insights into future customer purchasing behavior because they assume that a customer’s past buying behavior and future buying behavior will be the same. For example, the three strategic customer-based value metrics take into account more customer information than the first two categories of metrics mentioned above, but also have their drawbacks. For one, the RFM score does not convey to marketers when a customer is likely to buy, whether or not a customer is loyal, or how much profit they
are likely to give. The SOW metric does reveal whether or not a customer is loyal but if used as the sole metric for resource allocation, then SOW does not take into account the size of the budget; the metric provides a SOW percentage but does not accompany a dollar amount. Finally, the PCV metric does not look directly at profitability as a variable, and makes the assumption that past spending behavior will indicate future behavior (Kumar, 2008b). All of these metric-specific drawbacks, coupled with their collective lack of predictive power, can lead a firm to misallocate precious resources and to privileging the wrong customer or customer segment.

Because of the shortcomings of the strategic customer-based value metrics, there is need for a metric that solves the issues that are inherent within them; a metric that can accurately predict the future profitability of a customer and strengthen resource allocation budgets. The CLV metric does just that (Kumar and Reinartz, 2006; Kumar and Rajan, 2012). CLV is a forward-looking metric that does not prioritize loyalty over profitability, meaning CLV makes certain that valuable (and not merely loyal) customers are profitable (Kumar, 2008b). Unlike the previous three categories of popular marketing metrics, the measurement of CLV includes the likelihood of a customer being active in the future and the marketing dollars that need to be spent to retain the customer and achieve a positive return on investment (ROI) (Kumar, 2008a). CLV also lets managers “know when a customer buys, how much a customer buys and how much it costs to make the sale (Kumar, 2008b)”. The above-mentioned aspects of CLV make it an encompassing, revolutionary, and unique forward looking metric. Summing the CLV of all customers leads to customer equity that forms the foundation for valuing firms (Rust et al., 2004; Schulze et al., 2012). Additionally, competitive effects can be included as the elements of customer equity to consider customers brand switching behavior (Rust et al., 2004). Leading indicators of behavior such as what customers think about the relationship with the firm and fit between customer needs and provided services can also be used as sources of customer equity (Zeithaml et al., 2006). However, customer equity and CLV do not provide every possible piece of information, and can only be used to understand the profitability of the firm’s customers. Therefore, this paper argues for the use of complementarity metrics. While customer equity is the most useful metric in understanding the value of the customer base, it should be combined with other metrics such as the expected churn rate, expected SOW, expected failure and service recovery rates, human resource (HR) metrics, as well as operational metrics. Each of these metrics can provide different pieces of valuable information that can inform managers about the direction their business is going into. For instance:

1. **Customer engagement value** (Kumar et al., 2010a, b) – this measure provides a snapshot of customer health that encompasses CLV, customer referral value, customer influencer value, and customer knowledge value.

2. **Customer engagement behaviors** (Van Doorn et al., 2010) – beyond a transactional basis; it is defined as a behavioral manifestation that are focused around a firm or a brand which is a result of motivational drivers.

3. **Expected churn rate** – necessary to understand:
   - The degree to which retention is actually an issue.
   - The potential financial losses associated with customer churn.

4. **Expected SOW** – for firms in polygamous (simultaneous multi-brand users) industries, it can be calculated using the wallet allocation rule
(Keiningham et al., 2011) at a customer level as a function of performance relative to competitors in each customer’s usage set and then aggregated to the firm level.

(5) Expected service failure and recovery rates – will provide insight into whether the appropriate organizational strategy should be to invest more heavily in measures that minimize the former or maximize the latter.

(6) Industry-specific HR/employee engagement metric (Dulebohn and Johnson, 2013).

(7) Industry-specific operational metric.

These metrics are service-relevant, complementary and forward-looking, with proven linkages to business outcomes that far exceed those of more commonly used metrics (e.g. average satisfaction rating, NPS). The inclusion of HR and operational metrics provides the holistic view required to adequately assess strategic marketing initiatives vis-à-vis broader organizational needs.

However, keeping track of all these metrics can prove problematic, unless their content is presented in a visually appealing manner that would make it easy to scan the individual metrics, and see patterns in their interdependence. This exact reasoning has led to the development of service dashboards. The dashboard of an automobile is essentially a collection of gauges and meters that provide a driver with all the diagnostic information necessary to operate his vehicle and arrive safely at his destination. This information has to be organized and displayed in such a way that the driver is able to process this information quickly and easily while driving. Similarly, to be impactful on business decisions, the findings of marketing research need to be quickly and easily digestible by top-level executives, and the metrics contained in a service marketing dashboard must be as intuitively meaningful as a low fuel reading or a speedometer (which is to say merely that the metrics contained on an executive dashboard must be relevant to executives) (Pauwels et al., 2009).

In practice, the typical service-oriented “dashboard” is the front end of a larger online portal (neologically referred to with the portmanteau “reportal”) into which a user can drill-down for much greater detail. As such, the dashboard operates as a topline report of the most essential KPIs. These reports will often contain items like average satisfaction rating on specific areas of interest, overall satisfaction, likelihood to recommend and/or Net Promoter Score (NPS). They often provide a snapshot of performance on these metrics over time, with visualizations of ongoing trends. They frequently provide benchmarks (competitive, historical or aspirational) against which current scores can be evaluated.

A frequent selling point of these reportals is the ability to create multiple dashboards for different audiences. Therefore, a store manager would view her store manager dashboard as an entry point to her accessible portions of the reportal, while a district manager would see a district manager dashboard, and a CEO a “CEO dashboard”. The metrics presented on each of these dashboards generally differ in conjunction with the scope of the organizational information that is appropriate for the user. As such, a dashboard (or reportal) that is tailored specifically to researchers or operational staff is unlikely to resonate with top-level executives. At this point in time though, the typical service dashboards are still behind in the type of information they provide managers with and lack a certain degree of usability.

Consequently, it is imperative that the appropriate metrics for inclusion on an executive service marketing dashboard be established. The intention of recommendations made
is not to disparage the utility of more operational reporting platforms, which serve their own important purposes, but rather to highlight the appropriate service marketing metrics to present to the strategic leaders of business organizations. Organizational leaders will need a more holistic assessment of performance than employees in the middle and lower tiers; they require a dashboard that provides a true barometer of customer, firm, and employee health with proven linkages to financial outcomes. These metrics need to be forward looking – informed by past performance, but not limited in focus to it – and relevant for long-term as well as short-term goals. It is by no means argued that the measures proposed should be the only ones available in the dashboard, yet they provide a good starting point. Dashboards can and should be customized according to firm needs, desired levels of analysis and strategic goals.

With the increased complexity and diversity of data, service firms across industries have created dashboards to provide a summarization and integration of the metrics (Pauwels et al., 2009). Our framework in Figure 2 proposes how the different data sources are used to develop dashboards with the various key metrics.

6. Future challenges

While data-driven marketing strategies present opportunities to improve performance by enabling managers to make data-driven decisions, they are not without challenges.

6.1 Top management support and financial benefits
First, it is important for top management to recognize data-driven marketing as a strategic priority and invest in the right managerial talent and decision support systems. Research has found that managers who use high-quality analytic, model-based decision
support systems make objectively better decisions than do decision makers who only have access to generic decision tools such as Microsoft Excel (Lilien et al., 2004). However, their subjective evaluations (perceptions) of both their decisions and the processes that lead to those decisions do not necessarily improve as a result of use of these systems. To increase the inclination for managerial adoption, it is important to get the users to “see” the benefits of data-driven marketing. Furthermore, managers need to understand the economic benefits of using data-driven strategies. Some ways to ensure this include determining ROI of the investment, encouraging discussion about the benefits of alternate recommendations, reduce the perceived complexity of usage and establish the likely market/business outcomes.

6.2 Developing data capabilities, data orientation and tackling data analytics
Another challenge for ensuring analytic capability is the establishment of an IT infrastructure that enables collection, storage and analysis of very large amounts of data. With the availability of terabytes of data today (Verhoef et al., 2010), IT has become an integral part of the process of data-driven marketing. Additionally, even firms that emphasize the need for IT infrastructures in gathering and analyzing data need to understand the relevance of an organizational culture that embraces data, analytics and their insights. Therefore, ensuring that employees are trained to use data, to monitor and understand dashboards, discover trends and data patterns is paramount to guarantees a data-driven marketing strategy.

In addition to the more macro and strategic level challenges, there are also issues with the data analytics itself that need to be properly accounted for when using data-driven marketing, such as:

- establishing causality;
- identifying trigger events;
- the link between online and actual behavior; and
- social interaction modeling.

First, establishing causality can be difficult if the right variables are not measured and accounted for in the analytic process. For instance, when calculating the value of customer referrals (CRV) it is important to establish causality between the referral program itself and conversion of the prospect into a customer. This establishment is difficult because it is conceivable that the prospect may have become a customer anyways regardless of the referral (Kumar et al., 2007). Another issue to be accounted for includes the possibility that customer response is changing as a result of a trigger event in the customer’s life, described as something that happens during a customer’s lifecycle, such as sudden disruption in purchase patterns that a company can detect and which portends the future behavior of the customer (Malthouse, 2007). Accounting for such trigger events in data-driven analytic models therefore becomes important.

Moreover, in the context of social media measurement, managers today predominantly measure social interactions such as number of “likes”, or tallies of positive versus negative comments. While this is valuable information, it provides little guidance into how these metrics tie back to actual behavior. Therefore, it is crucial to link such “social” measures to how the customer actually responds to a firm’s marketing efforts (Verhoef et al., 2010). For example, in a study that links online word of
mouth to customer behavior, Trusov et al. (2009) find that online word of mouth referrals have substantially longer carryover effects due to social multiplier and social spill-over effects than traditional marketing and strongly affect new customer acquisition. Establishing this link provides recommendations to managers for how to allocate resources between different marketing vehicles and offers guidance on how to structure financial incentives to stimulate word of mouth.

In addition, there are several challenges that are specifically relevant to social interaction research. The first of which is endogenous group formation where group social behavior is because of similar tastes of group (homophily) and not necessarily as a result of being affected by each other (Hartmann et al., 2008). As a result a researcher cannot, therefore, conclude directly from observed correlation in behavior that there exists a causal effect. Second is the issue of correlated unobservable in which variables impact all those agents involved similarly. Finally, a simultaneity problem can arise due to the potentially simultaneous nature of decisions by the focal agent and others in his reference group. Due to simultaneity, correlation in subsequent actions could simply reflect the fact that the agents’ decision affects the group’s behavior, and at the same time, the group’s behavior affects the agent’s behavior (reflection problem).

Also, most customers tend to conduct business and interact with firms through different channels. One difficulty especially relevant to multichannel customers is the merging of disparate sources of data into a single source database. Merging presents a challenge as many times a customer’s interaction with the firm is not captured, partially captured, or only captured in a format that makes it difficult to link it back to the same individual. Without ensuring data quality and integrity for multichannel customers, it becomes very difficult to derive the benefits a holistic view of the customer (Neslin et al., 2006) and propose targeted strategies (Verhoef et al., 2010). Finally, data-driven marketing strategies resulting from such analytics provides unique opportunities to target customers in a more focused way. Amongst the many benefits is the ability to communicate with customers that have higher response likelihood on such criteria as CLV or CRV (Kumar et al., 2010a, b). As a result, customers are not saturated with multiple marketing messages, timing and frequency of communication.

6.3 Ethical considerations
Finally, the use of individual customer data brings with it ethical concerns over use of the data. While collecting data at all levels is important for companies, it also requires a high degree of responsibility regarding individual privacy. It is therefore important to ensure data privacy and security, alleviate any individual concerns and in the long run obfuscate any public misconceptions. This enforcement includes instilling regulations and procedures for obtaining permission from the customer to collect their data and/or providing opt-out opportunities should they prefer to not communicate. Excessive collection of personal information and a threat of security breaches can make the consumers reluctant to share personal information. Consumers may also respond with negative actions like refusal to provide or update information (Wirtz and Lwin, 2009) or fabricate their personal information (Lwin et al., 2007).

In the beginning of 2012, the US’ Federal Trade Commission (FTC) Chairman, Jon Leibowitz called for legislation that forces organizations that collect and sell data on individuals to organize a centralized web site that details what data has been collected, what the data is being used for, and what rights the user has concerning the data that
has been collected on them (Delo, 2012). In 2011, data giants Google and Facebook agreed to 20 years of audits after they were found to have made private customer information public (Menn, 2012). The ethical collection, sharing and selling of increasingly granular personal data is a growing concern for many technology users. Any organization seeking to collect and store data on individuals should be sure to be ethical in doing so.

Research conducted by neuromarketing firms has also raised some ethical concerns about the perception that neurophysiological methods can identify the “buy-button” region of the brain and tailor products and services to activate this region, as well as obtain covert knowledge about hidden preferences of consumers (Venkatraman et al., 2012). In order to address such ethical and validity issues in the application of neuroscience to marketing research, the Advertising Research Federation (ARF) initiated the “NeuroStandards Collaboration Project” in 2010. The aim was to increase the transparency of methods based on a scientific review with the goal of developing standards to support the neuromarketing discipline (Barocci, 2011); with the potential to alleviate ethical concerns.

Nonetheless, it is encouraging to know that privacy effects on the provision of data (e.g. participating in loyalty programs) has not been found to be strong (Van Doorn et al., 2007) and limited to a relatively smaller group of people. Furthermore, as governments are becoming more involved in ensuring that all firms adhere to certain data privacy regulations (see White House report), the potential for unethical conduct diminishes, and customers will be more able to trust firms which access more data.

7. Call for future research
The true potential of data-driven service management in a connected world is still largely unexplored, thereby offering fruitful avenues for future research. Research in this area should contrast our knowledge of traditional metrics with conceptual and empirical findings on the newly proposed metrics, so that we can understand the difference between the two as well as the incremental contribution of the new metrics. Empirical investigation is needed to demonstrate the usefulness and usability of the proposed tactical and strategic metrics, and there is a strong need for improvements and further developments. Moreover, researchers should explore new data opportunities. For instance, the rich data originating from social networking sites are especially promising (Libai et al., 2010; Hinz et al., 2011; Blazevic et al., 2013).

With regard to tactical metrics, a pivotal research task is to assess the predictive ability of the proposed measures, in particular for the proposed neurological and physiological measures. In order to increase their contribution for service management, in addition to regions of neural activity, neurological research needs to identify modulation in the levels of neural activity in response to changes in stimuli, which may then predict attitudinal or behavioral change. With respect to strategic metrics, more research is needed to propose better strategic metrics. One of the most prominent challenges is to improve the prediction of forward looking metrics.

Another pressing issue is to better understand how to balance tactical and strategic metrics. How much emphasis should be spent on each of them? This question is of utmost importance for service management, particularly when service managers need to balance short-term versus long-term in service failure and service recovery. More research is also needed to understand the potential synergies and complementarities between tactical and strategic measures. It is likely that the two can work together as part of an integrated
performance dashboard, but how they work together and when they do (or do not) work well together are open questions in the literature. Research should pick up the challenge to integrate complementary data sources to generate strategic and tactical insights.

From the standpoint of the firm, the extent to which service strategies directly and indirectly affect the proposed strategic measures needs to be quantified. As an initial step, this research effort should take into account the different business outcomes the firm realizes from optimizing selected sets of strategic measures as it will also enable building wider and more informed customer profitability models (Kumar et al., 2010a, b). Taking a more holistic view, further research is needed to explore the effects of strategic choices on all aspects of the firm, such as the inter-relations between marketing and HRs or between marketing and operations.

The lack of knowledge about many of the proposed metrics may cause risk-averse firms to avoid using some or all of the new metrics. More empirical and analytical studies are warranted on the trade-offs between the benefits and costs of implementing the proposed metrics and employing them in tactical and strategic decision-making. Researchers and managers need to identify ways of decreasing potential barriers for implementation and application. Clearly, more empirical investigation is needed to understand the contingencies under which the newly proposed tactical and strategic metrics can exploit their full potential. Moderating effects of context variables should be examined, such as competitive pressure, or consumers’ data privacy concerns, in order to determine the metrics’ efficacy in varying contexts.

Notes
1. Flyer Talk – www.flyertalk.com/

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