Customer approach to the use of Big Data: Wearables for Service

Introduction

Traditionally, customer data has been used in marketing research to investigate and measure customers' attitude, evaluation and purchase behavior in markets (Rust et al., 2004). Collected using various market research techniques this type of 'small data', however, has been purposively generated by marketers for analysis of various customer variables.

In recent years, the amount of data has exploded into Big Data, which has been fueled by the expansion of smart-devices, such as smartphones (Dube and Helkkula, 2015). The rapid expansion in data generation refers to both the size and speed of data generation in electronic formats (Versace, 2014). Customer generated data, such as social media posts, videos and photos form a large component of Big Data. Despite the expansion of customer generated data, the use of Big Data in service and research has been largely provider dominant in nature. Little is known about the customer approach towards the use of Big Data in service.

Thus, the purpose of this paper is to investigate the customer approach towards the use of Big Data for service. Specifically, we address the following research question:

  RQ: *In what ways customers would like Big Data to be used for customer value creation in service?*

Theoretical background

Use of electronic data is an established field of research in marketing. Customer data, such as point-of-sale analytics in the retail sector, clicks on websites, and, recently, social media engagement data in the form of likes, comments and shares are used extensively to investigate customer attitude and behavior (Seider et al., 2005; Aguirre et al., 2015; Chen et al., 2011). In recent years, customers are themselves generating large amounts of data through their everyday interactions with technology and smart devices, such as smartphones. Labeled as Big Data, this has recently been acknowledged as a rich source of customer information (Mahr and Wetzels, 2015). Lately, several companies, such as Amazon and Netflix, have been analyzing and using Big Data to develop tailored offerings for their customers (Milian, 2014; Simon, 2014)

Big Data is different in four ways from the conventional 'small data' (Gartner, 2015). First, Big Data is characterized by large 'volumes' of data that is many orders higher than conventional small data. For example Facebook analyzes 500 TB (10^{14} bytes of data) everyday (Big Data) as compared to the data size of a DVD (1 GB or 10^9 bytes) (Kern, 2012). Second, the 'velocity' of Big Data generation is much higher as compared to small data. For example a smart car generates every second tremendous amounts of data through its 100s of sensors. Third, the 'variety' of Big Data is much more diverse than small data. Big Data is characterized by unstructured and often customer-generated data such as posts, videos, photos, sensor data and user content. This is in contrast to the structured small data that is largely generated purposively in the form of account transactions and spreadsheets. Fourth, owing to this unstructured form of Big Data, the

'veracity' or uncertainty of Big Data is higher as compared to the conventional small data (IBM, 2015).

For this study, we employ wearables as our research context. In the latest service research priorities proposed by Ostrom et al. (2015) service research on the use of wearables is accorded high priority. Wearable perform various service tasks; they are smart-devices that customers can wear on their body (Wünderlich, 2015). They have in-built sensors that monitor several body measurements, such as location, distance, movement, temperature, skin conductivity and pulse rate. Through these measurements, wearables generate Big Data and offer service to customers in the form of tracking daily exercise routine and scheduling work tasks (Pocock, 2014). A popular example of a wearable is smart watches (e.g. Apple smart watch) that customers can wear on their wrists and pair up with their smartphones.

Method

We conducted an explorative study with 22 respondents on the development and use of wearables. The respondents narrated their desired imaginary experiences from wearables based on (a) the type of Big Data a specific wearable may generate, and, (b) can be used by service providers for customer value creation. In this study, we used Event Based Narrative Inquiry Technique (EBNIT) proposed by Helkkula and Pihlström (2010) for eliciting respondents' imaginary experiences. EBNIT is a narrative projective technique that uses metaphors for eliciting customers' imaginary experiences. We asked the respondents to write auto-narratives in diaries about (a) a desired wearable, (b) the

needs that such a wearable would address, (c) the type of sensors the wearable would have, (d) the type of Big Data the wearable would generate, and, (e) the ways in which respondents think such data could be used by service providers to facilitate value creation for them. In order to trigger the desired imaginary experiences we used the metaphor of a magic wand, where the respondents would imagine having a magic wand that could develop any desired wearable.

The respondents included equal number of men and women and were working professionals primarily in the field of service and marketing management.

Findings

Our findings show that customers were able to imagine desired experiences from wearables, and in turn were able to conceptualize future wearables and their intended service. In particular, customers were able to a) conceptualize the type of wearable, b) the body part where the wearable would be worn, c) the in-built sensors in the wearable, d) the type of Big Data the wearable would generate, and e) the ways in which wearable-generated Big Data can facilitate customer value creation through service. In this customer generated use of Big Data approach, customers' personal contexts are the primary platform on which customers desire to co-create value with wearable service.

As customers are creating the data, the respondents told that they would like to have an interactive relationship with the wearable. For example, respondents wished to use wearables that are in the form of a smart shoe-sole that sends them calming and encouraging voice messages in earphones whenever they feel stressed. Furthermore,

customers imagined this stress measurement data, as Big Data, to be used in the development of motivational pod-casts that can be broadcasted to them through their smartphones.

Discussion

Previous service research has largely focused on small data in service. Conventional marketing models, such as segmentation, targeting and positioning rely on small customer data that has been collected for understanding the market dynamics (Rust and Chung, 2006).

Recently, the rapid expansion of data generation has given rise to Big Data. The CEO of electronic data giant Google, Eric Schmidt, claimed in 2010 that every two days people create as much data as they have done from the beginning of time until 2003 (Siegler, 2010). A large proportion of this data is customer generated such as through the use of wearables in everyday lives as well as in specific service settings, for example in healthcare services (Sultan, 2015). This use, however, is restricted to the service provider perspective.

Our findings show that there are considerable differences between the customer approach and the service providers' approach in using Big Data for service. The service providers' approach to the use of Big Data is focused on the technical aspects of data collection and data analysis. Thus, we contribute to the customer approach of the use of Big Data. This is one of the first studies in service research to investigate customer approach on use of Big Data in service. While the provider approach to Big Data is

technology focused, the customer approach to the use of Big Data is focused on the ways Big Data is used for developing service that customers experience as valuable in their daily lives. This is especially relevant for customer generated Big Data that forms the biggest proportion of Big Data globally. Therefore the customer approach in use of Big Data should be emphasized in research and by service providers.

Table 1 shows the differences between provider approach and customer approach to the use of Big Data.

Future research

In this study we have highlighted the differences in customer and service provider approaches to the use of Big Data for service. Our research context is wearables as Big Data generator devices. We recommend future research to specifically explore other customer contexts, such as social media engagements, online retail and C2C commerce as sources of Big Data for integrating the customer perspective in service activities for customer value creation.

Table 1: Differences between provider dominant approach and customer dominant approach in the use of Big Data for service

		Provider dominant approach	**Customer dominant approach**
1.	Generation	Focus on volume and sources of Big Data	Focus on interactions with Big Data generation devices/technology in customers' daily lives
2.	Sources	Focus on structured and unstructured mass sources of Big Data	Focus on sensors and the customer information recorded in generation of Big Data
3.	Use	Technical analysis for description and prediction of customer behavior	Focus on the use of Big Data for facilitating customer value creation through service

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