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Your manuscript:
BIG DATA FOR BIG MARKETING

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BIG DATA FOR BIG MARKETING

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Abstract

The paper deals on Big Data and its role in marketing. Today's marketers must work with huge amount of data. Current trends show the use of unstructured data. Unstructured data is a generic label for describing data that is not contained in a database or some other type of data structure. Structured and unstructured data are both used extensively in Big Data analysis. Because of limited processing capability, inadequate memory, and high data-storage costs, utilizing structured data was the only means to manage data effectively. Unstructured data is related to the problem of extraction and processing by marketers. The relationship between marketing and huge amount of data may result in Data Hairballs.

Keywords: data hairballs, marketing, volume, variety, velocity

1. Data Hairball

The relationship between marketing and data is one of the most challenging strategic opportunities facing companies today. The actual core of the problem is that marketers don't have the data they need. Data quantity and data quality are two distinctly different things. Gathering digital inputs (e.g. in petabyte) does not equate with knowledge [1]. Metaphorically speaking, the data hairball is the biggest obstacle to improving customer engagement. It is the complicated jumble of interactions, applications, data and processes that accumulate haphazardly when companies are unprepared to handle information from a wide range of sources [L. Arthur, *Are You Tangled In A Big Data Hairball?*, 2013, <https://www.forbes.com/sites/lisaarthur/2013/08/01/are-you-tangled-in-a-big-data-hairball/#7d63bf8c7776>].

Marketing, IT, sales and others may all be working to collect data. But the organizations probably don't transcend systems and organizational lines to pull all this information together. Business success depends on ability to collect and integrate digital information with traditional offline data. But marketing strategies will always fall short if that's all what marketers do. They must go a step further and leverage Big Data analytics to transform data into actionable insights. Without using insights to adjust and optimize marketing activities, all efforts at aggregation and integration are largely wasted [1, p. 30].

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The Data Hairball is related with customer experience. Data, communications channels, messages are fragmented. As a result, the customer experience is fragmented, too. Companies did not know customers better because they are caught up in the data hairball, and the hairball is choking the creation of compelling customer experiences. The simplistic view of customer experiences might consist of:

- mail,
- retail,
- call centre,
- agent or account MGR,
- loyalty cards,
- web,
- e-mail,
- social,
- mobile [1, p. 31].

Big Data is a field dedicated to the analysis, processing, and storage of large collections of data that frequently originate from disparate sources. Big Data solutions and practices are typically required when traditional data analysis, processing and storage technologies and techniques are insufficient [2].

For marketing, Big Data is the fundamental consequence of the new marketing landscape. Many marketers may feel like data has always been big. But think about the customer data businesses collected 20 years ago: point of sale transaction data, responses to direct mail campaigns, coupon redemption, etc. Then think about the customer data collected today. Online purchase data, click-through rates, browsing behaviour, social media interactions, mobile device usage, geolocation data, etc. Comparatively speaking, there is no comparison [*Big Data, Bigger Marketing*, 2017, https://www.sas.com/en_us/insights/big-data/big-data-marketing.html].

2. Definition of Big Data

There is no commonly accepted definition of Big Data. J.R. Kalyvas defined Big Data as a process to deliver decision-making insights. The process uses people and technology to quickly analyse large amounts of data of different types (traditional table structured data and unstructured data, such as pictures, video, email, transaction data, and social media interactions) from a variety of sources to produce a stream of actionable knowledge [3].

We can discuss about major differences between traditional and Big Data:

- data architecture,
- types of data,
- volume of data,
- data schema,
- data relationship,
- scaling,

- higher cost of traditional data,
- accuracy and confidentiality [D. Aggarwal, *Difference between traditional data and big data*, 2016, <https://www.projectguru.in/publications/difference-traditional-data-big-data>].

Gartner (formerly META Group) defined data growth challenges and opportunities as being three-dimensional:

- increasing volume (amount of data),
- velocity (speed of data in and out),
- variety (range of data types and sources) [*Gartner Says Solving 'Big Data' Challenge Involves More Than Just Managing Volumes of Data*, 2011, <http://www.gartner.com/newsroom/id/1731916>].

Gartner used this '3Vs' model for describing Big Data. In 2012, Gartner updated the definition of Big Data as: „*Big data is high volume, high velocity, and/or high variety information assets that require new forms of processing to enable enhanced decision making, insight discovery and process optimization*”. 3Vs model is still widely used and in agreement with a consensual definition that states that „*Big Data represents the Information assets characterized by such a High Volume, Velocity and Variety to require specific Technology and Analytical Methods for its transformation into Value*” [4].

A new V 'Veracity' was added to describe it [*What is Big Data?*, 2017, <https://www.villanovau.com/resources/bi/what-is-big-data/#.WPcg1WekKM8I>], revisionism challenged by some industry authorities [S. Grimes, *Big Data: Avoid 'Wanna V' Confusion*, 2013, http://www.informationweek.com/big-data/big-data-analytics/big-data-avoid-wanna-v-confusion/d/d-id/1111077?page_number=1]. The 3Vs model has been expanded to other complementary characteristics of Big Data:

- Volume. The quantity of generated and stored data. The size of the data determines the value and potential insight- and whether it can actually be considered Big Data or not.
- Variety. The type and nature of the data. This helps people who analyse it to effectively use the resulting insight.
- Velocity. In this context, the speed at which the data is generated and processed to meet the demands and challenges that lie in the path of growth and development.
- Variability. Inconsistency of the data set can hamper processes to handle and manage it.
- Veracity. The quality of captured data can vary greatly, affecting accurate analysis [P. Shankar, *What are the characteristics of big data?*, 2017, <https://www.quora.com/What-are-the-characteristics-of-big-data>].

There are several ways to store larger amounts of data [5].

3. The role of Big Data in marketing

Big Data marketing is the process of collecting, analysing, and executing on the insights derived from Big Data to encourage customer engagement, improve marketing results, and measure internal accountability [1, p. 48].

When Big Data was emerging as a fashionable word, a lot of people in business really did see it as simply a catch-all term for ‘a lot of data’. As a result, a lot of businesses spent a lot of time and money measuring, recording, and storing as much data as possible in the hope that, at some point, they’d work out how to glean some actionable insights from it. These earnest but wrong-headed endeavours were so common that the phrase ‘data rich but insight poor’ became ubiquitous among critics of the ‘Big Data revolution’ [B. Marr, *The Difference Between Big Data and a Lot of Data*, 2015, <http://data-informed.com/the-difference-between-big-data-and-a-lot-of-data>].

By combining Big Data with an integrated marketing management strategy, marketing organizations can make a substantial impact in these key areas:

- Customer engagement. Big Data can deliver insight into not just who your customers are, but where they are, what they want, how they want to be contacted and when.
- Customer retention and loyalty. Big Data can help you discover what influences customer loyalty and what keeps them coming back again and again.
- Marketing optimization/performance. With Big Data, you can determine the optimal marketing spend across multiple channels, as well as continuously optimize marketing programs through testing, measurement and analysis [https://www.sas.com/en_us/insights/big-data/big-data-marketing.html].

Big Data sets are generated around customers based on their online purchases, web clicks, social media activities, smart connected devices, geo-location, etc. Customers create new data at every step they take, be it structured data when clicking through websites or unstructured data when posting comments on Facebook. Using Big Data technologies and analytics methods, marketers can mine, combine and analyse both types of data nearly in real time. This can help them discover hidden patterns such as the way different groups of customers interact and how this leads to purchase decisions. Sophisticated analytics solutions for Big Data provide new approaches to addressing some of the key marketing imperatives and delivering impressive results. These solutions can transform traditional marketing roles and improve how to execute essential marketing functions. Marketers are collecting the data produced from a variety of live customer touch-points to paint a complete picture of each customer’s behaviour. Analysing this large amount of data in motion enables marketers to fine-tune customer segmentation models and apply the insights to develop customer engagement strategies and improve the value of customer interactions [6].

Organizations that capitalize on big data stand apart from traditional data analysis environments in these ways:

- they pay attention to data flows as opposed to stocks,
- they rely on data scientists and product and process developers rather than data analysts,
- they are moving analytics away from the IT function and into core business, operational and production functions [T. H. Davenport, P. Barth, R. Bean, *How 'Big Data' Is Different*, 2012, <http://sloanreview.mit.edu/article/how-big-data-is-different/>].

4. Conclusions

There is no platform, to cover all Big Data requirements. Marketers should use different platforms to track different kinds of data points and then correlate the insights. Nowadays there are many good solutions for analysing data and it is easier to integrate platforms and aggregate data. The area of unstructured data can contain: web traffic, SEO, advertising tracking, comparison of web sites...

Gartner estimates that currently 5.5 million IoT devices are being connected every day, from fridges, cars and home thermostats to washing machines and TV's. This explosion will enrich the data set that the marketer will have available but will only be of use if it can be captured, stored, analysed and made sense of. This will challenge even the best data analyst let alone the marketer who has to utilise it effectively to drive future campaigns. [J. Fleming, *Is big data really the future of marketing?*, 2016, <https://www.marketingtechnews.net/news/2016/nov/22/big-data-really-future-marketing/>]

One aspect still needs further research - the ethics of Big Data. When Big Data raises personal privacy concerns, it generates new questions about personal identity, notably who owns our personal data and how the increased presence and availability of more data influence the reputations [7].

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References

- [1] L. Arthur, *Big Data Marketing*, John Wiley & Sons, Hoboken, 2013, 29.
- [2] T. Earl, W. Khattak and P. Buhler, *Big Data Fundamentals*, Prentice Hall, Crawfordsville, 2016, 240.
- [3] J.R. Kalyvas, *A Big Data Primer for Executives*, in *Big Data: A Business and Legal Guide*, J.R. Kalyvas & M.R. Overly (eds.), CRC Press, Boca Raton, 2016, 1.

- [4] A.D. Mauro, M. Greco and M. Grimaldi, *What is Big Data? A Consensual Definition and a Review of Key Research Topics*, Proc. of the 4th International Conference on Integrated Information, AIP Publishing, Madrid, 2015, 97-104.
- [5] R. Halenar, *Appl. Mech. Mater.*, **229-231** (2012) 2125-2129.
- [6] M. Svilar, A. Chakraborty and A. Kanioura, *ORMS-Today*, **40(5)** (2013), online at <https://www.informs.org/ORMS-Today/Public-Articles/October-Volume-40-Number-5/Big-data-analytics-in-marketing>.
- [7] K. Davis, *Ethics of Big Data*, O'Reilly Media, Sebastopol, 2012, 65.