

BIG DATA ANALYTICS FOR MARKETING REVOLUTION

MERVE TÜRKMEN BARUTÇU*

ABSTRACT

The Big Data potential in marketing is colossal and with data being generated and collected in real-time, around the clock, seven days a week, and the marketing industry is now able to see what people are buying, following or communicating about. Being able to overlay numerous amounts of data sets such as social media posts, money spent on product promotion, etc, the marketing industry business can now see which efforts were effective, which were not effective, and quickly adjust their marketing plans accordingly. The purpose of this study is to understand how Big Data will ultimately change the landscape of how business is transacted within industries, and more specifically, how the future of marketing will be grounded in data and analytics. The main question discussed is how our data is being excavated and what companies do with it. To answer this question, it is necessary to explore and compare how Big Data has already affected other industries. It is essential to explore the opportunities and challenges presented by this topic because as technology continues to grow at an ever-increasing exponential pace, in order to find new outlets and ways to survive and flourish as a business, industries must be able to adapt.

Keywords: Big Data, Marketing.

INTRODUCTION

The exponential growth of technology has brought about a new industry called "Database Marketing." Simply put, this type of industry collects, aggregates, and commercializes personal data and information. The digital activities of many millions of people around the world can be tracked through a variety of new techniques ranging from a store's loyalty/credit cards to targeted advertisements found on social media platforms such as Facebook, Twitter, Instagram, and others alike. Personal data, including both online and offline behavior, are combined, analyzed, and then are sold to different types of business and corporations (Marwick, 2014). Companies that collect, combine, and analyze this type of data are known as data brokers.

Data brokers represent this wave of change that deals with personal information and how it's handled both online and offline. This dramatic shift has created a new

* Research Assistant, Department of Business Administration, Sakarya University, Sakarya, Turkey.
mturkmen@sakarya.edu.tr

movement towards what is known as “Big Data.” For illustrative purposes, Big Data is simply made up of raw “little data.” In most cases, these little data give deep personal insight into a consumer’s individual and purchasing profile, and the consumer’s habits. Doug Laney, a tech analyst, first defined Big Data in 2001 as being “high-volume, -velocity and -variety information assets that demand cost-effective, innovative forms of information processing for enhanced insight and decision making.” (Sicular, 2013) Businesses, across any industry, value these types of insights that were once unavailable before this growth in technology and have become interested in how these analytics are collected and can be used.

This evolution of service intelligence combines both online and offline user behavior to determine what consumers are busy with, what they’re willing to spend money on, what type of service they prefer,” and how and why to keep them coming back. Companies use Big Data to not only target their community and consumer but also to give its consumer exactly what they want, and customize the consumer experience in a way that is relevant to their interests (Byfield, 2014). Customization is allowing industries to find new ways to drive consumer loyalty and with the assistance of Big Data, companies are able to easily match up consumer-relevant products/brands with targeted consumer profiles, and with data-backed decisions. Instead of decisions being based on a mere guess or feeling, the facts and numbers are now available (LaValle, et al., 2011).

DATA EXCAVATION AND ANALYSIS

To explore and fully understand the shift and change happening currently in the marketing industry we need to explore several areas: the first area involves how Big Data analytics enables companies to make high probability predictions about trends while also allowing them to hone in on strategically targeted marketing. Before this can happen, the data first must be collected. It is important to understand how that data is being deeply mined on a daily basis. What has been described as “The Internet of Things” will connect everyone to everything in an integrated worldwide network, and this will happen through collecting and linking every aspect of economic and social life (Halpern, 2014). Imagine the world where people, natural resources, machines, logistic networks, consumption habits, production, recycling flows, and virtually every other facet of life are linked and interconnected through software and sensors that feed the “Internet of Things” platform. To truly understand the magnitude of data that can be generated, Gartner, Inc. estimates that by 2020 over twenty-six billion Internet devices will be interconnected. In turn, this collecting and linking of data will generate what we know as Big Data in real-time (Sagiroglu and Sinanc, 2013).

There are many companies such as Google, Target, the automotive industry and even political campaigns such as the Obama presidential campaign that have relied on data and analytics techniques to market themselves favorably to the public.

The views and definitions revolving around Big Data vary, depending on the company and the industry involved, what they use the data for, what the value of the data is to them, and the results they can gain and generate from the data. More or

less, Big Data can be looked at as a collection of data from both digital and traditional sources, outside and inside your company that represents a hub for ongoing analysis and innovation. Using the data collected efficiently helps a company to better sell products or services, target marketing efforts, and improve services and products overall (Uğur and Türkmen Barutçu, 2016b).

Big Data analytics are becoming essential for industry and enterprise growth. In a recent Forbes' article, it is said that 87% of enterprises believe that Big Data will be what redefines the competitive landscape of many different industries, within as little as three years (Columbus, 2014). Eighty-nine percent also believe that companies who do not adopt Big Data strategies will risk losing their momentum and market share (Columbus, 2014). The Industrial Internet Insights Report for 2015 has emphasized that investments in Big Data analytics are becoming stronger than ever and found that not only do companies presently invest more than 20% of their overall technology budget in Big Data analytics, but also they expect this to increase over the next year (Industrial Internet Insights Report, 2015). Many industries are using these analytics to differentiate their competitive strengths and are doing so successfully. Therefore, the primary real risk to not implementing the use of Big Data is missing out on opportunities and overall growth in a market and allowing competitors who adopt an analytic strategy to have an upper hand.

Technology has increased the use of Internet-connected devices and has created a new position that the more information you put out about yourself, the more the world can tailor itself to your needs and give you exactly what you want. In short, the more technology collects information about you through your daily activities and interactions the more particular industries can manipulate that data to "benefit" you. Acxiom Corporation is the second-largest company in the database marketing industry that excavates, aggregates, and sells personal data. This giant data collector is said to have records of hundreds of millions of people that includes: 1.1 billion browser cookies (data that gets sent to a website and tracks a user's activity), 200 million profiles of mobile users, and an estimated 1,500 pieces of data per consumer, according to the New York Times (Singer, 2012).

First-Party and Third-Party Cookies

Data collected not only includes public records, but also cookies placed on websites that are providing information about online behavior. For example, when you use a computer a "first party" cookie is placed on sites such as Google that can save passwords and other information to avoid having users log in every visit. "First-party data" is your personal information, this ranges from behaviors, interest, and actions taken on websites visited, also including cross-platform data from when you access apps and the mobile web (Uğur and Turan, 2016; Benjamin, 2015). In addition "Third party cookies" travel across all sites tracking, in order, what sites are visited. "Third party" data generates on these visited platforms and often collects information from other websites as well (Chester, 2012).

The Apple Ecosystem

Apple is one company that has made collecting data easier by building the world that involves a computer for every single interaction. It is now possible for users to sync browsing histories across multiple devices, combining your behaviors on your laptop with your iPad and your iPhone (Uğur and Koç, 2015a). The result has been better marketing efforts and new ways to deliver advertising to consumers through with the help of these behavioral insights. The Apple brand has created a product that can pay for all your purchases, open your hotel room door, monitor your movements, control your devices in your home, track your sleep patterns, tell you where you parked, how many calories you burned, recommend movies for you to watch, etc. All the while, this Apple ecosystem is collecting data about your behavior every step of the way, creating more software and products that the Apple user wants. Intelligence collected by these devices is only a small part of the interconnected world in which we are now living (Türkmen Barutçu and Uğur, 2016; Fan, et al., 2015). Take for instance arriving at your hotel room, where the temperature, lights, stereo, mini bar, and even window shades are not only controlled by a single device but can adjust to your preferences before you even arrive at your room. This is just one of the many ways data collected on consumers is being put to use to give people exactly what they want (Gandomi and Haider, 2015).

The more data put out there and collected, the easier it will be to create different types of consumer profiles about any number of people that can include information such as: your education level, your health profile, the type of car you drive, how many children you have, your race and age, your recent purchases, and even your stock portfolio (Uğur and Koç, 2015b).

The Important Role of Algorithms

Apple isn't the only one that has caught onto the wave of collecting personal information and digital activities of people across the world. The creation and use of algorithms have made it possible for companies to collect and analyze Big Data through different data points. Algorithms consist of mathematical equations that create step-by-step instructions that calculate different data points, provide automated reasoning, and process data (Deangelis, 2015). Klint Finley states in his article on Wired.com how the Internet today is ruled by algorithms. We witness these mathematical creations every day from what movies Netflix recommends to you, what ads pop up in your email, what users Twitter recommends you to follow, and what shows up on your Facebook feed (Finley, 2014). Algorithms produce quantifiable results and answers.

The real value of algorithms comes from being able to examine as many data points as possible about someone and creating equations that solely are meant to build an accurate representation of a consumer (Dormehl, 2014). For example, Google created an algorithm that knew if a user was more or less likely to purchase a specific product online and could change the prices of items like videos, e-books, computer games, etc. By tracking your search history and website activity, Google was able to

use that data to produce an “automated response” based on the calculations (Dormehl, 2014). In other words, Google can sell you a product at a price you are willing to pay.

Companies and organizations are not just using Big Data for their own benefit but the use of Big Data is now allowing them to treat customers on more of an individual basis, building long-term loyal relationships (Chen, et al., 2012). Big Data allows for companies to predict exactly what customers want and in most cases before they even ask for it. Consciously, and in some cases subconsciously, the technological world in which we live has gotten us excited to want to see and use data. For instance, the craze over Jawbone’s UP and the Nike+ FuelBand, a product that tracks your daily steps and activity, and the food diary app MyFitness Pal, has provided users with more data about their health and eating activities than ever before possible. Big Data is now becoming meaningful to consumers the more they become interested in their own personal data, which in turn leads them to continue logging in and using these types of data collecting products. Luke Dormehl describes this new wave of individuals who enthusiastically take part in some form of self-tracking, called the Quantified Self movement (Dormehl, 2014). Simply put, these Quantified Self-devotees seek self-knowledge through numbers (different data points).

Companies are also using Big Data to improve their interactions with consumers and for that reason makes Big Data analysis key to effective marketing and development. With numerous brands being able to connect through more channels to consumers, improving and maintain relationships are essential (Uğur and Türkmen Barutçu, 2016a). Across many industries, the presence of Big Data and use of analytics is successfully helping companies understand their consumers and target markets, giving them a competitive marketing advantage (Linoff and Berry, 2011).

SOCIAL MEDIA EMPOWERS BIG DATA

Social media provides insight into purchasing habits (Uğur and Türkmen, 2014). Within the last few years, the marketing industry has started to take an active interest in big data and more importantly how to use it to determine what consumers like. Big Data has the ability to help the marketing industry better identify new waves of consumption trends, discover new products, and market those products more strategically (Boyd and Crawford, 2012).

Social media outlets have played a tremendous role in continually creating and gathering numerous data points about consumers and their interests and purchasing habits that can be used for analysis. Every time we “like,” share something, use a hashtag, like/share a page, stream video, buy something, or comment on a shopping blog on various social media outlets such as Facebook, Twitter, Instagram, YouTube, Tumblr, etc. we’re creating data points for those in the marketing industry to make better predictions (Uğur and Turan, 2015a).

Studying consumer’s purchasing habits provides important data points that can lead to endless marketing possibilities. Social Media analytics have opened the door for new analytics to boost marketing strategies. Facebook and Twitter have allowed consumers

to like, follow, and talk and comment freely with their peers about their favorite, or least favorite, products, and brands (Uğur and Turan, 2015b; Gantz and Reinsel, 2012).

Big data also promotes personalization. Big Data is allowing us to have a better understanding of the world we live in and a deeper understanding of consumers, and not just of a few people but billions. As we continue to use data collected to determine what consumers like, there will be other ways to manipulate the same data to figure out how to get them to buy what they like (Tirunillai and Tellis, 2014).

Similarly, to how online shoppers leave a trail of their movements through their IP address, which opens them up to being targeted with personalized offers through ads or emails that later pop up regarding either a page you visited or a purchase you made, consumers enable this personalized advertisement based not on only their purchases but their social interactions, both online and offline. Luke Dormehl gives an example, in his book *The Formula*, how something as small as mentioning the words "Cape Town" in an email will trigger airlines to send email promotions for "Cheap flights to Africa" emails to your inbox (Dormehl, 2014). Airlines and other travel companies have algorithms in place that sort through data that can indicate which users have a higher probability of being interested in traveling to South Africa in the future. Even though the context of the email could have been irrelevant to traveling, Big Data allows more efficient marketing promotions based on better predictions.

The marketing industry now has the opportunity to use similar tactics to ensure they are making improved decisions when it comes to directing their marketing efforts or creating new ones. Quantcast is one of the largest companies in the world that measure consumer consumers through the use of data and algorithms. Co-Founder Konrad Feldman came up with the notion of using data to measure a business' campaign, looking at what actually worked. He then analyzed the massive amount of data to determine the characteristics of a consumer rather than determining the ideal consumer for a product and then hoping to figure out where to find those consumers (Dormehl, 2014). This would do away with the traditional shotgun approach to marketing. Amazon's user recommendations are similar to the vision Quantcast had in creating insights for online retailers to tailor their promotions on their websites to each user and ultimately generate a formula that can depict and describe specific users, then be able to use that to influence their purchasing behavior.

Being able to split up consumers based on granular categories such as lifestyle, interests, demographics, geographic location, and psychographics has made it easier to interpret and read behavior patterns found in data. Understanding the consumer's behavior and studying data to see where different types of consumer profiles are going, and how they are getting there can aid in influencing their decisions. The more personalized the promotion, the higher probability that the said advertisement will work. Big Data is allowing for this huge aggregation of all your personal information that you've ever put out there to build a precise representation of who you are, now more than ever before. Moving forward it will only continue to be if not more important, to use data to determine what consumers want to buy.

DISCUSSION AND CONCLUSION

Without a doubt, Big Data and analytics are changing the landscape of many industries. Technology has created a new digital world that allows businesses to track digital activities of millions of people through a variety of different techniques that allow companies a personal look at consumer behavior and purchasing habits. Data collection has propelled other industries forward keeping them abreast with the current times. Marketing data can offer the same benefits by aiding those in the marketing business to make better decisions.

Generating and collecting Big Data in real-time, 7/24 will give insight into what people are buying, downloading, and communicating about. Data collected both online and offline can be combined to better determine what consumers like and want to see, what consumers are more inclined to buy. With consumer social interactions happening frequently online, the industry can now see which marketing efforts were a success, which was not, and adjust their plans accordingly.

The rise in Big Data and analytics put a magnifying glass on the consequences that come from the use of the Internet in this digital age. Newer products entering the markets now have a better probability of finding ways to distinguish themselves, thanks to Big Data. Up and coming products have always had a difficult job finding their target consumer. But now, with the use of data and analytics, it will be much easier to pinpoint how to reach those consumers, which ones to avoid entirely, and the most effective route to get there. Big Data provides similar advantages to established products but more importantly, it helps these well-known brands stay relevant to their demographic and, possibly, build new consumers they would have never been aware of before.

REFERENCES

Benjamin, M. (2015), '1st, 2nd, 3rd Party Data: What Does it All Mean? Lotame', 2015. Retrieved February 3, 2017, from <http://www.lotame.com/1st-2nd-3rd-party-data-what-does-it-all-mean>

Boyd, D. and Crawford, K. (2012), 'Critical Questions for Big Data: Provocations for a Cultural, Technological, and Scholarly Phenomenon', *Information, Communication & Society* 2012 15(5): 662-679.

Byfield, B. (2014). *Big Data Customization: A New Era for the Music Industry*. Umbel. Retrieved December 8, 2016, from <https://www.umbel.com/blog/big-data/music-industry-big-data/>

Chen, H., Chiang, R. H. and Storey, V. C. (2012), 'Business Intelligence and Analytics: From Big Data to Big Impact', *MIS Quarterly* 2012 36(4): 1165-1188.

Chester, J. (2012), 'Cookie wars: How new data profiling and targeting techniques threaten citizens and consumers in the "big data" era. In *European Data Protection: In Good Health?*', Springer Netherlands 2012: 53-77.

Columbus, L. (2014), '84% Of Enterprises See Big Data Analytics Changing Their Industries' Competitive Landscapes In The Next Year', *Forbes* 2014. Retrieved February 3, 2017, from <http://www.forbes.com/sites/louiscolumbus/2014/10/19/84-of-enterprises-see-big-data-analytics-changing-their-industries-competitive-landscapes-in-the-next-year/>

Deangelis, S. (2015), 'Artificial Intelligence: How Algorithms Make Systems Smart', *Wired* 2015 Retrieved February 3, 2017, from <http://www.wired.com/2014/09/artificial-intelligence-algorithms-2/>

Dormehl, L. (2014). *The Formula: How Algorithms Solve All Our Problems and Create More*. New York: Perigee Trade.

Fan, S., Lau, R. Y. and Zhao, J. L. (2015), 'Demystifying big data analytics for Business Intelligence Through the Lens of Marketing Mix', *Big Data Research* 2015 2(1): 28-32.

Finley, K. (2014), 'Wanna Build Your Own Google? Visit the App Store for Algorithms', *Wired* 2014 Retrieved February 3, 2017, from <http://www.wired.com/2014/08/algorithmia/>

Gandomi, A. and Haider, M. (2015), 'Beyond the Hype: Big Data Concepts, Methods, and Analytics', *International Journal of Information Management* 2015 35(2): 137-144.

Gantz, J. and Reinsel, D. (2012), 'The digital universe in 2020: Big data, bigger digital shadows, and Biggest Growth in the Far East', IDC iView: IDC Analyze the Future 2007 2012: 1-16.

Halpern, S. (2014), 'The Creepy New Wave of the Internet', NY Books 2014 Retrieved December 8, 2016, from <http://www.nybooks.com/articles/archives/2014/nov/20/creepy-new-wave-internet/?insrc=to>

Industrial Internet Insights Report. (2015), 'Accenture', 2015 Retrieved February 3, 2017, from <http://www.accenture.com/SiteCollectionDocuments/PDF/Accenture-Industrial-Internet-Changing-Competitive-Landscape-Industries.pdf>

LaValle, S., Lesser, E., Shockley, R., Hopkins, M. S., and Kruschwitz, N. (2011), 'Big Data, Analytics and the Path from Insights to Value', MIT Sloan Management Review 2011 52(2): 21.

Linoff, G. S. and Berry, M. J. (2011). *Data Mining Techniques: for Marketing, Sales, and Customer Relationship Management*. John Wiley & Sons.

Marwick, A. (2014), 'How Your Data Are Being Deeply Mined', NY Books 2014 Retrieved December 8, 2016, from <http://www.nybooks.com/articles/archives/2014/jan/09/how-your-data-are-being-deeply-mined/>

Sagiroglu, S. and Sinanc, D. (2013), 'Big data: A review', In *Collaboration Technologies and Systems (CTS) 2013 International Conference on*: 42-47 IEEE.

Sicular, S. (2013), 'Gartner's Big Data Definition Consists of Three Parts, Not to Be Confused with Three "V"s', *Forbes* 2013 Retrieved December 8, 2016, from <http://www.forbes.com/sites/gartnergroup/2013/03/27/gartners-big-data-definition-consists-of-three-parts-not-to-be-confused-with-three-vs/>

Singer, N. (2012). *Mapping, and Sharing, the Consumer Genome*. New York Times, 16.

Tirunillai, S. and Tellis, G. J. (2014), 'Mining Marketing Meaning from Online Chatter: Strategic Brand Analysis of Big Data Using Latent Dirichlet Allocation', *Journal of Marketing Research* 2014 51(4): 463-479.