ASSIGNMENT 1

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Big data analytics is the application of analytics to large and complex data, i.e. big data, to discover patterns, trends, correlations, and other insights. The amount of data generated is growing exponentially, in large part due to technologies such as radio-frequency identification (RFID), internet-enabled devices, and social media. How do we make sense of the sheer volume and complexity of the ever expanding data in the world? The answer lies in big data analytics.

Enterprises are increasingly using big data analytics to differentiate themselves from industry peers. IBM, in partnership with MIT, published a paper called *The New Intelligent Enterprise*. The study in this paper found that organizations that use analytics to achieve a competitive advantage are over two times more likely to substantially outperform their industry peers. The study also found that the number of enterprises using analytics to create a competitive advantage had increased by almost 60% since the previous year and that six out of ten organizations are now differentiating through analytics (Zikopoulos et al., 2013). In short, to be a leader of industry, one needs to understand and utilize big data analytics.

Big data means different things to different people, and as such, there is no adequate definition that encompasses all that big data entails. Instead, big data is typically defined by a number of concepts that begin with the letter "V"; that is, volume, variety, velocity, and veracity (Zikopoulos et al., 2013). This definition is continually being updated with new concepts by different organizations; the relevance of these concepts depends on the organization itself. With the exponential growth of data and advent of new technologies, the definition of big data changes as well in order to stay up to date with the changing times. For now, I would like to focus on the four aforementioned Vs: volume, variety, velocity, and veracity.

1) Volume is the amount of data. The amount of data generated and stored is now measured in zettabytes (ZB), which is a trillion gigabytes. Big data analytics attempts to tackle

the challenges associated with the exponential growth in data volume. 2) Variety is the type of data, which includes structured, semi-structured, and unstructured. Most of the data out there is unstructured, which big data analytics is particularly interested in. Examples of unstructured data include images, video, audio, and social media posts. Analyzing unstructured data can reveal insights into customer behavior and help businesses improve their products and customer service. 3) Velocity is the speed at which data arrives and is processed at the enterprise. Organizations that respond quickly to incoming data are at an advantage compared to those that do not. 4) Veracity is the quality or trustworthiness of the data. Not all of the data available to an organization can be processed; most of it is signals and noise. Big data analytics can help separate the useful data from the noise (Zikopoulos et al., 2013).

Together, the four Vs of big data are changing how companies do business and how we understand data. One might think that big data analytics has replaced traditional analytics; however, this is not the case. Instead, big data platforms complement traditional methods, with each being optimized for different tasks and different types of data. The synergy of traditional and big data analytic approaches can be highly rewarding.

Use Case 1: McDonald's

Serving more than 69 million customers daily in over 100 countries, McDonald's is one of the largest fast food chains in the world. Despite lagging behind its competitors in the use of technology, the fast food chain is hoping to turn things around by embracing big data to improve customer experience, increase revenue, and decrease costs. McDonald's technological priority is highlighted by this statement in its 2017 growth plan: "enhancing digital capabilities and the use of technology to dramatically elevate the customer experience." (Marr, 2018a)

As one of the most ubiquitous and successful fast food chains in the world, McDonald's generates huge amounts of data per day. Thus, it should come as no surprise that McDonald's is using big data analytics to help decide just what to do with all of the data it has at its disposal. Ways in which McDonald's has used big data to improve company performance include the mobile app, digital menus, self-ordering kiosks, and interactive terminals.

McDonald's can use the data generated from customers using its mobile app to increase sales. Customers using the mobile app get access to exclusive deals and product recommendations as well as the ability to skip the lines at the counter or drive-thru. Japanese customers who use the mobile app spend 35% more on average (Marr, 2018a).

McDonald's is also rolling out digital menus, which change based on big data analysis. The menus promote products based on which foods or beverages sell well on certain times of the day or weather conditions. For example, cold beverages are highlighted on hot days, while comfort foods are highlighted on cold days. In Canada, use of digital menus has increased sales by 3% to 3.5% (Marr, 2018a).

In some locations, customers can use self-ordering kiosks instead of ordering at the counter or drive-thru. This reduces labor costs as well as errors in the orders. In France,

customers can place orders at an interactive terminal. After placing the order, the customer takes a connected RFID card associated with the order to a table of their choice. The employee then locates the customer through the RFID card and brings their order to them (Marr, 2018a).

As McDonald's and other fast food chains continue to embrace big data and become more data-driven, the ordering process will increasingly become more digital in nature. No doubt we will see more of the aforementioned new technologies in McDonald's stores in the near future.

Use Case 2: Netflix

With over 100 million subscribers worldwide, Netflix is the world's leading entertainment service that provides steaming, video-on-demand, and DVD sales. With the amount of data generated and available to Netflix, the insights gained from analyzing that data is critical to its success. Netflix continuously uses the analytical tools at its disposal to optimize its service and improve customer experience.

Using analytics, Netflix found that a typical customer loses interest after 60 to 90 seconds of deciding what to watch; during that time, the customer looks at 10 to 20 titles. Unsurprisingly, recommending content is a top priority for the company. The faster Netflix is able to recommend content to its customers, the more likely it will be able to keep the viewers engaged with its platform. In fact, its recommendation system influences about 80% of the content we stream on Netflix. Furthermore, Netflix estimates its algorithms save the company $1 billion a year from customer retention (Marr, 2018b).

Not only is Netflix able to predict what kind of shows its viewers like to watch but also create shows for them. *House of Cards* is such a show. When data showed its subscribers were

fans of director David Fincher and actor Kevin Spacey, Netflix ordered two seasons of the show straightaway. Netflix's method of original content creation has been successful: Netflix original shows have a success rate of 80% compared to traditional TV shows' success rate of 30% to 40% (Marr, 2018b).

With big data analytics, Netflix is even able to produce a list of ten films that are too scary for viewers to finish. Netflix determined that if a viewer watched at least 70% of a movie but turned it off before finishing, the movie was too scary for the viewer to finish. The 70% threshold was chosen to differentiate among movies that are too scary to finish and movies that are simply too bad to finish. Netflix determined that if viewers do not like a movie enough to finish, they would turn it off well before the 70% threshold (Marr, 2018b).

Big data analytics is continually improving Netflix's customer experience. With the data generated from streaming, customers are not only getting recommendations for shows that might appeal to them but also shows that are created for them.

LaValle et al. (2011) summarizes the 2010 New Intelligent Enterprise Global Executive Study and Research Project, a study conducted by *MIT Sloan Management Review* in collaboration with the IBM Institute for Business Value. The article attempts to answer the question of how organizations are using analytics and capitalizing on the influx of data to gain a competitive advantage. To that end, a survey of nearly 3,000 executives, managers, and analysts was conducted. The survey obtained information from individuals from organizations in 108 countries and more than 30 industries. The article goes on to introduce a five-point methodology for "successfully implementing analytics-driven management and rapidly creating value."

Among the findings of LaValle et al. (2011), organizations that agreed that "the use of business information and analytics differentiates them within their industry" are twice as likely to be top performers than lower performers. Furthermore, top performers are twice as likely to use analytics to guide not only day-to-day operations but also future strategies than lower performers.

Organizations were classified into three stages – Aspirational, Experienced, and Transformed – based on how respondents rated their organization's analytics capabilities. Organizations in the most advanced stage, Transformed, are the most experienced and adept in terms of using analytics, while organizations in the most basic stage, Aspirational, have limited experience with and understanding of how to utilize analytics for business value. Organizations in the middle stage, Experienced, have some experience with analytics and are looking to improve the way they use analytics. Respondents of Transformed organizations were three times more likely to indicate that they "substantially outperform their industry peers" than those of Aspirational organizations (LaValle et al., 2011). Perhaps, this is indicative of the growth and competitive advantage associated with improved analytics capabilities.

Contrary to popular opinion, the obstacles organizations face in their quest to become more data-driven are not related to data and technology but rather managerial and cultural in nature. The survey respondents were asked to select the top three barriers their organizations face in adopting analytics, and only about 20% of respondents chose "concerns with the data" or "ineffective data governance." Whereas, almost 40% of respondents chose "lack of understanding of how to use analytics to improve the business" as an obstacle, and over 30% cite "lack of management bandwidth due to competing priorities." (LaValle et al., 2011)

In summary, LaValle et al. (2011) concluded that the correlation between company performance and analytics proficiency has significant implications to organizations seeking revenue growth, cost efficiency, or competitive differentiation. I agree with these implications since organizations that do not adopt or ineffectively adopt the widespread use of analytics will be left behind. The volume of data available has been and is exponentially increasing, and organizations that do not embrace an information agenda will find it difficult to gain business value from data-driven insights. Tools that analyze and take advantage of the massive amounts of data already exist, so the challenge lies in correctly and successfully applying analytics and company management prioritizing analytics initiatives.

References

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