

Evaluation of Data Science Applications: Selling Analytics

Name

Course

Instructor

Due Date

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The role of big data in advancing company performance is indisputable. Big markets have made big data part of their business processes, with big data analysis software part of their infrastructure (Marr, 2016). This report considers big data's value, impact, and shortcomings and how that information is relevant to industry-based companies. The report evaluates the following companies to demonstrate their application and usage of big data: Netflix, Rolls Royce, Walmart, Shell, and Norfolk Southern.

Netflix uses the big data predictive model, which has set methods for ensuring optimal viewership and satisfaction through predictive analysis (Marr, 2016). Netflix uses element algorithms, which analyze data based on patterns and can recommend items or products with similarities. This method helps predict what movie one is likely to binge on, based on their past watch history, or what film they will watch at a given time. This recommender system makes the user feel like the system knows them (Marr, 2016). Indeed, it can use their watching history, data searches, and patterns of interest to tell which movies may interest them. The overall effect of this approach is an increase in the overall watch hours.

Arguably, Netflix has succeeded in this realm as it has endeared itself to many users, having at least a daily viewership of over 100 million watch hours from people across the globe (Marr, 2016). This underscores the role of big data as a tool for market expansion and keeping data. The beauty of big data is that every one of these users has a personalized experience based on their profile and watch history. This shows the ingenuity of big data in developing personal experiences and user-specific data. If compared, a blockbuster or box office model would be insufficient in providing this efficiency level.

According to Marr (2016), the users would either consume movies based on recommendations from their friends or a general buzz or perhaps ask in the market which

movie or film is trending. In general, this approach limits the number of films watched as the consumer does not need to find a given watch. On the other hand, Netflix's recommender system makes it easy for consumers to decide what to watch next, as they are presented with real-time options that align with their interests (Marr, 2016). The biggest shortcoming for Netflix is that its recommender system does not allow the review model, which limits the input level in the big data model. This can lead to reinforced bias in the media (O'Neil, 2016).

Therefore, businesses in the e-commerce industry can benefit from this model as they get a good analysis of the markets – and use a similar recommender system to maintain consumer interest by showing them products they are likely to be interested in (Du et al., 2020). This approach shall ensure that the consumers purchase the highest number of products from the e-commerce chain and system. The recommender model is relevant in promoting customer loyalty and influencing purchase decisions. Thus, big data helps increase the overall volume of sales and, hence, the revenues accrue from a better consumer-recommendation system (Akter & Wamba, 2016).

On the other hand, Rolls-Royce uses big data for vehicle design, manufacturing, and sales (Marr, 2016). The big data approach is used to simulate the different models of Rolls Royce vehicles. This underscores the role of Rolls-Royce's use of big data to make the best design of its vehicles and airplanes (Marr, 2016). This approach helps develop new designs while minimizing the costs of using materials or spending man-hours to develop actual physical vehicles (Marr, 2016). It also helps in lowering the degrees of error that may arise when developing a new design by running data analytics simulations of the functionality levels. Also, as Rolls-Royce is involved in designing airplanes, it uses its simulations to run designs for various types of carriers. In the case of airlines, the essence of big data during the design process is to ensure the highest efficiency level in aligning the various parts with the corresponding functionalities of the whole. This method ensures that during the

manufacturing process, the engineers can precisely develop the various parts – which match the other parts (Marrs, 2016).

Besides, Rolls Royce uses big data in its manufacturing process by using it to run industrial process simulations (Marr, 2016). Notably, the industrial process uses control systems and limits, and this is where the big data models apply as they help to coordinate many operations. This ensures the factory machines work simultaneously and synchronously when assembling the various parts. In essence, aspects such as speed are estimated with proficiency and with a high degree of accuracy. This ensures few or no factory incidences (Marr, 2016). The core shortcoming facing Rolls Royce's data system is that it is majorly reliant on in-house design models rather than open-source, which limits the scope of innovation that is achieved as the system is limited to the computational capacity of its engineers (Marr, 2016; O'Neil, 2016).

The core lesson from Rolls Royce's big data operations is the need to use big data in the e-commerce system, especially in the supply chain process. This technique is essential in properly coordinating inventory, transport vehicles, and third-party fulfilling agents (Akter & Wamba, 2016). Big data can help provide sound analysis of these operations and synchronize them to ensure all parties involved work in unity and everything occurs in time (Du et al., 2020). Essentially, this would help reduce supply chain delays, which may lead to low inventory or delays in fulfilling customer orders.

Another example of using big data is Walmart, which optimizes its retail operations. Walmart is arguably the largest retailer, with over 10,000 stores worldwide (Marr, 2016). In actual practice, Walmart uses big data to create responsive inventories and real-time responsiveness to market demand changes (Marr, 2016). For example, when there is an increase in product demand, Walmart identifies it through predictive analysis and adjusts its

supplies to meet the new demands. This ensures that there is a consistent supply of the products and that there is sustained availability of products.

Walmart also uses big data to understand the social perceptions of the products people want to consume and their preferences. By keeping a watch on social perceptions, Walmart can predict which items are likely to hike in demand, increase its supply, and adjust its marketing methods. This helps advance a responsive system that aligns Walmart's marketing strategies with current trends. In addition, by studying the various demographics and their behaviors, Walmart can determine the type of products to stock in various stores and locations (Marr, 2016). As such, big data plays a role in advancing the level of knowing your customer, KYC that the retailer has on such a wide demographic. The current shortcoming in Walmart's big data is having a system that consistently matches consumer behavior. This challenge exists as they lack an individual consumer database, which leads to big corporate domination (Marr, 2016; O'Neil, 2016).

Thus, based on Walmart's big data usage, big data is relevant in the e-commerce industry as it is closely related to retailing. The concepts of inventory control and customer behavior prediction are crucial to the effective performance of e-commerce-based companies as they rely on real-time data to analyze their inventory and keep up with fluctuating market demand. Besides the use of big data in the e-commerce industry, with a view of Walmart's operations, it can be noted that predictive analysis helps to understand shifts in customer preferences as well (Akter & Wamba, 2016). In addition, big data from this case study can help e-commerce use demographic data to push tailored products while complementing it with social media data analytics to understand social patterns.

Shell Oil Corporation is another core company whose operations inform us of the significance of big data. This big oil corporation is one of the world's major dominant oil producers and refiners. Shell makes use of big data to explore oil sites. As oil exploration is

often costly, geographers and oil exploration experts study the geological patterns of the target areas on a small scale while gathering the data to determine the possibility of the presence of oil. The data findings are matched with established data collected from other study cases – to determine the probability of the existence of oil (Marr, 2016). The results are used to predict and inform whether the oil exploration project is viable. The core shortcoming of Shell is that its operations are limited to secondary data, hence the need to refer to other records. In the case of internalized biases or errors, the math models can lead to egregious repeated corporate errors (O'Neil, 2016).

The application of big data, as noted in Shell's case, is in market exploration. Just like how Shell makes use of big data analysis to compare the patterns of potential oil rigs across the globe to determine whether to do the drilling or not, e-commerce chains can make use of big data to do a market analysis of the various locations and determine whether to make market entry or not (Du et al., 2020). The pre-market surveys and analysis help define the various industries' and areas' existing market conditions. This helps to inform whether making an entry is effective or not. Thus, big data analysis of the market conditions, including consumer purchasing power, previous digital or market performances and operations, digital trends, and related details, can be useful in determining the favorability of a given market.

Further, the case of Norfolk Southern offers a compelling study of how organizations can leverage big data to attain competitive advantage and operate in a fast-changing environment. While in the 1990s, Norfolk Southern operated in quite a predictive environment with the freight business moving from point A to B with an expected number of goods to transport, the business swiftly changed with the entry of new competitors (Wixom et al., 2011). Thus, in moving its operations from traditional reporting, the business saw accelerated growth when it adopted big data to inform its business strategy. Some of the

applicable areas of the use of big data as one of the sources of business intelligence are market prospecting and understanding customer satisfaction (Wixom et al., 2011). These two elements are essential in determining prices and packaging various tickets that respond to market demand. The biggest shortcoming that Norfolk Southern faces is that the data is based on market analysis and does not anticipate consumer behavior as a core variable and, at times, can lead to sidelining of the individual, accelerating inequality (Marr, 2016; O'Neil, 2016).

The core lessons that can be learned from Norfolk Southern that are applicable in e-commerce need to adapt: data maintains competitive analysis by studying market patterns. Given that there are always new entrants in any industry, and competition is often rife in e-commerce, the most essential element is driving change through big data. Big data helps determine areas of competitive advantage, whether it is through differentiation or market targeting (Du et al., 2020). These are essential elements in gaining market dominance. Thus, this underscores the role of big data as a tool for developing relevant business strategies that help a company retain its competitive advantage.

Proposed Project

Given the relevance of big data in advancing the efficiency of corporations in their market performance and technical operations, it is essential to develop a big data model for e-commerce company adaptation (Wixom et al., 2011). Some of the core considerations that this report considers are the harmonization of data, the scope of operations within the company, and also the preparedness to transition to the use of big data. The core lessons in preparing this model are drawn from the five companies, with particular attention to the developments and transitions of Norfolk Southern.

From Walmart, developing a Lab or a data center is essential for studying social trends. To remain competitive, the data lab should work with top institutions to experiment

on several models and keep updating the systems. This can be drawn from the case of Rolls-Royce, which has established partnerships with universities to advance its class—tailored data designs. This is essential if e-commerce wants to advance its controls and reduce errors and false positives (Marr, 2016). From Netflix, it occurs that there is a need to have a software migration with an upgrade of the databases to reflect the current capabilities of the market. For example, as there are demonstrated unknowns, such as when the customers have playbacks or abandonment of a given movie, big data has to anticipate the predictive issues. The data lab must integrate continuous updates into its systems to cater for new discoveries. In this case, the abandoned orders, the click rate on items, and similar details relate to customer decisions.

The company must have the best big data analytics-compliant software, such as SQL Database, rather than Oracle (Marr, 2016). There is also a need to have internal capacity, such as storing more than 46 petabytes, as this is consistently used even in less intense operations such as Shell's market exploration. Besides, data visualization software is essential in building an effective market predictive software for market analysis. Finally, the company needs an integrated communication system to harmonize the data systems (Wixom et al., 2011).

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