

Big Data Program Implementation Plan for Tesla Motors

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Introduction

To visualize a future without data storage, just imagine a world where all records of interactions between people, businesses, and other entities are instantly erased after they have served their purpose. Under the current circumstances, most organizations would lose the ability to collect vital information and knowledge, do in-depth studies, and present novel opportunities and benefits. With that in mind, safely storing and quickly retrieving data is a vital skill that no one can do without (Ajitha, 2021. p.507). A company's success depends on every facet of its operation, from its list of customers and suppliers to the final product or service offered to the chosen consumers. Any company's prosperity hinges on its capacity to utilize data effectively. Consider the vast and varied information resources that have become available in recent years due to technological advancements like the internet. Due to improvements in storage capacity and data collection methods, huge volumes of data are now readily available. Every second, more data is created, all of which must be saved and analyzed to be useful. Data sets are getting bigger and bigger, so it's time to create a big data program to handle all that information. "Big data" refers to databases that are too huge to be used efficiently on conventional systems and are typically several terabytes or more.

Given its size, [Tesla Motors](#) is among the first automobile manufacturers to embrace big data efforts. As one of the leading retailers of electric vehicles, Tesla needs to use big data initiatives to keep up with the industry's other major players. In addition to producing and marketing electric vehicles, Tesla also produces and sells cutting-edge computer software and solar energy equipment (Jetter et al., 2018. p.26). The company aims to become the leading autonomous vehicle sales and services provider. Despite this, Tesla motors has been [facing human resource management](#) issues regardless of whether it is successful. Workers at Tesla have recently come forward to complain about unsafe working conditions, harassment, discrimination, and layoffs, all of which are HR issues for the corporation. Accident rates at Tesla factories were higher than average in 2014 and 2015, according to data provided by the non-profit organization Work Secure, which promotes workplace safety. This trend is expected to accelerate in 2016 (Golden, 2017). Therefore, the Tesla big data program is the subject of this research to address HRM issues.

Justification for the implementation of big data

programs

Using big data applications, Tesla can build a reliable [supply chain management](#) system, ensuring the factory's smooth running. As a result, a considerable chunk of the revenue must be allowed for these divisions as they are expected to deal with many components in Tesla Motors' deals consistently. Because of this, the company's ability to function would suffer without a reliable and well-coordinated supply chain. A robust supply chain management system is essential for Tesla Motors' continued success (Zhou et al.,2017. p.361). The consistency of a business's supply chain is influenced by factors, including market competition, the organization's level of innovation, and communication channels. If Tesla integrated big data into its supply chain, it could evaluate available products against its needs. Factors including price, quality of components, and dependability will be used in this evaluation. Consequently, Tesla has to prioritize employing either the highest quality components or the highest profit components.

There is a growing need for high-tech cars that can monitor their performance in real time and send notifications if something goes wrong. The two-way communication capabilities of a connected vehicle extend beyond the vehicle's local area network (Local Area Network). Cars equipped with this technology can link devices inside and outside the automobile to the web. Connected vehicles will rely heavily on big [data analytics](#) to become a reality. In addition, Tesla needs to collect a plethora of customer information to better meet its clientele's demands. Tesla needs to analyze data to learn about its customers' payment histories (Zhou et al.,2017. p.361). The big data program would greatly enhance the company's ability to ascertain customer tastes and preferences. Companies can now provide clients with tailored financial strategies that address their unique needs. They might provide services that stand out from the crowd to stay ahead of rivals. It also aids them in avoiding loan sharks and other shady characters. Big data analysis provides a decisive advantage in the auto-financing sector.

Relevant technology and tools for big data program implementation

Without the aid of technological devices, big data implementation would fail. Technology and techniques for creating visuals are among those needed for the rollout. Tesla motors need a standard of user-friendliness and ease of usage, such as the Google chart. With its extensive gallery of charts ranging from the straightforward line to the intricate tree format, Google Chart is a useful tool for Tesla Motors in making sense of its massive data sets. And while personalization is key when creating a chart, Google Charts doesn't provide many alternatives. You can always ask for clarification if you need it (Fernandes Andry et al.,2021. p.2059). It creates a representation of the chart in HTML5/SVG, which can be viewed in most modern browsers. Moreover, the business may consider implementing 3D, a JavaScript library for any data visualization. Because of the unique nature of this tool, you'll need a firm grasp of JavaScript to shape the data you collect. HTML, SVG, and CSS render the

modified data, leaving no room for older browsers (Internet Explorer 7 or 8) that do not support SVG.

The storage of the mined data would also be essential hence necessitating for storage tools such as cloud storage. The cloud not only provides readily accessible infrastructure, but also rapid scaling capabilities to deal with massive spikes in traffic or consumption. Also, it's easy to get a hold of and use (Nachiappan et al.,2017. p.43). Data stored in the cloud is always accessible; all you need to do is log in with your credentials. The cloud can be accessed from any mobile or computer device with the web-based browser and having active internet links. Companies have reaped great benefits from cloud storage as a result of workers' increased efficiency and productivity because to the simplicity with which they can now access, view, and make changes to files regardless of their physical location.

Tesla Motors may also use Apache Hadoop to keep track of internal information about their employees. Apache Hadoop is an open-source Java framework for processing and storing large datasets distributed across inexpensive computer clusters. Hadoop is built from the ground up on the principle that software should automatically handle hardware issues (whether localized to a single machine or affect an entire rack of computers). Apache Hadoop relies on the Hadoop [Distributed File System](#) (HDFS) for its storage needs; HDFS and the Hadoop Distributed Computing Environment (HDCE) work hand in hand. Hadoop breaks down data files into manageable chunks and distributes them across a group of computers (Oussous et al.,2018. p.435). Hadoop MapReduce sends pre-packaged code to the nodes to execute in parallel based on the data that each node needs to process.

Relevant big data analytics that would help to solve Tesla HR issues.

Human resource management concerns could be addressed by applying descriptive, diagnostic, and prescriptive analytics at Tesla Motors. Tesla will need to implement some technologies for data mining, purification, integration, visualization, and many other tasks to enhance the analytical process and guarantee the business benefits from the data it collects. Regarding analytics, the diagnostic analysis tool is the best option for Tesla Motors. Tesla Motors may employ diagnostic analytics techniques, which investigate the origins and outcomes of problems, to investigate recurrent HR issues like accident rates. Using data gleaned through questionnaires and polls, Tesla Motors will be able to motivate employees and customers to take positive action. The Tesla HR department's leadership plans to use a diagnostic tool to address the staff's recent difficulties. For instance, a flowchart explaining why Tesla salespeople quit could be included. Hence this could be due to some circumstances, including not meeting quotas and other companies offering higher starting salaries. The diagnostic process provides a narrative of the events and their deduced reasons. The first step in resolving any issue is pinpointing its origin. Using this data, Tesla could figure out how to effectively reward and retain its present employees.

Furthermore, HR issues like discrimination and layoffs would be manageable for [Tesla Motors](#) using

prescriptive data analytics. When human resources employ its data-driven workforce for strategic planning, all areas of resource allocation and optimization, as well as the HR process itself, are guided by a set of rules. Inadequate data and outmoded procedures can stymie even the most cutting-edge labour planning efforts. The future of predictive analytics seems bright. It will make it easier for businesses to adopt new data sources, which will help them better detect trends in the market. Given these advantages, it is the sense for organizations to look into how prescriptive analytics might affect HR. Disruptiveness and a lack of reliable data are two factors against this technology's widespread use. Prescriptive analytics is only as good as the information they utilize to make predictions. Without employees skilled in static, descriptive, and predictive analytics, a corporation may find adjusting to changing market conditions difficult. It is necessary to carefully analyze and fine-tune the prescriptive analytics output to choose the best action. An absence of strategic planners and data scientists in the workforce may make this difficult.

The use of descriptive analytics would also aid Tesla in tracking competitor activity and measuring internal performance (Tonidandel et al., 2018, p. 530). This method would be very helpful in figuring out why there has been an uptick in cases of harassment against workers. Basic mathematical operations are used to generate statements about samples and measurements as part of this stage of raw data analysis. You can use inferential and prescriptive methods to go deeper into the causes of a trend once you've detected it with descriptive analytics. Descriptive analytics is required when working with money, manufacturing, and retail. This form of analytics is important for many corporate applications, including financial report and metric generation, survey administration, social media campaign management, and more.

Tesla implementation of the big data business model maturity

Big data has emerged as the dominant technological trend of the post-2010 era, so it is only natural that the major platforms develop their models for measuring the maturity of this technological paradigm. Big data is no longer just a niche technology for gaining insights into stakeholder and consumer analytics; it is now a phenomenon easily translated into monetization models with measurable outcomes. Concerning this, Tesla aims to take advantage of extensive data programs to solve their prevailing human resource management problems using Big Data Business Model Maturity (BDMM). The BDMM entails five stages or phases: business monitoring, business insights, business optimization, insights Monetization, and Business Metamorphosis phase. In the first stage of the BDMM, the Tesla motors management team will gather all material facts about employees, firms' products, and customers. The Tesla team will use traditional enterprise business intelligence and data storage to generate historical and descriptive reports of the prevailing human resource management problems (Boncea et al., 2017). The collected data will help Tesla to track and analyze human resource conditions for a given period, thus creating goals and objectives for this stage to oversee and track the progress effectively.

In the second step, data science is used to customer and product data to generate more actionable insights and, eventually, aid coerce the business outcomes, transforming the descriptive data obtained in the first stage into a more prescriptive one. Once the data is collected and analysed, Tesla Motors will have a better understanding of what has been contributing to the company's HR management issues. In order to gain operational and behavioural insights, the data is analysed in the business insights phase using the four big data economic values of discovery, integration, prediction, and exploitation (Farah, 2017, p.16). All of this knowledge is then put to use in a way that reveals operational and behavioural details about staff and customers.

Third in the BDMM process is business optimization, which plays a crucial role in helping the organization boost productivity. In order to better understand how to monetize the data and find new revenue opportunities that will increase the value of the business as a whole, Tesla Motors will actually model the data according to employee and customer behavior through prescriptive analytics, business analytics, and visualization. Thus, Al-Sai et al. (2019, p.158) argue, Tesla Motors will enhance its human resource management method to better practice and improve organizational efficiency. At the Insights Monetization phase, Tesla will discover new prospects after having improved the organization's efficiency in other ways. At this point, Tesla Motors will strengthen its basic human resource management practices by enhancing its business processes and decision-making.

It is during Business Metamorphosis phase of business transformation that the company's business model becomes intertwined with those of its most important customers, partners, and distribution channels. Finally, the company's data model as a whole is modified to better leverage human resource data in order to provide business insights and intelligence, putting the company in a stronger financial and strategic position.

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