Utilization of Big Data Analysis in HRM – Challenges and Future Directions

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Abstract

With the dramatically technological advancements, heavy dependency on data, and advanced communication technology big data has the fueling capacity for the revolution of the world to the electronic world. It gives us a delusion that data after certain size is predicted as Big Data. Depending upon the capacity of a firm, big data is defined in terms of system capacity. With the increasing importance of big data, plenty of challenges are faced by the firms. Firm leaders and HR department are failed to brace the capacity of professionals in merging HR related data with other determinants. The aim of this research paper is to highlight the role and uses of Big Data and its innovatory changes in the field of human resource management

Keywords:
Big data, HRM, technological advancements

1. Introduction

With the technological advancements of the world, the way we live and the way we work has been totally changed. The world is now data world. In every 40 months, the capability of the world technological pre-capita to store data has been approximately doubled. As of now, firms are heavily depending on data and embracing the world of business analytics, smart working and increasing volume of data (George, 2014). To give better prediction of activities with significant accuracy, data is not only expressed in megabytes and gigabytes but also terabytes, exabytes and petabytes. With the increasing amount of data approximately 90% of data are not captured and if the data is captured than it is not analyzed. It is expected by 2016, that the cumulative amount of all the universe data exceeds 16000 acres. Big data analytics refers to a process of collecting, interpreting organized or unorganized data to detect correlation between them (Planet, 2012). For future growth and decision making of any firm or system patterns and useful data are very beneficial. Data consist of characters and figures. When the data is translated or used to predict future it become wisdom.

Advanced information technologies invite academicians and practitioners to find out different ways to discover new behaviors, actions and trends. Big Data is used from a wide collection of data sources by many researchers nowadays. From past few years, the utilization of data mining and information science for HRM processes has progressively developed to accomplish vital advantages. Human Resource management, being the administration of the most important asset in the firms is becoming the most challenging field in research (Strohmeier, 2013).

Big data is characterized in terms of 5 V's for example Volume, Variety, Velocity, Value and Veracity. The volume of accessible information has expanded by practically 90% in past 3 years. The Velocity alludes to the speed at which information is created, gathered and investigated. Different formats of data are initiated in every field and the uncertainty about the data is referred as veracity. The data is increasing with every passing minute. As data is initiated from different sources and in different format, data complexity increases and is referred as "Big Data Complexity". Beyond the traditional system, there is an immense need of sophisticated system.

Objective

The aim of this research paper is to evaluate the use of big data and its role in human resource management, to provide future directions and answer the following research questions.

1. What is the role of Big data in HR?

2. Challenges faced by firms in using big data?

Literature Review

The present businesses need new knowledge and sight in order to be successful. Big data is a major source of modern insight and new knowledge for firms. As big data

consists of enormous meanings, it is difficult to define big data (Frizzo-Barker, 2016).

According to (Manyika, 2011) , big data is something that is too vast to capture, stock, manage and evaluate by any typical database tools. A supple definition which ranges from 'two or three dozen terabytes to numerous petabytes.'

A journal in Wired Magazine "The End of Theory: The Data Deluge Makes the Scientific Method Obsolete" states a new era in which large volume of data and mathematics will going to replace the theory (ANDERSON, 2012).

Data collection has become a traditional methodology that is being supplanted by a new approach that is known as Big Data (Mayer-Schönberger, 2013). Big data has been defined in different ways giving deliberation on the size, variation, speed and integrity of data. A large number of sources, similar to web clicks, buy and sell transactions as well as social media plays a vital role in emerging big data.

(T.S.Eliot, 2015) "Where is the wisdom we have lost in knowledge? Where is the knowledge we have lost in information?" HR analyst faced catastrophe while utilizing HR analytics, big data can be very beneficial for utilizing complex data and sorting complex problems (Angrave, 2016).

Methodology

We have selected Big Data and HR as an area of research and consider various types of data from online sources i.e. journals, websites and blogs to conduct descriptive study on big data. The researcher has collected research papers from the past 10 years and different findings has been conducted related to the use of big data, its role and challenges. In the end, conclusion and future directions has been discussed.

Big Data in Human Resource Management

A large amount of data which cannot be processed is referred as Big data. Data plays a vital role in every field such as technology and management. In various field of management data is very essential for predicting and accessing consumer behaviors, data mining, workforce and talent analysis, supply chain management, HR planning and management etc. Decision making systems is becoming more crucial nowadays (McAfee, (October)).

An airline company based in US after facing imprecise estimation of arrival time started utilizing big data analytics in order to overcome its losses. By enabling big data in airlines in order to know about the weather, accurate time

of flights arrival and departures has doubled the yearly profits of airports (Erik, 2012).

HRM field include various phases such as planning, organizing, controlling, recruiting and training. Big data is becoming an essential part in HRM and all the other fields as to get high-quality and cost friendly results. With the passage of time, more and more HR related data will be accessible from many sources. Currently, all the decisions made are data driven (Y., 2013).
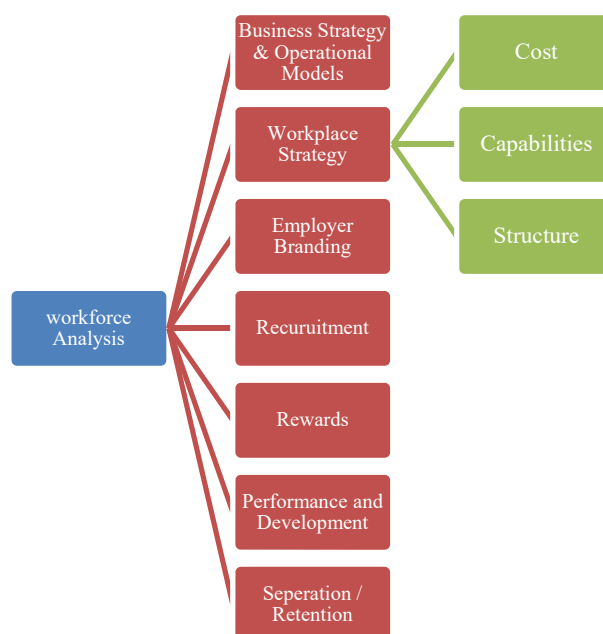
[Figure 1]: Workforce Analysis

Many problems are faced by HR department in multiple ways. As the number of employees are increasing day by day and with the expansion of the organization it is difficult to store data of both new and old employees. All the data of an organization is futile unless it is accessible, store and analyze by the HR department.HR

In December 2011, a survey carried out by (Aberdeen Group) over 128 companies rated HR. data as an essential part to their big data management attempt. According to their report it is found that organization are more satisfied with their data by integrating their data with multiple sources i.e. human resource and workforce management etc.

Big data analytics is beneficial in forecasting the nature of the job and its chances of success in the future. By providing jobs to employees we can analyze data related to the employees and with the help of big data analytics

organizations are able to find the right employee for the right position in the organization fastly (S. Jeffrey, 2014).

Challenges using Big Data

With the increasing volume of data organization are facing several challenges such as storing, analyzing, transferring and visualizing the organized and un-organized data. Nowadays, big data analytics and human resource are working together in order to make great chances of success for the organizations and enabling the management to take workforce decisions for their organizations. Big data is beneficial for all the departments in a firm such as human resource department and talent acquisition department (V. Maria Antoniate Martin, 2018).

With the right information, big data not only empowers human resource to get perception but it also forecast the future of the organization. When organizations desire to utilize big data in their firms, they have to face several challenges. One of the biggest challenges is to get the required data on time which is authentic, structured and refined. According to the HR professionals HR data falls in the following categories:

Individual Data

It includes the data of employee such as their skills, experience, awards achieved and their engagement score.

Execution Data

It includes the employee performance data which is recorded/measured by instruments such as evaluation rating, goal attainment, talent program and profile.

Participation Data

It captured the records of employee participation in the training and workshop development programs, assignment and project data as well as their availability in the organization.

After solving data related challenges, HR team focused on other critical areas and solve workforce related issues. Organization won't enjoy the benefit of using big data if they fail to manage the challenges of changes of administration.

Leadership

Firms utilize big data not because they have a great volume of data but they do have the leadership team that

tells the firm when, where and how to utilize big data by using best techniques. Firms with leaders' vision and decisions utilizes big data to make helpful improvements and make the firm successful (Dr. Arup Barman, April 2015).

Talent Acquisition

Hiring employees fast is not enough for a firm. It is essential to hire the right person with the right skills for the right position that fits with the environment too. By using big data, it is easy to hire employees (CIPD, 2013). Having great knowledge related to the capabilities, skills and relevancy to the job helps the hiring team to select the best candidate from multiples and contribute towards the firm prosperity.

Learning and Development

Learning and development is another challenge which is very essential for a firm success. For the future of the firm employee must be ready to learn new skills. The participation of the workforce in different training session are also very beneficial. Getting complete information about your workforce helps to determine which employee needs more training and coaching.

Culture and Engagement

Organizations are facing enormous culture and engagement challenges. With these challenges' privacy concerns are increasing day by day. It is essential to have a peaceful culture in an organization with a highly-engaged workforce. Big data help the firms to define their firms-culture, program and processes carefully.

Talent Management

In some sectors, shortage of data experts is becoming a serious challenge. The data experts combine the formless data and do analysis, gather rich data sources, link them with one another and clean up the resulting set (Masuma H. Mammadova, 2016.).

Knowing the best talent in your firm means that you are putting great effort toward the success of the firm and sustaining the best candidate and crediting them for their hard work. It is also for improving and managing your workforce to achieve their goal.

[Figure 2]. Talent analytics maturity model. Note: Adapted from Bersin (2012).

Technology

Due to the increasing volume of the data it is difficult to manage data. Therefore, new technologies are developed to handle the data. One of the most recent and open source technology Hadoop is used to handle large amount of data. Some of the other technologies to handle big data are PLATFORA, Hive, PIG and skytree.

Decision Making

An effective firm store data and information as well as their decision in the same place rather them storing them on different places. In the time period of big data, all the data is formed and transferred. The leaders make the firms flexible enough to understand that all difficulties need to be brought together with the right data at right time.

Future Direction & Conclusion

The present business conditions are becoming complicated in the way business methods are directed by the management. Moreover, the appearance of large volume data linked with great amount of contrast data that is produced makes the rivalry even harder. Such powerful situations cleared route to the introduction of data science and big data analytics whereby the organizations started to depend on such tools to confront difficulties posed by the revolution of information (Valle L.S., 2011).

HRM field include various phases such as planning, organizing, controlling, recruiting and training. Big data is becoming an essential part in HRM and all the other fields as to get high-quality and cost friendly results. Firms with leaders' vision and decisions utilizes big data to make helpful improvements and make the firm successful.

Big data is very beneficial for businesses as industry analysis has been done ever than before. Even future patterns can be evaluated and essential countermeasures for future can be taken consequently. Candidate analysis has become more constant with the help of Big data that it

enables HR departments to inspect candidates by looking them from infinite points of view (J, 2012).

By utilizing Big data techniques, HR departments are more dominant than ever before. However, that arise with some issues. It is difficult for human being to accumulate useful data since it is not easy to forecast which data comes in handy and which not. Big data present an ideal opportunity for HR to create better business outcomes.

The world is becoming digital world and big data is playing an important role in it (J. Bersin, 2015). With the right information, big data not only empowers human resource to get perception but it also forecast the future of the organization.

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