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Applying Big Data in Higher Education

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ABSTRACT: The importance and significance of using Big Data Analytics in Universities is increasing day by day. Higher Education Universities has access of data which can be managed and used for amelioration in teaching and learning for teachers and students, it could be also used on Management level for making Decision using analytics.

KEYWORDS: Big Data, Data Analysis, Higher Education, Decision making, Analyzing, performance.

I. INTRODUCTION

The higher education universities are always fascinated by technologies to enhance different processes like teaching, learning and management of vast data, as they all need to go through the critical observation and evaluation from various accreditation agencies or government norms. It is necessary to explore new means for improving and monitoring student's success and other institutional policies [1B.Tulasi].

In Higher Education Universities using Big Data Tools and managing data will make the tedious task of management very easy. In the management department of any university there is vast volume of data and managing that data in the proper way as well as using and analyzing the data is also necessary. Many universities find it difficult to manage such a vast data. Analyzing such data and evidences for making decisions will be possible now by using Big Data and Analytics.

Big Data is used not only for management of vast data but also to leverage it for teaching, learning process which will help students for their improvement. This is the key IT trend that should drive institutional strategy and policy making in future years [2.EDUCAUSE]. This process will help the higher education universities to empower their consumer or stake holders. Analytics performed on the basis of data collected from student information like-financial, enrollment, academic, extracurricular and instructional plays a critical role in performing a thorough analysis of students and learning data to make informed decision on future course offerings [1, 2].

II. WHAT IS BIG DATA AND BUSINESS INTELLIGENCE?

“Big Data” now-a-days is an emerging term which describes voluminous amount of structured, semi structured and unstructured data that has the potential to be mined for information. As the data of the big university is increasing day-by-day the need of these Big Data is also increasing.

Features of Big Data:

- Improved Customer relationship management
- New Business Models
- Helps in Decision making
- Guide for future Planning
- Improve the efficiency
- Less cost required



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The key concepts of Big Data are its 5 V's :-

1. Volume
2. Velocity
3. Variety
4. Veracity
5. Value

1. Volume :

As every second lots of data is generated everywhere, this large data set is very difficult to manage and handle. But for these, big data allows to save such large amount of data in data sets with the help of distributed systems where parts of the data is stored in different locations and brought together by software. This also helps the firm or organization to analyze the data for study or decision making.

2. Velocity :

The speed at which the data is generated refers to the term velocity in Big Data. There are many such parts in an organization or firm where data is generated with high speed e.g. social media, online feedbacks, visits to the sites or likes etc. Big Data technology provides us with the facility to analyze the data while it is being generated without ever putting it into database.

3. Variety :

Variety term refers to the variety of data that is continuously revolving e.g.- photos, messages and videos which are updated on the sites or applications, but now, due to Big Data we can organize and manage such structured or unstructured data.

4. Veracity :

In veracity the verification and security of the data is controlled and managed. The example of such data is twitter posts with hash tags, abbreviations etc.

5. Value :

The Value is an important V of big data as big data is used to get value of the insights, benefits and business processes etc. in an organization.

III. HOW BIG DATA IS USEFUL IN UNIVERSITIES?

As we have seen in this paper the features and characteristics of using "Big Data" to manage large amount of the data, it will be very useful to manage large amount of organization data and also to analyze such big data for future improvement or changes to be made in an organization.

Big Data Analytics not only helps in maintaining the data but also the student's performance can be maintained and improved by using and implementing the big data features.

To perform such analysis the institution must adapt [1- B.Tulasi] :

- Relevant data required for analytics. E.g.- students performance of each semester.
- The key values on which the data can be measured.
- The tools and models suitable to calculate and analyze these measures.
- The suitable process to analyze in institution.

The relevant data collected for analysis can be analyze by using different phases. The different phases of analyzing Big Data are:

- Acquisition



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- Extraction
- Integration
- Analyzing
- Interpretation

In acquisition and extraction phases the data can be taken from real time e.g.- Academic Monitoring Committee (AMC), Student Information System (SIS), Learning Management System (LMS), and Library System (LS). In this phase filtration of data is done and the right and useful data is extracted for analysis.

In integration and analysis phases the data is integrated from different parts of the system for this the integration phase plays a pivotal role with different data structures. In analysis part it helps in solving the problems of missing data, hidden relationships etc.

The interpretation phase involves examining all assumptions made by decision maker. In interpretation phase the analysis of Big data would have very less value if it is wrongly interpreted by decision makers. This phase result is completely dependent on the information provided by an organization so it is necessary to provide supplementary information.

IV. CONCLUSION AND FUTURE SCOPE

This paper provides you the vital information about how useful is using Big Data and Analytics in University or organization (i.e. Higher Education). It also explains the features and characteristics of Big Data Analytics and how it could be implemented in the education system; it also gives the idea about improving the performance of not only the university but also the students, as students are the important asset of any of the University. As Alan Kay quotes “The best way to predict future is to invent it”, to meet the demands of improved productivity higher education has to bring the tool of analytics into the system [4].

For future, I would like to suggest that there are many innovations to be found in the higher education system by using Big Data. Another scope is to design a module or a tool for University to perform the analysis on the data for decision making.

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