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A Study on Elusive Enactment of BigData Analytics at University Level

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ABSTRACT

In previous years big data applications are increasing everywhere which also forces education sector especially at university level to use big data for prediction of student performance and retention rate among college students at university. As technology changes at very fast speed big data analytics implementation in education will provide new ways of thinking. In this research paper tries to evaluate how big data analytics can be used for student's performance evaluation and retention at university level. At university level students enrolling for various advanced studies are day by day increasing. Big data refers to large volume of data with technology and tools which are used to process and evaluate this large volume data which may be structured or unstructured format into insightful information for university. This paper tries to address the retention rate issue, history of big data, analytics methodologies for success at any university level students.

Keywords: Big data, University, student performance, Analytics.

Introduction

At university as its size is more as compare to colleges more and more data about students like database of different types consisting records of different courses is accessible by university. At this stage using we are stepping into new era of using data which will be used for improving students performance, the streamline processes and more effectively utilizing resources of university [4]. At university it requires to record all academic data from various activities student data, registration data, examination data, fees record data etc.

Now a days online interactions with students creating huge data in different formats which is to be analyzed for further processing. This data collection from different sources is a challenging task in traditional way is very difficult [5]. The major objective of analytics is concerned with beneficial processed information for data driven decision making for university. However the greatest challenge at

university level is to determine how data is captured, processed, stored, presented and used for the benefits for student's outcome [1]. Now a day's data is described in yottabytes and petabytes, here big data as the name suggests is a huge amount of data that is generally refers to size of data in terms of Exabyte and much beyond of the same.

Today big data taking many sectors in its storm. Data is very important in decision making & this found same in big data analytics definition- It is a process to examine large data sets for identifying the hidden pattern and other necessary information [8]. As university has more and more student data with them which is increasing every year as new students admitted for number of courses each year.

This data is analyzed which may be used by university for more accurate enrolment forecast, better placement of students even some early warning systems that will identify and help students at risk of failing or dropping out. The university education monitoring and evaluation are rich and will be divided in two category that is education, teaching with technology and evaluation. In the first category university collect all student data, clean it, process it, will store with proper backup storage. Using statistical analysis and modeling tools data can be analyzed and converted in reports. In second category which is evaluation in which formation of a specific relationship with colleges, faculties and society [10]. Quantitative analysis and statistical analysis have become more popular in analytics and big data research methodologies [2].

Materials and Methods:

Big data analytics is different from traditional data analytics because of three main features of big dada volume, velocity and variety on which data is processed. To identify the exact requirements of analysis of big data, a step-by-step methodology is need to organize all the activities and function with acquiring, processing, analyzing and repurposing data. Here a specific lifecycle should be adopted from planning to final outcome considering issues of training, education, tooling and staffing of data analytics team. From university many students not completing their education and this dropout rate increasing rapidly due to several reasons. Indian universities are trying to get more insight from student experiences to monitor and improve teaching and learning. Here use of big data analytics gives excellent opportunity. The challenges faced by university are interrelated to each other and may responsive to big data capabilities such as: a) Real-time feedback and recommendations; b) Personalized learning and continuous Improvement; c) Behaviour and sentiment analysis; d) Improved retention of students.

For retention of students there may be several reasons like academic, content in education not understandable, motivational, psychosocial and financial conditions. The big data analytics lifecycle can be divided into eight stages as shown below.

1. Data Identification
2. Data Acquisition and Filtering
3. Data Extraction
4. Data Validation and Cleaning
5. Data Aggregation and Representation
6. Data Analysis
7. Data Visualization
8. Utilization of Analysis Results

START

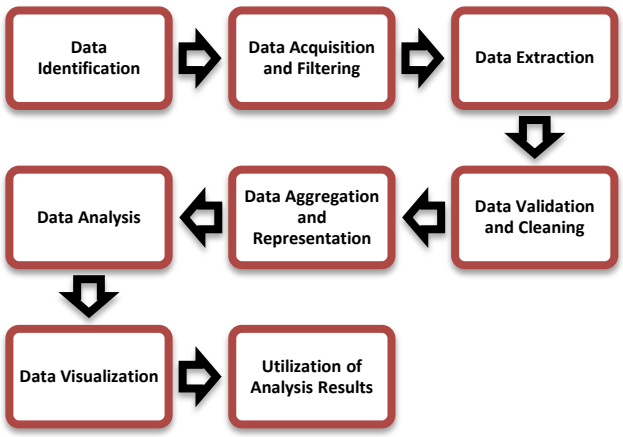

Figure 1

END

The big data analytics life cycle shown in above figure 1 will carry actual analysis task. These steps can be iterative in nature if data analysis is exploratory in which analysis is repeated until the required pattern or correlation is uncovered. Which type of analytic result is required upon that the stage can be as simple as querying a dataset to computation aggregation for any comparison. In many business organizations big data analytics is actively used in business intelligence in areas such as marking, financial forecasting [7].

In recent years big data is attracting the academia. May universities are moving to cloud architectures as increased use of digital devices by users which resulting more and more data collection at university never before. This makes big data a considerable opportunity to analyze and correlate information that will enhance the decision making to higher authorities in university. Observed that it is absolutely important for universities to use big data analytics in order to deliver the very best of learning environments for the good of society [3]. The processing of big data begins with raw data that isn't aggregated and is mostly impossible to store on a single computer as it was done traditionally. To analyze insights, for better decision and strategic moves now big data is used in all over. The definition given by Gartner is, "Big Data is high-volume, high-velocity and high-variety information assets that demand cost-effective, innovative forms of information processing that enable insight, decision making and process automation" [9].

Results and Discussion:

Customarily big data analytics word is used to analyze and acquire intelligence from big data. Universities are trying to gain more insights from big data analytics for students to monitor and improve teaching and learning which will faculties with change and improvements especially for students. Here big data analytics has excellent prospects that will surely benefit student's success. The problems faced by university in this study are interrelated to each other which leads to approachable the capabilities of big data analytics as: a) Real time feedback and recommendations for students; b) Continuous improvement and personalized learning; c) Behaviour analysis of students and sentiment; d) Retention of students improved.

Big data helps to faculties to formulate formative assessments which will be opted according to each student's learning ability and talents as every student is not same learning ability and talent. This can be achieved by various methods such as setting up groups based on ability of students within the education system. Based on formative assessment students can be guided for next step with more advanced learning with different content and more practice on the same topic [6].

Conclusion:

For successful shaping of university in future big data analytics can help to better recognize themselves, up-to-date and accurate knowledge for student's success. There is a potential for big data analytics at university level to support the students in their educational journey. University as compare to individual college are sound from all aspects like finance, staff, infrastructure, technology at large level which leads them to adopt big data analytics at university level. Now big data analytics is a trend which will significantly increasing in the coming years impacting with large advantages to the students. Universities should must identify big data analytics tools to fruitage the benefits from the huge amount of student data stored at university level students success and decision making at strategic process.

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