Review of Big Data on Student Information for Finding the Uncertainty in Higher Education Enrollment

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ABSTRACT

The student enrollment for higher study kept on decreasing continuously especially for the past five years. This is affecting the higher education institution drastically – threatening the very existence and sustenance leave alone their sustained growth. Why is this capricious global trend? What is the mitigating solution for the revival? The answers to these questions are being attempted to in this paper by making use of Big Data concept. The four phases of big data namely data generation, data acquisition, data storage and data analytics on various parameters of the student data set from Valdosta state university (VSU) are being adopted for the analysis. The main causes for the epidemic are academic stress, demography, co-student behavior and uncertainty about the future. This paper also address the open issues of big data that promotes the cross function of science and technology that triggers the thinking revolution.

Keywords: Big Data, Data Acquisition, Data Generation, Data Storage, Education, Student Information

1. INTRODUCTION

Technical education plays a vital role in human resource development by creating skilled manpower, enhancing overall productivity, and improving the quality of life per se. It covers the courses and programs in Engineering, Technologies, Management, Architecture, Pharmacy and Applied Arts and Crafts and Hospitality sectors.

In the whirlpool of economic challenges and the fluctuating business opportunities have not left the human resources also untouched. Nearly 3 million educated hands retire in this age group

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50-60 years; whereas only about 50% are replaced with new enrollments/recruits in this age group of 25-34 years. This pathetic situation is due to the fact that only about 21% of outgoing students of the schools opt for higher technical education; and the balance seek various other options such as Arts/Science/Hospitality sector or Entrepreneurships.

For example, in India over 4,400 students were dropped outs of IITs and NITs in the last three years (2012-2014) due to varieties of causes. The reasons for dropouts may be attributed to shifting to other colleges/institutions, personal, health, economy stress and uncertainty of future after PG Course (The Times of India, 5th August 2015). Engineering education in the state is going through a churning process, with a 20% drop in the number of applicants for the single window counseling from 1.75 lakhs in the 2014 to 1.4 lakhs in 2015 (The Times of India, 31st May 2015). Recent survey states that more than 9 lakhs of Engineering seats are vacant in India in 2015-2016, where as other degree a programme has got a steady growth in the same period. The post-graduation course like Master and Doctoral degree were under cloud with only 30% of enrollment in 2015-2016. This uncertainty in the enrollment of technical education reported from 2012 to 2015 had created an overview for research to unearth the causes.

As the demand for engineering professional is rising in the global level, the number of students entering the technical education is getting reduced leaving a void return supply and demand. Hence, Big Data concepts to predict the various factors that affect the student enrollment process are adopted for analysis especially that affects the student from choosing the technical education for their higher studies.

Section 2 discusses about the related work. The Big Data in student information system is discussed in section 3. Section 4 discusses about the proposed approach to predict the various parameters that affect student career. Section 5 discusses materials and methods. The result and discussions are given in the section 6. Section 7 concludes the study.

2. RELATED WORKS

The recent approach of data mining has got great potentials to educational institutes. Jiaqu Yi (Jiaqu Yi, 2014) was tempered to find out the application of big data research in education field. His work has not only provided an efficient way of analyzing students’ learning skills and academic performance, but more importantly, teachers are able to modify the course content and school work for students based on their performance. For school principals and education authorities, the result also provides a good reference for designing education curriculum. The students web usage behavior supports to make enlightened decisions to improve the students performance and suggest recommendations for their academic perspectives (G. Vaitheeswaran and Arockiam, 2014).

Philip Sheridan Buffum (2014) examines three key aspects of a Big Data unit for middle school, its alignment with emerging curricular standards; the perspectives of middle school classroom teachers in mathematics, science, and language and student feedback as explored during a middle school pilot study with a small subset of the planned curriculum. The results indicate that a Big Data unit holds a greater promise in a middle school computer science curriculum.

Mohammed M. Abu Tair (2012) used Educational data mining technique and adopted to improve graduate students’ performance, and to overcome the problem of low grades of graduate students.

Darrell M. (2001) applied Online tools enabling the evaluation of a much wider range of student actions, such as how long they devote to readings, where they get electronic resources, and how quickly they master the key concepts.
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