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# Big Data and Social Media to Improve the Quality of Higher Education

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**Abstract:** *The quality of higher education is a matter of myriad state concern all over the world. Recently the use of technology have been practiced and explored to a greater extent in improving the quality of higher education. Big data and the social media are two such contemporary technologies which lament significant impact on components of higher education. The social media has become main communication medium to connect among family, friend, colleagues and peers to share information in many forms such as text, audio, video, image, pdf etc. to shares their views and feeling. Owing to popularity and comfort in use social media have penetrated to every quarter of higher education. Recently concluded researches shows that average global internet user spends two and a half hours daily on social media producing huge sum of data absconding the traditional data handling techniques at stake. Since these data potentially reflects user trend and hence are much useful for various purposes. The social media partners are making significant investments in putting this data to work because it gives the analysis of media content has been central in social sciences, behavioral sciences, education, research, marketing and policy framing etc. No doubt the majority of social media clients are youth who use it before anything else. Their performance and experiences such as study, eating, sleeping, and social habits, the course of study selected, passion and attitude towards instructor are impacted by it. Positive impact leads to improve their learning and skill out comes while negative impact may leads to problem of their retention and downgrade their results. Various researches are there which provide an solo impetus to either big data and social media for education but there are very little efforts to explore both through an integrated study, specially in higher education. This paper will discuss the impacts of big data and social media use to short out positive impacts on the stakeholders of higher education and institutes of higher education. Based upon this a roadmap is suggested for future use of these two emergent technologies to improve quality of higher education.*

**Keywords:** *big data, social media, higher education, quality education.*

## 1. Introduction

Higher education is always been subject of top priority for state, all over the world. Recently, it have been transforming from a conventional instruction delivering methodology to technology enabled transaction of learning contents which include satellite based distance learning, online learning, MOOC learning etc. Institutes of higher education are embracing potentially useful technologies in attracting students, teaching them and deliver real time services to them. At present more than 74% of the US universities are having MOOC courses and online learning portal [www.coursera.org](http://www.coursera.org) have more than 15 million registered users with about 840 different courses. In global perspective, India, one of the giant knowledge economy in word have launched National Programme in Technology Enhanced Learning (NPTEL) having about 90 online courses and more than 10,000 registered session in January 2016. Keeping this futuristic trend in mind Government of India is planning to recognize online certificates at par with that of regular courses.

Apart from it social media has emerged a social networking platform based upon web 2.0 technologies which not only allow surfing rather provides a interactive platform to users to share their ideas, feeling and hard contents in varieties of format with humor and sense. We may post blog entries accessible to anyone or maintain friendships through online social networks. Every day people around the world post 400 million tweets on Twitter, add 350 million photos to Facebook and view 4 billion videos on YouTube. 57% of over-16s' in the UK use some form of social media, generating vast quantities of data.

This out of bound usage of social media constitutes a new contour of “network-self” learners. This online and social media learning attitude involves use of computing and internet technology which produce huge amount of data, counting to the scale of Big Data. Big Data lead to social computing as well as social behavior. Social media voice represents public voice is ‘**Very Big**’ concern. It creates need of real time analytics and also need of powerful metric for social media and big data. To Analyses large quantities of readily existing data from social media has created new opportunities to understand and influence how people think, act and react. The ready availability of masses of data and the means to exploit them is changing the way we do science in many domains. Molecular biology, astronomy and chemistry have already been transformed by the data revolution, undergoing what some consider an actual paradigm shift. In other domains, like social sciences and humanities, data driven approaches are just beginning to be deployed. People live life in the network. They check e-mails regularly, make mobile phone calls from almost any location, swipe transit cards to use public transportation and make purchases with credit cards. Our movements in public places may be captured by video cameras and our medical records stored as digital files.

Recently many Higher Education institutions having the goal to have the ability to access, examine and deal with vast volumes of data while rapidly growing the Information Architecture. As the competition for talented students becomes more intense while the cost of education makes the pool of potential students more limited, many institutions are taking another look at how they are analyzing potential students and managing the experience that students have while they are enrolled. A Big Data based architecture enables the inclusion of a greater variety of data sources so that different types of data can be analyzed. This, in turn, broadens the analytics and

predictive options available and can lead to better management of the institution. Today's data sources may include:-

- Traditional enterprise data from operational systems.
- Student test data.
- Social media data.
- Institution marketing data.
- Financial business forecast data.
- Web site browsing pattern data.
- Campus sensor data.
- Data gathered from mobile devices.

The big data and social media use policy briefing discusses some of the key questions around Big Data and education, in particular:

- ✓ How Big Data and social media can use to reform educational delivery and improve learning;
- ✓ How academia can be partner of industry to exploit Big Data in order to get better learning.
- ✓ How those involved in education can make the most of Big Data whilst being alert to its limitations.

The subsequent part of this paper will explain these technological issues and their applicability in Education.

## 2. Big Data and Social Media

Whenever we talk about technology, it is playing great contribution with the usage of ICT and social media have greatly expanded the overall scope of communication in calamity management. Various concluded research have uncovered that Chemistry of higher education changes considerably due to Social Media. It operate through sculpt shown in figure 1 while its novel characteristics are shown in figure 2, below.

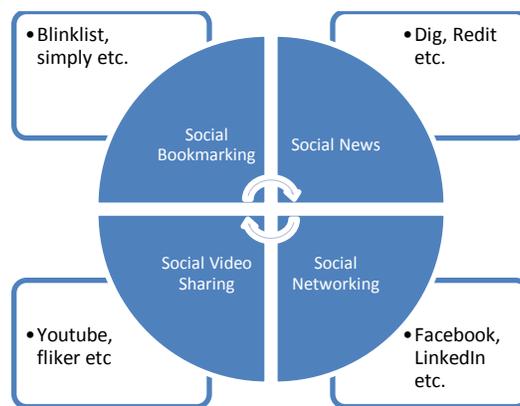


Figure1: Social Media Operations

Big data is traditional data management technology, which involve data collection, storage, management and automated large scale analysis in a regime where traditional data strategy fails on account of volume, velocity and variety, commonly known as **3Vs** of data. Owing to these qualities big data emerge as opportunity in higher education instead of mere a technology.

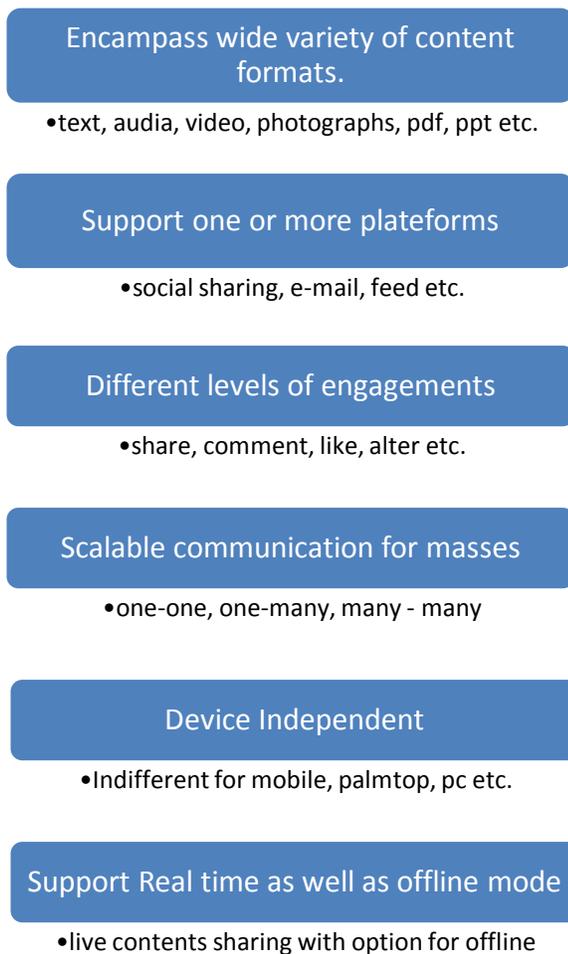


Figure 2: Characteristics of Social Media

### 3. Big Data and Social Media for Quality Higher Education

Owing to comfort in usage, popularity and analytic ability and wide spread adoptability big data and social media are helpful in maintaining quality of higher education in developed as well as over the developing nations’.

#### 3.1. Big data and Higher Education

Maximum Big data is unstructured and with many type of content collection with many source and format such as web content, Twitter posts, Facebook photos and free for comment. This data can be analysed and the output can be used for decision that was not possible earlier.

For example, decoding the human genome originally took 10 years to process; now it can be achieved in one week. . At present, the main concern is that big data and social media projects are highly dependent on skilled developers and computer programmers and in order to avoid limited diffusion and to democratize use, user friendly developer tools are required. In equal measure appropriate education and skills training from an early age to encourage users to play with datasets in a fun and informative way is required.

### **3.2.Big Data and Social Media for Quality Higher Education**

Education delivery is changing constantly with the innovative growth of technology and mobility of the student as can envisaged from rising in popularity of Massive Open Online Courses (MOOCs). At this time more than 4,70,000 student in UK are registered for MOOCs there is the ability for academia to gather insights from data in the process of learning itself. The major fulcrums which are supportive in this area are:-

#### **3.2.1. Technology**

The internet, cloud computing, live stream, and other comparable technological developments bring new forms for delivering and increasing access to learning. In the process the widespread ability to collect, integrate and analyze big data from these activities is generating important opportunities for improving education

#### **3.2.2. Analytics**

Big Data, which provides a richer analytical understanding of how people and operations can better meet customers' needs and objectives rather than simply holding this information, companies are sharing it with their customers, co-creating new value in the process. expression with pressure to improve quality outcomes while cutting costs, colleges and universities can similarly build new value relationships with students, leveraging the data collected at every step of the enrollment, financing, and instructional process to support greater student success. This is a key IT trend that should drive institutional strategy and policymaking in future years.

As per Louis Soares “With this conception of college as a co-created thing, Big Data becomes immensely important because it allows you to unpack how this relationship is playing out in real time.”

#### **3.2.3. Big Data Deployment for Quality**

As the cost of tuition soars, colleges starts delivering what students and their families are paying for. Unfortunately, a recent survey of 2,300 undergraduates showed that 45% “demonstrated no significant gains in critical thinking, analytical reasoning, and written communications during the first two years of college”. At the same time, the proportion of nontraditional students is growing every year. Rather than characterizing their differences as risk factors, institutions need to rethink the way in which they provide and support educational services for these students. Big Data, therefore, is far more than an exercise in collecting information and generating reports; it is a strategically important use of IT resources to improve educational quality and guide students to higher rates of completion.

### **3.3. Research and Development**

To improve overall learning experience the higher education institutions are focusing on in-depth analysis of results to find the area of weakness among students. After identification of the subjects the emphasis should be given to determine the reason behind the weakness. There are numerous research works on application of big data in higher education system. We feel that these research works are in preliminary stage. However, to the best of my knowledge, based on the exhaustive literature survey there is no efforts made to use big data to identify the weak subjects and seek the way to improve it. Moreover, none of the research has focused on improving the quality of higher education by adopting the cloud and big data based recommendation system.

### **3.4. Branding and Marketing**

As the institutes of higher education find the need to appeal to an ever increasing and diverse student base, successful branding and marketing have become increasingly important activities for institutions.

With the emerged use of social media tools, a large number of such institutions are embracing this new ecology of information offered by social media. More and more colleges and universities from all over the world are transitioning from traditional teaching/learning towards social media teaching/learning, widening their curriculum landscape beyond technology by integrating different forms of social media, like social networks, microblogs, or cloud computing. However, in this era of fundamental changes in education brought by virtual worlds and augmented reality, dominated by mobile devices and applications, it is necessary to rethink the academic work environments based on social media tools and applications like Facebook, Twitter or YouTube, in accordance with the learning needs, skills, and competencies of students.

### **3.5. Recruitment and Enrollment**

Acquiring today's most talented students is not just about recruiting. Most prospective students thoroughly research the institution on-line prior to making any physical contact. Most will use social media to understand the sentiment that other prospects and current students express about the institution. Many also use social media to portray and differentiate themselves among their peers. Institutions that view potential students only through test scores, applications, and face-to-face interviews are at a disadvantage. Big Data solutions enable better understanding of the sentiment about the institution and how well rounded and well known a prospective student is. The institution can also use its own social media and web presence to an advantage once it understands how effective or not, its presence actually is. Identification of student demands and trends enable institutions to develop courses and curricula that meet student needs effectively while attracting greater pool of students that results in higher revenues and lower cost. Budgetary pressures are faced by almost all academic institutions. Big Data solutions can not only act as information discovery platforms, but can also enable IT cost reduction.

### 3.6. Student Experiences

A student's performance is measured by how well they perform academically. Their performance and experience can be impacted by study, eating, sleeping, and social habits, the course of study selected and their passion for it, and other factors such as the effectiveness of instructors. Negative experiences can lead to student retention problems. Institutions have traditionally measured students by grades and attendance. Students facing severe academic challenges are often recognized too late. Many institutions are now starting to look at Big Data solutions to better understand student sentiment (gathered from social media) and other aspects of the campus life experience. For example, sensors in buildings enable tracking of students and the time that they spend in the classroom, in their dormitory, in the cafeteria, or in the library. The effectiveness of their instructor can be partly determined by analysis of student sentiment. Problems can be detected and corrected earlier, with less dire consequences for all involved.

## 4. Conclusion

In the light of above discussion it is much clear that big data and social media are much easy to use and adopted tools in social as well as educational field. They have boundless potential to improve quality of higher education and take it to pinnacle in the sub arena of distance education, online education. These non-traditional tools not only improve content delivery based upon user semantics but also support present day requirement of educational institutions like students experience and their placement. This way big data and social media are much suggestive tools for institutes of higher education.

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**Dr. Savita Kumari (Sheoran)** is an academician and researcher of high tempore. She has graduated her Ph.D. from Banasthali University, Rajasthan (India) in 2011 and have about 12 years of teaching and research experience. She has about 35 national / international papers, 03 books and 01 patent in her credit and has attended about 30 national/international events in India and abroad. She is on the panel of reviewer of various research journals and conferences and has organized national conference in capacity of organizing secretary. She has actively been engaged in research in the area of mobile computing, cloud computing, big data, social networks and learning platforms.