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A QUALITATIVE STUDY ON USAGE AND EFFECTIVENESS OF MASSIVE OPEN ONLINE COURSES (MOOCS) IN INDIAN UNIVERSITY EDUCATION SYSTEM

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Abstract:
Massive Open Online Course (MOOC) is an online course aimed at unlimited participation and open access via the web. In addition to traditional course materials such as videos, readings, and problem sets, MOOCs provide interactive user forums that help build a community for students, professors, and teaching assistants. MOOCs have recently received a great deal of attention from the media, entrepreneurial vendors, education professionals and technologically literate sections of the public. MOOCs will provide free to access cutting edge courses to students of higher education in university system. Across the world, premier universities have put their courses online by setting up open learning platforms, such as edX. Commercial start-ups such as Coursera and Udacity have also been launched in collaboration with prestigious universities, offering online courses for free or charging a small fee for certification. The rapid expansion of MOOCs has sparked commercial interest from venture capitalists and major corporations who want to enter the Higher Education (HE) market using a MOOC approach. Students' motivation to participate in MOOCs is a significant area of interest. Factors that influence students' motivation to learn include future economic benefit, development of personal and professional identity, challenge and achievement, enjoyment and fun. What motivates the MOOC learner? Surveys conducted by researchers at Duke University show that student motivations typically fell into one of

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four categories viz. a) To support lifelong learning or gain an understanding of the subject matter, with no particular expectations for completion or achievement b) For fun, entertainment, social experience and intellectual stimulation c) Convenience, often in conjunction with barriers to traditional education options d) To experience or explore online education (Belanger and Thornton, 2013). In order to investigate the usage and effectiveness of Massive Open Online Courses (MOOCs) of edX, Coursera, Udacity and Udemy in university system in India, a qualitative study was employed by the authors and semi-structured in-depth interviews were conducted with students of higher education in Indian universities and teaching professionals in university setups. The authors interviewed the participants based on a list of questions expanded from the three primary research questions based on the awareness, content, usage and learning outcomes. The questions were open-ended, which allowed the participants to freely express their experiences, thoughts, and feelings about the use of MOOCs. This study demonstrates the awareness, usage and effectiveness of MOOCs among students and teaching professionals of Indian University system.

Keywords: MOOC, Massive Open Online Courses, edX, Coursera, Udacity, Udemy

1. Introduction

Massive Open Online Courses (MOOCs) are a recent expansion in higher education that experienced rapid development and achieved substantial attention from a broad range of learners.

The idea behind MOOCs is to offer world-class education to a (massive) number of students around the globe with internet access (online) for low, or no fees (open). The courses consist of pre-recorded video lectures, computer graded tests and discussion forums to review course materials or to get help (Hoy, 2014). Compared to traditional online courses, MOOCs are larger in scale and distributed worldwide across a variety of networks and platforms, with no limitations on individual involvement. MOOCs provide an opportunity for teachers to deliver interesting or critical content to new groups of learners (Knox *et. al*., 2012).

MOOCs offer high quality education from worlds' top universities, usually for free. These universities offer their courses through major providers of MOOCs viz. Coursera, edX, Udacity and Udemy. Over 20 million students globally have enrolled in thousands of such courses offered by these top 3-4 providers of MOOCs. Coursera has over 12 million students and offers 571 courses from 117 globally recognized partners. edX has over 3 million students from 195 countries. Udacity has 1.6 million students in

12 full courses and 26 free coursewares. Udemy has over 6 million students and offers more than 25000 courses.

These MOOCs have also garnered tremendous amounts of investments from institutions and venture capitalists. Coursera has received (as of Nov 25, 2013) USD 85 million investments from investors such as GSV capita; and Learn Capital. Udacity has obtained about USD 20 million funding from Charles Rive Ventures and Andreesen Horowitz. Udemy has garnered about USD 16 million in funding as well. edX, a non-profit, has been seeded with USD 30 million each from MIT and Harvard (FICCI, 2014).

In India, BITS Pilani has already offering courses using Coursera and edX to their students. In July 2014, IIT Bombay started offering courses using edX platform. IIT Bombay has offered 3 courses and have already attracted 35,000 students worldwide. Other institutions in India are also proposing to implement a blended MOOC model based on a combination of online access using the open-source edX platform and customization of the edX platform to incorporate multilingual support and potentially face to face instructor support at various physical centres across the country (FICCI, 2014). According to Richard Levin, CEO of Coursera "*India is the second largest user base already with 800,000 students registered. It is also one of the top five countries in terms of revenue generated for Coursera*" (Economic Times, 2014). Although penetration of MOOCs in IITs and some top notch private universities is very high, there is an inadequate awareness about MOOCs in Indian universities located in Tier-1 and Tier-2 cities. According to survey published in The Chronical of Higher Education (2013) to know the public awareness of MOOCs, many people outside higher education have never heard of MOOCs. While an overwhelming majority of respondents to the survey said they were familiar with online education in general, only 22 percent said they were familiar with MOOCs, and only 4 percent said they were very familiar with them.

One of the biggest complaints against MOOCs is the extremely high dropout rate, often 90 percent. De Coutere (2014) writes that "*typically half of the enrolled people never show up, levels of participation vary; a more or less stable community forms after two weeks, and 5 to 10 percent of people will follow the whole MOOC until the end date*". Another aspect that account for the high dropout rate is simply the newness of MOOCs. Learners who sign up for the courses may not know what to really expect in an online course. Wang *et. al*. (2013) writes that "*A possible explanations is that students with more experience in taking online courses were also more familiar with the online learning settings. Therefore, they had more effective learning strategies in taking online courses, which then led to the higher levels of motivation toward their online courses*"

Students' motivation to participate in MOOCs is a significant area of interest. Factors that influence students' motivation to learn include future economic benefit, development of personal and professional identity, challenge and achievement, enjoyment and fun. What motivates the MOOC learner? Surveys conducted by researchers at Duke University show that student motivations typically fell into one of four categories viz. a) To support lifelong learning or gain an understanding of the subject matter, with no particular expectations for completion or achievement b) For fun, entertainment, social experience and intellectual stimulation c) Convenience, often in conjunction with barriers to traditional education options d) To experience or explore online education (Belanger and Thornton, 2013).

MOOCs are relatively new and have been evolving. Problems and opportunities must be identified. At present, there is no definitive conclusion as to its value. In terms of efficiency, proponents of MOOCs claim that online courses increase accessibility and affordability. Such courses are scalable to accommodate any number of students. In terms of effectiveness, this is an area of great debate. Both proponents and opponents, in spite of their opposing views, have an identical claim. Each camp asserts that its preferred method of instruction is superior. Proponents of MOOCs believe that online courses are at least as effective as traditional courses. Opponents of MOOCs, on the other hand, believe that traditional courses are far more superior. Very limited data are available at the present time, and the data offer somewhat mixed results with regard to the efficiency and effectiveness of MOOCs. Criteria must be created to judge the efficiency and effectiveness of MOOCs. In addition to viewpoints of administrators and faculty, students' needs and performance must be taken into account. It is necessary to assess the applicability of MOOCs, its pros and cons, and its potential and limitations. Research needs to address the issues of student motivation, distraction and learning outcome (Onkvisit, 2014).

2. Methodology

In order to investigate the awareness, usage and effectiveness of Massive Open Online Courses (MOOCs) of edX, Coursera, Udacity and Udemy in university system in India, a qualitative study was employed by the authors and semi-structured in-depth interviews were conducted with students and teaching professionals in Indian universities located in tier-1 and tier-2 cities.

2.1 Sample and Data Analysis

Our target was graduates and postgraduates of Humanities, Science, Engineering and Management courses in Indian Universities located in Tier-1 and Tier-2 cities of Karnataka, India (Table 1). 10 graduates and post graduates, and 5 teachers from each discipline (Humanities, Science, Engineering and Management) were randomly chosen to understand the extent of awareness about MOOCs. The initial sample included 40 graduate and 40 post graduate students, and 20 teachers from universities in tier-1 and tier-2 cities. Out of 160 students, based on their awareness on MOOCs, about 15 students were shortlisted for interview. Out of 40 teachers, about 5 teachers were included in the interview. Using Microsoft Excel statistical functions, MOOC awareness among students and teachers was calculated.

At the beginning of the semi-structured interview, we gathered demographic information about each participant and then interviewed the participants based on a list of questions expanded from the three primary research questions based on the awareness, content, usage and learning outcomes. The questions were open-ended, which allowed the participants to freely express their experiences, thoughts, and feelings about the use of MOOCs.

Interviews ranged from approximately 25 minutes to 45 minutes. All interviews were audio recorded, annotated and transcribed for further data analysis. The interviews produced a rich set of recollections and descriptions related to primary questions based on *Awareness on MOOC; Motivation, Content Comprehensibility, Usage and Learning outcomes.*

As summarized in Table 1, our 20 interviewees included undergraduate and post graduate students, and teachers of Humanities, Science, Engineering and Management disciplines of the universities located in Tier-1 and Tier-2 cities of Karnataka, India. In the following discussion, we refer to individuals as relevant by participant number.

3. Findings and Discussion

3.1 Awareness on MOOCs

Out of 40 graduate and 40 post graduate students in Tier-1 cities, 53% graduate students and 73% postgraduates are aware of MOOCs (Fig.1 & Fig.2). While, in Tier-2 cities, 38% graduate students and

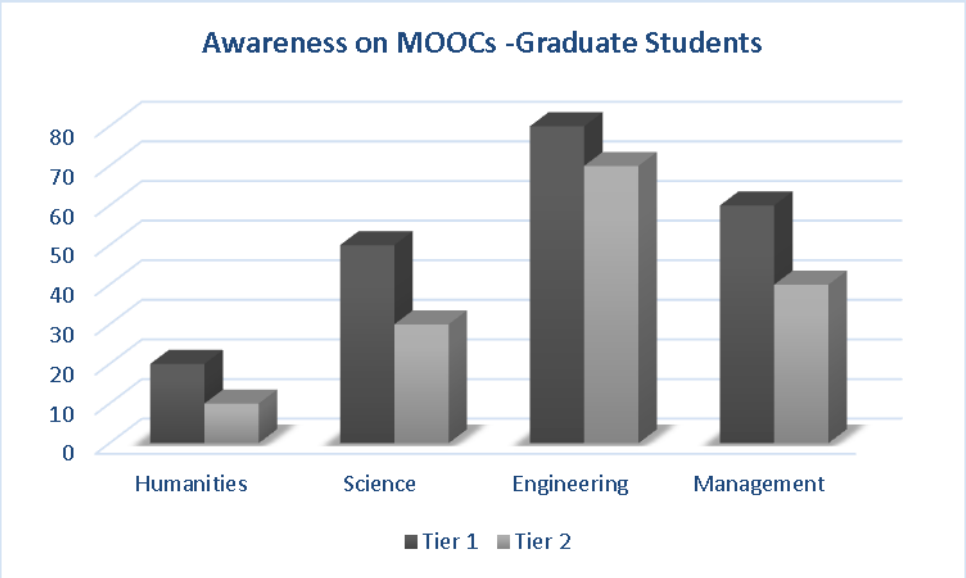

Figure 1: Awareness on MOOCs –Graduate Students

55% post graduate students are aware of MOOCs. Results indicate that awareness on MOOCs is high in universities located Tier-1 cities than Tier-2 cities. Awareness is higher in postgraduate students than graduate students.

Out of 20 teachers in Tier-1 cities, 80% of them are aware of MOOCs (Fig.3). While, in Tier-2 cities, 60% teachers are aware of MOOCs. Low awareness is observed in Humanities teachers of both Tier-1 and Tier-2 cities, and high awareness is observed among Engineering and Management teachers. As awareness is high among teachers of Engineering and Management, the study shows high awareness among students of these disciplines both in Tier-1 and Tier-2 cities.

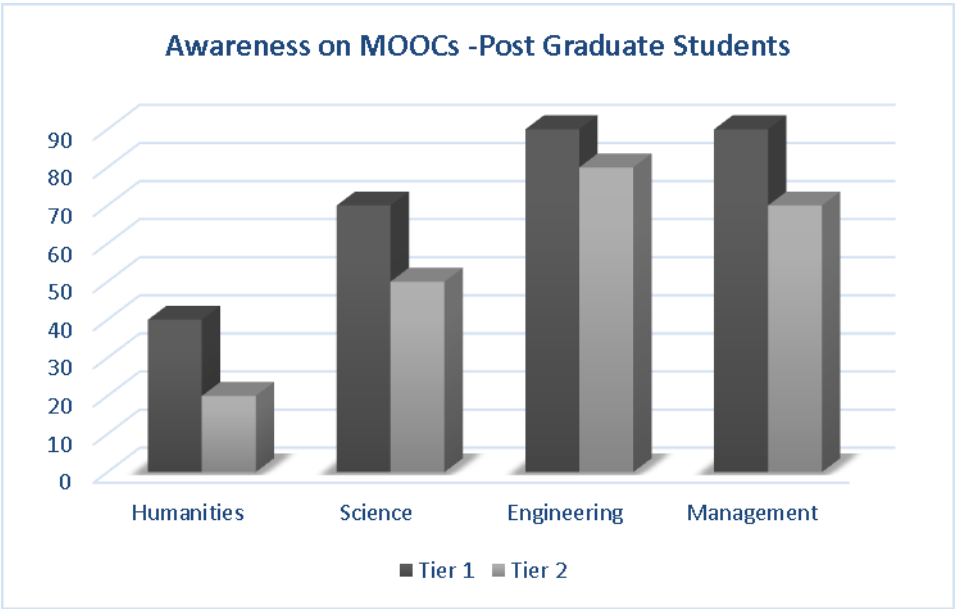

Figure 2: Awareness on MOOCs –Post Graduate Students

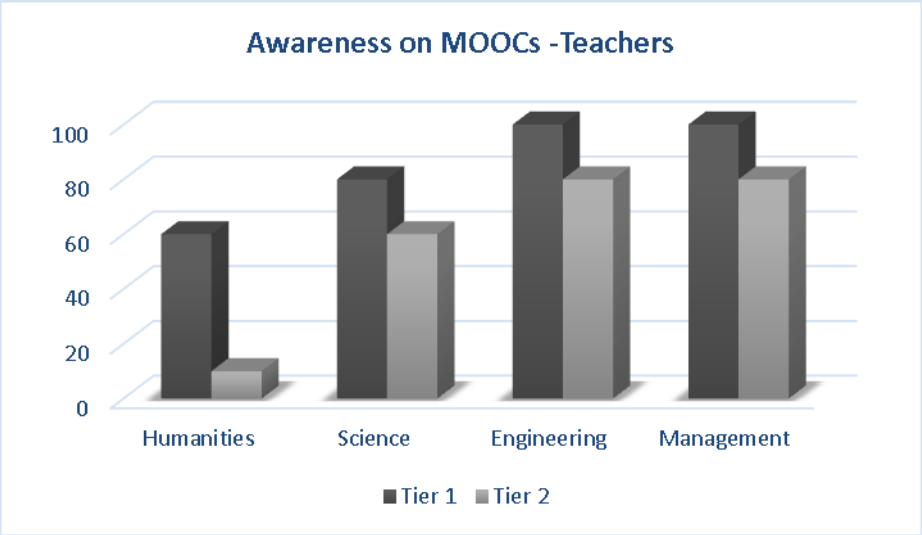

Figure 3: Awareness on MOOCs -Teachers

There is a significant correlation between awareness among teachers and the awareness among students. It is apparent that adoption rate in Tier-2 cities is lower than Tier-1 cities. Therefore, for effective penetration of MOOCs in university system, the university teachers have to be trained on use of MOOCs. Out of 160 graduate and post graduate students included in the study, only 87 of them had joined one or other MOOC and discontinued, while 15 have completed at least one course. About 83% drop out is evidenced, which is supported by earlier studies on dropout rates in MOOCs. According to Liyanagunawardena *et. al.* (2013), a small percentage (generally around 10%) of the large number of participants enrolling in MOOCs manage to complete the course. Most of the studies related to drop-out rate in MOOCs, reported about 85-90% drop-out in any MOOC.

3.2 Motivation, Content Comprehensibility, Usage and Learning Outcome

Zheng *et. al*. (2014) identified four broad types of student motivation for joining MOOCs: fulfilling current needs, preparing for the future, satisfying curiosity and connecting with people. However, in this study we identified three types of student motivations for joining MOOCs viz. Fulfilling current needs, Preparing for the future and Satisfying curiosity.

A. Fulfilling Current Needs

A common motivation for students to enroll for a MOOC is to complement their regular courses they are currently taking. In our study, P6 was pursuing post graduation in Bioinformatics. He found it very difficult to understand R-Programming course taught

in the regular class. He enrolled for R Programming course in Coursera, which helped him comprehend the R programming concepts.

> *"I am from biology background, one course in my postgraduation program was R-Programming. I found it difficult to understand, and when I googled, I found R-Programming course in Coursera. I just enrolled to try this course, but as I progressed in the course I found it very interesting. Presentation of the content was very simple and there was an opportunity to ask questions to teacher. This course was very helpful for me" [P6].*

A post graduate student of Education [P15] wanted to carry out his final year project. Although, he had studied Research Methodology subject as a part of post graduate curriculum, he wanted to know more about Descriptive Statistics. One of his professors asked him to take MOOC on descriptive statistics from Udacity. P15 successfully completed this course, which helped him to apply descriptive statistics for his project work.

Most participants opined that content in MOOCs that they have done, the content was well organized and simple, and enhances learning outcomes.

B. Preparing for the future

Many participants enroll in MOOCs to enhance their future employability. P5 and P 12 are final year students of post graduate course in social work. Both wanted to hone their communication skills. P5 joined 'Introduction to Public Speaking' course offered by Coursera, while P12 joined 'Conversational English Skills' offered by edX. Both P5 and P12 expressed that these courses helped them to enhance their communication skills. Interestingly, these two students had done their graduation in regional language and hence are not conversant in English. Both opined that MOOCs in regional languages would help non-English medium learners.

> *"I am from Kannada medium and wanted to improve my conversational skills in English. My classmate suggested me to join 'Conversational English Skills" by edX. Initially, it was very difficult for me to follow the content, but repeated watching of downloaded videos and discussion forums helped me. I would like to take more courses of this kind" [P12]*

C. Satisfying curiosity

One common motivation to register for a particular course is personal interest. About 50% of the participants have taken courses to satisfy their curiosity. P16 and P18 are teachers in universities in Tier-2 cities. P16 joined course "The Science of Happiness" offered by edX, to know more about science behind happiness. *"I am very satisfied with the content and pedagogy of this course. I completed this course at my own pace. I am impressed! I would like to join course on Medical ethics" [P16].*

P18 is a teacher in communication department and wanted to know more about personal financial planning, and hence joined course "Personal and Family Financial Planning" by Coursera. *"Being a teacher, it is difficult for me to go to my colleagues in departments related to finance for help.*

Table 1: Demographics of Participants and MOOC usage

#	Occupation	Gender	Age	University	Interview	Completed Course
P1	Student (PG)	M	28	Manipal University*	F2F	Understanding Einstein: The Special Theory of Relativity (C)
P2	Student (PG)	F	24	Manipal University*	F2F	Design: Creation of Artifacts in Society (C)
P3	Student (PG)	M	26	Manipal University*	F2F	Big Data and Social Physics (E)
P4	Student (G)	M	25	Manipal University*	F2F	Introduction to Genetics & Evolution (C)
P5	Student (PG)	M	27	Manipal University*	F2F	Introduction to Public Speaking (C)
P6	Student (PG)	M	22	Mangalore University*	F2F	R Programming (C)
P7	Student (PG)	M	28	Mangalore University*	F2F	Nanotechnology: The Basics (C)
P8	Student (PG)	F	26	Mangalore University*	F2F	Programming Foundations with Python (U)
P9	Student (PG)	M	25	Bangalore University#	Phone	Genomic Data Science (C)
P10	Student (PG)	M	24	Bangalore University#	Phone	Principles of Economics with Calculus (E)
P11	Student (PG)	F	26	Bangalore University#	Phone	Introduction to Communication Science (C)
P12	Student (PG)	F	25	Bangalore University#	Phone	Conversational English Skills (E)
P13	Student (G)	M	21	Bangalore University#	Phone	Introduction to Machine Learning (U)
P14	Student (PG)	F	25	Azim Premji University#	Phone	Fundamental of Online Education: Planning & Application (C)
P15	Student (PG)	M	24	Azim Premji University#	Phone	Introduction to Descriptive Statistics (U)
P16	Teacher	F	45	Manipal University*	F2F	The Science of Happiness (E)
P17	Teacher	F	34	Manipal University*	F2F	Instructional Methods in Health Professions Education (C)
P18	Teacher	F	39	Bangalore University#	Phone	Personal and Family Financial Planning (C)
P19	Teacher	M	33	Mangalore University*	F2F	Take Your Medicine: The impact of Drug Development (E)
P20	Teacher	M	38	Azim Premji University#	Phone	Health Literacy and Communication for Health Professionals (C)

P-Participants G-Graduate; PG-Post Graduate
-Located in Tier-1 cities
*-Located in Tier-2 cities
C-Coursera U-Udacity E-edX

Courses like this would provide an opportunity for us to understand non-domain concepts, which are essential for our personal life. The way professor explained the concepts in financial planning, I am truly impressed! Curious to take some more courses like this"[P18].

P1 is pursuing post graduate course in Communication and inquisitive to know non-domain concepts. He has successfully completed "Understanding Einstein: The Special Theory of Relativity" from Coursera. Currently, doing course on "Web designing". He is satisfied with the content and opined that MOOCs provide opportunity for learners to learn at their own pace and feels that certification is not important for him.

"I got a good support in my first mooc! In my opinion, learner would expect additional support during his first MOOC. Learner support during first 2 weeks would decide the continuation of learner in the course" [P1].

Suggestion from P1 supports the finding by Wang et.al. (2013) that students with more experience in taking online courses were also more familiar with the online learning setting. Therefore, they have more effective learning strategies in taking online courses, which then led to the higher levels of motivation toward their online courses.

P19 and P20 are the university teachers. P19 is a physics professor and has completed the course "Take Your Medicine: The impact of Drug Development", which is outside his area of expertise. P20 is a professor in development communication department and has completed course on Health Literacy and Communication for Health Professionals.

"Well-structured online course with measurable learning objectives would enhance the learning. In comparison with conventional courses, MOOCs are well organized in terms of content comprehensibility" [P20].

"In my opinion, MOOCs have to be credit based and should be linked to subjects in the University programs. This enhances the credibility of MOOCs and increases the course completion percentage" [P19]

Most participants including teachers opined that integration of credit based MOOCs in university program curriculum would enhance the value of MOOCs and

increase the motivation among students to complete the course as a part of university program requirement. Currently, MOOCs are also being recognized by some institutions for academic credits. A number of US institutions have recognized MOOCs for credit on an individual basis or as part of structured credit recognition schemes. In February 2013, the American Council for Education (ACE) recognized a small number of MOOCs provided by Coursera as part of its credit recognition programme, CREDIT. Students from around the world who have received a validated certificate of completion from recognized courses can use their certificate when applying to study at institutions that are members of the CREDIT network and potentially have it count towards a final award. The CREDIT programme is also reviewing additional courses for possible recognition alongside a wider programme of work investigating the quality and learning outcomes of MOOCs (Universities UK, 2013).

4. Conclusion

This is an exploratory study on awareness about MOOCs in Indian University System. This study reveals that awareness on MOOCs is very high among post graduate students than graduate students of the university colleges. High-level of awareness is evidenced among Engineering and Management students. This is attributed to high percentage of MOOC awareness among teaching professionals in Engineering and Management departments of the universities. Students and teachers of the universities in Tier-1 cities have high percentage of awareness on MOOCs, while Tier-2 cities evidenced a lower percentage of awareness. This result indicates low MOOC penetration in Tier-2 cities.

Participants' motivation to join MOOC falls under three categories –Fulfilling current needs, Preparing for the future and Satisfying curiosity. Most participants feel that MOOC content was simple and easily comprehensible. MOOCs helped them to understand the complicated concepts that are taught in regular classes. Participants included in the study expressed their satisfaction for MOOC and they would like to pursue more courses. This qualitative study reveals that MOOCs have been successful in meeting the learning goals of the learners and complement their learning in the Universities.

The present work is a part of nationwide study on MOOC usage and effectiveness, and included only two universities in Tier-1 and Tier-2 cities of Karnataka, India. Inclusion of students from IITs and IIMs would provide better insight about the usage and effectiveness of MOOCs in India.

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