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MOOCs Platform: A Review and Sources

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Abstract: *Recent years have seen a significant and eye-opening transformation in the Indian educational sector. Although "Massive Open Online Course" (MOOC) platforms have been available to students for learning purposes since the beginning, its potential has only lately been recognised. The purpose of this essay is to examine and contrast the major MOOC platforms utilised to provide courses in India, as well as the numerous difficulties they encounter. To accomplish these goals, a detailed examination of the four most established and popular MOOC platforms is conducted. NPTEL (2003), mooKIT (2014), IITBombayX (2017), and SWAYAM (2017) are among them. The lack of digital infrastructure, the necessity for investment, and learners' capacity to adapt to MOOCs are a few of the researchers' top concerns with relation to how well MOOCs perform in India. It was also realised that there may be a possible compromise in the calibre of the research work done, the requirement to raise the calibre of information produced, and the necessity to address the variety of demands of Indian students.*

Keywords: Nptel, Swayam, Iitbx, mookit, Massive Open Online Course, Online Learning, Development, Stages, Types, Opportunities ,Challenges

I. INTRODUCTION

David Cormier, a Canadian scholar, first used the word "MOOC" in 2008. George Siemens and Stephen Downes, however, taught the first MOOC at the University of Manitoba in Canada, when a class of 25 normal students was expanded online to teach 1500 students. In educational developments, particularly in higher education, it is recognised as the new approach. The way traditional pedagogy is practised in educational institutions has been challenged, if not endangered, by the tsunami of online courses (MOOCs), according to some scholars. The contact between professors and students online has mostly or completely replaced conventional teaching techniques in this technological advancement. According to Wikipedia.org, a MOOC is an online course designed for open access and limitless participation. Additionally to the standard course resources like books, videos, and problem sets. MOOCs gained significant international attention in 2012 thanks to the three leading businesses Udacity, edX, and Coursera, and they quickly gained popularity in many nations, including the United States, Canada, the United Kingdom, Germany, Australia, and China. Numerous new learning formats have emerged based on MOOC, including PMOOC (Personalised MOOC), Meta-MOOC, DLMOOC (Deep Learning MOOC), Mobi MOOC, MOOL (Massive Open Online Lab), DOCC (Distributed Open Collaborative Course), MOOR (Massive Open Online Research), and SMOC (Synchronous Massive Online Course).For students, professors, and teaching assistants (TAs), MOOCs provide participatory user forums that support community building. The "Open Educational Resources" movement, which includes distance learning, online learning, and traditional classroom sessions, has expanded with the advent of MOOCs.

- **Massive** - indicates that a big number of people are being targeted; they are not only confined to the class or the college; anybody may sign up without any prior education and begin studying at the same time.
- **Open Access** – The courses provided here are open to everyone without regard to location and are freely available to anybody, anywhere, at any time, on a 24 hour, 7 day a week, 365 day basis.

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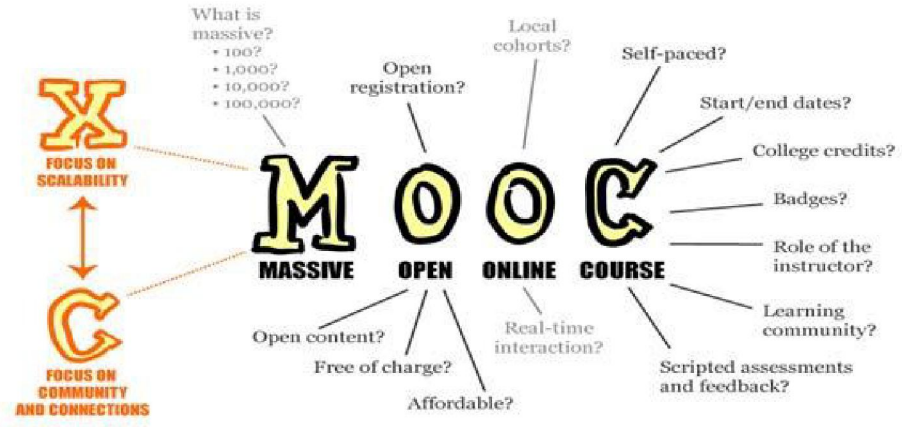
- **Online**- indicates that it is offered through the web.
- **Courses** – Any educational background can take the numerous courses that are offered across the subject. Students from all over the nation enrol in a self-paced programme that lasts typically 4 to 8 weeks. After the online tests and assignments are evaluated by an auto grader or a peer group, certificates or "statements of accomplishment" are given to the successful students. Massive Open Online Courses live up to its name since it's one of the biggest steps in digital education that has ever been made, giving students access to concepts and courses in particular fields. It wouldn't be wrong to say that MOOCs have swept India like a tremendous tsunami. India, a nation of over 1.21 billion people, is no stranger to online education and its magical potential, which has the power to work marvels in the area of education. India presently boasts the second-highest number of enrollments across all significant MOOC platforms, trailing only the United States, and future projections indicate that this figure will increase rapidly. MOOCs using Coursera, edX, NPTEL, and other platforms are offered in India by IITs, IIMs, and other prestigious private universities. While some portals, like coursera and edX, demand exorbitant fees, others, like NPTE Lare, are less expensive and concentrate primarily on drawing in large numbers of students. According to this theory, everyone on earth works towards some sort of gain, even those who participate in MOOCs.



II. DEVELOPMENT OF MOOCS IN INDIA

A brief history of Indian MOOCs: In 2012, Dr. Gautam Schroff of Tata Consultancy Services (TCS) and an adjunct professor at the Indian Institute of Technology (IIT), Delhi, launched the first MOOC experiment in India. The first native MOOCs in the private sector were independently developed in 2012 by Larks Learning and Sunstone (Sunstone Business School). IIT, Kanpur created the mooKIT platform in-house in 2014; IIT Bombay X, a customised version of the open-source edX platform, debuted in 2014–15; and from 2014, NPTEL content is distributed using Google Course Builder. In July 2017, the Swayam platform was launched.

National Coordinators

Sl. No	National MOOCs Coordinator	Sectors
1.	University Grants Commission (UGC)	Non Technology Post Gr Programme
2.	NPTEL	Technical / Engineering programme.
3.	Consortium for Educational Communication	Non Technology Under programme.
4.	IGNOU	Diploma and Certificates
5.	CBSE, NCERT & NIOS	Classes 9th to 12th
6.	IIM Bangalore	Management Courses
7.	NITTTR, Chennai	Teacher Training

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III. FOUR QUADRANT APPROACH

- **Quadrant-I** is e-Tutorial: Video and Audio Content in an organisd form, Animation, Simulations, video demonstrations, Virtual Labs, etc.
- **Quadrant-II** is e-Content: PDF, Text, e-Books, illustrations, video demonstrations, documents and Interactive simulations wherever required.
- **Quadrant-III** is Web Resources: Related Links, Wikipedia Development of Course, Open source Content on Internet, Case Studies, books including e-books, research papers & journals, Anecdotal information, Historical development of the subject, Articles, etc.
- **Quadrant-IV** is Self-Assessment: Problems and Solutions, which could be in the form of Multiple Choice Questions, Fill in the blanks, Matching Questions, Short Answer Questions, Long Answer Questions, Quizzes, Assignments and solutions, Discussion forum topics and setting up the FAQs, Clarifications on general misconceptions.

IV. SOME MOOC INITIATIVES AROUND THE WORLD

V. SOME MOOC INITIATIVES IN INDIA

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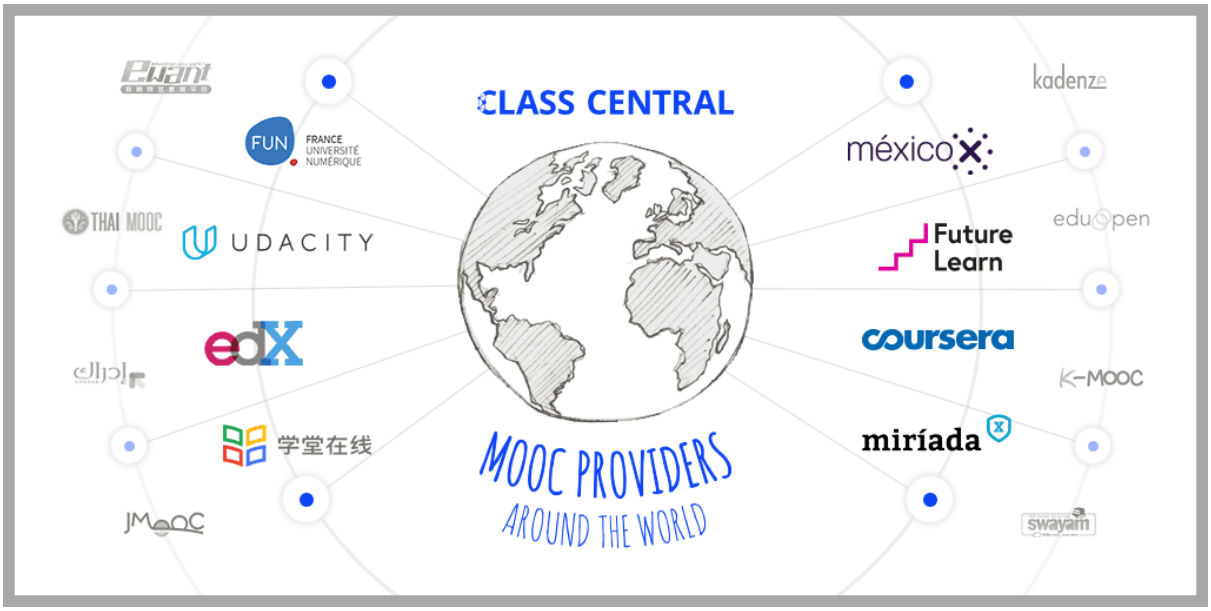

VI. TYPES OF MOOCS

There are various types of MOOCs :

A) Connectivist MOOC is referred to as cMOOC. Its foundation is the connectedness theory of education, whose tenets include connectivism, openness, and participatory instruction. Participants give the teacher their thoughts, ideas, references, etc. on a certain subject. The latter classifies the information, puts it in a shareable email with embedded HTML links, and distributes it to everyone. As a result, a "connective ecosystem" of learning resources on a single platform is created. Even though cMOOCs are no longer popular, several older MOOCs fell under this category.

B) Extended MOOC is referred to as xMOOC. This approach is based on the conventional college teaching format, which includes video recorded lectures, quizzes (MCQs), and other evaluation tasks as well as verified certificates or "statements of accomplishment" that are supplied online through some MOOC provider website. The open source LMS (learning management system) is used by xMOOC to handle courses in a more behaviourist manner.

C) given Online Collaborative Courses, or DOCCs, are classes where the same course content is given to students at different universities, albeit the precise delivery of the material may vary. Through the online component, students from other colleges may interact with one another.

D) BOOCs, or Big Open Online Courses, are comparable to MOOCs but are limited to fewer students—usually 50—than MOOCs.

E) Synchronous Massive Online Courses (SMOC) are different from xMOOCs in that the lectures are broadcast live, necessitating that students join in at certain times in order to hear them.

F) SPOCs, or Small Private Online Courses, are comparable to BOOCs in that they have a restricted number of students, but their student-teacher interactions are more like those in a regular classroom. Similar references to SPOCs may be found in the "flipped classroom" approach.

G) Corporate MOOCs - These are MOOC programmes meant for continuing education or staff training that are often financed or specially certified by businesses. For more details one can see([1]-[37]).

VIII. AIM OF MOOCS

The reason MOOCs exist or have become more popular is because they offer innovative courses, draw large student populations, do not adhere to the traditional model of brick and mortar education, treat the entire world as a library, award certificates for very little money, and offer free access to education.

Role of Instructor

The instructor is in charge of creating the assignments, tests, and activities as well as choosing the best course of study.

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Role of Learner

The learner gets access to information for the course work they have chosen through material, which is often videos sent through email. He actively participates in group discussions, attempts the assessment material in the form of quizzes, and also does research or furthers his literature review in order to try the projects.

Flow of knowledge

In a setting that is very different from a traditional classroom, the instructor immediately transfers information to the student, without compromising the knowledge's substance.

IX. ADVANTAGES OF MOOC'S

1. MOOCs provide us the freedom to follow our interests while working, studying, or doing anything else.
2. MOOCs are open to participants from all around the world who are not physically connected.
3. MOOCs allow students to access top universities and professors without ever leaving their homes. There is absolutely no need for physical presence.
4. You may complete MOOCs in your leisure time. There is no set amount of time given for watching or listening to video.
5. MOOCs have no seat capacity restrictions. Its size is enormous.
6. You may complete a course using just a PC, a mobile device, or a tablet and an Internet connection.
7. Those who are prevented from pursuing education by financial hardship would benefit greatly from it.
8. Unless and until you require a credential, MOOCs are virtually totally free.
9. MOOCs provide corporate workers greater efficiency and help them hone their abilities in the areas they need.

X. LIMITATIONS OF MOOC'S

1. Due to their size, MOOCs do not allow for one-on-one or face-to-face interactions between students and instructors.
2. MOOCs could not ultimately assist you in obtaining a degree.
3. MOOCs are driven by self-interest.
4. MOOCs will never completely replace the necessity for regular classroom instruction.
5. MOOCs are not the best choice for courses that require laboratories for experimentation.
6. Participants hardly ever take MOOCs seriously. The ratio of enrollments to completions is almost usually significantly greater. High dropout rates are prevalent.
7. MOOCs are never going to be as participatory as a classroom.

XI. CHALLENGES FOR MOOCS IN INDIA

The main problems with MOOC performance in India are covered in more depth below. Lack of digital infrastructure, the need for investment, learners' capacity to adapt to MOOCs, the emphasis on improving the calibre of content produced for MOOCs, and meeting the diverse demands of Indian students are a few of them.

1. **Lack of digital infrastructure:** Due to the excellent material in their brief courses, MOOC platforms demand high-speed internet connections. India, a developing nation, is unable to give simple access to computers. Additionally, the availability of computers and consistent Internet access is still restricted to metropolitan areas since these products are still considered to be affluent. Similar to this, the restricted availability of crucial infrastructure has hampered the accessibility of MOOCs. To enable connection across the country, digital infrastructure has to be further improved.
2. **Need for Investment:** MOOC systems require a massive infusion of funding for their creation, administration, and dissemination. Human resource employment, social media overhead, content generation, and other expenses are among the expenditures incurred. By progressively loosening the traditional constraints and rules, the precise demands will be satisfied. For the creation and upkeep of MOOCs, public-private partnerships must also be promoted.

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3. **The adaptability of MOOCs by the learners:** Written communication is the main means of interaction between the teacher and the student. As a result, the students' speaking abilities will be weak, necessitating enrolment in a regular course. The lack of contact between course participants in MOOCs also contributes to a sense of isolation. The learner's learning and wellbeing are significantly impacted by a lack of social support. Additionally, practical courses that need in-person instruction and guidance might not be appropriate for online training. Technology adoption itself might provide difficulties for the students.
4. **Enhancing the quality of the content:** A highly qualified teacher or instructor is the most significant stakeholder to increase the calibre of MOOC courses. In addition to having inadequate infrastructure that prevents the high-quality delivery of MOOCs, the nation lacks full-time, qualified teachers. To remedy these gaps, the New Education Policy 2020 makes a number of proposals. For instance, implementing the credit transfer system and promoting MOOCs. It also emphasises the importance of periodically doing teacher training.
5. **Diversified Needs:** Courses taught in only one language may have little value in a multilingual and multicultural nation like India where many different languages are spoken. The National Employment Programme (NEP) emphasises technical and vocational education, which calls for training and curriculum that are bilingual. Given that English is a language of communication that is widely accepted, this doesn't imply we should abandon it; rather, we should try to be more tolerant and considerate of the many requirements of the community. The content's homogeneity and quality were reduced, albeit this was noted during the translation into regional languages. Additionally, it was difficult in and of itself to create the course materials, deliver them, and oversee the MOOC platforms.
6. **A possible tragedy of the commons:** For instance, student X attempted all 30 MOOCs conducted by IITB Professors despite not being able to join in a course provided by IIT Bombay (IITB) and gained credits comparable to a degree programme. On the other hand, a different learner, Y, pays 1000 times as much for offline lessons with the same names. What criteria are used to determine which study method is the most advantageous? Will learner X, who joined at IITB and earned the credentials, possess the same level of skill? In the future, no student will be ready to pay for the course due to a tragedy of the commons if learner Y is unable to distinguish himself from student X. The quality of the curriculum subsequently enters in doubt even if the institute maintains that MOOC credits are inferior to classroom credits.
7. **Quality of research compromised:** Teaching and research are closely related to one another. The act of teaching in a classroom, which is characterised by impromptu encounters and novel explanation techniques, might increase productivity in the research activity. Such interactions are absent from MOOCs, which has a negative impact on the instruction's quality. However, talks about active research projects may potentially put intellectual property at risk. Additionally, there are numerous opportunity costs. MOOC planning, development, editing, and management can take a lot of time, resulting in little to no research output, which lowers the faculty and MOOC quality and growth potential.
8. **The gender gap in enrollments:** Gender differences in the rate of enrolment have been noted. The underrepresentation of women in traditional courses, such those in the STEM fields, is clearly seen in MOOCs that cover related topics and have comparable names. 2014's Macleod et al. There is no current research demonstrating that women are better represented in the social sciences. Thus, it may be said that the gender gap persists in "online" education. However, Bayeck (2016) finds that offering collaborative/group courses increases the enrollment rates of female candidates.
9. **Relies on Self-Motivation:** One of the many aspects influencing the popularity and use of MOOCs is that the students are expected to be self-motivated and self-directed. Additionally, learning gains rather than completion rates must be used to determine if a MOOC is successful. Since the response rate for the majority of MOOCs is so low, measuring the same is challenging. The E-learning/MOOC platform must be completely restructured as a result to meet the evolving needs and wants of our students now and in the future.

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XII. INDIAN PLATFORMS FOR MOOCS

- **SWAYAM**- Study Webs of Active Learning for Young Aspiring Minds is what this acronym stands for. The government of India launched the Itisan India Chapter of Massive Open Online Courses, an indigenously designed IT platform that promotes chances for lifelong learning and self-actualization. It is a comprehensive MOOCs platform for online learning with the objective of providing all courses from high school (Class IX) to postgraduate level. SWAYAM, a platform capable of hosting 2,000 courses, was created in 2014 in collaboration between the MHRD (Ministry of Human Resource Development) and AICTE (All India Council for Technical Education).
- **NPTEL**- is an acronym for the National Programme on Technology Enhanced Learning, a project of the Indian Institute of Science (IISc) and seven Indian Institutes of Technology (IIT) for the development of online engineering and science course materials. It is a Ministry of Human Resource Development (MHRD)-funded project, and the course materials were based on the All India Council for Technical Education (AICTE) standard curriculum and the curricula of the country's top affiliated universities.
- **mooKIT**- is a lightweight MOOC management system, similar to EdX, that IIT Kanpur created to offer and administer courses online. The mooKIT Management System was created from the ground up at the IIT Kanpur Computer Science department with best-in-class features and cutting-edge technologies.
- **ITBX**- is a MOOC platform created by IIT Bombay with extensive Xcodebase customisation. The IIT BX platform combines Opened X with Drupal 8. Opened X is used to provide the courses, and Drupal is used to acquire and display them in various ways. Academicians, students, researchers, professionals, administrative staff, novice users, educationally, socially, economically, physically disadvantaged groups, and others who seek to transform themselves through cutting-edge technologies, innovative pedagogy, and demanding courses are all intended users of this platform
- **IIMBx**- is a MOOC that was created with the belief that management education has a significant potential to improve our educational institutions and that all people should have access to high-quality education without being bound by barriers related to their geographic location, financial means, or prior educational history.

XIII. CONCLUSION

The purpose of this study was to discuss the associated research on MOOCs, in particular the stages, kinds, possibilities, and obstacles of their growth. Based on the conversation, we conclude that both cMOOCs and xMOOCs are crucial for raising the calibre of education, despite certain disparities in their features and functions. Therefore, future study should assess the motivating factors based on particular type and include the type as a moderation element in order to minimise the bias of combining both subjective and objective data, such as both kinds in one mobile. The effectiveness of the interactions between lecturers and their students as well as between students depends greatly on three key elements: the quality of the MOOC platform's quality system technology, the effectiveness of the education, which includes the lecturers' capability, the use and delivery of the materials, and finally, the awareness and intention of the students. Because of these three issues, there is still potential for further study on how to enhance MOOC operation and uptake.

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