MOOCs: Catalysts for Higher Education Transformation in India

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Abstract: *Over the course of history, education has undergone significant transformations. With the advancements in Information Communication Technology (ICT), e - learning has expanded its horizons through the introduction of Massive Open Online Courses (MOOCs). The enrollment rates in MOOCs have experienced a tremendous surge, prompting India to establish various platforms for MOOC courses. In a developing country like India, MOOCs hold immense potential in reaching a wide audience, promoting literacy, and enhancing the skills of the youth to tackle issues such as unemployment and support initiatives like Make in India in the digital era. India currently ranks second globally in terms of MOOC enrollments, with NPTEL, IITBX, mooKIT, and SWAYAM serving as the primary MOOC platforms in the country. However, it is crucial to recognize that every technology brings both advantages and disadvantages. Against this backdrop, this review article delves into a detailed examination of MOOCs, including their history, evolution, and various types. It also sheds light on the technical and theoretical foundations of MOOC platforms in India. Additionally, the article highlights the challenges associated with implementing MOOCs in India. While acknowledging the potential benefits of MOOCs, it is important to note that they cannot fully replace the traditional education system. A balanced and comprehensive education for today's youth can only be achieved through a blend of both traditional and MOOC - based learning approaches.*

Keywords: E - Learning, MOOC, SWAYAM, Indian MOOC Platforms, C - MOOC, X - MOOC, Massive Open Online Courses.

1. Introduction

The conventional education system in India faces limitations such as cost, infrastructure, and restricted access. Distance learning and digitalization have emerged as solutions to address these challenges. Massive Open Online Courses (MOOCs) have gained popularity as a means of providing quality education to a wide audience. MOOCs offer flexibility in terms of location, timing, and prerequisites, allowing learners to access course materials from anywhere. They utilize pre - recorded lectures, quizzes, and online discussion forums to facilitate learning and create a sense of community. MOOCs can provide certificates, credit preferences, and vocational skills. Coursera, Udacity, and edX are leading MOOC providers. In India, MOOCs have gained momentum as a solution to challenges in the education system, with millions of enrollments. Some MOOCs are introduced by private players, while others are government initiatives to enhance literacy and promote digital projects. The article also acknowledges the benefits and drawbacks of MOOCs and explores their evolution and different types.

According to Devi (2019), effective management and government support are essential for the success of MOOCs in India. Awareness workshops for faculty members can help in developing MOOCs and making online education accessible to all. Biswas and Sarkar (2020) emphasize the need to understand the factors contributing to the success of MOOCs and suggest incorporating them to enhance educational outcomes. Barak, Watted, and Haick (2016) found that motivation patterns and social interactions are important in MOOC learning, regardless of cultural backgrounds. Littlejohn, Hood, Milligan, and Mustain (2016) discovered differences in learning behaviors between learners with high and low self - regulated learning scores,

indicating the impact of motivation and goals on the learning process in MOOCs. Implementing advanced technologies and promoting online learning can contribute to India's growth in education.

Littlejohn, Hood, Milligan, and Mustain (2016) found significant differences in learning behaviors between learners with high and low self - regulated learning scores in MOOCs, influenced by motivation and goals. Harju, Leppänen, and Virtanen (2018) attribute the low completion rate of MOOC courses to limited interaction capabilities and lack of instructor - learner interaction. Pike (2018) examines the design of a specific MOOC and explores issues related to it, including high learner retention rates. Jaganathan and Sugundan (2018) discuss the characteristics and growth of MOOCs in India, highlighting challenges and listing providers offering online courses. Pant, Lohani, and Pande (2021) investigate trends and predictions regarding the adoption of MOOCs in the Indian higher education system, emphasizing the benefits of open participation and access to top universities' faculty. Arya (2017) suggests that MOOCs are gaining significant attention online. Satpute, Deshpande, Joshi, and Pohakar (2021) discuss challenges and prospects for implementing MOOCs in higher education in India, including technological infrastructure, learner awareness, quality issues, and access in rural areas. Chauhan and Goel (2017) highlight the massive participation of learners in MOOC courses, with India being the second largest country in terms of enrollments after the United States. They provide a technical and theoretical overview of platforms such as MooKIT, NPTEL, IITBX, and SWAYAM that offer MOOCs in India. The paper includes a comparative analysis of these platforms using web analysis. The authors acknowledge the challenges faced in implementing MOOCs in India and emphasize the need for addressing them.

Classifications of MOOCs:

C - MOOCs, or Connectivist MOOCs, are a type of MOOC that prioritize connecting learners through collaboration and interactive learning. These MOOCs are built upon the concept of connectivism, which emphasizes the relationship between work experience, learning, and knowledge. Unlike traditional MOOCs, C - MOOCs have a loose structure and are organized by individuals rather than institutions. The organizers create a learning framework where participants from around the world can connect, share, collaborate, and expand their networks. In C - MOOCs, learners have more authority and control over the course, determining objectives and designing their own learning paths. The course content is regularly contributed by participants through platforms like blogs and tweets. The shared experiences and knowledge are compiled by the organizers and shared with participants via email. C - MOOCs focus on connecting learners rather than teaching specific content and are used for sharing best practices, professional development, and creative learning. Assessing C - MOOCs can be challenging, and they do not fit into traditional assessment categories.

XMOOCs: MOOCs can be classified into two main types: C - MOOCs and X - MOOCs. C - MOOCs, or Connectivist MOOCs, prioritize connecting learners and are organized by individuals who have a passion for a specific course or content area. They are characterized by loose structures, learner autonomy, and a focus on collaboration and sharing. In contrast, X - MOOCs are offered by renowned institutions and follow a more traditional lecture - based format. They have fixed curricula, utilize proprietary learning management platforms, and incorporate automated assessments. While C - MOOCs emphasize connectivism and learner feedback, X - MOOCs maintain a hierarchical relationship between instructors and learners. India has seen significant MOOC participation, ranking as the second - largest country in terms of enrollments. The Indian government has taken steps to support open education, and prestigious institutions in India have adopted MOOCs. However, the country still faces challenges in providing widespread access to MOOCs, and efforts are needed to develop a government - supported platform for online courses.

NPTEL (National Program on Technology Enhanced Learning) is a collaborative project involving several IITs and IISc, funded by MHRD. It offers online courses and accreditations in engineering and science subjects, aiming to provide open - source educational resources. Initially faced with challenges, NPTEL has expanded and currently offers over 1, 200 courses, with plans to launch 600 more from 2016 to 2020. **MooKIT,** operated by IIT Kanpur, addresses issues of low bandwidth and offers flexible content delivery options. It provides various features, including multiple content delivery modes, discussions, assessments, and customizable courses.

IIT BombayX is a non - profit MOOC platform specializing in Hybrid MOOCs, combining flipped classrooms, online lectures, and live correspondence. It offers different types of MOOCs, focusing on academic knowledge, lifelong learning, professional skills, and teaching abilities. IIT BombayX follows a blended learning model and emphasizes course completion.

SWAYAM, launched by the Ministry of Human Resource Development (MHRD), is a MOOC platform in India. It aims to integrate online and offline education and offers a wide range of courses. What sets SWAYAM apart is its ability to provide learners with credits for completed courses, which can be transferred and recognized by educational institutions. The University Grants Commission (UGC) has established a credit framework to facilitate this transfer. SWAYAM offers courses at various levels and disciplines, from school education to postgraduate programs. While courses are accessible for free, learners seeking a certificate must register and pay a nominal fee. The platform currently hosts over 500 courses, and National Coordinators, such as AICTE, NCERT, NIOS, CEC, NITTTR, UGC, NPTEL, IGNOU, and IIM Bangalore, are appointed to ensure effective communication, content development, and assessment.

e - PG Pathshala is an educational initiative led by the Ministry of Education and implemented by the UGC as part of the National Mission on Education through ICT (NME - ICT). It offers high - quality, curriculum - based, interactive e - content in 70 subjects spanning various disciplines, including social sciences, arts, fine arts, humanities, natural and mathematical sciences, linguistics, and languages. The content has been developed by subject experts from Indian universities and research institutes across the country. Each subject has a team of principal investigators, paper coordinators, content writers, content reviewers, language editors, and multimedia experts.

Khan Academy provides a platform for learners to study at their own pace with practice exercises, instructional videos, and a personalized learning dashboard. It covers a wide range of subjects such as math, science, computing, history, art history, economics, and test preparation (SAT, Praxis, LSAT). Khan Academy emphasizes skill mastery to help learners build strong foundations and enable them to continue learning without limitations. Its mission is to offer free, world - class education accessible to anyone, anywhere.

Spoken Tutorial is an acclaimed educational content portal that offers self - paced, multilingual courses on various Free and Open Source Software (FOSS). It allows individuals to learn independently from any location, at any time, and in their preferred language. The project is supported by the National Mission on Education through Information and Communication Technology (ICT), initiated by the Ministry of Education (formerly Ministry of Human Resources and Development) of the Government of India. The website serves as a coordination platform for promoting software learning and the use of spoken tutorials.

Challenges related to MOOCs in India

The utilization of MOOCs has sparked significant transformations in the education field. However, along with these advancements, there are also notable challenges that arise. To gain insights into these challenges, we conducted a survey among MOOCs learners, with the participation of 324 individuals. The survey encompassed various aspects,

such as internet speed, course completion rates, and frequency of accessing MOOCs. The questionnaire was administered through an online Google form.

Based on the survey findings, the following challenges were identified among MOOCs learners:
1) Course Completion: The study revealed that a considerable number of learners did not complete the courses they initially enrolled in. Out of the total 324 learners, 89 individuals, consisting of 216 males and 108 females, did not complete their MOOCs courses.
2) Another challenge associated with MOOCs is the frequency of accessing online courses. According to a study conducted, it was found that out of the 324 learners surveyed, only 56 learners visited the course or MOOCs on a daily basis, while 103 learners accessed them on a weekly basis. Furthermore, approximately 28.7% of learners reported not having a fixed schedule for accessing MOOCs.
3) MOOCs is the limited engagement of learners with the course content. It was observed that a majority of learners do not thoroughly go through the study material provided in the course or MOOCs. Among the 324 learners surveyed, only approximately 43.83% of them reported viewing or reading the material included in the study materials. Out of the 324 learners surveyed, the breakdown of their engagement with the course content is as follows: 142 learners viewed the entire content, 122 learners almost completed it, 30 learners saw half of the content, 23 learners had some engagement, and 7 learners did not view anything.

In addition to the aforementioned challenges, there are several other significant issues related to MOOCs:
- The infrastructure pertaining to technology needs to be upgraded by universities, colleges, and learners to ensure smooth participation.
- The videos provided by MOOCs should be concise and interactive to enhance learner engagement.
- The course material offered by MOOCs should be made available in regional languages of India to cater to a wider audience.
- Learners require better internet speed and connectivity, especially when accessing video content provided by MOOCs.
- There is a need to fulfill the demand for courses in technical and professional fields to align with the evolving needs of learners.

Challenges hinder MOOC adoption: curriculum - employer mismatch, limited accessibility, rural infrastructure, low completion rates. Criticisms: content quality, lack of practical courses, reliance on individual effort. MOOCs not a complete replacement, popular for tech upskilling. SWAYAM launched to address challenges, collaborate with IITs.

2. Discussion

Currently, SWAYAM offers over 500 MOOCs for higher education, primarily focused on engineering, science, and mathematics. However, there have been ongoing debates surrounding MOOCs, especially in the humanities field, where students typically receive instruction in smaller groups. Globally, humanities courses have limited representation on platforms like Coursera and edX. Similarly, on the Indian SWAYAM Portal and other platforms, there is a scarcity of humanities subjects. It is important to note that certain aspects of humanities education, such as writing, thrive in intimate classroom settings where detailed feedback can be provided on essays, which is unlikely to occur in a massive online course with 150, 000 students. While online education will undoubtedly reshape higher education, esteemed universities must adapt while safeguarding the invaluable and irreplaceable aspects of the traditional university experience. Striking a balance between technology and traditional methods is essential to provide a comprehensive and well - rounded education to today's youth.

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