



## MOOC Platform in Higher Education: An Indian Context

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**Nethravathi K**

Assistant Professor of Economics  
Mandya University, Mandya-571401  
Karnataka, India  
[nethravathikyoganand@gmail.com](mailto:nethravathikyoganand@gmail.com)

### ABSTRACT

*Massive open online courses (MOOCs) are especially recent and vital in Higher education (HE). MOOCs are growing increasingly popular, with large enrolments. India's MOOC initiatives include NPTEL, IITBombayX, NROER, ePG Pathshala and SWAYAM. Various online platforms offer accessibility to online courses designed to promote continual learning. MOOCs are challenging to implement in India for several reasons. In this work, we will define MOOCs and the organisations and universities that deliver them and present a fundamental analogy of the various MOOC platforms. This study examined MOOC sites and other popular MOOC platforms in India. It also mentioned some of the advantages and disadvantages of MOOC platforms. The outcome is to ascertain the most effective MOOC platform in the Indian context.*

**Keywords:** MOOC, NPTEL, HE, IITBombayX, SWAYAM

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### 1. Introduction

Within the sector of HE, MOOCs have created a lot of excitement and debate among educators, students, HE institutions, civil society, governance, policymakers, and entrepreneurs. It has been noted that most nations worldwide are funding an increasing number of online and virtual educational projects in this digital age of the twenty-first century. Many studies have looked at how online learning is used globally, and the results indicate that in industrialised countries where over 70% of education is given online, online learning is used more frequently than in other locations. Rural areas in India possess the highest population growth yet lack access to excellent education. MOOC courses offer a cost-effective approach to study. MOOCs provide access to diverse courses from prominent colleges and teachers, making them highly helpful. MOOCs provide free enrollment in lectures and classes on various topics, making them accessible to many individuals. MOOCs are user-friendly

because they lack lengthy procedures and enrollment prerequisites. MOOCs become increasingly popular during the digital era. As a result of the University Grant Commission's (UGC) initiative to advance credit transfer and the CBCS system, 20% of courses in India's HE system must now be delivered online. There are other drawbacks to MOOCs as well. For instance, we cannot replicate the physical characteristics of a teacher or the feeling of an actual classroom [1].

## **2. Goals of the Study**

### **The study intends to achieve the following goals**

- To explore the fundamental features of MOOC curricula in India, how they are being used and adopted for learning purposes, and their possible impact.
- Explore the history of MOOC programmes in India. Understanding their development over the years enables us to understand their impact and degree of infusion in the country.
- Comparisons of the various MOOC platforms available in India. To know the kinds of MOOC platforms and their extensions, which help to study the influence.
- To analyse the benefits and drawbacks of MOOC courses. A study of them will help to improve the limitations and enhance its applications.

## **3. Features of MOOCs**

### **These attributes are common to most MOOCs**

- Students in the course are probably dispersed throughout the globe.
- Course materials can be found all over the internet rather than in one single location.
- Personal blogs or portfolios, websites, social networking sites, and more can all serve as hubs for engagement, with the online classroom being only one.
- Teachers and students combine, remix, and rework the material throughout the course.
- There are no set class prerequisites, but participants must maintain a rough schedule.
- The majority of MOOCs are free; however, if a participant wants to earn certification, there can be a fee [2].

## **4. Historical Context and Viewpoint for MOOC Development**

A popular advancement of Open Course Ware, which was established in 2001 by the "Massachusetts Institute of Technology (MIT)" is MOOC. MIT has been at the forefront of improving MOOCs through MITx and edX. In 2008, Dave Cormier suggested MOOCs to describe Siemens and Downes' course "Connectivism and Connective Knowledge." MOOCs are modern online course initiatives by individuals and private and professional organisations[3]. To boost the concept of online open distance learning, the Indian government has also taken

several actions.

Initially, the government set up several publicly accessible online databases, e-books, e-content, e-libraries, and other educational media files. The characteristics of MOOCs are

- **Massive** A MOOC may attract a sizable number of participants.
- **Open** There are no official qualifying requirements for enrolling in or participating in MOOCs; anyone ready to learn can do so. Participation is entirely free, and anyone with an Internet connection is welcome. It is possible to enroll in many courses. Everyone has access to and shares the materials created during the course.
- **Interactive** MOOCs offer very interactive classes. They offer chances for interaction with other students and tutors. Participants are encouraged to produce and share their work.
- **Four Quadrant Method** Assessment, Discussion Board, and e-Tutorial.

**i. Quadrant-I** Here, the e-Tutorial which consists of virtual labs, animations, video demos, and simulations.

**ii. Quadrant-II focuses on e-content, which may include interactive simulations**  
Text, video, e-books, images, and PDFs are all included.

**iii. Quadrant-III** It includes online resources like Wikipedia, case studies, associated links, open-source websites, books (including e-books), research papers, journals, articles, anecdotal record reports, and the subject's historical development.

**iv. Quadrant-IV** Self-assessment entails problem-solving exercises including multiple choice questions, “FAQs”, fill-in-the-blanks, matching questions, short- and long-answer questions, discussion forum topics, “quizzes”, homework, assignments, and clearing up common misconceptions. [4].

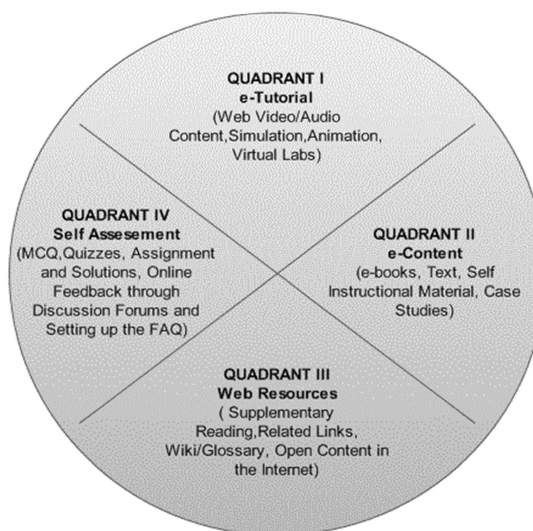


Figure 1. Four Quadrants of MOOC's

## 5. MOOC Platforms in India

The Indian government has implemented numerous measures to facilitate and uphold the principles of open education. At first, the goal was to make open materials available, such as e-books, libraries, repositories, and instructional media files. They were made available to everyone. The National Digital Repository (NDR) of the IGNOU, Sakshat (e-content provider), the CBSE Board's Shishoya (XI-XII Standards), and Vidya Vahini (interactive training and developmental communication) have all started several initiatives in this area. Setting up dedicated departments was the first step in several measures to make education available to as many students as possible. Common names for this path include the Education and Research Network (ERNET), a satellite initiative for education in India; the Consortium for Educational Communication (CEC), which uses television to disseminate educational knowledge; and the Information and Library Network Centre (INFLIBNET). Despite all of these efforts to promote open learning and the use of technology in education, MOOC remained unattainable. The government of India (GOI) launched online courses to help individuals establish their platforms. Only a few Indian institutions and institutes have the necessary facilities to initiate or support such initiatives. Some organisations and their efforts are as follows:

### 5.1 NPTEL

It stands for “National Programme on Technology Enhanced Learning”, and it was started in 2003 as a joint endeavour between the ‘Indian Institute of Technology (IITs)’ and the ‘Indian Institute of Science (IISc)’, and it is supported by the Indian government Ministry of Education (MoE). NPTEL began as a mission to provide excellent educational standards to all regions of the nation. Today, it provides almost 600 courses per semester for certification in roughly 22 areas. NPTEL is

- The most extensive collection of online instruction is accessible globally, encompassing engineering, fundamental scientific disciplines, and a few humanities and business areas.
- The NPTEL YouTube channel has over 40 lakh subscribers and 1.3 billion views, making it the most subscribed educational channel.
- Over 56000 hours of video recordings are transcribed and subtitled.
- The most widely used repository of peer-reviewed instructional resources in the world
- More than 12000 hours of English transcripts were translated into regional Indian languages. [5].

### 5.2 MooKIT

A more compact version of the MOOC management system, mooKIT, was developed in 2014 by the IIT, Kanpur, using open-source technologies. This system can deliver online courses at multiple levels, from ‘micro’ to ‘macro’, and is dependable. It was developed primarily as a connectivist MOOC (cMOOC) platform. For the 200+ courses that are currently being provided, more than 200,000 people have registered. MooKIT is very helpful for students who reside in remote rural areas without access to a computer, smartphone, laptop, high bandwidth, or dependable internet connectivity because it offers a play-synchronized slide audio stream that closely resembles the visual experience. Learners only require an essential phone to receive calls and listen to audio [6].

### 5.3 IITBX

It is a MOOC platform created by IIT Bombay in 2014 by heavily altering the open edX source base. The IITBX platform is an Open edX and Drupal 8 connection. Drupal is employed to retrieve and display the courses in various ways. Open edX is used to offer the courses. This platform is designed for learners, including academics, learners, scholars, professionals, managerial employees, and inexperienced users. It is also intended for educationally, socially, economically, or physically disadvantaged groups, as well as others who aspire to change themselves via cutting-edge technologies, creative pedagogy, and demanding coursework [7].

### 5.4 SWAYAM

To achieve the three primary objectives of the Education Policy- equity, quality, and access- the Indian government created the SWAYAM project. This endeavour aims to provide the best teaching and learning resources to everyone, including the most disadvantaged. For students who have not yet been affected by the digital revolution and are unable to enter the mainstream of the knowledge economy, SWAYAM seeks to bridge the digital divide. This is achieved by employing a platform that enables all courses delivered in classrooms, beginning in Class 9 and extending through post-graduation, to be hosted and accessed by everyone, anywhere, at any time. Expert educators from around the country have produced all of the dynamic courses, which are available to students for free. The development of these courses involved the participation of more than a thousand carefully chosen educators from around the country [8].

The SWAYAM courses are broken down into four categories: (i) video lessons, (ii) specially prepared readings that can be downloaded or printed, (iii) tests and quizzes for self-evaluation, and (v) a discussion site for queries. Using audio-visual and multi-media resources, together with contemporary pedagogy and technology, has improved education. Nine National Coordinators have been nominated to guarantee the production and delivery of the highest calibre material. They are:

- **All India Council for Technical Education-[AICTE]** It was founded in November 1945 as a consultative organisation supporting integrated and coordinated development in India. The Indian technical education system is properly planned and developed by the AICTE, which is under the Ministry of Human Resource Development (MHRD).
- **National Programme on Technology-Enhanced Learning -[NPTEL]** It seeks to partner with organisations to benefit both sides by giving courses to educate freshers in the firms and cross-skill and upskill the existing workforce.
- **University Grants Commission-[UGC]** HE standards are UGC's responsibility to coordinate, decide, and uphold. Approved Indian universities get funding from the UGC, which also grants status to these approved schools and universities.
- **Consortium for Educational Communication-[CEC]** It was founded to develop information communication technology appropriately in conjunction with the potent medium of television to solve the requirements of HE.
- **National Council of Educational Research and Training-[NCERT]** It is an agency of the government

created to help raise the standard of education in Indian schools. The NCERT is responsible for creating and releasing NCERT textbooks to create a unified educational system.

- **National Institute of Open Schooling-[NIOS]** The GOI launched the NIOS, also known as the National Open School, as a significant initiative to meet the educational needs of pupils unable to attend traditional schools. Students with physical disabilities, individuals with chronic illnesses, and athletes who must train and travel throughout the school year are among the beneficiaries of this program.

- **Indira Gandhi National Open University-[IGNOU]** A vast array of undergraduate and graduate degree programs are available at this distance-learning institution. UGC-recognized IGNOU degrees are accepted for admission to universities and other educational institutions and for employment in the public and private sectors.

- **Indian Institute of Management, Bangalore—[IIMB]** The IIMB is a nationally significant institute. IIM Bangalore, one of the top-ranked management schools in India, is dedicated to employing technology-enabled, inclusive, and accessible education to create meaningful social change. The institute founded the IIMBx digital learning program with this goal in mind.

- **National Institute of Technical Teachers Training and Research-[NITTTR]** It was founded as a fully centrally financed autonomous institution by the Department of Education, MHRD, GOI , to offer pre-and in-service training to educators and employees of degree- and diploma-level training institutions, as well as to carry out various activities about the country's technical education system's quality improvement.

The courses offered via SWAYAM are free for students to take; however, students who wish to receive a SWAYAM certificate must register for the final, paid proctored tests and show up in person at the set times and at the designated centres. The course page will proclaim eligibility for the certificate, and students will only receive certificates if these requirements are met. The grades or certificates earned in these courses may be applied to universities or colleges that approve credit transfers for these courses. Table 1 depicts the comparison and evaluation of the main MOOC platforms in India.

- **Other popular MOOC platforms are Coursera** is a profit-making firm formed by two computer science professors from Stanford University. It provides over 5,800 courses, professional certificates, and degrees from accredited schools [9].

- **Udacity** A Stanford University computer science professor developed this site for profit. It is taught by eminent leaders in the field and helps build competencies for in-demand talents with the most advanced IT companies worldwide. More than 205k nano degree certificates were distributed by more than one lakh sixty thousand students from more than two forty countries who were admitted to this platform; 73% of graduate students agreed that it was a good platform for changing careers [10].

- **Khan Academy** Established in 2019, Salman Khan, an MIT and Harvard graduate, started the non-profit organisation. Khan believes that everyone should be able to access top-notch education for free. Learners can progress at their own speed while practising[11].

•**Udemy** It is a platform that is run for profit. With this platform, which offers lifetime access to desktop and mobile devices, students may learn at their own pace. Furthermore, students can learn in-demand skills from more than 2 lakh video courses delivered by professionals in the field. According to Udemy, the site has 830 million enrollments, 62 million students, and members from over 180 countries, and it supports 75+ languages for users [12].

•**WizIQ (India and USA)** This portal provides access to a wide range of IIT Delhi, India courses, all involving enrollment through registration and a money deposit [13].

| MOOCs Platform | Opening Year | Institution behind launch | Learning Mode | Total Courses Offered | Total Users  | Regulatory Credits | Language of the System | Mobile Application | Website's official URL                                      |
|----------------|--------------|---------------------------|---------------|-----------------------|--------------|--------------------|------------------------|--------------------|-------------------------------------------------------------|
| NPTEL          | 2003         | IIT-Madras                | Online        | More than 2400        | 1.82 cr      | Partial/Half       | E                      | Yes                | <a href="https://nptel.ac.in/">https://nptel.ac.in/</a>     |
| mooKIT         | 2012         | IIT-Kanpur                | Blended       | More than 200         | 2 Lakh       | Half               | EHFRU                  | No                 | <a href="https://www.mookit.co/">https://www.mookit.co/</a> |
| IITBX          | 2014         | IIT-Bombay                | Online        | Upto 200              | 1.25 million | Half               | E                      | No                 | <a href="https://iitbombayx.in/">https://iitbombayx.in/</a> |
| SWAYAM         | 2016         | MHRD & Microsoft          | Blended       | More than 2152        | 2.72+cr      | Full               | EH                     | Yes                | <a href="https://swayam.gov.in/">https://swayam.gov.in/</a> |

\*Source: The websites listed in the above table (Last column)

Table 1. Comparing and evaluating the main MOOCsplatform in India

## 6. Advantages of MOOCs

### There are many advantages of MOOCs Flexibility

- Learners can progress at their own pace, breaking free from time and location constraints.
- Particularly advantageous for adult learners juggling work or family commitments.

### Influence on the Employment Landscape

- Overcomes geographical limitations and rigid work schedules, allowing learners to access education anywhere and anytime.
- Enhances competitiveness and attractiveness to employers through skill enhancement.

### Bridging the Skills Gap

- Addresses industry challenges by providing access to training and certification programs aligned with in-demand job skills.
- Offers practical solutions to the rapid evolution of technology in the job market.



### Increased Access for Underserved Communities

- Open doors for individuals in low-income brackets, rural areas, and working professionals who previously had limited access to education.
- Facilitated education and training that were beyond reach, promoting inclusivity.

### Career Advancement and Professional Development

- Empower individuals to earn degrees, certifications, and badges online, fostering career progression.
- Augments earning potential by providing opportunities for continuous professional development.

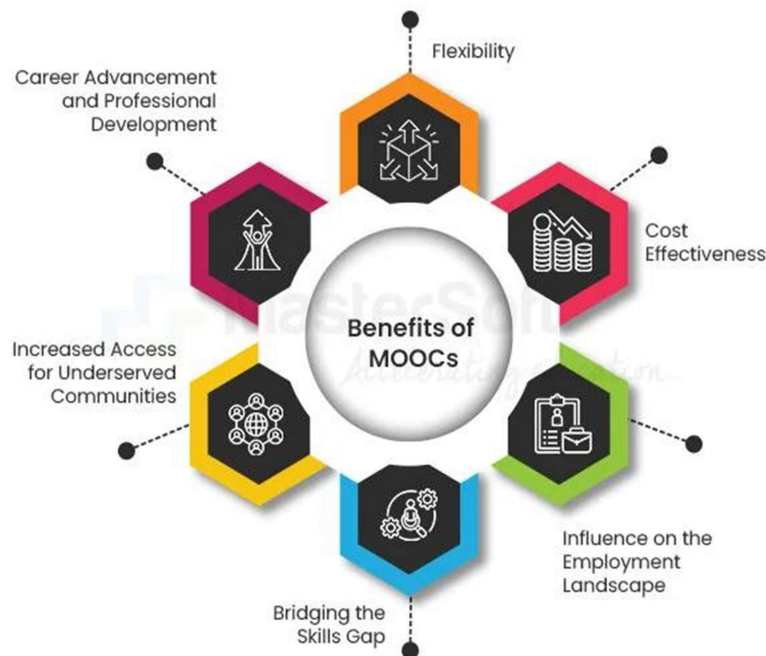


Figure 2. Benefits of MOOCs

## 7. Disadvantages of MOOCs

### MOOCs have certain drawbacks, such as

- Inability to offer individualised course materials and tutoring
- Difficulty in monitoring student participation and assignments
- Inability to use MOOCs for learners with disabilities or with inadequate Internet connections
- Language barrier when providing MOOCs
- Inability to be employed as a credit-earning course during universities [14].



## 8. Conclusion

MOOC platforms are widely utilised globally for online courses, including in India. The major MOOC platforms in India are “NPTEL”, “mooKIT”, “IITBX”, and “SWAYAM”. SWAYAM is a recent launch. An overview of each platform and its features is presented to establish a foundation for comprehension, covering both theoretical and technical elements. To use these platforms effectively, it’s essential to understand their present state, popularity among learners, social media usage, and other relevant parameters or features. This article provides a comparative analysis of these platforms utilising web analysis, considering several characteristics.

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