

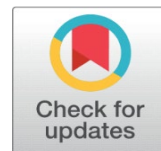
HIGHER EDUCATION IN INDIA THROUGH MOOCS AND ONLINE COURSES



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ABSTRACT

Online education has seen a rapid and significant growth in the 21st century. Online courses and MOOCs have had an extremely positive impact on higher education in India. Herein, is an attempt to study the growing sphere of online education in India, with special reference to developments in the past decade. In the study, the authors have examined the role of the public and private sector in the field of education. SWAYAM is an indigenous platform of the Government of India which hosts numerous courses and has attracted learners from all age groups and across different streams. Simultaneous growth of educational start-ups in the last decade has enhanced employment generation as well as opened up new avenues for professional growth. Growing collaborations between educational start-ups and foreign universities is helping in globalization of education. The paper compares private and public online courses and discusses how online education has positively impacted employability across various sectors. The various challenges posed in online education have also been elaborated.

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1. INTRODUCTION

Higher Education in India is one of the largest of its kind in the world. It accommodates hundreds of thousands of people in the university-fold. According to the University Grants Commission (UGC), Universities are responsible for creating new knowledge through research, engage in capacity building and produce an intelligent human resource pool through challenging teaching, research, and extension activities [University Grants Commission \(2003\)](#). It is common knowledge that university graduates who hold a degree, obtain higher than average earnings, are more likely to be employed, and are less likely to experience poverty than individuals without a higher education degree. Additionally, these individuals also acquire significant social benefits, such as improved cognitive skills, better concentration on job-related tasks, and demonstrate a tendency to engage in public welfare initiatives [Baum and Payea \(2013\)](#). The development of any Nation in terms of its economic growth is also directly correlated with its literacy rate.

Higher Education may have a different purpose in different societies, but it universally remains a place for teaching and learning and organized research. Universities engage in skill development in order to create a high-quality workforce. Currently, the focus in higher education is on skill development



and this have brought a paradigm change in attainment of knowledge and acquiring degrees [Kromydas \(2017\)](#). In an increasingly knowledge-driven global economy, higher education has become more essential than ever before. Notably, there is a discrepancy between higher education providers and the employment sectors thus leading to a situation where the educated youth find it difficult to get employment [Chan \(2016\)](#).

The estimated growth of the number of enrolments for higher education is expected to have 281% increase over the 30 years from 2000 to 2030 demonstrating an undeniable growth of demand for access to Higher Education [Calderon \(2018\)](#). Now more than ever, policies are focused towards increasing the access to Higher Education towards a wider population focusing on demographics that may cover various socio-economic groups, disability groups or ethnicity [Kromydas \(2017\)](#). This demand could be supplemented by the emergence of an increasing number of Massive open online course (MOOC). The evolution of technology has allowed distant higher education to be cheaper and more convenient than the traditional mode of in-class active learning leading to an easier access to higher education.

MOOCs have gained unparalleled popularity in the last two years owing to the COVID-19 pandemic. The popularity of MOOCs in the pandemic has grown manifold, however the groundwork to its surge in popularity was laid in the last decade. The New York Times had dubbed 2012 as the “Year of the MOOCs” [Shah \(2020a\)](#). According to [Anders \(2015\)](#), a significant number of learners on coursera and edX, two leading providers of MOOCs, are from India. In 2013, The Bill & Melinda Gates Foundation made an investment of more than US\$800,000 towards the MOOC Research Initiative to understand the full scope of this online education method [Kolowich \(2014\)](#). In 2020, the pandemic forced universities around the world to use online mode of learning thereby leading to several students exploring the prospects of studying from a MOOCs platform. Coursera, one of the most popular MOOC platforms, registered the largest number of new learners, receiving 35 million enrollments between mid-March and the end of July 2020 [Shah \(2020b\)](#).

A survey on benefits of MOOCs, conducted by Harvard Business Review in 2014 showed that 72% of respondents reported career benefits and 61% reported educational benefits [Zhenghao et al. \(2020\)](#). These benefits are also extended to the faculty involved in developing and teaching a MOOCs course and they have seen elevated professional appreciation as observed by a report from the UT Arlington symposium. The hosts are also able to take advantage of the large number of learners as it enables them to try a low cost and low risk way of new pedagogical approaches to test the market before developing a full degree program via the collected learner data [Inside Higher Ed. \(2014\)](#).

It is important to note that there is a difference between MOOCs and Online Courses. While all MOOCs are online courses, all online courses are not MOOCs as the latter tends to have a massive reach. An online course can fall outside the MOOC category owing to its small scale or structure.

Online courses (with special emphasis on MOOCs) are useful for a plethora of objectives- career development, college studies, supplemental learning, skill learning and lifelong learning for adults wishing to continue their education. Online courses have become widespread with the availability of resources such as smart phones and expansion of internet coverage in India.

In this paper, we shall review how MOOCs offered through the SWAYAM platform, a Government of India (GOI) initiative, as well as e-learning sources offered by educational start-ups are transforming the future of higher education. We

have drawn a comparison between government-funded and private online e-learning portals. Challenges and limitations to online education are also discussed in the paper.

2. MOOCS IN INDIA THROUGH THE SWAYAM PLATFORM

The word MOOCs was given by David Cornier and Bryar Alexandra to describe courses which can be taken by anyone across the globe with the use of technology. Coursera, one of the most popular MOOCs providers, was conceptualized in 2012 by Andrew Ng and Daphne Koller from Stanford. Around the same time MIT and Harvard professors launched edX, another platform for hosting online courses. India was not far behind, and in 2014, Ministry of Human Rights Development (MHRD) announced SWAYAM, an online education platform built by Microsoft and WizQ under its National mission on education through Information and communication Technology (NME-ICT).

Thus, the emergence of SWAYAM, a government funded MOOCs platform, can be seen as an Indian response to the emergent 21st century culture of online learning. SWAYAM has nine *National Coordinators* that are entrusted with creation and curation of content not only for school going students and those pursuing higher studies, but also for teachers and lifelong learners. [Table 1](#) shows the national coordinators associated with higher education.

Table 1 National Coordinators and their area of specialization

National Coordinator	Courses Offered
1.National Programme on Technology Enhanced Learning (NPTEL)	Engineering and Science courses
2.University Grants Commission (UGC)	Non-Technical Post-Graduation
3.Consortium for Educational Communication (CEC)	Undergraduate Education
4.All India Council for Technical Education (AICTE)	Technical Education
5.Indian Institute of Management (IIM), Bangalore	Management Studies
6.National Institute of Technical Teachers Training and Research (NITTTR)	Teacher Training Programmes

It is noteworthy that the coordinators mentioned in [Table 1](#) are bodies that precede the establishment of SWAYAM in 2016. These bodies had resources as well as the technical-know-how to a large extent to develop online courses. NPTEL is a case in point. It was established in 2003 in a collaboration between Indian Institute of Science (IISc) and 7 IITs (Kharagpur, Delhi, Bombay, Kanpur, Madras, Guwahati, Roorkee). NPTEL over the years, has designed courses in five major engineering disciplines- civil engineering, computer science & engineering, electrical engineering, electronics & communication engineering, mechanical engineering, and core science programmes.

In its first phase of development (2003 to 2009), NPTEL developed 235 online courses in video format and during its second phase of development from 2009 to 2014 it further recorded 600 web and video courses, while accommodating more branches of engineering, physics for undergraduate and postgraduate courses. Subsequently in the third phase of development another 900 new courses were added. Today, NPTEL is the world's largest repository of educational content with more than 56,000 hours of learning material which are now accessible on the SWAYAM platform NPTEL: Swayam.

The MOOCs offered by NPTEL on the SWAYAM platform are unique in terms of assignments provided. The coordinators design new assignments every time they

host a course on the SWAYAM platform, which is in contrast to other courses offered on different platforms where in for long periods the assignments remain the same. For smooth running of various courses and conduct of examination at the end of the course, NPTEL has established local chapters SWAYAM website (2021) in close association with various colleges and universities. Through these local chapters, a process for getting feedback from the learners continuously, allows for incorporation of relevant changes in the courses and thus facilitates a better learning process. To motivate students to enrol for the MOOCs offered by NPTEL, a format for credit transfer from SWAYAM – NPTEL has been formulated by experts teaching these courses. Most NPTEL courses are for 4,8,12 weeks and accordingly one can earn 1,2,3 credits respectively on successful completion of these courses.

Indian Institute of Management, Bangalore (IIMB), another coordinator for SWAYAM, had started offering massive open online management courses (MOOCs) in 2014 through its digital learning initiative [Haumin and Madhusudhan \(2019\)](#). Initially IIMBx was offering these courses in partnership with **edX** – a not-for-profit online initiative of Harvard and MIT. Apart from edX, **IIM** offered courses on its own platform, IIMBx. Almost all IIMBx courses offered on edX and IIMBx platforms are also available on the SWAYAM platforms.

The National Institute of Technical Teachers Training and Research (NITTTR) Chennai is the coordinator for the teachers training program and develops MOOCs in collaboration with NITTTR Bhopal, Chandigarh and Kolkata.

Consortium for Educational Communication (CEC) is the National coordinator for developing non-technical undergraduate and postgraduate courses for SWAYAM portal. It was set up in 1993 under the National Mission of Education through ICT (NME-ICT) project. It started with 6 media centers for production of e-learning and video content and today has 21 centers spread all over India. Since its inception CEC has had a tremendous growth trajectory and today it has one of the largest repositories of digital educational content in the country including more than 40,700 video programs, 24,000 e-content modules and around 322 MOOCs covering Arts, Literature, Language, Social Sciences, Natural and Applied Sciences and Management and Professional courses [Swayam \(2021\)](#). A number of these MOOCs have been developed by repurposing the existing e-learning content. The MOOCs are offered twice in a year (January and July) on the SWAYAM portal. These courses are in diverse disciplines and can be taken by learners of any age group. Courses like, academic writing, animations, artificial intelligence, cyber security, and computer programming have been rerun numerous times because of their popularity. In a study done by [Pranav et al. \(2021\)](#) it was seen that the program on art of C programming had an enrollment of 36,362 students in the January-July cycle. In the same study it was also observed that as many as 64 institutes/universities participated in the development of courses. Thus, we see that the popularity of MOOCs offered on SWAYAM is rising steadily among the various stakeholders and there is a substantial increase in the number of universities associated with the development of modules of the course.

As per the latest AICTE/ UGC guidelines, every semester, a regular student enrolled in any Institute/ University, can take up to 40% of courses from SWAYAM and earn credit on completion of such courses. Hence the biggest advantage of MOOCs is that students can now take discipline elective courses which are not offered by their college due to the non-availability of expert faculty, earn credits for such courses and add them to their academic credit bank (ACB). Moving forward the Institutes of eminence, like IIT Madras and IISc, Bangalore are planning to start e-masters in certain courses like, cyber security, power sector and communication, data science and business analytics. Nearly 30276 students enrolled in an online

graduation degree offered by IIT Madras in 2020. In a latest notification, UGC has allowed 100 autonomous colleges to start offering online degrees. The National Education Policy (NEP) focuses on blended learning and taking MOOCs will put a student at an advantage. We see a great future for digital education in the coming years.

3. THE RISING ROLE OF THE PRIVATE SECTOR

The initial development of online courses in India was government-sponsored but the recent years have observed a very quick and parallel growth of private enterprises indulging in establishing commercial organizations that develop online courses. One may notice that government-sponsored platforms like SWAYAM host courses catering more to prescribed syllabi of a university-based curriculum. Although SWAYAM also caters to what are seen as 'life-long learning courses' that teach art, philosophy, religious principles, music etc. and focuses on skill development courses as well. Private companies that develop and offer online courses tend to cater primarily to skill development courses which can provide employment and help in professional development. In this section, we will have a look at the prominent educational start-ups involved in delivering online courses in India. [Table 2](#) gives a list of some educational startups.

Table 2 Educational Startups based in India

S.no	Name of the Educational Start-ups	Year established
1	Simplilearn	2010
2	Eruditus	2010
3	EduKart	2011
4	Edureka	2011
5	Talent Sprint	2011
6	Imarticus	2012
7	Great Learning	2013
8	UpGrad	2015
9	Ekeeda	2015

Many of these companies offer prolific courses ranging from certificates and diplomas to degrees. EduKart, for instance offers BBA, BCA, MCA, MBA with tie ups with Narsee Monjee, London School of Business and Concordia University. It was acquired by the ecommerce and digital payment company Paytm in 2016 [Chakraborty \(2016\)](#). On similar grounds it has been observed that edtech start-up, Great Learning also offers MBA, MCA, BBA with tie ups with Shiv Nadar University and Jain deemed University. Great learning has also established partnership with international universities, including Stanford and Massachusetts Institute of Technology. However, Byju's acquired it in July 2021 and marked its entry in the higher education segment. Besides offering courses these educational start-ups also prepare learners to write a strong resume and face interview sessions thus preparing them for the job market.

The educational start-up Eruditus, launched in 2010, a Mumbai based company is seeing a steady growth in the global market. It offers professional educational courses in collaboration with top ranking universities, like MIT, Columbia, Harvard, Cambridge, Wharton, UC Berkeley, IIT, and IIM to offer high quality education. It has offered close to 200 courses, which have been taken by 100,000 professionals across over 80 countries. A unique feature of Eruditus is the creation of classroom experience wherein the learners get to interact with each other as well as with the

faculty. Action learning is promoted through the use of simulations and gamifications. Eruditis has a strong global presence with about 80% of its students from outside India. It has tie-ups with universities in China, SE Asia, Australia, Latin America, US, and Europe offering courses in Spanish, Portuguese, Mandarin.

Edureka, a Bangalore based start-up, ever since its inception has partnered with various educational institutes such as National Institute of Technology (NIT) Rourkela, NIT Warangal, IMT Ghaziabad and Indian Institute of Kanpur (IIT) Kanpur [Edureka \(2022\)](#). It offers IT related courses such as coding, cloud computing, cyber security, digital marketing and now they also specialize in courses in Artificial Intelligence. One of the largest higher education companies that offers online courses is Upgrad. Established in 2015, it has collaborated with over 100 Universities for online education offering a plethora of management and IT related courses. Upgrad claims to be the 'Most Integrated Higher EdTech company in the world (Upgrad 2021). It has further acquired Impartus in March 2021. Impartus specializes in video technology, and hence gives a distinct advantage for flipped lecture recordings, automated recording, distribution of classroom lectures, and a better online learning experience

To bridge the gap between industry and academia, start-ups like Simplilearn, Imarticus were conceptualized in 2012. Imarticus specializes in providing courses related to finance and business analytical, and these courses have been designed in consultation with multinational accounting firms like, International Business Machines Corporation (IBM), and Klynveld Peat Marwick Goerdeler (KPMG). This sort of a partnership allows for exploring job opportunities in these firms by the enrolled participants [Imarticus \(2020\)](#). Simplilearn, a Bangalore based start-up, trains its students in digital marketing, cloud computing, and data science among other subjects. It has partnered with several multinational companies such as Microsoft, Facebook, and IBM. [Simplilearn \(n.d.\)](#). Educational start-ups like Talentsprint focus more on courses related to banking and financial services, while Ekeeda, launched in 2015, specializes in offering engineering courses.

Such collaborations in the aforementioned section enable access to world class instructors and resources. All these prestigious institutions remain elusive to most, hence online education makes high quality education accessible and affordable to the broader community.

Courses offered in collaboration with corporations often fill the lacuna between what is taught in universities and what is needed by industries. Most mid-career professionals have to keep abreast with upcoming technologies to achieve professional growth and hence enrol for such courses.

4. THE PUBLIC VERSUS THE PRIVATE SPHERE IN ONLINE EDUCATION

Since the liberalization and privatization reforms of India in 1991, India has seen a proliferation of private universities and colleges all over the country. According to March 2021 data of the University Grants Commission, there are 395 Private Universities in India and 618 Central, State universities and 492 public universities [UGC \(2021\)](#). Another noteworthy development is the rise of private universities in India with a drastic 47% increase in the number of private universities in the last four years [Sharma \(2021\)](#). The data suggests that the private sector in education is bound to grow and with it, online portals offering online education are bound to rise.

Just like two spheres exist in the traditional higher education system- private and public, a similar sphere can be seen in online education as well. Government-

backed and funded portals like SWAYAM co-exist along with educational start-ups and multinational giants such as Coursera and Udemy. The discourse of education today is not limited to one country alone since larger MOOC platforms of the world cannot be limited to the countries of their origin. Take for example Coursera, a company founded in the US that has several courses made by non-American academic professionals and the students who enrol for such courses need not be American. Private companies that run MOOCs are a product of globalization and they also enable it in many ways. This is a sign of democratization of education.

As far as the question of India is concerned, the benefits and the downsides to the privatization of education have been discussed both in the public and academic spaces. [Tilak \(2014\)](#) has argued that private sector educational institutes focus on market-friendly, short-term courses for career development, in contrast to rigorous long-term programmes offered by public institutes. While this observation was made in reference to traditional private university education, a similar inference can be drawn for private online education as well. Online courses offered by educational start-ups are extremely market-oriented with more emphasis on engineering, computer science, and management courses. This of course suits a section of students and working professionals who need these skills to be more employable, but there is a conspicuous disregard for the courses related to humanities and liberal arts. For example, one can easily find a course on C++ coding on several private platforms while in all probability, a course on Hindi Literature or Indian Classical Music would only be found on the SWAYAM portal. Two conclusions can be drawn from this argument:

- The Private Sector caters to the needs of the market and focuses on courses that would increase technical skills and employability.
- The Public Sector steps in and covers crucial educational areas, providing degrees, diplomas, or certificates. Courses related to skill development and range of lifelong learning courses that include, spirituality, languages, religion, music, art of writing etc. are also available on government hosted online platforms.

In this way, one can argue that the presence of both the private and the public sector benefits education in India. The private sector provides market-friendly courses at a huge price, while portals like SWAYAM not only provide education in all spheres but are also affordable (and mostly free of cost) to the common masses. However, a feature common to both of them is their accessibility to learners at different geographical locations and the availability of the best of faculty for masses.

5. CHALLENGES AHEAD

The benefits of online education far outweigh the negative aspects. However, the shortcomings have to be addressed and solved in order to make online education more accommodative and egalitarian to all sections of the society in India. The present study identifies three major challenges:

- Internet connectivity with adequate band width is a must for online teaching. There is a disparity in terms of not only accessibility of internet connection but the speed of internet across different states and households in India. The availability of personnel laptops/ android phones is another deterrent to online learning. The benefits of online education cannot be availed without eliminating the digital divide.
- Language is a major barrier for people who study in vernacular medium colleges. Private sector online courses mostly have courses only in the English language. SWAYAM on the other hand is gradually making efforts

on being a multilingual portal with subtitle support and courses in regional languages.

- Online teaching would be detrimental to a student's education due to lack of intervention by a teacher in a physical classroom. Day to day interactions with peers and faculty, in the classroom and outside is an integral part of college life. All this will be compromised in online education and will affect the holistic growth of students.

6. CONCLUSION

Education must be provided to all irrespective of their socio-economic or geographical background. This aspect is reflected in the Sustainable Development Goal 4 (SDG 4) of the 2030 agenda for sustainable development. Technology has transformed education and with digital learning we can achieve the SDG 4 and provide quality education and lifelong learning opportunities for all. However, various challenges have to be met to realize these goals. Hence as of today blended learning, which is an integral part of National Education Policy can help in imparting effective education to masses. The availability of video lectures as one quadrant of MOOCs can be merged with face-to-face discussions in the classroom to materialize blended forms of learning.

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