

## MOOCs in India and SWAYAM: An overview

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### Abstract

*Education plays a vital role in every possible way of shaping the future of any nation. One of the major responsibilities of the Government is to enable the citizens of the country to skill themselves through quality education. Massive Open Online Courses (MOOCs) through the SWAYAM portal is one of the major initiatives by the Govt. of India to promote learning among its citizens. Although the concept of MOOC is now more than a decade old, in India it started in 2014 through MookIT. Later in 2017 Govt. of India launched the SWAYAM portal. It aims at providing learning opportunities through MOOCs which provide online free education to all and have the capacity to bridge the digital gap. Through these courses, quality education can be made available at the doorstep of every learner without any cost. These courses are curriculum-based having interactive content material on different topics across all disciplines. The materials are developed by the best teachers from various top-level educational institutions across the country from secondary to post-graduation levels. The MHRD now the Ministry of Education has identified nine national coordinators to ensure the production and delivery of high-quality content material. It is meant for anyone, anytime, anywhere with the facility of credit transfer for up to 40 per cent of the courses in a programme. It follows a four-quadrant approach. In this paper, the focus is on a) Development of MOOCs in India b) Emergence of SWAYAM c) A brief review of SWAYAM course content and its activities d) Critical review of the accessibility of MOOC courses on SWAYAM.*

**Keywords-** MOOCs, SWAYAM, Online Learning, ICT, Distance learning, Remote Learning

### Introduction

Education is a very important aspect of the human race to grow and excel in life. Human beings are inquisitive and since the time they came into existence, they used this inquisitiveness as a weapon to achieve their goals in life. The knowledge that is attained through education provides several opportunities for better prospects in career growth. Individuals put efforts to gain knowledge across the globe which plays a significant role in opening up their minds and preparing them for the future. For ages, people used to travel from one place to another to meet their

quest for knowledge and attain wisdom. They started sharing their learning and educating other people and also preserved their piece of knowledge in scripted form. This continued and education gradually transformed into a structured form which then got passed on to the next generation.

\*Facts stated and opinions expressed in this paper are entirely of the authors and not of ICSSR.

Schooling up to grade twelfth and higher education at a university level follows a structured learning process, but people search for new and better learning

avenues once they start working after attaining a level of formal education (Sharma, 2018). Open and distance education has been available for quite some time and now it has witnessed a paradigm shift due to technological advancements and interventions. One such intervention is that of MOOCs which are online learning materials. MOOCs are a kind of revolution that can change the formal system of education. During the covid-19 pandemic when the education sector was one of the worst-hit areas and was not prepared for lockdowns across the globe, online learning proved itself as a rescuer. MOOCs which are extensions of online learning are the courses which have the capacity of anytime unlimited access to quality study materials at a very affordable rate with the option of free and open registration. According to Technavio's research MOOC market across the globe will reach \$17.70 bn during 2020-2024 with 36 per cent growth from the Asia Pacific. This data supports the fact that it is the future of our education system which will encourage the universal access to quality education.

## Literature Review

A review of related literature is very important to find the gap in existing available knowledge in a particular area and the researcher has gone through various literatures in this field which helped her to narrow down the actual research problem and also provided a strong base for the facts related to the article. Some of them are as follows:

Mohapatra, S. and Mohanty R. (2017) through their paper Adopting MOOCs for affordable quality education have studied the various parameters that influence the adoption of MOOCs by Indian learners. The data was collected from various stakeholders like learners from the undergraduate college, students pursuing master's

degrees, corporate employees looking for career accelerator courses, parents and educators. It was found that the learner's skill, usability and availability and affordability are the main factors affecting the learner's perception of MOOC adoption.

Kaypak, E.et.al. (2017) In the article entitled Mobile learning and MOOCs have provided a general overview of the emergence of MOOCs, the different types of MOOCs, the dimensions of these MOOC types, their topologies and integration of mobile learning in MOOCs. Authors have highlighted a few concerns like big class size, dropout, quality concerns and non-accreditation still finds a great scope in shaping the future of distance education.

Majumdar, C. (2019) in his paper SWAYAM: The dream initiative of India and its uses in education has discussed the various aspects of SWAYAM, its advantages and challenges associated with its implementation and delivery. Although the author sees a great future for the learning environment through SWAYAM, the fact that the economic condition of the people can affect this programme cannot be denied.

Singh, N. (2019) in a study named SWAYAM-Indian MOOCs: An insider's perspective has tried to find out the experiences of course coordinators, especially the challenges faced by them while operating the platform for running their courses. She found that course coordinators are quite satisfied with the platform.

Though research has been done in India and abroad on the topic, still there is a need to do further research to get more feedback for strengthening the system. Hence the study is undertaken.

## Objective of the study

- To have a brief look at the growth and development of MOOCs globally and in India.

- To critically analyze the factors that pose challenges in accessing SWAYAM.

### Research questions

1. How have MOOCs evolved around the world and in India?
2. How does SWAYAM work and serves the purpose for which it has been started?
3. What are the hurdles that can impact the implantation of SWAYAM?

### Material and Methods

Researchers mainly used secondary data to show the development of MOOCs and SWAYAM in India. Facts related to MOOCs and SWAYAM have been collected from various research articles and related websites. For data used in the section where the researcher's experience is shared, the course coordinator was contacted through email.

### Global Perspective

MOOCs have changed the perspective in what way education is perceived in this 21<sup>st</sup> century across the globe because of large-scale technological developments. The need for skilled labour force with advanced specialisation due to globalization is the biggest contributor to such courses because; in today's world any skill becomes outdated after a few years. It has evolved as a medium of learning for learners with flexibility in all terms i.e., access, time and eligibility. Technically MOOC is an extension of distance education that has led to a massive shift from traditional methods to technology-enabled methods which have revolutionised the way of delivery of courses. In these fast-moving times, people are trying their best to acquaint themselves with the available skills and knowledge in their field of expertise and during this transition phase distance

learning especially MOOCs have evolved as an important player in the education sector. Delivery through post then radio and television and now internet, distance delivery system in distance education has changed drastically and these high-tech advancements have every time ensured better learning in all possible ways. The idea of education for all is also a big contributor to the creation of MOOCs in the present society.

The growth of MOOCs from 2012-2021 shows a large-scale increase in the number of courses (to more than sixteen thousand) which points out to the potential of MOOCs in the coming times (Class Central).

If we look into the history of the evolution of MOOC, it started with Nikolai Frederik Severin Grundtvig of Denmark who first provided the theoretical framework for it which later became famous as the folk high school (Rollins, 2018). The main purpose of this school was to teach anyone interested, without any restrictions in terms of age, social background or financial means. This movement of self-learning continued to be popular throughout the 20<sup>th</sup> Century in Europe. With the arrival of the internet, other movements also emerged that changed the way education was imparted. The first online courses were technically not very complicated instead they were simple and basic in terms of delivery of content. Earlier the postal system was used to send the study materials. Later, email with a list of documents to download and read replaced the postal system. With more advanced internet quality videos were included to demonstrate the concept for better understanding. Initially, lectures delivered in classes were simply recorded and were made available as it is without any ratification. In this journey, the world witnessed the Open Education Resource movement which started in the United States

in early 2000 and this movement initiated the first-ever MOOCs which further was sparked by the MIT open courseware project. In 2006, Wikiversity started and in 2007 first open course was organized on the platform. The term MOOC was used for the open course “Connectivism and Connective Knowledge” (CCK08) by Dave Cormier and was introduced at the University of Manitoba in Canada by Stephen Downs and George Siemens. Alongwith 25 students who attended this course in a class of 2,300 more learners joined this online. In 2011 Stanford University started three of its online courses; the first on artificial intelligence (CS221) in July and the second and third in August on database and machine learning. The connectivism theory for knowledge

creation and generation was the main idea for the very first generation of MOOCs which became popular as cMOOCs and later extended MOOCs also known as xMOOCs emerged which allowed free access with some closed licenses (Wikipedia).

Declared by New York Times as the year of the MOOC in 2012 (Wikipedia), several well-financed providers like Coursera, Udacity and EdX associated with top universities emerged and revolutionized the education system with more diverse courses through this new online medium. Table-1 summarises the growth of MOOCs in terms of the number of learners, a number of participating universities and demand of new courses globally.

**Table-1: Growth of MOOCs in terms of the number of learners, number of participant universities and demand of new courses**

Year	Enrolments	University	Courses
2011	300K	1	3
2012	2M	40	250
2013	10M	200+	1.2K
2014	16-18M	400+	2.4K
2015	35M	500+	4.2K
2016	58M	700+	6.85K
2017	81M	800+	9.4K
2018	101M	900+	11.4K
2019	120M	900+	13.5K
2020	180M	950+	16.3K

Source- Class central (do not include data from China in 2019 and 2020)

### MOOCs in Indian contexts

India is one of the leading countries in terms of enrolments in MOOCs which are provided globally through various platforms. The MOOC history began with NPTEL in a different format which was started in 2003 as an educational content repository similar to MIT open courseware. It was started by

seven IITs and IISc to put its recorded lectures delivered by its member institutes online open access. Today it is the largest online repository in the world of courses in engineering, basic sciences and selected humanities and social sciences subjects. It is also the most accessed library of peer-reviewed educational content in the world. Later MookIT an indigenously built platform,

which was developed by IIT Kanpur in 2012 launched two MOOCs named Architecting Software for the cloud and MOOC on MOOCs which witnessed 2,300 participants (Jagannathan, Sugandhan and Kumar, 2018). It is a lightweight MOOC management system and is completely based on open-source technology which enables the creation of content in such a manner that is freely available for the public to view, edit and re-distribute. The MEAN stack application that uses javascript-based technology enabled it to work on low bandwidth which was common with other available MOOC platforms (Chauhan 2017). An indicator was provided like mobile bars to show the current bandwidth and in case of bad connectivity, the learners had the choice to switch to other content delivery options. Overall, it used user-friendly features. MookIT has delivered close to 30 courses to about 2,00,000 users, in over 100 countries.

In 2014-15, IIT Bombay came up with the customization of the open-source EdX for attracting a global audience. It was funded by the National Mission on Education through Information and Communication Technology (NME-ICT), the then Ministry of Human Resource Development (MHRD), Government of India. IIT BombayX was introduced on the EdX platform as the basic version of the blended learning MOOC. Blended learning is a combination of both electronic and online media as well as traditional face-to-face teaching. After IIT Bombay some other institutions also offered MOOCs on EdX and Coursera in 2015. Later in 2017 by the recommendation of the then Ministry of Human Resources and Development (MHRD) now Ministry of Education, SWAYAM, a MOOC delivery Platform by the Government of India was finally launched. There are few more lesser-known providers available in other fields. Table-2 enlists some of them.

**Table-2: Lesser-known MOOCs providers**

Provider	Founded in Year	Type	Industry	Head-quarter	Website
V skills	2009	Educational Institution	<b>Education Management</b>	New Delhi	www.vskills.in
U18	2009	Privately held	<b>Education management</b>	Gurgaon	www.u18.edu.in
DigitalVidya	2009	Privately held	<b>Higher Education</b>	New Delhi	www.digitalvidya.com
Edukart	2011	Privately held	<b>Education management</b>	Jaipur	www.eduKart.com
Apna Course	2013	Privately held	<b>E Learning</b>	Bengaluru	www.apnacourse.com
UpGrad	2015	Privately held	<b>E Learning</b>	Mumbai	www.upgrad.cm
Learnvern	2020	Privately held	<b>E Learning</b>	A h m e d - abad	www.learnvern.com

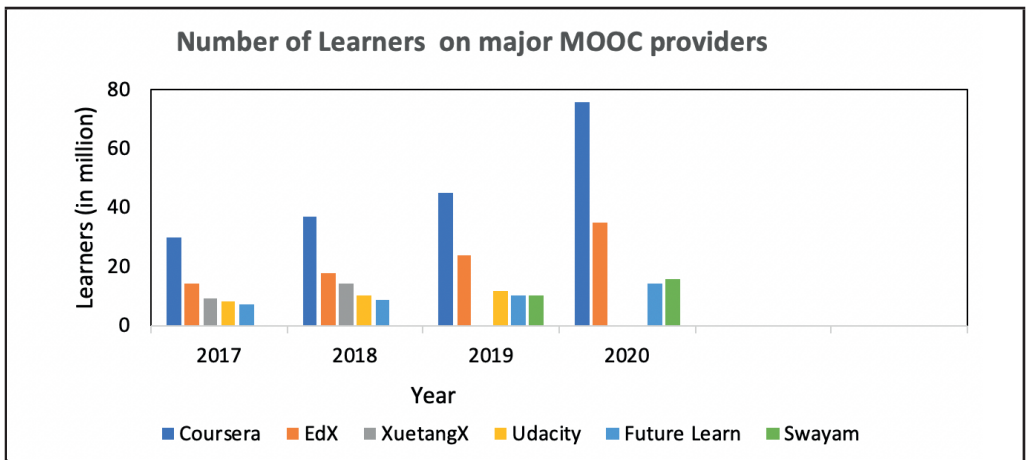
(Source: LinkedIn)

## Development of SWAYAM

To cater to the diverse needs of the learner, the Govt. of India launched the SWAYAM Platform on 9 July 2017 for providing MOOCs. It is a very good move which enables eminent scholars an opportunity to share their knowledge with all including the most disadvantaged in the society. It is an initiative to provide quality education which can be accessed by anyone, anywhere to bring equity to society. It specially targets those students who could not be benefitted from the digital revolution and are not able to participate in the mainstream formal education system. Making quality education available to all is a priority of the Government but due to limited resources and a huge population, physical enrolment in top-level institutes like IITs and IIMs are very tough. The highly competitive entrance tests make entry almost impossible for students who are not at par with their level. Through SWAYAM

MOOCs, learners can join courses by leading faculty of these institutes even if the student could not get admission there. The SWAYAM project is fully funded by the government and the cost for everything like content creation, technical infrastructure, maintenance and human resources are borne by them. Nine national coordinators AICTE, NPTEL, UGC, CEC, NCERT, NIOS, IGNOU, IIMB, NITTTR have been entrusted to ensure the production and delivery of quality content to all the sections of learners from school to higher as well as vocational education. For learning SWAYAM, courses are free but certification requires registration and attendance in final exams conducted online through NTA and a fee is charged for that. The emergence of SWAYAM among big players in the field can be understood by figure-1 which depicts how it evolved as a major MOOC provider within two years of its launch and surpassed Future Learn the very next year.

**Fig.-1: Number of learners on major MOOC providers**



(Data source: Class Central)

The course credits obtained from a SWAYAM course can be considered by the institutions for credit transfer and UGC had already issued a framework on 20 July 2016 way before its launch.

This permits credit transfer on to the academic records for courses done on SWAYAM. Earlier 20 per cent of course credits were allowed to transfer from the MOOCs offered on SWAYAM but



according to new UGC guidelines during the pandemic where online education is the only medium to provide education universities can offer 40 per cent of courses on SWAYAM. Recently UGC has decided to allow universities to teach up to 40 per cent of the syllabus of each course through online mode (other than SWAYAM courses) and the remaining 60 per cent in offline mode (UGC, 2021, D.O.No.1-9/2020). Examination for both online and offline portions can be conducted offline and this provision can be created over and above up to 40 per cent of online education permissible for SWAYAM courses for which mode of examination would be online as per the rules. The Government, therefore, is also promoting online education with up to 80 per cent portion in the online mode which indicates a great future for SWAYAM.

### **SWAYAM Course Content and Activities**

SWAYAM, an indigenously developed portal of MHRD, can host 2,000 courses and 80,000 hours of learning at a time. It covers the courses from school education to PG level in multiple streams and different industry skill sets. SWAYAM gives liberty to its learners in choosing the courses as per their requirements, interest or profile. The interested learner can access and join courses online by registering on the SWAYAM portal at [swayam.gov.in](http://swayam.gov.in). It gives them a choice to register themselves by filling in the required details manually on the SWAYAM portal or through Facebook, Google and Microsoft. The courses available on SWAYAM are categorised into ten categories that are: AICTE- NITTT courses, ARPIT courses, Architecture and Planning, Education, Engineering and Technology, Humanities and Arts, Law Management and Commerce, Maths and sciences and School. Different filters are also available for convenience on the portal to choose the desired

course for the learners. The learner can select the course either by national coordinators or course duration. They can choose the course which fits the best in their busy schedule according to the exam date. It also gives the choice of choosing a course with and without credit. The courses hosted on SWAYAM follow the four-quadrant instructional design.

- i. Teaching content:** The first is teaching content which includes teaching videos, PowerPoint presentations, animations and e-text which is self-explanatory text material covering the subject matter.
- ii. eContent:** The second is e-content which includes self-instructional material, which are available online such as e-Books, Open-source Content Videos, Case Studies, research papers & journals with related links.
- iii. Assessment:** Third is Assessment which contains weekly quizzes in the form of Multiple-choice Questions, Fill in the blanks, Matching Questions, Short Answer Questions, Long Answer Questions, Assignments and term papers.
- iv. Discussion Forum:** The fourth is a discussion forum which allows learners to interact with each other and also ask questions and their doubts are clarified by the course coordinator and their team.

SWAYAM course contents are divided into modules which are released weekly and clearly list the topics to be covered in that particular week. In order to promote the goal of the SWAYAM Project along with National coordinators who are responsible for the production and delivery of quality content, local chapters are also created. They are higher educational academic institution (College/University) that

helps in better adoption of MOOC integration into the curriculum. Local Chapters serve as a local link between SWAYAM and students/faculty in the institution. SWAYAM coordinators (or Single Point of Contact) within the institution as a representative of the local chapter are provided with sufficient features by the portal which allows them to monitor the progress of learners enrolled in the course. This enables these institutes as SWAYAM Local chapters to better facilitate MOOC adoption among learners. In addition to this, each National Coordinator uses their strategies to effectively partner with the Local Chapters for increasing the effectiveness of the course enrolments. Local chapters put up publicity posters within the college at places that students frequently visit, conduct awareness workshops on NPTEL Certification courses inside the campus to all students and faculty members, motivate students to join courses and register for exams and give feedback on the courses that were offered, provide suggestions on what they would like to see, nominate faculty as Mentors who can extend help to students, make arrangements within the college for either lab facilities for students to access the material online or download the content and let the

students know about it, explore the avenues of adopting the courses for credit and implement the same through the Board of studies/Academic Councils.

### **Researcher's experience as a MOOC learner on SWAYAM**

To understand better and get a feel of how MOOCs are actually developed and delivered on various platforms, the researcher enrolled herself on some courses on SWAYAM, Futurelearn, Coursera and CoL portals. Here the MOOC which is included to highlight the researcher's experience on a MOOC course which she completed on SWAYAM with certification in Academic Writing. It was very much relevant for research knowledge and was joined by the researcher in its first run for the session from July 2019 to October 2019. The researcher personally contacted the course coordinator through email for the related data about courses in different cycles. The researcher's observations are categorised into three groups named learner focussed, teaching focussed and MOOC focussed. A testimonial from learners which is available on the SWAYAM page also supports the researcher's experience with the course.



**Table-3: Learners' testimonial**

Learner focussed	Learner's characteristics	Undergraduates, postgraduates, research scholars, and academicians of beginning stage with and without prior knowledge of academic writing
	Lerner's expectations	Met to a satisfactory level could have been better if few topics would have covered in more details like the use of literature management tools and plagiarism
	Learner's engagement	Good, although the course was joined late by the researcher but, found earlier contents interesting which was enough to arouse curiosity for further learning and was able to complete the course with certification.
	Learner's satisfaction	Satisfactory
	Peer interaction	Satisfactory
	Learning outcome	More than 96% result in the final proctored exam.
	Knowledge retention and application	Yes, as a learner, researchers learned so many things about academic writing and are using them in current PhD research.
Teaching focussed	Knowledge transfer	The course design was good and the content covered weekly was clear and relevant to the topic
	Instructor's clarity	Impressive and balanced as the experience of video lectures were like face-to-face classroom
	Skills taught in terms of objective stated	Yes, to a greater extent all related topics were attempted to be included but as a beginner she found few topics were covered very briefly where more elaboration was required.
	Response on the discussion forum	The instructor's response was quick and good in terms of clarification of doubts.
	Assessment and feedback	Satisfactory as weekly progress and feedback were available on the portal. Need for more activity-based assignments for better engagement of learners on every topic.

MOOC focussed	Comparison with other MOOCs	If we compare it with other MOOCs from different platforms, still a lot can be improved for learners' support. Reminders can be sent through mails to complete weekly tasks by enabling some monitoring features with the platform.
	Technical functionalities	Improvement in this particular MOOC course was needed as it had certain technical issues in releasing the weekly module and assignments in the later part of the course, i.e., in weeks 13,14 and 15
	Completion rate	In the first three cycles for which data are available out of 28723 enrolled, 2769 registered for the exam which is 9.64% of total enrolment. It got maximum exam registration among all UG/PG SWAYAM MOOCs in the first two cycles and results were more than 96%
	Return on investment	The enrolments in all four cycles of this particular MOOC were 12532+7546+8645+6647=35370 and exam registration was 1472+723+574+ not opened. Overall got maximum exam registration among all UG/PG SWAYAM MOOCs in the first two cycles and in the third cycle ranked #2 in India. The result was more than 96% and this data about exam registration against enrolment indicates a good return on investment.

### Critical review of the accessibility of MOOC courses on SWAYAM

Making education available to all is a priority of the government. SWAYAM has a great potential to make far-reaching changes in the educational processes, especially in these times of the Covid19 pandemic and can extend its reach to remote corners of the country. But, developing countries like India, with limited resources are the most affected in this tough time. The availability of limited resources and the "backwardness" of certain communities are the major reasons for this inequality. Due to a shortage of qualified faculty and sufficient funds for setting up physical infrastructure, reaching out to the learners at a mass scale is a big

challenge. Although MOOCs seem to be an alternative for achieving this goal there are various practical problems associated with their implementation and delivery. The purpose of the SWAYAM project is to achieve the three main tenets of education, namely, access equity and quality. Also, we see a large disparity in the literacy rate of women and marginalised communities which would certainly affect the target of achievement of equity in education but the major problem is associated with access. Adequate technical means which are prerequisites for course delivery are the first and major hurdles in overcoming the digital gap in India. Again, the availability of proper hardware setup does not guarantee

access especially because of the absence of smooth uninterrupted internet connection in India. Forget better internet services, a large number of populations are deprived of digital resources like smartphones due to large economic disparities. About 220 million Indians are forced to sustain an expenditure level of less than Rs 32/- (the poverty line for rural India in 2013) and this figure was revealed by World economic forum, post analysing a study which was conducted in 2020. For such people, having a computer and paying internet connection bills is not a priority. In this scenario, access to computers in publicly funded schools will give a large number of school children a chance to learn computer skills, but most of these schools are not equipped with such facilities. In a survey by ASER conducted in 2018, it was found that in 596 government schools of 619 districts overall 21.3 per cent of the students had access to computers in schools. Along with the resource constraints, the digital literacy rate in India is also not very good. A large number of individuals do not know the basics of computers and thus cannot use these online materials to enhance their knowledge and skills. Again, SWAYAM courses are available online and for that, a stable internet connection is essentially important but the condition of quality of internet speed is not very good. If we look at the global scenario, India ranks second in terms of internet users but according to the October 2019 speed test global index, published by speedtest.net, India ranked 70th out of 176 countries by average fixed broadband speed and 128th out of 141 countries by average mobile speed. This was not a good indication because this could probably

interfere with the anytime anywhere access concept of the MOOC learning on SWAYAM. Another prominent issue with the SWAYAM courses is its content language. Most of the MOOCs available on SWAYAM are either in English or Hindi and it is a huge hurdle for learners belonging to vernacular linguistics. One more aspect which needs to be discussed about courses on SWAYAM is related to its learner's support system. Like Coursera, SWAYAM does not have any active monitoring system which can track the actual time spent on learning by the learners. If the SWAYAM portal can adopt a feature which can track the weekly progress of the learner after the release of a new module like active days, completed items and actual learning time, it will help them to access their real progress and accordingly, they can cover up the pending tasks which need to be done for the completion of the course. Weekly reminders can be sent through emails which will motivate the learner to complete the work on time.

## Conclusion

Within a period of five years, SWAYAM has been able to provide a platform for online learning which is gradually growing in terms of enrolments. These courses by expert educators can be seen as effective mediums for self-learning. Through these courses, quality education is brought to the doorstep of every learner at virtually no cost. It has the potential to change the way education is perceived. Although it is facing certain issues in terms of its acceptance at a mass scale, it can definitely be redressed to shape the future of the education sector.

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