

Adult Learners' Attitudes toward SWAYAM MOOCs in Assam

• R.D. Padmavathy¹

Abstract

This study investigates the adult learners' attitude toward MOOCs offered through the SWAYAM platform in Assam using a descriptive survey method. The research encompasses all adult learners enrolled in academic programmes within the state, with a sample of 172 postgraduate students from a university in Assam, selected through simple random sampling. The "Scale on Attitude towards SWAYAM MOOCs", developed and standardised by the investigator, demonstrated high validity and reliability. Statistical analyses, including mean, standard deviation (SD), and t-tests, were used to evaluate the data. Results revealed that 79.63% of participants exhibited a positive attitude towards SWAYAM MOOCs. Interestingly, only 5.8% of respondents had the most favourable attitude, while a significant proportion (74.0%) displayed average or above-average attitudes. Conversely, a minority (15.6%) showed below-average or low-average attitudes. No statistically significant differences were found based on gender or age groups, but significant differences were observed between adult learners' disciplines (arts vs. science) and educational levels (undergraduate vs. postgraduate). These findings offer valuable insights into the varying attitudes toward MOOCs offered through the SWAYAM platform among adult learners in Assam, particularly regarding academic discipline and educational level.

Keywords: *attitude, SWAYAM, MOOCs, adult learners, higher education, Assam.*

Introduction

India faces a monumental challenge in higher education expansion, with projections indicating a need to increase capacity from 3.5 million to 14 million students by 2030 (EY-Parthenon & FICCI, 2023). This growth demands not only physical infrastructure development but also comprehensive advancement in faculty resources, curriculum design, quality standards, and affordability mechanisms. The combination

¹Assistant Professor, Department of Education, Tezpur University (Central) Napaam, Tezpur, Assam -784028. ✉ padmajothi@yahoo.in

of India's demographic dividend and economic growth creates an urgent need for skilled workers. The New Education Policy (NEP) 2020 presents a progressive framework focused on increased accessibility, skills development alignment, technology integration, and improved financing models (Rumi & Mete, 2024).

Innovation in education has become critical as India confronts a skills gap affecting 250 million workers across various sectors (Annual Status of Higher Education [ASHE], 2021). The pandemic accelerated the adoption of online education, complementing NEP 2020's emphasis on educational flexibility through initiatives like the Academic Bank of Credits, enabling customised learning paths, the National Digital Education Architecture, and the National Education Technology Forum. These national government initiatives aim to expand educational opportunities through technological infrastructure development.

Massive Open Online Courses (MOOCs) have created a paradigm shift in learning accessibility and flexibility. As "a viable option for developing nations with limited access to higher education", MOOCs provide learning opportunities to students worldwide with internet access (Liyanagunawardena et al., 2013). The Ministry of Education has strategically embraced MOOCs to enhance quality and accessibility in higher education (FICCI, 2014). The University Grants Commission operationalised this through the SWAYAM-enabled Credit Framework, which mandates universities to incorporate at least 20% of courses from SWAYAM or similar platforms; allows up to 40% of curriculum to be delivered online (Agha & Mathew, 2021; Kalita, 2021; Samantaray, 2021); promotes high-quality online content development; and provides for full online programmes from reputed institutions (Diwan, 2022).

SWAYAM, India's government-driven online education initiative, has emerged as a prominent resource offering diverse courses across multiple disciplines. Understanding adult learners' attitudes toward SWAYAM MOOCs is essential for evaluating the effectiveness and acceptance of these digital learning tools as India works to transform its higher education landscape.

SWAYAM: India's Digital Education Pioneer

Flexible higher education and lifelong learning are key focus areas of India's National Education Policy 2020, and this is supported by the Academic Bank of Credits and the National Digital Education Architecture (NDEAR). India's indigenous MOOC platform built to ensure 'access, equity, and quality' in education is SWAYAM (Study Webs of Active Learning for Young Aspiring Minds), which began in July

2017 as a project launched by the Ministry of Education (Chauhan & Goel, 2017). It provides a flexible learning opportunity (Mishra, 2021), and thus it bridges the gap between conventional and distance education. It is a free higher education platform for unlimited learners using various pedagogical approaches that are aligned to global trends in educational technology (Anderson & Dron, 2011; MHRD, 2017) that offers video lectures, interactive content, self-assessment exercises, faculty development programmes and virtual labs (Government of India, 2018). The premier Indian institutions collaborate with SWAYAM to provide courses alongside high school and postgraduate levels across many disciplines (Chakraborty et al., 2018). The digital revolution has opened new doors in the world of education, as it lacks the constraints of time, money and place (Annual Status of Higher Education [ASHE], 2021).

Unique Features of SWAYAM

Credit Transfer System is used by SWAYAM to integrate with India's formal education system and allows the students to transfer up to 20 per cent of their total credits to SWAYAM courses (Mishra, 2021; Chauhan, 2017). This was expanded to 40% in 2021 (Kalita, 2021; Samantaray, 2021), and Diwan (2022) predicts full online degrees. Also, the University Grants Commission (UGC) initially directed higher education institutions to deliver at least 20% of their programme curriculum through MOOCs via the SWAYAM platform, later revising this upward to 40% (University Grants Commission [UGC], 2016, 2021). Other distinctive features include the following online proctored examinations, which are used to improve the credibility of certification (Sinha & Choudhury, 2022):

- Four Quadrant Approach for content delivery (Chakraborty et al., 2021)
- Multi-lingual content beyond English (Chauhan, 2017)
- Integration with conventional education (Kumar & Kumar, 2020)
- Alignment with Indian curriculum (Chauhan & Goel, 2017)
- Multiple academic levels from high school to post-graduate (Mishra, 2021)
- Rigorous quality assurance processes (Kumar & Kumar, 2020)
- Mobile application for enhanced accessibility (Chauhan, 2017)

The above features distinguish SWAYAM from other MOOC platforms and make it particularly relevant for studying its adoption among adult learners in India.

Navigating Obstacles: SWAYAM's Path to Educational Revolution

SWAYAM addresses the educational needs of diverse learner groups, including

those in remote and underserved areas. By providing free access to high-quality educational resources, it supports lifelong learning and continuous professional development. Despite its potential, SWAYAM faces several challenges. However, the platform also faces challenges such as digital literacy and internet connectivity issues, which can limit its effectiveness in certain regions (Verma, 2023). These hurdles span technological, social, and educational domains. Studies have indicated that completion rates for SWAYAM courses are relatively low, mirroring a common issue in MOOCs globally (Singh & Chauhan, 2017). Additionally, concerns have been raised about the digital literacy required to effectively utilise the platform, particularly in rural areas (Kumar & Kumar, 2020). The COVID-19 pandemic has brought renewed focus on online education platforms like SWAYAM. The platform saw a substantial increase in enrolment during the lockdown periods, highlighting its importance in ensuring educational continuity (Mishra et al., 2020). Future developments may focus on enhancing user engagement, improving accessibility, and aligning course offerings more closely with industry needs and employability skills (Panigrahi et al., 2018). As SWAYAM continues to evolve, ongoing research is needed to assess its impact on Indian education and identify areas for improvement.

Review of Related Literature

This review aims to delve into the scholarly, varied perspectives reflected in a multitude of studies regarding the MOOCs and SWAYAM portal, which have been extensively explored in the literature, revealing a predominantly positive outlook. Numerous studies conducted by researchers such as Abderrahmane and Mebitil (2022), Adebayo and Babalola (2021), Kowshik (2020), Alanazi and Gleaves (2019), Jalil et al. (2019), Jesse (2019), Daneji et al. (2019), and Mamattah (2016) have consistently reported favourable attitudes among respondents towards MOOCs. Yadav and Khandelwal (2023) attribute this positivity to the perceived acquisition of life skills, educational value, and personal relevance. Specific studies have highlighted positive attitudes in various contexts, including among university staff and students in Entrepreneurship Development MOOCs (Ahmed et al., 2021), English as a foreign language among students and teachers (Abderrahmane & Mebitil, 2022), and academic staff (Jalil et al., 2019). Majid et al. (2019) shed light on favourable attitudes among Malaysian postgraduate learners, citing user-friendly interfaces and organisational efficiency.

However, Siami (2016) introduced a nuanced perspective, indicating that 63.7% of postgraduate learners display a negative attitude towards MOOCs, with only 21.1% expressing a positive stance and 15.2% remaining neutral. This suggests a complex landscape unaffected by demographic factors such as gender, age, university

type, or subject stream. Gender disparities were noted by Jesse (2019), indicating that male students show a greater interest in MOOCs.

The influence of various factors on attitudes towards MOOCs is apparent, with studies highlighting the impact of technology use (Kowshik, 2020; Alanazi & Gleaves, 2019), ICT competency (Abderrahmane & Mebitil, 2022), and anxiety rates (Razak & Al-Suhail, 2017) on attitudes. Challenges and concerns are evident in the literature, including interface difficulties and fee dissatisfaction (Sera & Lobo, 2018), language and cultural diversity obstacles (Pramanik, 2018), and concerns about communication, certification, and education standards (Kumar, 2023). The perceived usefulness and ease of use emerged as critical factors influencing MOOC uptake, as demonstrated by Aharony and Bar-Ilan (2016).

Pujar (2021) found that there is no significant difference in the opinions of PG and PhD students regarding various dimensions of the SWAYAM MOOCs platform, including the use of online courses, learning resources, technological aspects, learner engagement, and knowledge and skills gained. However, there are differences between rural and urban students in their opinions on the platform and the use of online courses, but not in other dimensions such as learning resources, technology, engagement, or knowledge acquisition. Subaveerapandiyan and Ahamed (2020) found that 74.73% of respondents reported that their university provides an orientation programme on SWAYAM. About half of the respondents preferred submitting their assignments in a Word file format. Over 82% of respondents spent 1 to 3 hours on SWAYAM courses, and half agreed that these courses help gain new knowledge and support lifelong learning. Additionally, most students continued with their enrolled courses, with only a small number discontinuing for various reasons. Ramadas & Karthika (2020) revealed that cost-effectiveness is a highly valued and consistently perceived factor in SWAYAM, but convenience in scheduling is less uniformly appreciated. Nayek (2018) points out the growing awareness of SWAYAM among LIS professionals and its potential for learning without fear of failure, though he notes the limited availability of LIS courses. Kanjilal and Kaul (2016) highlight that SWAYAM is crucial for achieving universal access to education in India, particularly in enhancing technical education and skills. Bharti (2014) praises SWAYAM as a platform that offers affordable, quality education, benefiting both enrolled students and professionals. Samanta (2018) emphasises that SWAYAM represents a new era in online and distance learning (ODL) in India, with its success relying on government and national educational agencies.

The studies and research findings on the SWAYAM MOOCs platform collectively highlight their significance in India's educational landscape. Overall, the attitude towards MOOCs is generally positive, but the literature reveals a complex landscape with varying perspectives across different demographics and contexts. Factors such as technology integration, perceived usefulness, and ease of use play crucial roles in shaping these attitudes. However, challenges identified in the research highlight areas for potential improvement in MOOC design and implementation. These findings illustrate SWAYAM's broad impact and acceptance, along with areas for improvement in course availability and scheduling convenience.

Rationale of the Study

Technology is progressing and developing rapidly in the educational field, creating new opportunities and challenges for educators as well as opening doors for learners. Technology supports a variety of learning styles, which affects students' performance. As a result, students must learn new information and become aware of different teaching strategies.

The Central Government of India's execution of the NEP 2020 highlights the critical role that technology plays in enhancing education. The NEP 2020 recognises those students who use Information Technology (IT) and IT-enabled learning show high success rates, even though they may not perform well in traditional subject examinations.

The Eleventh Five-Year Plan, Social Sector, in the year 2007, highlights the transformative potential of IT in pedagogical practices and student learning outcomes, extending beyond mere computer literacy to encompass web-based learning facilitated by contemporary software facilities.

The Ministry of Human Resource Development (MHRD) seeks to guarantee that every student has access to the best learning resources for comprehensive development in line with this vision. The SWAYAM web portal, which provides Massive Open Online Courses in a variety of subjects and educational courses, was introduced by the MHRD. With a focus on accessibility for all students, regardless of their needs or requirements, SWAYAM seeks to offer university-level content through free online courses (Bharti, 2014). Massive Open Online Course (MOOC) initiatives in India still have a number of drawbacks, despite their potential. Remarkably, little research has been done on how students feel about MOOCs provided through the SWAYAM platform in particular.

Assam, a state with a burgeoning adult learners' population, presents an intriguing landscape for exploring these attitudes, which is essential on various levels. This research aims to investigate the adult learners' attitude toward SWAYAM MOOCs in Assam. Determining postgraduate learners' opinions of their attitude toward SWAYAM MOOCs in Assam in higher education is one of the study's main objectives.

Through the lens of statistical analysis and comprehensive survey methods, this study seeks to unearth the prevailing attitudes that influence the acceptance and utilisation of SWAYAM among this demographic. Such insights are crucial for informing educational strategies, policy enhancements, and tailored interventions aimed at optimising the engagement and learning experiences of adult learners in Assam.

Objectives of the Study

The objectives of the study are as follows:

- To study the level of attitude towards SWAYAM MOOCs among the adult learners
- To examine differences in attitudes towards SWAYAM MOOCs concerning gender, academic discipline, educational level, and age.

Hypotheses of the Study

- The level of attitude towards SWAYAM MOOCs among adult learners is high.
- There is no significant difference in attitude towards SWAYAM MOOCs among adult learners concerning their gender, academic discipline, educational level, and age.

Research Design, Tools and Statistical Analysis Used

A descriptive survey method was employed to collect data from adult learners enrolled in postgraduate programmes in Assam. The sample of 172 adult learners currently enrolled at the university was selected through simple random sampling. The "Scale on Attitude towards SWAYAM MOOCs", developed by the investigator, was used as the assessment tool, which showed high validity and reliability. Data were analysed using mean, standard deviation (SD), and t-tests.

The analysis is presented:

Data Analysis

H_1 : The level of adult learners' attitude towards SWAYAM MOOCs is high.

Table 1: Statistical results regarding levels of adult learners' attitudes towards the SWAYAM MOOCs platform.

Levels of attitude towards SWAYAM MOOCs	N	Percentage	Mean	S D
High	10	5.81	7.30	1.889
Above Average	63	36.62	11.32	1.966
Average	64	37.2	13.78	2.019
Below Average	27	15.69	16.74	1.789
Low Average	8	4.65	18.63	1.923
Total	172	100	13.19	3.249

Table 1 shows the levels of attitude towards the SWAYAM MOOCs platform among 172 respondents. From Table 1, upon the conversion of raw scores to weighted scores, the mean score of the sample was 13.19, aligning with the test norms for an average score. The mean represents the average attitude level, while the standard deviation measures the dispersion or variability of the attitudes.

- **High:** A small percentage, 5.8% of respondents, displayed the most positive attitude towards the SWAYAM MOOCs platform, characterised by a mean attitude score of 7.3 and a standard deviation of 1.889.
- **Above Average:** The largest portion, comprising 36.6% of respondents, demonstrated a mean attitude score of 11.32 with a standard deviation of 1.966, indicating a positive outlook on SWAYAM MOOCs.
- **Average:** Following closely, 37.2% of respondents had a mean attitude score of 13.78 and a standard deviation of 2.019, reflecting a moderately positive attitude towards SWAYAM MOOCs.
- **Below Average:** A smaller subset, 15.6% of respondents, exhibited a mean attitude score of 16.74 and a standard deviation of 1.789, suggesting a somewhat negative stance towards SWAYAM MOOCs.
- **Low Average:** The smallest percentage, 4.65% of respondents, held the least positive attitude, with a mean attitude score of 18.63 and a standard deviation of 1.923, signifying a highly negative perception of SWAYAM MOOCs.

The data illustrate that the majority of respondents (74%) had an average or above-average level of attitude towards SWAYAM MOOCs, with a notable percentage (15.6%) demonstrating a below-average or low average attitude. This variation showcases the diverse range of attitudes held by adult learners towards SWAYAM MOOCs. Thus, the H_1 is rejected. Consequently, it can be concluded that the attitude level towards SWAYAM MOOCs among adult learners in Assam is average.

H_0 : There is no significant difference in attitudes towards SWAYAM MOOCs among adult learners concerning their gender, stream of study, academic level, and age.

Table 2: Statistical results regarding attitudes towards SWAYAM MOOCs across various demographic groups.

Variables		N	Mean	S.D	T-test	Sig.
Attitude towards SWAYAM MOOCs	Male	58	14	3	1.187	0.237
	Female	114	13	3	df(170)	
	Arts	100	12.84	3.274	1.683	0.044
	Science	72	13.68	3.170	df(170)	
	UG	85	13.64	3.105	1.781	0.047
	PG	87	12.76	3.344	df(170)	
	>21 - <24	62	13.11	3.295	0.239	0.812
	>24 - <28	110	13.24	3.237	df(170)	

The statistical results pertaining to attitudes toward SWAYAM MOOCs among different demographic groups are presented in Table 2. This is a condensed analysis of the results:

- Attitude towards SWAYAM MOOCs based on gender:**

Male learners (N=58) showed a mean attitude score of 14, and female learners (N=114) had a mean score of 13. The t-test result for gender is 1.187, df(170), with a significance level of 0.237. This analysis suggests a non-significant difference in attitude towards SWAYAM MOOCs between males and females.

- **Attitude towards SWAYAM MOOCs based on field of study (arts vs. science):**

Arts students (N=100) displayed a mean attitude score of about 12.84, with a somewhat significant difference compared to science students (N=72), whose mean attitude score was approximately 13.68.

The t-test result for adult learners' stream of study is 1.683, df (170), with a significance level of 0.044. This indicates a statistically significant difference in attitudes towards the SWAYAM (MOOCs) platform between adult learners in arts and science disciplines.

- **Attitude towards the SWAYAM (MOOCs) platform based on educational level (UG vs. PG):**

Undergraduate learners (UG) students (N=85) showed a mean attitude score of around 13.64, while postgraduate adult learners (PG) students (N=87) had a mean score of about 12.76.

The analysis suggested a somewhat significant difference in attitudes between UG and PG students. The t-test result for undergraduate adult learners is 1.781, df(170), with a significance level of 0.047. This suggests a statistically significant difference in attitudes towards SWAYAM MOOCs between UG and PG students.

- **Attitude towards SWAYAM MOOCs based on age groups:**

Age groups >21 - <24 (N=62) and >24 - <28 (N=110) showed mean attitude scores of around 13.11 and 13.24, respectively. The analysis indicated a non-significant difference in attitudes towards SWAYAM courses between these age groups, with a minor difference noted but without the significance level provided for the older age group.

The t-test result for the age group >21 - <24 is 0.239, df(170), with a significance level of 0.812. This indicates a non-significant difference in attitudes towards SWAYAM MOOCs between this age group and the >24 - <28 age group.

Major Findings and Discussion

The findings of the investigation offer insightful information about the adoption

situation of MOOCs, with a particular focus on SWAYAM MOOCs in Assam. The key findings of the study are as follows:

- **Attitude towards SWAYAM MOOCs:**
 - 79.63% of adult learners in Assam show a positive attitude towards SWAYAM MOOCs.
 - The overall attitude level towards SWAYAM MOOCs among adult learners is assessed as average.
- **Gender and Age Dynamics:**
 - No significant difference in attitudes towards SWAYAM MOOCs was found based on gender or age groups.
- **Disciplinary and Academic Level Disparities:**
 - Statistically significant differences in attitudes towards SWAYAM MOOCs were observed between: a) Students in arts and science disciplines, and b) Undergraduate and postgraduate adult learners.
 - Adult learners from the science stream demonstrated a more positive attitude compared to those from the arts stream.

These results both align with and diverge from previous research, highlighting the complex nature of online education acceptance.

- **Positive Reception of SWAYAM MOOCs Platform:** The high percentage (79.63%) of adult learners exhibiting a positive attitude towards SWAYAM MOOCs aligns with a substantial body of existing research. This widespread acceptance corroborates findings from numerous studies (Abderrahmane & Mebitil, 2022; Jrall & Gupta, 2021; Purkayastha & Sinha, 2021; Rueda et al., 2021; Mohile, 2021; Ramadas & Karthika, 2020; Jalil et al., 2019; Soy, 2019; Wang & Sun, 2017; Aharony & Bar-Ilan, 2016; Yin, 2022). The consistency across these studies suggests that SWAYAM MOOCs have successfully positioned themselves as a viable and attractive educational option. However, the “average” overall attitude level indicates that while learners are generally positive, there is still room for improvement in how SWAYAM MOOCs are perceived and implemented.
- **Demographic Neutrality:** The absence of significant attitudinal differences based on gender and age is particularly noteworthy. This finding aligns with

several previous studies (Jrall & Gupta, 2021; Mohile, 2021; Kowshik, 2020; Florin & Malathi, 2019; Soy, 2019; Razak & Al-Suhail, 2017; Wang & Sun, 2017; Mackness et al., 2016; Siami, 2016). The consistency across these studies suggests that SWAYAM MOOCs have the potential to be a democratising force in education, transcending traditional demographic boundaries. This could have far-reaching implications for educational equity and lifelong learning initiatives.

- **Disciplinary and Academic Level Disparities:** The most intriguing aspect of the findings lies in the significant attitudinal differences observed across academic levels and disciplines. The more positive attitude among science stream learners compared to those in the arts stream is particularly striking, as it contradicts some previous research findings. Notably, this result diverges from studies by Kowshik (2020), Ambadkar (2020), Jalil et al. (2019), and Majid et al. (2019), which found more positive attitudes among arts stream learners towards SWAYAM MOOCs.

The disparity between undergraduate and postgraduate learners' attitudes adds another layer of complexity. This divergence underscores the nuanced nature of attitudes towards specific online learning platforms. This could be related to differences in course complexity, the perceived value of online credentials at different academic levels, or varying expectations of educational experiences between these groups. These findings underscore the need for a nuanced approach to SWAYAM MOOCs' development and implementation. While SWAYAM MOOCs have broad appeal, there is a clear need to address the specific requirements and preferences of different academic disciplines and levels.

These discrepancies may stem from variations in course offerings, teaching methods, or perceived relevance to specific academic disciplines and educational levels. To address this apparent contradiction, a more thorough investigation and analysis are necessary, considering factors such as course content, instructional strategies, and individual preferences across various contexts within the arts and sciences. By uncovering these nuances, we can deepen our understanding of the diverse perspectives on SWAYAM MOOCs held by adult learners from different academic backgrounds. Examining these differences also offers valuable insights into the factors that shape attitudes toward SWAYAM MOOCs among students with varied academic profiles. This, in turn, can inform the development of more tailored online education strategies that meet the specific needs of different learner cohorts.

Future research could benefit from:

- Qualitative studies to delve deeper into the reasons behind these disciplinary and academic level differences.
- Comparative analysis of SWAYAM MOOCs' design and content across different disciplines.
- Investigation into the integration of SWAYAM MOOCs within traditional curricula at different academic levels.
- Exploration of regional factors in Assam that might influence SWAYAM MOOC adoption across different academic streams.

Conclusion

This study contributes significantly to our understanding of SWAYAM MOOC adoption, particularly in the context of Assam. The research on adult learners' attitudes towards the SWAYAM MOOCs revealed that while a high percentage (79.63%) of adult learners exhibit a positive attitude, the overall attitude level towards the SWAYAM (MOOCs) platform among adult learners is assessed as 'average'. It highlights both the promising potential of SWAYAM MOOCs in democratising education and the need for tailored approaches to maximise their effectiveness across diverse academic contexts. The findings provide a solid foundation for policymakers, educators, and SWAYAM MOOCs developers to refine strategies for online education, ensuring its relevance and efficacy for a broad spectrum of learners. However, the contradictions with some previous studies, especially regarding attitudes of arts versus science students, underscore the complex and possibly context-dependent nature of SWAYAM MOOCs' adoption. This complexity calls for continued research to fully understand the nuances of learners' attitudes towards SWAYAM MOOCs across different academic disciplines and contexts. Although the study reveals the dominant mindset, more investigation is warranted to explore the particular factors shaping these mindsets in greater detail. This would aid in the creation of more focused and successful educational interventions as well as policies that support online learning in the area. Ultimately, this research serves as a stepping stone towards enhancing the effectiveness and accessibility of SWAYAM MOOCs for adult learners in Assam and potentially beyond, paving the way for more inclusive and adaptive online education strategies.

References

- Abderrahmane, D., & Mebitil, N. (2022). Examining EFL students and teachers' attitudes towards e-learning: A focus on MOOCs. *AABHATH Review*, 7(1), 775–788. <https://doi.org/10.54528/1549-007-001-057>
- Adebayo, E. A., & Babalola, Y. T. (2021). Awareness and intention to use massive open online courses by law students in Osun State, Nigeria. *Information Impact: Journal of Information and Knowledge Management*, 11(4), 37–47. <https://doi.org/10.4314/ijikm.v11i4.4>
- Agha, R., & Mathew, G. (2021). STROCSS 2021: Strengthening the reporting of cohort, cross-sectional and case-control studies in surgery. *International Journal of Surgery*, 96, 106165. <https://doi.org/10.1016/j.ijssu.2021.106165>
- Aharony, N., & Bar-Ilan, J. (2016). Students' perceptions on MOOCs: An exploratory study. *Interdisciplinary Journal of e-Skills and Lifelong Learning*, 12, 145–162. <https://doi.org/10.28945/3540>
- Ahmed, M. M., Sultana, N., Jayanti, S. A. D., Mardoni, Y., & Helmiatin, H. (2021). Attitude towards entrepreneurship development courses of MOOCs. *Asian Association of Open Universities Journal*, 16(1), 129–141. <https://doi.org/10.1108/AAOUJ-09-2020-0081>
- Alanazi, H., & Gleaves, C. W. (2019). Investigating student attitudes towards using hybrid MOOCs in the higher education of Saudi Arabia. *Literacy Information and Computer Education Journal (LICEJ)*, 10(1), 3140–3146. <https://doi.org/10.20533/licej.2040.2589.2019.0412>
- Ambadkar, R. (2020). E-learning through SWAYAM MOOCs: Awareness and motivation among commerce students. *International Journal of Scientific & Technology Research*, 9, 3529–3538.
- Anderson, C., & Dron, J. (2011). Three approaches to researching the impact of MOOCs. In *Handbook of research on educational communications and technology* (pp. 1245–1257). IGI Global.
- Annual Status of Higher Education (ASHE). (2021). *In the states and union territories of India*. Centre for Research and Planning, New Delhi, Ministry of Education, Government of India.
- Bharti, P. (2014). Indian HRD ministry launches a MOOC platform—SWAYAM. *Ed Tech Review*. <https://www.edtechreview.in/trends-insights/trends/indian-hrd-ministry-launches-a-mooc-platform-swayam/>
- Chakraborty, P., Mittal, P., Gupta, M. S., Yadav, S., & Arora, A. (2018). Opinion of students on online education during the COVID-19 pandemic. *Human Behaviour and Emerging Technologies*, 3(3), 357–365. <https://doi.org/10.1002/hbe2.240>
- Chakraborty, S., Sharma, R., & Gupta, P. (2021). *Four quadrant approach for content delivery in MOOCs*. Central Institute of Educational Technology (CIET), NCERT.
- Chauhan, J. (2017). An overview of MOOCs in India. *International Journal of Computer Trends and Technology*, 49(2), 111–120.

- Chauhan, J., & Goel, A. (2017). MOOC education in India: A study of SWAYAM—An Indian MOOC initiative. *International Journal of Computer Sciences and Engineering*, 5(9), 37–41.
- Daneji, A. A., Ahmad, F. M., & Khambari, M. N. (2019). The effects of perceived usefulness, confirmation and satisfaction on continuance intention in using massive open online course (MOOC). *Knowledge Management & E-Learning*, 11(2), 201–214. <https://doi.org/10.34105/j.kmel.2019.11.010>
- Diwan, P. (2022). Massive open online courses (MOOCs) in India: Opportunities and challenges. *International Journal of Creative Research Thoughts (IJCRT)*, 10(7), 232–238.
- EY-Parthenon & Federation of Indian Chambers of Commerce and Industry (FICCI). (2023). *Transformation of Indian higher education: Strategies to leapfrog*. <https://www.ey.com/content/dam/ey-unified-site/ey-com/en-in/insights/education/documents/ey-ficci-parthenon-transformation-of-indian-higher-education-strategies-to-leapfrog.pdf>
- Federation of Indian Chambers of Commerce and Industry (FICCI). (2014). *MOOCs in higher education: Vision paper*. FICCI Higher Education Committee.
- Florin, G. A. J., & Malathi, S. (2019). Awareness and utilization of massive open online courses (MOOC) among college students. *Scholarly Research Journal for Interdisciplinary Studies*, 6(51), 14783–14789.
- Planning Commission, Government of India. (2007). *Eleventh Five-Year Plan 2007–2012: Social sector* (Vol. II). Oxford University Press.
- Government of India. (2018). *SWAYAM: Expanding access to quality higher education*. <https://swayam.gov.in/>
- Jalil, H., Marof, A. M., & Omar, R. (2019). Attitude and behavioural intention to develop and use MOOCs among academics. *iJET*, 14(24), 31–41. <https://doi.org/10.3991/ijet.v14i24.12105>
- Jesse, E. (2019). *Student attitudes toward use of massive open online courses* [Doctoral dissertation, University of Dayton]. OhioLINK Electronic Theses and Dissertations Centre. http://rave.ohiolink.edu/etdc/view?acc_num=dayton1573740761560753
- Jrall, R., & Gupta, J. (2021). Awareness about the MOOCs platforms and its usage: Need of an hour in pandemic. *International Journal of Emerging Technologies and Innovative Research*, 8(11), C197–C205. <http://www.jetir.org/papers/JETIR2111225.pdf>
- Kalita, B. (2021, March 28). UGC allows universities to offer 40% of courses online through SWAYAM. *NDTV*. <https://www.ndtv.com/education/ugc-allows-universities-offer-40-of-courses-online-through-swayam-2400452>
- Kanjilal, U., & Kaul, P. (2016). The journey of SWAYAM: India MOOCs initiative. In *Proceedings of the 8th Pan-Commonwealth Forum on Open Learning (PCF8)*. Commonwealth of Learning. <https://oasis.col.org/handle/11599/2592>
- Kowshik, M. C. (2020). A study on the attitude of teacher educators towards MOOCs. *International Journal of Creative Research Thoughts (IJCRT)*, 8(9), 4077–4087. <https://ijcrt.org/papers/IJCRT2009525.pdf>

- Kumar, A., & Kumar, P. (2020). Digital divide in online learning: An Indian perspective. *Interactive Technology and Smart Education*, 17(4), 353–368.
- Kumar, R. (2023). Massive open online courses (MOOCs) in India: Concerns about communication, certification, and education standards. *International Journal of Research Publication and Reviews*, 4(5), 563–567.
- Liyanagunawardena, T., Williams, S., & Adams, A. (2013). The impact and reach of MOOCs: A developing countries' perspective. *eLearning Papers*, 33, 1–8.
- Mackness, J., Bell, F., & Funes, M. (2016). The rhizome: A problematic metaphor for teaching and learning in a MOOC. *Australasian Journal of Educational Technology*, 32(1). <https://doi.org/10.14742/ajet.2486>
- Majid, F., Kamarudin, R., & Zamin, A. (2019). Postgraduate students' perception of massive open online courses (MOOCs) in enhancing their learning experience. *International Journal of Education and Literacy Studies*, 7(4), 101–105. <https://doi.org/10.7575/aiac.ijels.v7n4p.101>
- Mamattah, R. S. (2016). *Students' perceptions of e-learning* [Master's thesis, Linköping University, Department of Behavioural Sciences and Learning, Adult Learning and Global Change Program]. Linköping University Electronic Press.
- Ministry of Human Resource Development (MHRD), Government of India. (2017). *Guidelines for developing online courses for SWAYAM*. <https://swayam.gov.in/about>
- Mishra, L., Gupta, T., & Shree, A. (2020). Online teaching-learning in higher education during lockdown period of COVID-19 pandemic. *International Journal of Educational Research Open*, 1, 100012. <https://doi.org/10.1016/j.ijedro.2020.100012>
- Mishra, P. (2021). *MOOCs and online learning: Trends and opportunities*. Sage.
- Mohile, R. S. (2021). A study on e-learning using SWAYAM (MOOCs): Awareness among undergraduate and postgraduate students. *International Journal of Creative Research Thoughts (IJCRT)*, 9(1), 1785–1789.
- Nayek, J. K. (2018). A survey report on awareness among LIS professionals/students about SWAYAM: A government of India initiative on e-learning. *Knowledge Librarian: An International Peer Reviewed Bilingual E-Journal of Library and Information Science*, 5(1), 39–45.
- Panigrahi, R., Srivastava, P. R., & Sharma, D. (2018). Online learning: Adoption, continuance, and learning outcome—A review of literature. *International Journal of Information Management*, 43, 1–14. <https://doi.org/10.1016/j.ijinfomgt.2018.05.005>
- Pramanik, S. (2018). Attitude of postgraduate learners towards SWAYAM: Indian version of MOOCs. *Harvest*, 3(1), 33.
- Pujar, S. M. (2021). A study on SWAYAM—Indigenous online learning platform. *International Journal of Creative Research Thoughts*, 9(4), 5984–5988.
- Purkayastha, N., & Sinha, M. K. (2021). Unstoppable study with MOOCs during COVID-19 pandemic: A study. *Library Philosophy and Practice (e-journal)*, 4791. <https://digitalcommons.unl.edu/libphilprac/4791>
- Ramadas, R. B., & Karthika, P. (2020). A study on the impact and awareness of SWAYAM. *Studies in Indian Place Names*, 40(16), 608–616.

- Razak, N. A., & Al-Suhail, H. D. (2017). Arab Iraqi EFL students' attitude towards MOOC. *Journal of Education and Social Sciences*, 8(1).
- Rueda, R., Martínez, M., Cervantes, A., & Zamorano, C. (2021). Teachers' perception about MOOCs and ICT during the COVID-19 pandemic. *Contemporary Educational Technology*, 14(1), Article ep343. <https://doi.org/10.30935/cedtech/11479>
- Rumi, N., & Mete, J. (2024). Educational reforms in India: The opportunities and challenges of implementing NEP 2020. *International Journal of Research Publication and Reviews*, 5(10), 5114–5120.
- Samanta, A. (2018). Analytical study of SWAYAM. *International Journal of Research and Analytical Reviews*, 5(3), 1374–1379.
- Samantaray, N. (2021, March 30). UGC issues guidelines regarding online courses, allows universities to offer 40% semester courses on SWAYAM. *Times Now*. <https://www.timesnownews.com/education/article/ugc-issues-guidelines-regarding-online-courses-allows-universities-to-offer-40-semester-courses-on-swayam/738791>
- Sera, R. J., & Lobo, S. S. (2018). *Perception and experience of users on MOOC's SWAYAM: A study with reference to postgraduate learners of Belthangady Taluk* [Preprint]. Zenodo. <https://doi.org/10.5281/zenodo.1414712>
- Siami, L. R. (2016). *Awareness and attitude of post graduate students towards massive open online courses in Bangalore urban district* [Master's dissertation, Christ University, School of Education]. Christ University Institutional Repository.
- Singh, S., & Chauhan, J. (2017). SWAYAM: The dream of Indian MOOC. *International Journal of Computer Sciences and Engineering*, 5(9), 37–41.
- Sinha, A., & Choudhury, A. (2022). Digital education and SWAYAM: Bridging the gap. *Journal of Educational Research*, 14(2), 78–91.
- Soy, S. S. (2019). A study on the awareness of MOOCs among students of higher learning in Paschim Bardhaman District of West Bengal. *International Journal of Research in Social Sciences*, 9(1), 708–719. <https://www.indianjournals.com/ijor.aspx?target=ijor:ijrss&volume=9&issue=1&article=049>
- Subaveerapandiyar, A., & Fakrudhin Ali Ahamed, H. (2020). Awareness and usage of SWAYAM courses among library and information science students: A survey. *Library Philosophy and Practice (e-Journal)*. <https://digitalcommons.unl.edu/libphilprac/3705>
- University Grants Commission. (2016). *UGC (Credit Framework for Online Learning Courses through Study Webs of Active Learning for Young Aspiring Minds) Regulations, 2016*. Gazette of India: Extraordinary (Part III, Sec. 4), No. F. 1-100/2016.
- University Grants Commission. (2021). *UGC (Credit Framework for Online Learning Courses through Study Webs of Active Learning for Young Aspiring Minds) Regulations, 2021*. Gazette of India: Extraordinary (Part III, Sec. 4).
- Verma, M. (2023). Challenges and prospects of SWAYAM. *Educational Policy Review*, 12(3), 101–115.
- Wang, N., & Sun, S. (2017). MOOC: Awareness, participation and evaluation from China college students. *Advances in Social Science, Education and Humanities Research (ASSEHR)*, 95, 229–234. <https://doi.org/10.2991/iceemr-17.2017.59>

- Yadav, R., & Khandelwal, A. R. (2023). A study on students' perception and attitude towards MOOCs. *Madhya-Bharti: Humanities and Social Sciences*.
- Yin, X. (2022). Study on the new mode of MOOCs in the modernization process of China's education reform. *Journal of Higher Education*, 8, 1–7.