A Comparative Analysis of Students Engagement in SWAYAM and NPTEL

Biju Narzary
Librarian
Tamulpur College

Abstract: The role of MOOCs in online learning recommends that the online education system empower students' learning behavior. This study examined student engagement in MOOCs and compared SWAYAM and NPTEL's online education platforms. The results show that both platforms have different effects on user engagement and academic success, demonstrating the value of technology in a modern learning environment. The need to promote the ability to collaborate and the integration of professionalism into these platforms can improve the engagement of users. The study emphasizes the importance of students' learning in the online platform and how to use a well-structured discussion forum to stimulate student involvement.

Key-words: MOOC, SWAYAM, NPTEL, User Engagement

1. INTRODUCTION

The MOOC program was to enhance the educational framework within networked learning, emphasizing the importance of high-quality education on a global scale. It highlights the significance of online courses and facilitates the opportunity for individuals learning from any geographical location. Millions of individuals have been unable to gain admission to higher education institutions, and learners have had a chance to augment their knowledge base. The MOOC initiative promotes equitable learning opportunities for students and encourages learners to pursue courses aligned with their interests. SWAYAM and NPTEL constitute components of the online courses developed under the MOOC framework launched by the Government of India. The primary objectives of these courses are to enhance the teaching and learning processes, thereby enriching the lifelong learning trajectories of all participants (Stephens, & Jones, 2018). The proliferation of digital technologies enables individuals to integrate education into the fabric of contemporary human existence. Both platforms function as digital learning providers for knowledge seekers and establish connections with esteemed educational institutions (Rodriguez, 2013). Interested learners may enroll to access and enhance their knowledge by engaging in their chosen subject areas. SWAYAM serves as a repository for various courses encompassing disciplines ranging from the ninth standard to postgraduate levels. NPTEL specializes in offering courses related to science and technology and enabling learners to concentrate on their career aspirations within this domain. The specific location is not mandatory for learning, no constraints on knowledge access, and opportunities for study are available at any time.

2. Objectives

- To explore prominent Indian MOOC platform SWAYAM and NPTEL in detail.
- To make a comparison of the existing Indian MOOC platforms as SWAYAM and NPTEL based on certain parameters.
- To identify the challenges of MOOC platform based on their requirement.

3. Significance and Needs of the MOOC

The emergence of the networked learning environment and the introduction of open learning environments have changed the learning strategy. After realizing the importance of MOOCs in creating learning opportunities for all stakeholders, like students, participants, and the general public, governments have started promoting them rigorously. It becomes necessary that people have a clear idea of the strengths and weaknesses of these platforms. Also, making a comprehensive study about the features and benefits of SWAYAM is helpful for students selecting a subject of interest to pursue a few courses relevant to the platform.

4. Literature Review

Sehgal & Garg (2019) assert that SWAYAM and NPTEL represent significant Massive Open Online Course (MOOC) platforms in India, both of which are improving the accessibility of online education. SWAYAM is analyzed by a more extensive range of courses spanning multiple disciplines, whereas NPTEL concentrates on engineering and technology domains. The study delineates parameters such as course diversity, accessibility, and user engagement to facilitate a comparative analysis of these platforms. Although both entities shared the objective to promote open access to education, their methodologies and intended audiences exhibit substantial divergence, thereby influencing the experiences and outcomes of learners.

Agnihotri & Pandit (2021) concentrate on SWAYAM with leading international MOOC platforms such as Coursera, edX, and Future Learn. The study underscores SWAYAM's aims, including the provision of education to remote regions and underprivileged groups, while also addressing its constraints and potential avenues for enhancement. A more comprehensive comparison with NPTEL necessitates the incorporation of additional scholarly resources.

Jadhav & Rathod (2024) underscore the pivotal role of SWAYAM in delivering educational opportunities to remote and disadvantaged populations in India, whereas NPTEL (the National Programme on Technology Enhanced Learning) offers high-quality engineering education through online courses. Both platforms aspire to expand learning opportunities; however, their target audiences and course provisions may vary, reflecting their distinct objectives within the MOOC ecosystem.

Dash & Panigrahi (2023) highlight SWAYAM as a governmental initiative designed to elevate the quality of education through MOOCs, with a particular emphasis on enhancing teacher capacity and skill development. NPTEL, while also providing online courses, primarily focuses on engineering and scientific disciplines. Although both platforms seek to broaden access to quality education, SWAYAM encompasses subjects and incorporates features such as professional certification and a meticulously structured four-quadrant design.

Panda et al. (2019) elucidate that SWAYAM is a government-initiated MOOC platform in India aimed at improving access, equity, and quality education, spanning higher education, secondary education, and skill development sectors. NPTEL, although not addressed within the scope of this paper, represents another MOOC initiative centered on engineering and technology courses. A thorough comparative analysis would require further investigation into both platforms.

Sikarwar et al. (2022) concentrate on the engagement of educators and students regarding the SWAYAM platform, emphasizing its attributes of flexibility, innovation, and interactivity, while acknowledging challenges such as limited employability prospects and usability difficulties.

Kim (2020) examines SWAYAM, India's pioneering MOOC platform, emphasizing its significance in fostering interactions among learners and educators via discussion forums. The study highlights the importance of SWAYAM in establishing a well-structured discussion forum to bolster student engagement. In contrast, NPTEL, another MOOC initiative, is recognized for its comprehensive course offerings and established framework, which may differ from SWAYAM's nascent stage of development in promoting online discourse.

Bordoloi et al. (2020) discuss MOOCs associated with the SWAYAM platform in India, accentuating its role in facilitating lifelong learning. The study reveals that SWAYAM aims to enhance access, equity, and quality in education. Conversely, NPTEL focuses on engineering and technology courses, catering mainly to students within these fields. Both platforms contribute to online education, yet they address different educational requirements and target audiences within India's higher education landscape.

4. Methodology

This study examines the online educational platforms to comprehend student engagement in the SWAYAM and NPTEL online learning environments. This study intended to collect measurable data on students' engagement in MOOC courses using quantitative and qualitative methods. The research design integrated primary and secondary data sources, facilitating a comprehensive analysis of the subject matter. The requirement of primary data is access from the web portals in April 2025, and help to identify the elucidation of user engagement within MOOC courses. The secondary data was from various websites. The data compares with samples in student perspectives regarding online learning behaviors. It is difficult to determine the validity of this data collection methodology or the possible ramifications of focusing on students who participate in online learning platforms.

5. SWAYAM

Study Webs of Active learning for Young Aspiring Minds is an acronym created in 2014 by MHRD and AICTE in cooperation with Microsoft and approved by Mr. Pranab Mukherjee, the former president of India. Using the UGC (Credit Framework for Online Learning Courses through SWAYAM) regulation, 2016, filed as No.F.1.-100/2016 (MOOCs/e-contents), UGC started offering online courses in New Delhi on July 19, 2016. This rule sought to increase access to higher education by utilizing technology developments for an in-house learning environment. By combining e-learning with conventional classroom techniques, SWAYAM develops a mechanism for delivering content to learners for unlimited use in geography areas. To create this platform, UGC used its powers under clauses (f) and (g) of sub-section (1) of section 26 of the UGC Act 1956 (No. 3 of 1956) (UGC, 2016). The AICTE (Credit Framework for Online Learning through SWAYAM) Regulation, 2016, and online courses registered under F.No.AICTE/P&AP/SWAYAM/2016, were introduced in New Delhi on August 17, 2016. Section 10(i) and (v) of the AICTE Act, 1987 (52 of 1987), as well as subsection (i) of section 23, this regulation was put into effect. All universities, institutions, and presumed universities affiliated under section 3 of the UGC Act 1956, as well as technical institutions and universities authorized by the Central Act, State/Union Territory Act, and Provincial Act, are permitted to offer online courses on this platform (AICTE, 2016). The use of a MOOC platform offers top-notch instruction, makes available materials, and promotes knowledge distribution equality (Hiremath, 2017). SWAYAM's main goals are to provide all students with an outstanding teaching-learning platform and facilitate widespread access to educational resources in the digital era. Because of the ease with which the digital revolution has made program hosting possible, users can improve advance teaching-learning in particular fields (Chakravarty, 2016). SWAYAM offers courses in school education, undergraduate, graduate, legal, engineering, and other professional programs in a few subjects.

6. NPTEL

The MHRD, Government of India, provided money for launching the National Programme of Technology Enhanced Learning (NPTEL) in 2003. IISc Bangalore and seven IITs—Delhi, Bombay, Kharagpur, Madras, Kanpur, Roorkee, and Guwahati—have joined forces on this project. NPTEL specializes in free online courses in specific subjects like mechanical, electronic, computer science, engineering, humanities, management, and music. Exam fees are small. It started providing open online courses and certifications upon successful completion in March 2014 (Krishnan, 2007). NPTEL's goal is to develop engineering and core scientific courses. The course material conforms to the standards established by the All-India Council for Technical Education and other universities with that are connected.

7. Comparison of SWAYAM and NPTEL

The study compared the user enrollment and their performance in the MOOC courses based on SWAYAM and NPTEL learning outcomes. The data was analyzed using Microsoft Excel software to understand the differences in student engagement in the MOOC platform. The data outcomes are given below in detail:

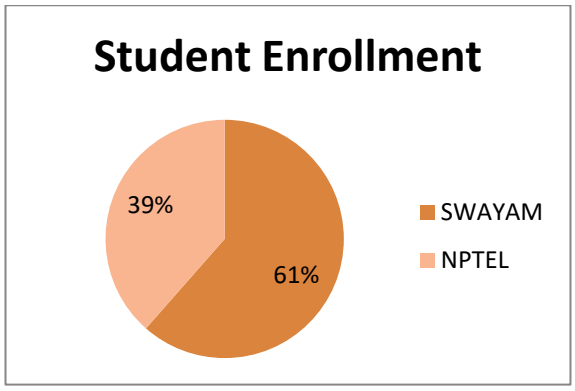

Figure 1: Student Enrollment

Figure 1 indicates that more students use the SWAYAM online learning platform compared to NPTEL. Specifically, SWAYAM attracts 61% of the total students, while NPTEL accounts for the remaining 39%. This suggests that SWAYAM is the more popular choice among students for engagement in online courses. The higher enrollment in

SWAYAM could be attributed to its wider range of course offerings or a more user-friendly interface. It has been a great initiative to explore the factors contributing to SWAYAM's popularity among students.

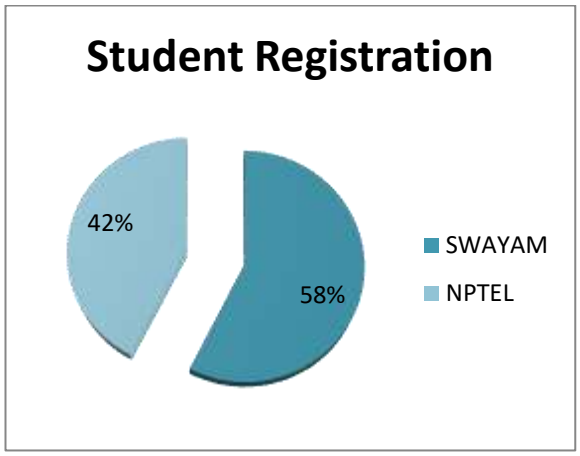

Figure 2: Student Registration

Figure 2 reveals that more students sign up for SWAYAM compared to NPTEL. Data shows that 58% of students choose SWAYAM, while 42% opt for NPTEL. That means SWAYAM is the more popular choice among students for online learning. The preference for SWAYAM could be due to its wider range of courses or user-friendly interface. Understanding these preferences could help educational institutions and policymakers make informed decisions about online learning resources and platforms.

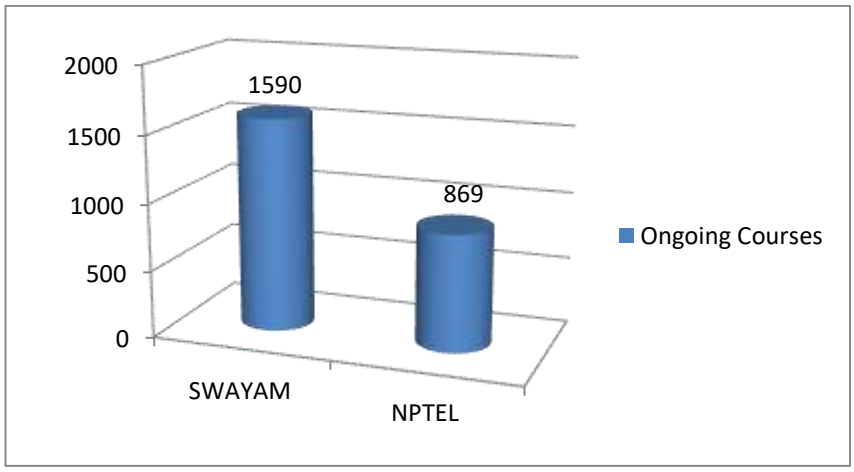

Figure 3: Ongoing Courses

Figure 3 reveals that SWAYAM currently offers more active courses than NPTEL. Specifically, SWAYAM has 1,590 courses in progress, while NPTEL has 869 ongoing courses. This information indicates that SWAYAM is currently the largest platform for course offerings. The course offerings signify SWAYAM's dedication to improving access to high-quality education across academic fields and its pivotal role in fostering self-directed learning initiatives within the Indian context.

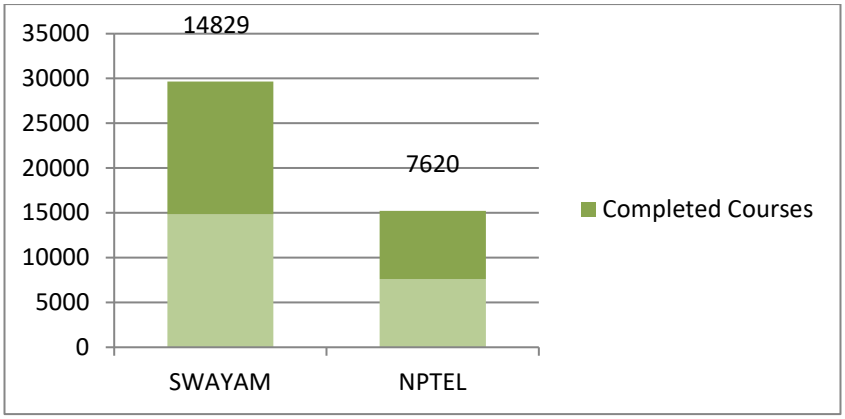

Figure 4: Complete Courses

Figure 4 indicates the completed courses in SWAYAM and NPTEL. The result shows that 14829 courses were completed on the SWAYAM platform, and NPTEL has completed 7620 courses. The highest number of courses is completed on the SWAYAM platform. This trend highlights the growing popularity and effectiveness of online learning initiatives in India, through government-supported platforms like SWAYAM and NPTEL, which are transforming the educational landscape by providing accessible and quality learning resources to a diverse audience.

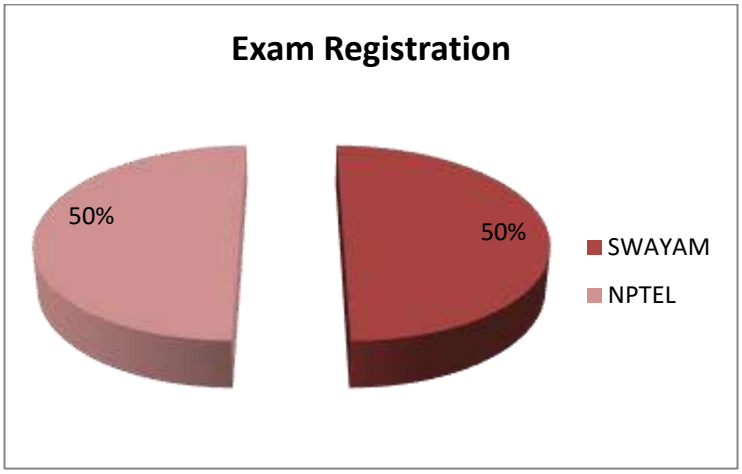

Figure 5: Exam registration

Figure 5 highlights examination registration in SWAYAM and NPTEL. The result shows that 50% of students register on both platforms, and an equal percentage of students are registered on both online platforms. This observation denotes a substantial convergence in user engagement, implying that students appreciate the varied educational provisions offered by both platforms. This intersection may enrich the educational experience by affording students access to a broader spectrum of resources and support mechanisms.

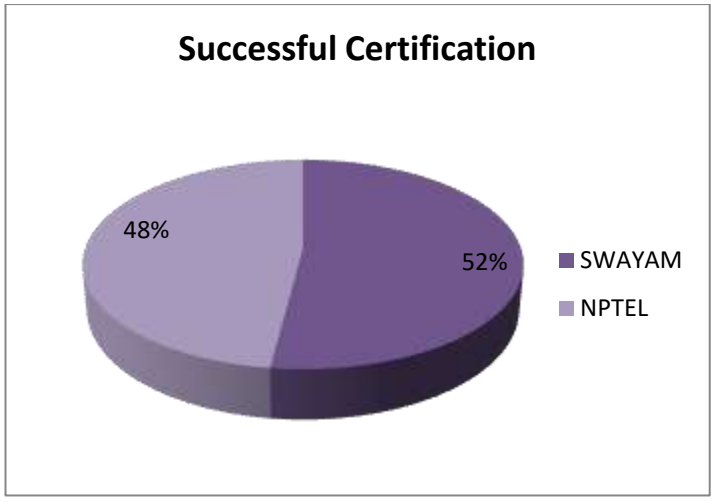

Figure 6: Successful Certification

Figure 6 illustrates the student's successful certification in SWAYAM and NPTEL. The result shows that 52% of students succeeded in their courses and achieved certificates from SWAYAM, and 48% of students from the NPTEL platform. The highest students are successful in SWAYAM by achieving certificates from the online learning platform. It indicates a significant overlap in user engagement, suggesting that students value the diverse offerings of both platforms. This overlap may enhance the learning experience by providing students access to resources and support options.

8. Challenges of MOOC

- Obtaining sufficient financial resources is essential for project engagement and achievement. Potential avenues for monetary support encompass grants, scholarships, or personal financial reserves. It is imperative to investigate all viable options and develop a pragmatic budget to ensure the successful completion of the project.
- Organizations must carefully consider user experience, functionality, and security when developing web portals. The design process involves extensive planning, user research, and iterative testing to ensure the portal meets stakeholders' needs and expectations. Organizations face challenges in integrating various systems, ensuring scalability, and maintaining the portal's performance as user demands evolve over time.
- Specialized instructors possess in-depth knowledge and experience in their specific field, allowing them to provide more targeted and effective instruction. They can offer valuable insights, practical examples, and industry-specific techniques that may not be available from general instructors. Specialized instructors can manage their teaching methods to address the unique challenges and requirements of their subject area, enhancing the overall learning experience for students.
- The curriculum to students' interests, educators can enhance engagement and motivation in project-based learning. This approach allows learners to explore topics they find compelling while developing essential skills and knowledge. Moreover, offering a diverse range of courses can cater to various learning styles and preferences, ensuring that students have ample opportunities to pursue their academic passions.
- One of the most common requirements is course selection, and courses are needed to provide the learner, which are best for the present day. These courses should focus on emerging technologies and skills that align with industry demands.
- The technology of multimedia is important to utilize video conferencing with the students regarding a question-and-answer session on a specific topic. This approach enhances to promote collaborative learning among students through interactive discussions and shared insights. This method encourages students to develop their communication skills and helps create a sense within the classroom, ultimately leading to improved learning outcomes. The immediate Question Answering is impossible because of the technical issues connecting to learning behavior.

- The Assessment or Examination is designed with multiple-choice questions for the learners. It is crucial to design the question because multiple questions are very time-consuming. Therefore, careful consideration must be given to the clarity, relevance, and difficulty level to ensure an assessment. Additionally, aligning the difficulty of questions with the learning outcomes can enhance the assessment's effectiveness and promote a more meaningful evaluation of student understanding.
- The conducting of an Examination is not an easy task to complete because of a lack of capacity in managing the institution. It is a critical need for develop management strategies to enhance organizational capacity and ensure the successful completion of examination processes. Improving management strategies is essential for institutions to build their organizational capacity, leading to more effective examination processes and better educational outcomes.

9. Results and recommendation

The findings elucidate student engagement in Massive Open Online Courses (MOOCs) and draw a comparative analysis with the SWAYAM and NPTEL online learning platforms. Among the various MOOC initiatives in India, the NPTEL is recognized as the most established, inaugurated in 2003. Conversely, SWAYAM was launched in 2016, rendering it the most recent addition to this educational landscape. It observes that both MOOC platforms receive financial support from the Ministry of Human Resource Development (MHRD) of the Government of India. The SWAYAM portal boasts the highest user engagement, with 58% of registrations and student enrollments exceeding 61%. NPTEL has over 42% of registered users, with student enrollment figures reaching 39% compared to SWAYAM. The number of courses offered by NPTEL is 7,620 courses, with 869 of these courses currently active across various subject domains. SWAYAM offers over 14829 courses and the ongoing courses are over 1590. SWAYAM encompasses a comprehensive range of subjects, while NPTEL focuses on disciplines related to science and technology. It observes that nearly all platforms incorporate features for hosting text and multimedia content on their respective portals. All platforms facilitate the assessment of student progress. The issuance of certification upon course completion constitutes a primary requirement for MOOC platforms. All platforms examined operate under free-to-access models. Students undertaking each platform include provisions for integrating credits earned into the regular academic programs. Lastly, all surveyed platforms have incorporated web-based tools into their portals to enhance user experience and accessibility.

The results demonstrate the usefulness of technology in modern learning contexts by indicating that both platforms have different effects on user engagement and academic accomplishment. The long-term impacts of these platforms on professional preparedness and skill growth across a range of domains require more investigation. The collaborative abilities necessary for encouraging contemporary work situations and the incorporation of trans-professionalism into these platforms may improve user engagement. The focus on inter-professional learning can greatly aid in the teamwork abilities graduates need to succeed in the workplace. Further analysis of course completion rates and student satisfaction levels for both platforms could provide valuable insights into their effectiveness and areas for improvement.

10. Conclusion

Online learning is a platform for organizing and bringing courses in the digital environment to allow learners. It is a career builder for the learners and provides multiple subject areas to fulfill the requirements. The MOOC courses help us to extend our knowledge and support the achievement of a job in a different organization relevant to our career. It was providing essential information resources and services to meet growing information needs. It is a part of the global information system for communication among students and teachers. SWAYAM was working to improve the country's educational system and reduce the number of uneducated people. Many organizations and institutions are helping to lower the number of people in the country and help them advance their careers through this course. SWAYAM can improve students' careers by offering high-quality education on an online platform. Since students face many obstacles when trying to participate in the traditional educational system, it is the only place to provide adequate information and educational resources in a different discipline.

References

1. Agnihotri, M. A., & Pandit, A. (2021). *Overview and Future Scope of SWAYAM in the World of MOOCS: A Comparative Study with Reference to Major International MOOCS* (pp. 169–201). Springer, Singapore. https://doi.org/10.1007/978-981-15-8744-3_9
2. AICTE. (2016). The Gazette of India: Extraordinary Part III- section 4. Government of India, 5–7. Retrieved from https://image.swayam.gov.in/wqimgtest/9da02ba8-bdd8-409c-afdb-645e6dbc544f.pdf
3. Bordoloi, R., Das, P., & Das, K. (2020). Lifelong learning opportunities through MOOCs in India. *Asian Association of Open Universities Journal*, *15*(1), 83–95. https://doi.org/10.1108/AAOUJ-09-2019-0042
4. Chakravarty, R. (2016). MOOCs in India: Yet to Shine, 14–21
5. Dash, M. K., & Panigrahi, S. (2023). Development of mooc for swayam: a shift in teaching learning paradigm. *Journal of Global Resources*, *9*(01), 123–138. https://doi.org/10.46587/jgr.2023.v09i01.013
6. Hiremath, R. (2017). SWAYAM : The dream of Indian MOOC. *IJARIIE*, *2*(3), 242–247
7. Jadhav, R., & Rathod, A. R. (2024). Overview and Future Scope of SWAYAM in the World of MOOCS: A Comparative Study with Reference to Major International MOOCS. *Deleted Journal*, *2*(09), 2804–2806. https://doi.org/10.47392/irjaem.2024.0408
8. Kim, E. (2020). *Designing Discussion Forum in SWAYAM for Effective Interactions Among Learners and Supervisors* (pp. 297–302). Springer, Cham. https://doi.org/10.1007/978-3-030-60703-6_38
9. Majumder, C. (2019). SWAYAM : The Dream Initiative of India and its uses in Education. *International Journal of Trend in Scientific Research and Development (IJTSRD)*, *3*(3), 57–60.
10. Mohamed, M. H., & Hammond, M. (2018). MOOCs: a differentiation by pedagogy, content and assessment, 2–11. https://doi.org/10.1108/IJILT-07-2017-0062
11. Panda, S. P., Mahapatra, R. K., & Saibabu, K. (2019). *A Study of Webs of Active Learning for Young Aspiring Minds(SWAYAM)-A MOOC Platform of India*. *6*(1), 1–14. https://doi.org/10.5958/2455-8060.2019.00001.6
12. Rodriguez, O. (2013). The concept of openness behind c and x-MOOCs (Massive Open Online Courses), 5(1), 67–73.
13. Sehgal, A., & Garg, A. (2019). Inconsistent Framework of Online Education: A Comparative analysis. *International Conference on Computing, Communication and Networking Technologies*, 1–6. https://doi.org/10.1109/ICCCNT45670.2019.8944539
14. Sikarwar, T., Gupta, M., & Vishnoi, S. (2022). SWAYAM Platform of Distance Learning: A Perceptual Study. *International Journal of Management and Humanities*, *8*(8), 1–6. https://doi.org/10.35940/ijmh.h1458.048822
15. Stephens, M., & Jones, K. M. L. (2018). MOOCs as LIS Professional Development Platforms: Evaluating and Refining SJSU's First Not-for-Credit MOOC, *55*(4), 345–361.
16. UGC. (2016). The Gazette of India: Extraordinary, Part III-section 4. University Grants Commission, 4–7.