MOOCs: Determinants of Enrolment and Completion Rate among Learners of Higher Education Institutions in India

ABSTRACT:

Aims: The advancement and integration of technology in education made a dramatic change in the landscape of the teaching-learning process. Massive Open Online Courses (MOOCs) as one of the emerging trends in education removed the barriers of time, space, and pace throughout the world. Diverse lifelong learners irrespective of social, cultural, economic, age and gender identity are participating in the melting pot of MOOC. This study aimed to explore the present landscape of the participation and completion rate in MOOCs by learners from formal educational institutions in the eastern part of India specifically in West Bengal. The research also aimed to identify the underlying causes of the present landscape.

Place and duration of study: The study was conducted among the learners who enrolled in different programs in different Higher Education Institutions (HEIs) during the end of 2023.

Methodology: A self-administered questionnaire in Google Forms was used to collect data from the learners. A total 298 samples have been collected. Collected data have been analyzed by descriptive statistics, independent samples 't' test, ANOVA using SPSS and MS Excel.

Results: The study depicted poor enrolment as well as completion rates in MOOCs among the learners. Lack of awareness and huge pressure on the present curriculum were the main factors behind non-enrolment. SWAYAM was the most popular MOOC platform among the students of West Bengal. Attaining knowledge, enhancing skills, and earning certificates were the main intentions of the students who enrolled in MOOCs. Lack of time, affordability, in-person proctored examination, non-cooperation of facilitators, length of courses, and uninteresting discussion forum were the major constraints to completing the MOOCs for the enrolled learners.

Conclusion: Organizing awareness-building programs, institutional policy framing, and incorporating a credit transfer system into enrolled courses may be emphasized as immediate initiatives for re-thinking the present opportunities and challenges in higher education.

Key words: MOOCs, Higher Education Institutions, learners, participation, completion

INTRODUCTION:

Distance learning is an opportunity for students who are enthusiastic about education but separated by distance [1]. Massive Open Online Courses (MOOCs) show their prominent growth in the field of distance education in the higher education sector [2]. India takes the second largest position regarding the increased rate of enrolment in MOOCs in recent years [3]. These courses are providing

excellent educational resources without considering the social and geographical boundaries [4]. The MOOC was first introduced by George Siemens and Stephen Downs in 2008 through 'Connectivism and Connective Knowledge' [5]. These very online courses are structured for a large number of participants from anywhere as long as they have internet accessibility [6]. The MOOC is purely an online and free offered course and not a single element of this course has not other than the online execution. If this course contains any slightly different form of elements rather than its online nature then the course is termed as a hybrid or blended course. The nature of the openness of MOOC secures free access; it does not mean that it has free accessibility. Though there is no need for prerequisite qualifications, entrance examinations, interviews, or tuition fees for a MOOC, still there are a lot of barriers that exist like language, digital literacy, bandwidth, etc. to secure participation in it. [7].

MOOCs are mainly two types, one is cMOOCs and another is xMOOCs. The cMOOCs or connective Pedagogy-based MOOCs were developed to harness the utility of social and participatory media [5]. It is a peer-learning model [2]. There is no official evaluation procedure but informal feedback or self-assessment may be arranged by the participants [8]. On the other hand, xMOOCs are guided by the behaviorist pedagogical approach [5]. The xMOOCs focus on content-based lectures, video presentations, tests, and tasks as the main course of learning [9]. These types of courses foster individual learning instead of peer learning [5]. In this course, there is an opportunity for students' assessed by the teacher (s) through different approaches [10]. There are other two types of MOOCs: Blended MOOCs or bMOOCs and Small scale MOOCs or sMOOS [11].

Professional MOOCs are the maximum interest area of the enrolled students but a large number of student hobby learners [2]. Several studies highlighted that though no significant differences exist in completion rates by gender, level of study (undergraduate or postgraduate), or platform, but the retention rate in MOOC is very low [4]. It has been observed that the dropout rate is very high in MOOCs. To minimize the dropout rate there is a role of motivation. Academic motivation has the highest influence on the retention of the student in MOOCs [12]. Retention and engagement are the effects of consistent and structured support [13]. There are different causes like lack of time, motivation, interactivity in MOOCs, feelings of isolation, insufficient previous knowledge and skills, and hidden costs are the guiding factors of the low retention in MOOCs [14]. Even some studies found that the retention rate in MOOCs is very low and the completion rate is less than seven percent [15] [16]. Some studies explored that female students have a higher completion rate of STEM MOOCs than male students [17]. On the other hand, some studies conclude their study that there were no significant differences based on gender but significant differences exist by age group in the completion of MOOCs [18].

RATIONALE OF THE STUDY:

A lot of studies explored that the enrolment rate in MOOCs is increasing day by day worldwide. The MOOCs are emerging educational opportunities for all of the students who wish to learn and want to

cope with excellent educational resources from different parts of the world. Learners from West Bengal also have equal opportunities to enrol in the different courses under MOOCs. In this study, researchers want to explore the present landscape of the participation and completion rate in MOOCs by learners from formal higher education institutions in the eastern part of India specifically in West Bengal. The research also aimed to identify the underlying causes of the present landscape. If higher education institutions in West Bengal want to utilize the potential advantage of MOOCs in students' learning, then an in-depth study is essential to understand the variables, that affect the completion of the courses, and to clarify the drawbacks and potentials of the MOOCs in West Bengal. The study was conducted among the learners who enrolled in different programs in different Higher Education Institutions in West Bengal.

RESEARCH QUESTIONS:

To depict the real landscape of MOOC enrolment and completion among the learners of higher education institutions and to explore the possible answers of the study quantitatively and qualitatively the following research questions have been formulated –

RQ1: How much is the overall enrolment rate in MOOCs among the learners of higher education-institutions-gender-wise and programme wise?

RQ2: What are the factors behind enrolment & non-enrolment in MOOCs among the learners of higher education institutions?

RQ3: How much is the overall completion rate in MOOCs among the enrolled learners- gender-wise and programme wise?

RQ4: What are the major MOOC platforms and factors behind the non-completion of MOOCs among the learners?

HYPOTHESIS:

To study the gender and program-wise learners' participation and completion in MOOCs following hypotheses were formulated:

H01: There is no significant difference in enrolment rate in MOOCs between male and female learners of higher education institutions.

H02: There is no significant difference in enrolment rate in MOOCs among UG, PG, and PhD learners of higher education institutions.

H03: There is no significant difference in completion rate in MOOCs between male and female learners of higher education institutions.

H04: There is no significant difference in completion rate in MOOCs among UG, PG, and PhD learners of higher education institutions.

METHODOLOGY OF THE STUDY: It is a survey based descriptive research.

- **Tools used:** A self-administered questionnaire was prepared by the researchers to obtain data related to the MOOC enrolment and completion status of the learners of higher education institutions. The questionnaire consisted of four sections with applicable options. The first section was framed to collect primary information about the learners. The second section aimed to collect data regarding the MOOC enrolment rate, MOOC enrolment platforms, and the factors of enrolment. The third section was aimed to collect data regarding the factors of non-enrolment. The last section was aimed at collecting data regarding the MOOC completion rate, and the factors of non-completion.

- **Area of the study:** The study has been conducted on the learners of higher education institutions, especially in different colleges and universities in West Bengal.

- **Variables of the study:**

  The following variables were considered for the study:

  - Independent variables –
    - Gender
      - Male
      - Female
    - Programme of the present study
      - Under Graduate (UG)
      - Post Graduate (PG)
      - Doctor of Philosophy (PhD)
  - Dependent variables –
    - Enrolment rate
    - Completion rate
    - Factors of enrolment
    - Factors of non-enrolment
    - Factors of non-completion

- **Sample size:** The learners of Higher Education Institutions are the population of the study. A total of 298 samples have been collected from the learners who were pursuing different general courses under UG, PG, and PhD programmes in different colleges and universities of West Bengal using simple random sampling techniques.

- **Collection of data:** The self-administered questionnaire in the Google Forms was sent to the learners of higher education institutions of West Bengal through social handles like, e-mail, Messenger, and WhatsApp during the end of 2023.

- **Data Analysis:** Collected data have been analyzed by descriptive statistics, independent samples 't' test, ANOVA using SPSS and MS Excel.

- **Result:**

In terms of enrolment and completion of MOOCs, the present research surveyed the learners of higher education institutions in West Bengal. Among the total 298 students who were part of this survey, 118 were male and 180 were female students. Among them 156 students were from undergraduate (UG) programmes, 108 were from post-graduate (PG) programmse and 34 were from PhD programmes. It has been found that total the enrolment rate in MOOCs from the regular programmes of higher education institutions is only 12.75% (Fig. 1). In respect of gender-wise participation, it has been observed that the enrolment rate in MOOCs of male students (15.25%) was higher than female students (11.11%) (Fig. 2). For hypothesis testing '1' score has been given to those respondents who have enrolled in MOOCs and '0' who has not enrolled. Based on the enrolment scores it was found that there was no significant difference in the scores for male students (M = 0.15, SD = 0.361) and female students (M = 0.11, SD = 0.315); t (296) = 1.047, ***P*** = 0.296 at the 0.05 significance level (Table 1 and 2). These results suggested that the gender-wise enrolments in MOOCs were more or less the same. From the perspectives of programmes, the enrolment rate in MOOCs of UG students was very poor (5.13%), where it was 12.96% for PG students and 47.06% for PhD students (Fig. 3). A one-way ANOVA was performed to evaluate the relationship between programmes of study (UG, PG, and PhD) and MOOCs enrolment scores. The means (0.05, 0.13, 0.47) and standard deviations (0.221, 0.337, 0.507) are presented in Table 1 below. The ANOVA was significant at the .001 level (less than one in a thousand chance of being wrong), F (2, 295) = 25.634, ***P*** = .000 (Table 3) and the results suggested that there was a significant difference in the enrolments in MOOCs from UG, PG, and PhD programmes. These results of the study also indicated that a major part of the students of regular programmes of higher education institutions remained out of the influence of MOOCs.

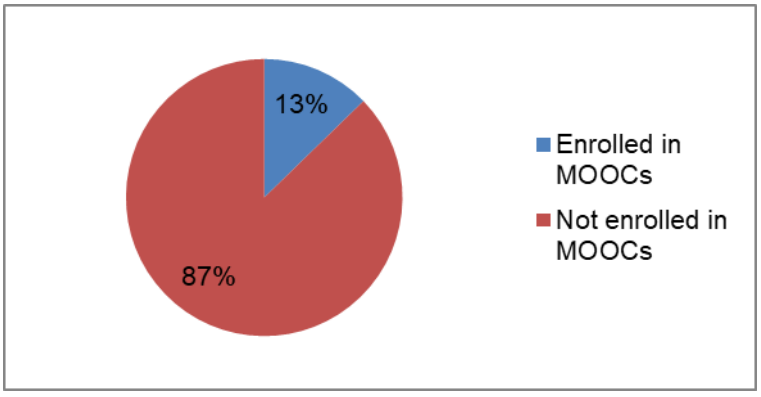

Fig. 1: Overall enrolment rate in MOOCs among the learners of higher education institution

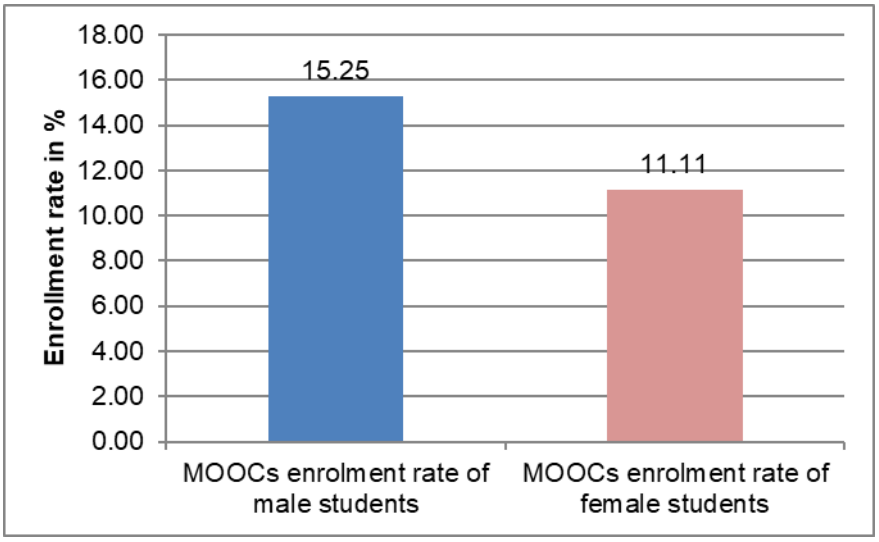

Fig. 2: Gender wise enrolment rate in MOOCs among the learners of higher education institution

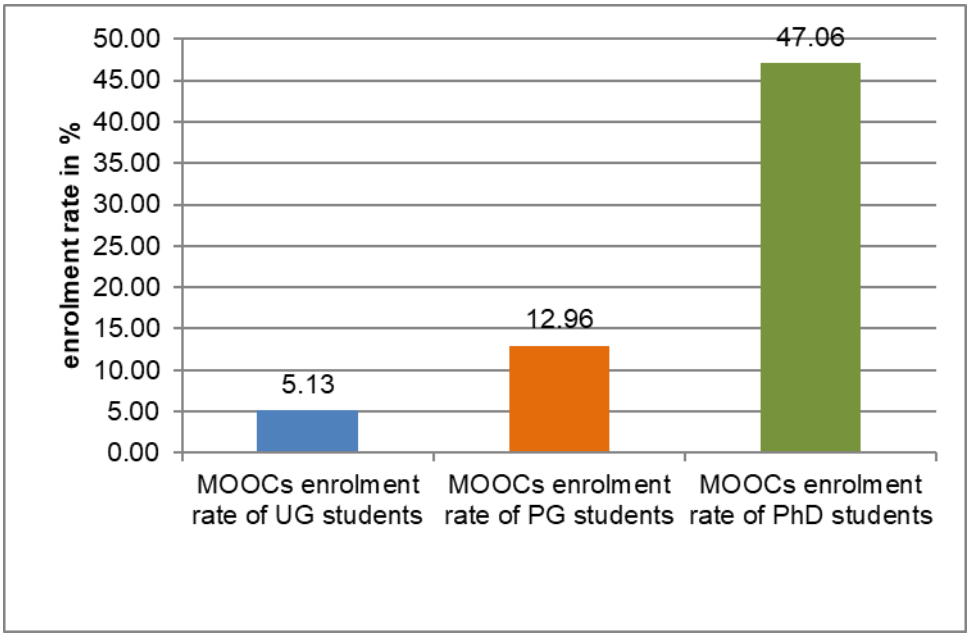

Fig. 3: Programme wise enrolment rate in MOOCs among the learners of higher education institution

Table 1: Group statistics for gender and programme wise MOOCs enrolment scores

		N	Mean	Std. Deviation	Std. Error Mean
Gender wise Enrolment Score	Male	118	.15	.361	.033
	Female	180	.11	.315	.023
Programme wise Enrolment Score	UG	156	.05	.221	.018
	PG	108	.13	.337	.032
	PhD	34	.47	.507	.087

Table 2: Independent Samples t Test results for gender wise MOOCs enrolment scores

		t-test for Equality of Means						
							95% Confidence Interval of the Difference	
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Gender wise Enrolment Score	Equal variances assumed	1.047	296	.296	.041	.040	-.036	.119

Table 3: ANOVA results for programme wise MOOCs enrolment scores

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.909	2	2.454	25.634	.000*
Within Groups	28.246	295	.096		
Total	33.154	297			

*significant level at p<0.001

There were various factors behind the low enrolment rate in MOOCs among students who already enrolled in various regular programmes in higher education institutions. The most common factor is a lack of knowledge about MOOCs. More than half of the students who were not enrolled in any MOOC stated that they did not know about MOOCs. 40% of students who were not enrolled in MOOCs stated that they were not aware of the benefits of MOOCs. Affordability, as all MOOCs were not free of cost, was another constraint for some students (17.69%) towards enrolment in MOOCs. Some students (15.38%) also raised the issue of the huge pressure of curriculum in their present regular courses. Poor internet connectivity was another problem for the students (10.00%), especially those who lived in rural areas. Some students (9.23%) admired the lack of ICT skills as another obstacle for them to enroll in any MOOC. A few students raised different issues like they did not feel any need for any additional courses. Few of them raised questions as there were no direct job opportunities after the completion of any MOOC. Some institutions had no provision to add credit earned by completion of any MOOC. Only a few of them stated that they felt anxiety about using technology or they had no internet connectivity or any devices from which they can access MOOCs such as personal computers, laptops, smart phone, etc. (Fig. 4). Earlier study also identified a lot of barriers that exist like language, digital literacy, bandwidth, etc. to secure participation in it [7].

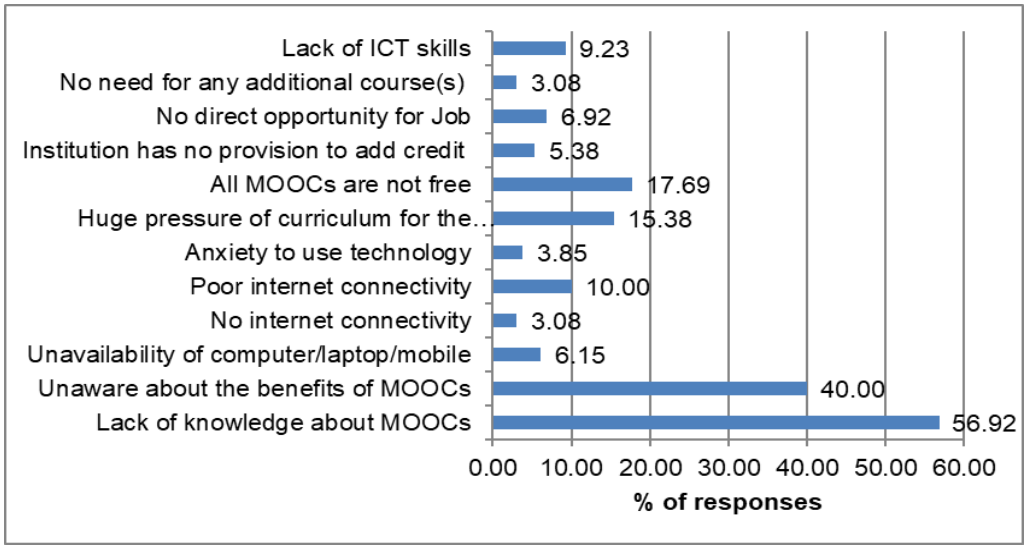

Fig. 4: Factors behind non-enrolment in MOOCs among the learners of higher education institution

Another interesting objective of the study was to explore the factors that played an important role in motivating those students who enrolled in MOOCs. There were several factors behind the enrolment in MOOCs. Among those students who enrolled in MOOCs, the major section (94.74%) stated that they enrolled in MOOCs to learn new knowledge. This was the main goal for their enrolment in MOOCs. 57.89% of enrolled students mentioned that they wanted to acquire new skills from MOOCs. Among them, 47.37% of students stated that they enrolled in MOOCs to earn certificates. Interestingly, a section (26.32%) of the enrolled students admired that they were very interested in knowing about the instructional process in MOOCs. Only a few students stated that they were instructed by their teacher to join the MOOCs and few were compelled to enroll in MOOCs as they had no expert in a particular field at their institutions (Fig. 5).

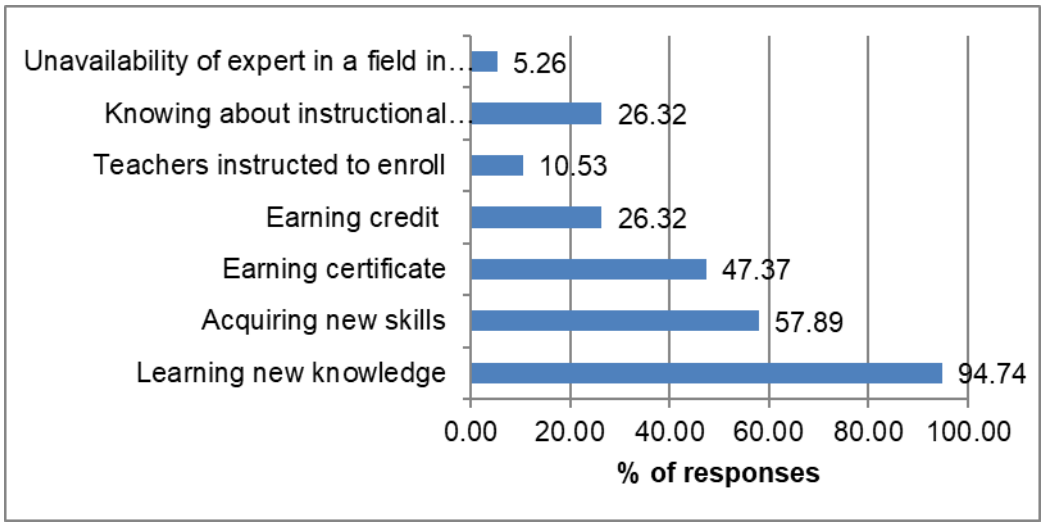

Fig. 5: Factors behind enrolment in MOOCs among the learners of higher education institution

It has been observed that most of the enrolled students (78.95%) enrolled in SWAYAM courses for MOOCs. Only a few of them selected NPTEL, mooKIT, edX, Coursera, FutureLearn, Canvas Network, and NSOU LMS, etc. for enrolling in MOOCs (Fig. 6).

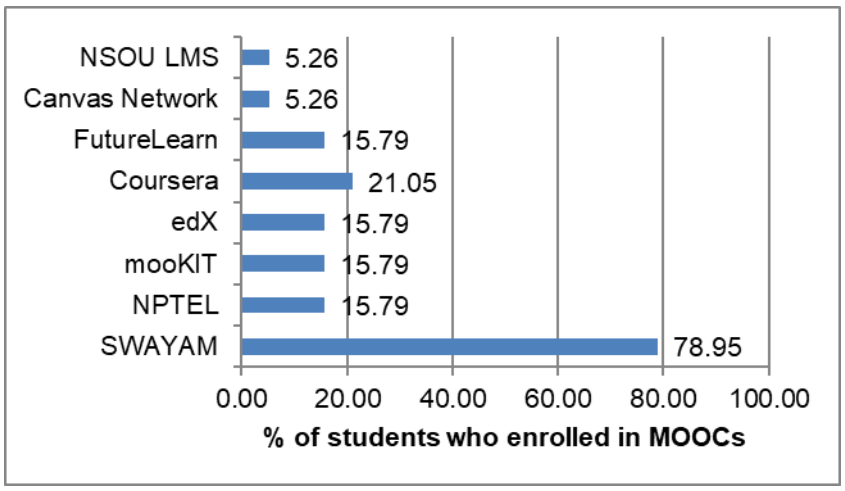

Fig. 6: Major MOOC platforms where the learners of higher education institution enrolled

The overall average MOOC completion rate of the students of general courses from higher education institutions was only 8.55% (Fig. 7). The finding is in line with various earlier studies [15] [16]. A major section of enrolled students could not retain their interest till the end of the courses. This average completion rate was slightly higher for male students (11.46%) than the female (3.57%) students (Fig. 8). Based on the completion rate it was found that there was no significant difference between male students (M = 11.46, SD = 22.99) and female students (M = 3.57, SD = 13.36); t (36) = 1.169, ***P*** = 0.250 at the .05 significance level (Table 4 and 5). These results suggested that the gender-wise completion rate in MOOCs were more or less the same. Some earlier studies supported the findings of this present study [4] [18]. The MOOC completion rate were maximum (14.06%) for the students under PhD programme, where it was 3.57% for PG students and 6.25% for UG students (Fig. 9). A one-way ANOVA was performed to evaluate the relationship between programmes of study (UG, PG, and PhD) and MOOCs completion rate. The means (6.25, 3.57, and 14.06) and standard deviations (17.68, 13.36, and 25.36) are presented in Table 4 below. The ANOVA was not significant at the .05 level, F (2, 35) = 1.082, ***P*** = .350 (Table 6) and the results suggested that there was no significant difference in the MOOCs completion rate from UG, PG, and PhD programmes. This finding is also in line with previous studies [4].

Table 4: Group statistics for gender and programme wise MOOCs completion rate

		N	Mean	Std. Deviation	Std. Error Mean
Gender wise MOOCs completion rate	Male	24	11.458	22.9948	4.6938
	Female	14	3.571	13.3631	3.5714
Programme wise	UG	8	6.250	17.6777	6.2500

MOOCs completion rate	PG	14	3.571	13.3631	3.5714
	PhD	16	14.063	25.3620	6.3405

Table 5: Independent Samples t Test results for gender wise MOOCs completion rate

		t-test for Equality of Means						
							95% Confidence Interval of the Difference	
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Gender wise MOOCs completion rate	Equal variances assumed	1.169	36	.250	7.8869	6.7453	-5.7931	21.5669

Table 3: ANOVA results for programme wise MOOCs completion rate

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	875.529	2	437.764	1.082	.350
Within Groups	14157.366	35	404.496		
Total	15032.895	37			

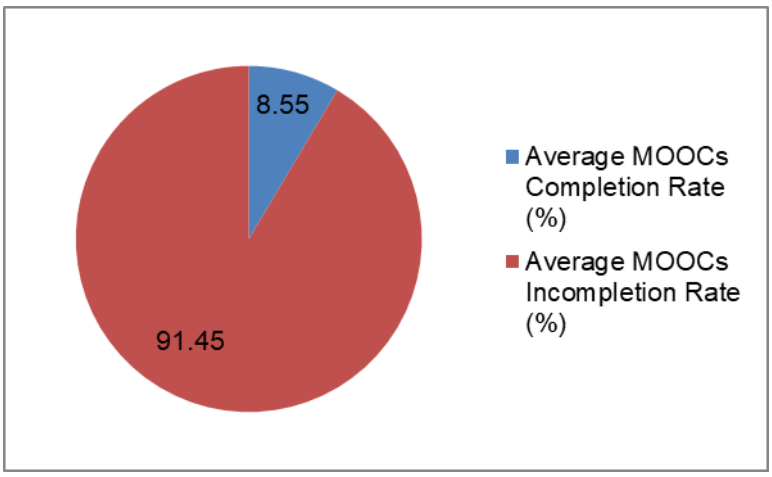

Fig. 7: Overall average completion rate in MOOCs among the enrolled learners

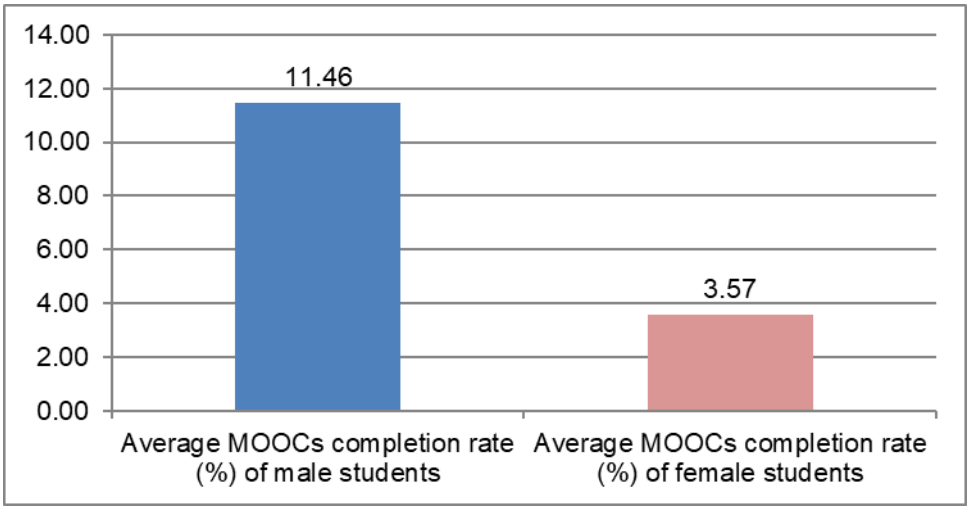

Fig. 8: Gender wise average completion rate in MOOCs among the enrolled learners

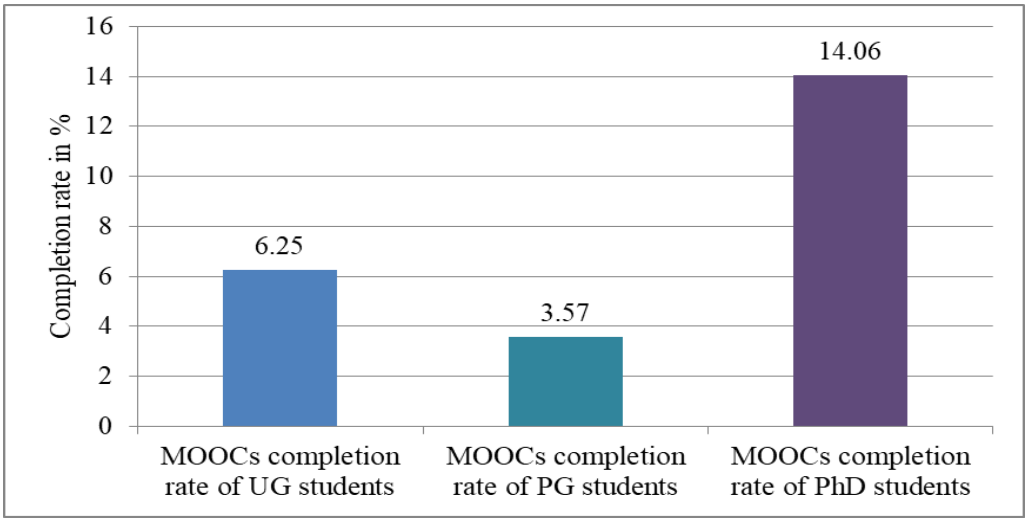

Fig. 9: Programme wise average completion rate in MOOCs among the enrolled learners

There were various causes behind the low completion rate. All the students who had not completed their courses in the MOOC platform stated that they did not sufficient time to complete the courses. A section of students who did not complete MOOCs raised other issues as the factors of incompletion which are unaffordable costs, proctored examinations, non-cooperative facilitators, ineffective discussion forum, length of the courses, etc. (Fig. 10). Some of the factors like lack of time, motivation, interactivity in MOOCs and feelings of isolation, insufficient previous knowledge and skills, and hidden costs already identified in the previous study [14].

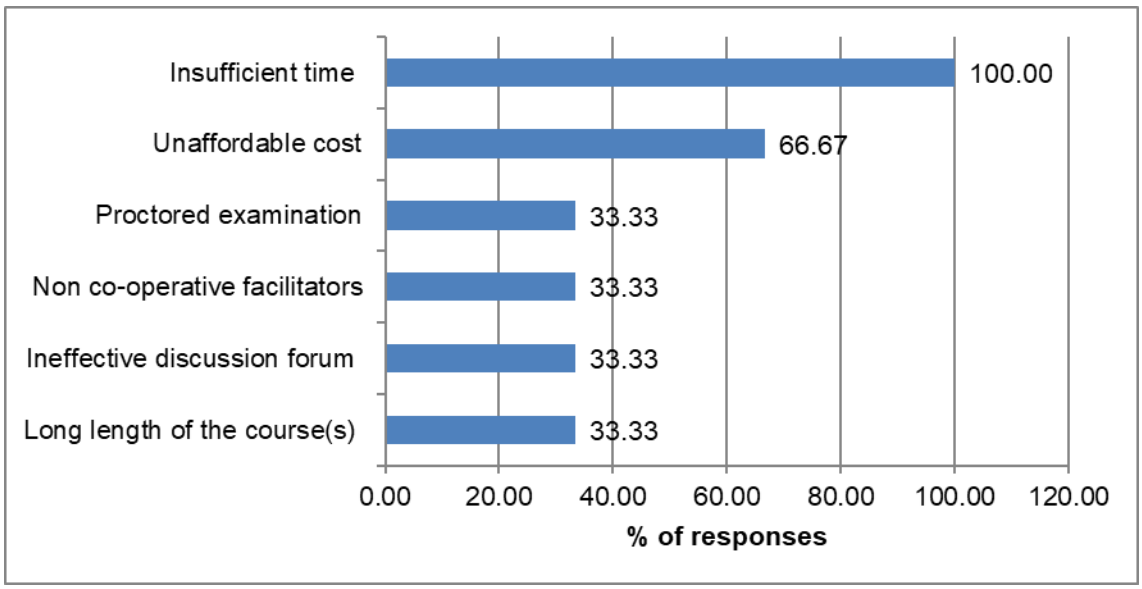

Fig. 10: Factors behind non-completion of MOOCs among the enrolled learners

Major Findings:

- The total enrolment rate in MOOCs from the regular programmes of higher education institutions is only 12.75%.
- The enrolment rates in MOOCs of male students and female students were 15.25% and 11.11% respectively.
- There was no significant difference in gender-wise enrolments.
- The enrollment rate in MOOCs of UG students was very poor (5.13%), where it was 12.96% for PG students and 47.06% for PhD students.
- There was a significant difference in the enrolments in MOOCs from UG, PG, and PhD programmes.
- The most common factor behind the low enrolment rate was a lack of knowledge about MOOCs. 40% of students who were not enrolled in MOOCs stated that they were not aware of the benefits of MOOCs. Other factors were affordability, huge pressure of curriculum, poor internet connectivity, lack of ICT skills etc.
- Factors that played an important role in motivating those students who enrolled in MOOCs - learning new knowledge, acquiring new skills, earning certificates, etc.
- Most of the enrolled students (78.95%) enrolled in SWAYAM courses for MOOCs.
- The overall average MOOC completion rate of the students of general courses from higher education institutions was only 8.55%

- The average completion rate for male and female students was 11.46% and 3.57% respectively.
- There was no significant difference in gender-wise completion rate
- The MOOCs completion rate was maximum (14.06%) for the students under PhD programme, where it was 3.57% for PG students and 6.25% for UG students
- There was no significant difference in the MOOC completion rate from UG, PG, and PhD programmes.
- Causes behind the low completion rate – lack of sufficient time to complete the courses, unaffordable costs, proctored examinations, non-cooperative facilitators, ineffective discussion forum, length of the courses, etc.

Discussion:

Bonk and Khoo (2014) identified three main factors that affect online learner attrition i.e., individual factors, course-related factors, and technological factors. The TEC-VARIETY framework emphasized on ten motivational principles for online learners i.e., tone or climate, encouragement, curiosity, variety, autonomy, relevance, interactivity, engagement, tension, and yielding products [19]. The interplay of three factors i.e., teaching, social, and cognitive presences as experienced by students in the learning community - led to profound and meaningful online learning [20]. In an online course, students report high levels of perceived cognitive presence and self-regulation. On the other hand, a comprehensive understanding of co-regulation in addition to self-regulation promises better outcomes in creating an online collaborative community of inquiry, since students' co-regulation provides control over learning, time, and process, and is becoming increasingly important, especially with online collaborative learning. In addition to their reflections, students can become aware of and involved in the metacognitive thoughts and activities of others in the online courses [21]. Cognitive presence has a mediating role in the relationship between teaching presence, self-regulation, and learning engagement as well as the direct effects on learning engagement [22]. While teaching presence and social presence also have a positive correlation, there is a strong correlation between cognitive presence and deep learning approaches [23]. Higher degrees of cognitive presence arise as a result of the scaffolding aspects incorporated into the learning modules, particularly for students who possess prior knowledge [24]. The real learning outcomes of students are positively and directly impacted by learner empowerment in an online learning environment [25]. We should make efforts to enhance students' cognitive presence to promote learning engagement, teach self-regulation strategies, and provide opportunities to practice self-regulation [22].

Every system has some challenges whether it is traditional Face-to-Face classroom teaching online teaching or blended. With limited human resources and physical infrastructure, it may not be possible to achieve the overarching goals of Higher Education within a short period frame but there is a silver

lining to reach the unreached. In this mission of drawing out the optimum opportunities for multidisciplinary and holistic education, technology is the game changer. Technology integration in education is the best way to address issues like accessibility, inclusivity, and lifelong learning. But whenever we talk about accessibility and inclusivity, we face the challenges of (a) digital divide, (b) poor internet connectivity, (c) poor supply of electricity, (d) lack of training for teachers, and (e) language of the e-content and so on. The present study with its delimitation has tried to interpret the landscape of higher education and unleashing MOOCs as a vehicle for promoting higher education in India.

Conclusion:

The study apprised and further explored that students enrolled in MOOCs for many different reasons to satiate their learning aspirations and educational journeys. The study is useful for understanding the gender-wise and programme-wise enrolment scenarios in MOOCs. By examining the findings, it may be concluded that the completion rate is very low and several factors are responsible for the dropout from the courses. If the reasons behind the low enrolment and low completion rate are addressed by the stakeholders as well as policymakers, then the opportunity will be maximized for anytime, anywhere and anyone learning-the principles behind MOOCs. The investigation also purports that candid efforts are to be taken by the course coordinators and curriculum developers to make online learning more engaging and joyful with optimum riders of facilitation.

COMPETING INTERESTS

NO COMPETING INTERESTS EXIST

AUTHORS' CONTRIBUTIONS

'Author 1' and 'Author 3' designed the study, performed the statistical analysis. 'Author 1' and 'Author 2' wrote the first draft of the manuscript. 'Author 3' managed the analyses of the study. 'Author 2' managed the literature searches. All authors read and approved the final manuscript.

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