

# Toward acceptance of MOOCs in the Higher Education: A Perspective of Indian Students

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**Abstract:** Massive Open Online Courses (MOOCs) are gaining popularity and these are a matter of appreciation among a large number of students worldwide. Currently, the Indian higher education system is ranked third in the world, and MOOCs are also growing rapidly in India. Therefore, systematic data analysis is the key requirement to understand the acceptance of MOOCs in higher education in India. Statistical data analysis is done on a data of 945 students from Graphic Era Hill University India, where MOOCs are a part of the academic curriculum and students are free to choose any MOOCs in each semester. This statistical analysis reveals the popularity of various platforms among students. It is also found that students' selection of MOOC is not independent of gender and different academic level of courses. Overall, the statistical analysis suggests that MOOCs are acceptable for different streams and MOOCs offer ease in academic learning.

**Keyword-** MOOCs, Systematic analysis

## I. INTRODUCTION

The exponential growth in digital technologies has revolutionized the traditional education system, with an enormous number of online courses and learning modules available for the broad spectrum of students. Therefore, an appropriate term 'MOOC', meaning Massive open online course was coined by Dave Cormier earlier in 2008, now become the reality with more than 100 million registered users worldwide[1]. Notably, first online course developers Stephen Downes and George Siemens (2008), followed by further scale-up initiatives of Stanford professor Sebastian Thrun, and Director Research Google Peter Norvig had given the hallmark in MOOC's success story[2]. Moreover, the first MOOC service provider Udacity, and afterward MITx, Coursera, edX, MiriadaX, Open2Study, etc. had also become key elements in generating a MOOCs revenue model. Subsequent add-on with the introduction of peer review, peer-assessment, and self-assessment also further broadened the scope and spectrum of MOOCs [3]. Seeking the urgent quality education need, several national governments blended learning initiatives with their MOOC platforms, for example, SWAYAM- India, Malaysia MOOC- Malaysia, ThaiMOOC- Thailand, EduOpen- Italy, Miriadax- Spain, Campus II- Israel, etc. [4-6].

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The recent class central report of 2019 [7] suggests that the students enrolled in popular MOOCs Coursera, edX, Udacity, Future Learn, SWAYAM and NPTEL are 45 million, 24 million, 11.5 Million, 10 million, 10 million, and 02 million respectively.

Despite large access, MOOCs acceptance with formal course credits and qualifications is remained unresolved in major institutions worldwide and a very few especially higher education institutions, including Georgia Tech, MITx, University of Leeds, Malaysian qualifications agency [8], Graphic Era Hill University [9], etc. granted course credits across a wide range of courses as a part of the teaching curriculum.

First hand MOOCs offer huge potential with the following competitive advantages: (i) a Large number of enrolment at a time, (ii) Open online accessibility, (iii) Free of cost academic delivery, (iv) Heterogeneous participation with a different set of learning, (v) Promotes learning in an inter-professional educational environment, (vi) Self-pacing, (vii) Promotes creativity, (viii) Inculcates self-directed learning skills, (ix) Repetition of the learning module. Other hands, MOOCs limits its universal application due to following reasons: (i) Unspecific short courses, (ii) High drop-out rate, (iii) Resource- intensive course development, (iv) No well-defined assessment criteria, (vi) Dubious certification, (vii) No appraisal and recognition of MOOCs certificates, and (viii) Low monetary incentives for course content developers. Although a tremendous amount of data is generated across several fields due to MOOCs for further follow-up studies, however a very few reports highlighting an ideal model(s) for better understanding of learners' behavior [10]. Another report by Rienties and Toetel with student data has found that learner satisfaction in MOOCs has different reasons than degree-seeking students in formal education [11]. With a large number of MOOCs enrolments in a variety of courses, learners are diverse. These participants comprise males and females of different age groups, also from the different educational and socio-economical background. This diverse nature of users is also part of many studies where gender influences on completion of courses [12]. Few studies show that females are more likely to finish up these courses. Similarly, findings between the age and course completion are related to each other and another study finds out the positive relationship between age and course completion [13]. Another Stanford University study found that in a generalized group of students 88% were male in MOOCs for undergraduate and graduate level. Graphic Era Hill University is a pioneer in integrating MOOCs in the curriculum for all courses for the last six years.

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The University offers a flexible learning environment with a choice of MOOCs selection; therefore, more than thirty-five thousand MOOCs have been completed by the students. In this paper, we explore the popularity of various MOOCs platforms and dependency on MOOCs selection on gender-basis as well as different academic level of courses.

## II. ANALYSIS

To know the acceptability of various MOOCs among students, students were asked to provide their MOOCs related information like name, gender, age, department, the platform used, and duration of course and title of the course. At last, students were asked to provide the reason for selecting a particular course from four different choices; ease of learning, recommendation by faculty, part of the curriculum, and others. In our survey, we have analyzed the data of 945 students of different streams of Graphic Era Hill University. The data comprise 473 male and 472 female students. In this, 814 students were undergraduate courses and 95 from postgraduate courses and 36 from diploma and other courses. Table 1 shows the gender-wise distribution of various platforms chosen by students.

**Table 1. Gender wise distribution of various platforms**

Platforms	Male	Female	Total
SWAYAM	341	322	663
COURSERA	48	57	105
edX	34	43	77
NPTEL	23	26	49
UDEMY	7	3	10
FUTURE LEARN	7	13	20
OTHERS	13	8	21
Total	473	472	945

The data reported in Table 2 shows the academic level-wise distribution of various platforms chosen by students.

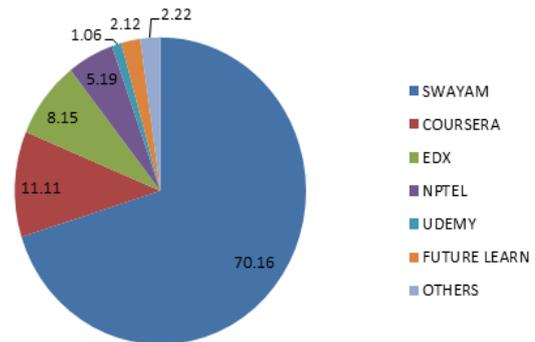
**Table 2. Academic level-wise distribution of various platforms**

Platforms	UG	PG	Others	Total
SWAYAM	582	60	21	663
COURSERA	96	7	2	105
edX	63	8	6	77
NPTEL	37	9	3	49
UDEMY	9	1	0	10
FUTURE LEARN	9	7	4	20
OTHERS	18	3	0	21
Total	814	95	36	945

From Tables 1 and 2, we observe that the SWAYAM platform is the first choice of students in every aspect whether we consider gender or academic level. The second choice is Coursera followed by edX. Table 3 shows the overall popularity of various MOOCs platforms percentage and its graphical representation is shown in Fig. 1.

**Table 3. The popularity of various MOOCs platforms in percentage**

Platform	Percentage
SWAYAM	70.16
COURSERA	11.11
EDX	8.15
NPTEL	5.19
UDEMY	1.06
FUTURE LEARN	2.12
OTHERS	2.22

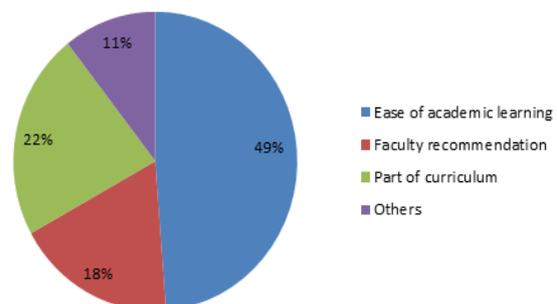


**Fig.1 Graphical representation of the percentage of various platforms used by students**

Now analyze the reasons chosen by students for selecting MOOCs. As discussed earlier, four choices were provided to students. For further use, assign labels to the choices. Table 4 shows the labels, corresponding reasons, and many students for different reasons of course selection. Graphical representation of the percentage of students selecting different reasons is given in Fig. 2.

**Table 4. Distribution of students for selecting different reasons**

Label	Reason	No. of students
A	Ease of academic learning	461
B	Faculty recommendation	172
C	Part of the curriculum	212
D	Others	100



**Fig. 2 Percentage of students selecting various reasons**



We also analyze department wise distribution of students selecting different reasons and it is shown in Table 5.

**Table 5. Department wise distribution of students for selecting different reasons**

Sr . No.	Department	No. of students for a different reason				
		Ease of learning	Faculty Recommendation	Part of the curriculum	Others	Total
1	Agriculture	22	4	17	7	50
2	Allied Sciences	38	2	21	18	79
3	Architecture	6	5	2	1	14
4	Commerce	67	39	15	6	127
5	Computer Application	44	12	17	12	85
6	Engineering	42	16	13	8	79
7	Management	128	50	90	23	291
8	Pharmacy	47	16	10	11	84
9	Humanities	15	7	7	3	32
10	Fashion Design	26	8	11	4	49
11	Others	26	13	9	7	55
<b>Total</b>		461	172	212	100	945

Analysis of the different reasons for selecting courses shows that the majority of students selected the course because of ease of learning, even though the course is a part of the curriculum. It is interesting to note that it is also true for department wise distribution. Thus, based on the sample data, it can be stated that MOOCs provide ease of academic learning among students.

After the initial analysis of MOOC's acceptability, to check the role of gender or the academic level in choosing MOOCs, we further analyzed the dependence between gender and decision and between academic level (UG/PG) and the decision of selecting MOOCs. Our objective to answer the following questions:

Q1. Whether the decision of choosing MOOCs is dependent on gender?

Q2. Whether the decision of choosing MOOCs is dependent on an academic level (UG/PG)?

To get the answer to the first question, we framed the following null hypothesis:

$H_0$ : The decision of choosing MOOCs is not dependent on gender.

Thus, the alternative hypothesis would be

$H_1$ : The decision of choosing MOOCs is dependent on gender.

We choose a 5% level of significance. To analyze the data, we use the Chi-square test statistic to test the independence between gender and decision. Table 6 shows the observed values of the gender-wise distribution of students selecting various reasons.

**Table 6. Gender wise distribution of students for selecting different reasons**

Gender	Reason				
	A	B	C	D	Total
Female	228	87	120	37	472
Male	233	85	92	63	473
Total	461	172	212	100	945

Upon calculation, we get  $\chi^2 = 10.535$  and the  $p$ -value 0.0145. The  $p$ -value is less than .05, thus the null hypothesis is rejected at a 5% level of significance. It is observed from the sample that the decision of choosing MOOCs is not independent of gender, that is, gender has some role in selecting MOOCs.

To get the answer to the second question, we framed the following null hypothesis:

$H_0$ : The decision of choosing MOOCs is not dependent on the academic level (UG/PG).

Thus, the alternative hypothesis would be

$H_1$ : The decision of choosing MOOCs is dependent on the course level (UG/PG).

We choose a 5% level of significance. To analyze the data, we use a Chi square test statistic to test the independence between gender and decision. Table 7 shows the observed values of the academic level-wise distribution of students selecting various reasons.

**Table 7. Level wise distribution of students for selecting different reasons**

Level	Reason				
	A	B	C	D	Total
UG	385	154	184	91	814
PG	61	9	21	4	95
Total	446	163	205	95	909

Since observed frequency in one cell is less than 5, thus first we merge the third and fourth columns and then apply the Chi-square test of independence. Upon calculation, we get  $\chi^2 = 10.629$  and the  $p$ -value 0.0049. The  $p$ -value is less than .05, thus the null hypothesis is rejected at a 5% level of significance. It is observed from the sample that the decision of choosing MOOCs is not independent of UG and PG level of courses.



This further signifies that the academic level also has some role in selecting MOOCs.

### III. CONCLUSION

The present analysis was based on 945 students of different branches of Graphic Era Hill University, Dehradun to explore the acceptance of MOOCs among students and analyzing the view of students towards selecting MOOCs. The statistical analysis based on sample data shows that the SWAYAM platform has the highest acceptability among the students irrespective of gender and academic level and MOOCs offer ease in academic learning. The results further suggest that the selection of MOOCs is not independent of gender and academic level, that is, gender and academic level affect the selection of MOOCs which opens further dimensions to explore.

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