ASSESSING STUDENTS' MOTIVATION IN THE ADOPTION OF MASSIVE OPEN ONLINE COURSES (MOOCS)

ABSTRACT

The global education sector has been reformed by recent development in the internet and other digital technologies. To remain vibrant, academic ecosystems in higher education have infused modern technologies into their development strategies. The launch of Massive Open Online Courses (MOOCs) in India is the most recent breakthrough in online education. Students have embraced and recognised the value of online education through MOOCs. Students carry an array of motivating beliefs that influence their desire to learn these online courses. The present study aims to assess students' motivational beliefs, such as self-efficacy, intrinsic value, and test anxiety, that led to the intention to adopt MOOCs. Two hundred students enrolled in MOOCs were surveyed through a structured questionnaire. The data collected was analysed with Partial Least Squares Structural Equation Modeling (PLS-SEM) by SMART PLS software. The results revealed that all three motivational beliefs significantly influenced the intention to adopt MOOCs. The findings were corroborated with the government initiatives to go a long way in accomplishing the academic goals of the student community.

Keywords: *Adoption, MOOCs, Motivational belief, Online learners, PLS-SEM.*

P. S. BUVANESWARI

Assistant Professor of Commerce

University of Madras Chennai - 600005

M. S. SWETHA

Assistant Professor of Commerce

M. O. P. Vaishnav College for Women, Chennai - 600034

C. V. CHITTIBABU

Associate Professor of Botany

Presidency College (Autonomous), Chennai - 600005

I. Introduction

Education is the lifeblood that paves way to development. The United Nations Sustainable Development Goals have described how improving education enables socioeconomic mobility upward and plays a key role in eradicating poverty. In 2018, around 260 million children were

school dropouts, accounting for one-fifth of the world's population in that age category. More than half of all the children and teenagers worldwide do not meet the basic requirements of excellence in reading and mathematics. In 2020, several countries had confessed that the temporary closing of schools affected more than 91 % of students nationwide due to COVID-19 pandemic spread across the globe. It was projected that by April 2020, nearly 1.6 billion children and young people would be out of school. And almost 369 million children dependent on school meals had to look for other daily nutrition options[1]. In order to safeguard children's welfare and guarantee their access to ongoing education, UNESCO established the COVID-19 Global Education Coalition in March 2020. This multi-sector partnership brings together the UN family, civil society organisations, media, and IT partners to develop and implement creative solutions. The abrupt and unprecedented educational upheaval, is assisted by the multi-sector partnerships in addressing the educational content, filling the gaps, and facilitating inclusive learning opportunities for children and youth. [2].

A. Education in India

The Indian higher education system is the third largest in the world and offers education and training across almost all disciplines[3]. The Education 4.0 India initiative aims to use fourth industrial revolution technologies to enhance learning and reduce inequalities in India. By 2030, India and UNDP aim to ensure high-quality, inclusive and fair education, in addition to providing opportunities for lifelong learning[2]. According to World Economic Forum 2021 study titled "Shaping an Equitable, Inclusive and Sustainable Recovery: Acting Now for a Better Future", at least 24 million children, in India mostly girls, may never return to school. To reverse these learning losses and scale up solutions that will not just fill in the gaps but also build long-term learning environments, immediate action is required. This challenge can be addressed through the means of digital learning platforms[4]. FICCIs' report on higher education has revealed that the rise of online learning is estimated at 50% increase in gross enrolment ratio[3]. As a reformative step the Indian government has brought in several initiatives such as SWAYAM, E-Basta, Rashtriya Madhyamik Shiksha Abhiyan(RMSA), Skill India and Digital India as a part of development in online learning platforms [5].

B. Online Learning Platforms

Online courses and e-learning have transformed education levels, from primary school to university. In the current era, all higher education institutions have started adopting online learning

in addition to the traditional learning system due to the advancement of technology. The higher education sector is increasing the use of online learning platforms to reduce the cost of education and attract more students [6]. Belanger and Jordan (2000) reported that educational institutions and organisations could evolve through three stages, i.e., the first stage is technology insertion, when the organisation uses instructional technologies within the traditional classroom environment [7]. The second stage is partial conversion; where delivery of online courses are conducted, or through other distance-learning technologies. The third stage comprises total conversion, the most extensive conversion of traditional classroom training to online or other distance-learning technologies. Thus, the education industry has undergone a rapid transformation, as predicted.

The twenty-first century has been marked by major improvements in technological progress that have permeated almost every aspect of existence. Technologies have an impact on how people go about their daily lives. The introduction of social media has also aided in technical improvements. For example, learning today occurs in social contexts facilitated by social media platforms, and the exponential rise in popularity of Massive Open Online Courses (MOOCs). With the implementation of new educational technology, approaches to teaching and learning continue to evolve. One relatively new strategy is to use technology to scale up education in the form of MOOCs. MOOCs give learners several chances to attend courses in various fields within higher education for free or at a little cost [8–10]. Post-COVID'10 is critical in transforming education industries; hence, education stakeholders have stepped into online mode due to the pandemic. The education industry has grown through its application, reflecting convenience and technology's confluence. In this case, the entire teaching and learning process is moved to an online environment. As a result, students can explore online courses and stay engaged. This study seeks to understand how students feel about the online courses offered through various educational platforms. The factors of motivational belief, such as intrinsic value, test anxiety, and self-efficacy, were considered in this study. PLS-SEM analysis was used to investigate the student's behaviour intention and the relationship between the motivational factors. The study aims to answer the major question: What is the relationship between motivational elements and students' adoption of MOOCs ?

II. Review Of Literature

The literature reviews were composed of articles from the recent past, that is, between 2015 and 2019. They were classified into two segments: students' motivational belief and behaviour intentions in online courses.

A. Motivation Belief

Motivation is the impetus to activate a person toward performing a behaviour or actions[8]. Many research studies have been conducted to investigate student acceptability and motivation for online learning, open education resources, and MOOCs. Understanding the motives for using MOOCs and the elements influencing MOOC acceptability is critical for increasing participation and completion rates among participants. One of the motivators for students to participate in MOOCs is to study a new topic or to expand their expertise [11 and 12]. The previous literature analysed the relationship between learners' motivation and course engagement in an astronomy MOOC [13]. The student motivation, student's performance, completion or engagement depends on the individual character and goals [14]. Learners' perception revealed that selectively paid attention, self-determined relevance, high confidence, different sources of satisfaction and the online platform's design motivate students' interest in the MOOCs environment [11]. The students' attitudes, motivations and barriers in MOOCs courses were discussed in previous studies. But, they had neglected a few important variables, namely, self-efficacy, intrinsic value, and test anxiety. Self-efficacy, intrinsic value, and test anxiety are key variables considered motivation belief in previous literature on traditional classroom learning environments [15]. The current study considers these three constructs as a motivational belief of MOOCs adoption.

B. Self-Efficacy

Self-efficacy is a subjective assessment of a person's ability to do specific activities or achieve particular outcomes in the future[15]. Computer self-efficacy refers to self-efficiency in computer use. In previous studies, computer self-efficacy was found to affect e-learning system utilisation substantially. In his research, Artino (2007) used and enlarged TAM, whereas Chang and Tung (2008) merged the innovation diffusion theory (IDT) with the technology acceptance model (TAM)[16 and 17]. Alenezi et al. (2010) performed a study at Saudi Arabian government universities and discovered that students' propensity to use e-learning is highly influenced by their computer self-efficacy[9 and 18]. In accordance with the above findings, the proposed hypothesis is:

$H_{1a:}$ Self Efficacy is positively related to behaviour intention .

C. Intrinsic value

The intrinsic value of students refers to their emotional attachments to a certain topic or endeavour. One important aspect of students' motivation is their intrinsic value, and their effort in the classroom is seen as one of the most important consequences of ensuring kids' academic achievement [19]. Students' perspectives about their intrinsic motivation for and perceptions of the value of their coursework, as well as their preferences for the challenge and mastery objectives, are gathered to calculate the intrinsic value. Although intrinsic worth does not directly correlate with performance, it has a favourable relationship with performance and cognitive engagement in classroom learning [15]. In accordance with previous literature, intrinsic value is a key motivator, and hence, the proposed hypothesis is:

$H_{2a:}$ Intrinsic value is positively related to behaviour intention .

D. Test Anxiety

An individual's tendency to worry, have distracting thoughts, have mental perplexity, tension, and a bodily reaction in exam conditions is known as test anxiety. [20]. Few researchers have attempted to understand the role of test anxiety in MOOC-based education concerning students' performances on the final exam [21] and the impact of test anxiety on online students[20]. The previous literature has stated that test anxiety is a key attribute in the learning environment, and hence the following hypothesis has been proposed

$H_{3a:}$ Test Anxiety is positively related to behavioural intention..

E. MOOCs adoption

The key dependent variable of this research is MOOCs adoption or, in other words, students' behaviour intention. Several previous researchers who have examined MOOCs adoption have considered the intention to use MOOCs. The researchers examined consumer satisfaction and intention to use MOOCs [22]. Behavioural researchers have considered sustainability, initiative, concentration and reflection as the factors for learning behaviour engagement[23]. Some studies have used TAM, Technology Acceptance Model; TAM2, Technology Acceptance Model 2; UTAUT, Universal Theory of Acceptance and Use of Technology; TRA, Theory of Reasoned Action; TPB, Theory of Planned Behaviour, in understanding MOOCs adoption [24–26]. Some studies have examined the students' online learning interest and their continuance intention to learn MOOCs through the metacognition effect and student's completion rates in MOOCs [27 and 28].

These reviews showcased limited research on variables such as self-efficacy, intrinsic value, and test anxiety as key motivators in students' adoption of MOOCs courses. The studies version of the observe is provided in Figure 1.

III. Methods And Measures

The questionnaire was drafted to collect demographic information of the respondents, such as Age, Gender, Education, Course Streams, Duration of Course and Hours Spent on Courses. The second part of the questions was related to the variables (Self-Efficacy, Intrinsic Value, Test Anxiety, Behaviour Intention to adopt MOOCs). using the five-point Likert scale [29]. Pintrich and DeGroot (1990) validated statements related to the three major motivational belief constructs: self-efficacy, intrinsic value and test anxiety [15]. They were utilised in this article along with statements related to Adoption intention. Table 1 depicts a glance at the methods.

IV. Results And Discussion

A. Demographics Profile

Age, gender, and education-related demographic data of the respondents were gathered (Table 2). Majority of the respondents (59.6%) were women. The majority (92.1%) of the sample comprised respondents from the 18 to 23 age cohorts. The majority (73.4%) of them were postgraduates. 47.3% of respondents opted for NPTEL as their preferred online learning platform. The data revealed that smartphones and laptops were the top-used gadgets.

Table 1 Methods

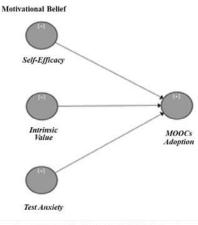|	Description
Data collection	Sample size: 203 completed for analysis Sampling technique: Purposive sampling Data collection: **Primary**- Questionnaire, Chennai **Secondary**- Several source Target populations: Online courses participants
Data analysis	Percentage, Multiple Response analysis Partial Least Square- Structural Equation Model Software used: SPSS 23.0 & SMART PLS
Data Curation	Reliability tests (Cronbach alpha, Composite Reliability) Validity tests (Discriminant validity and construct validity)

Figure 1. Research Model

Table 2 Demographic profile

Variables		F	%
Gender	Male	82	40.4
	Female	121	59.6
Age	18-25	187	92.1
	25-30	16	7.9
Education	UG	37	18.2
	PG	149	73.4
	PhD.	5	2.5
	Diploma/Certificate	5	2.5
	Others	7	3.4
Online learning platform*	NPTEL	96	47.3
	SWAYAM	60	29.6
	EDX	7	3.4
	Others	56	27.6
Electronic gadgets used*	Computer	40	19.7
	Laptop	93	45.8
	Smart Phone	115	56.7
	Tab	7	3.4
*Multiple response analysis			

B. Measurement of the Model

The coefficients of composite reliability and the Cronbach Alpha for each construct are larger than the suggested cut-off value of 0.7, as shown in Table 3, demonstrating that all constructs have sufficient reliability. The confidence level for each construct's AVE (Average Variance Extracted) is more than the permitted value of 0.5. Additionally, all items strongly load on their theoretical construct because all loadings are higher than the permissible level of 0.7, which supports the dataset's convergent validity.

Table 3 Reliability and validity

Construct & its Code		X	SD	Λ	α	CR	AVE	VIF
MOOCs Adoption	BI.1	3.37	0.89	0.84	0.78	0.86	0.61	1.85
	BI.2	3.50	0.94	0.77				1.61
	BI.3	3.58	1.08	0.70				1.29
	BI.4	3.61	1.05	0.81				1.73
Intrinsic Value	IV.1	3.61	0.99	0.76	0.88	0.91	0.63	1.88
	IV.2	3.59	1.02	0.76				2.04
	IV.3	3.66	0.96	0.83				2.43
	IV.4	3.65	1.00	0.82				2.08
	IV.5	3.75	0.97	0.80				2.29
	IV.6	3.72	0.98	0.79				2.05
Self-Efficacy	SE.1	3.58	0.86	0.80	0.78	0.87	0.69	1.54
	SE.2	3.67	0.97	0.84				1.67
	SE.3	3.65	0.96	0.85				1.64
Test Anxiety	TA.1	3.03	1.17	0.88	0.89	0.93	0.76	2.56
	TA.2	3.01	1.23	0.88				2.75
	TA.3	2.97	1.18	0.89				2.62
	TA.4	3.03	1.14	0.82				2.00
Source:SMART PLS								

C. Fornell-Larcker Criteria validity

One of the most often used methods for evaluating the discriminant validity of measurement models is the Fornell-Larcker criterion. This criterion states that the correlation between a construct and any other construct must be greater than the square root of the AVE by the construct. Discriminant validity is proven when this prerequisite is met. For instance, the correlation between Intrinsic Value and MOOCs adoption is 0.69, which is a lesser score (Table 4), so the findings show that the measurement model's discriminant validity is achieved.

Table 4 Discriminant validity (fornell-larcker criteria)

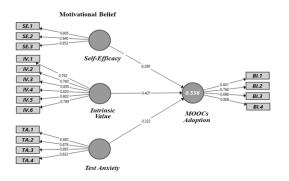| Variables	BI	IV	SE	TA
BI	**0.78**			
IV	0.69	**0.79**		
SE	0.65	0.79	**0.83**	
TA	0.38	0.26	0.19	**0.87**

Figure 2. Research Model

D. Relationship between test anxiety, self-efficacy, Intrinsic value and MOOCs adoption

Table 5 Results of pls- sem

Variables	B	T	R^2	Sig.	Decision
TA -> MA	0.22	3.85		0.00	Significant
SE -> MA	0.29	3.68	0.57	0.00	Significant
IV-> MA	0.41	4.68		0.00	Significant

Self-Efficacy and MOOCs adoption

Table 5 reveals that there is a positive and significant influence of Self-efficacy on the adoption of MOOCs.The result shows that 29% of increase in self-efficacy would increase students motivation to adopt MOOCs. The results support the findings of other studies where Self-efficacy was highly correlated with students' intrinsic motivation [30 and 31]. Computer self-efficacy[17 and 32], academic self-efficacy [33] and students' self-efficacy [15] have positive effect on behavioural intention to use online learning platforms. The literatures have also revealed that self-efficacy is directly related to students' engagement [34].

Intrinsic value and MOOCs adoption

Intrinsic value impacts, positively and significantly, the students to adopt MOOCs. It is found that 41% of increase in intrinsic value would increase students'to adopt MOOCs. This finding is similar to another study where intrinsic value and effort are key variables that leads MOOCs adoption[19 and 30]. There are several studies that speak on intrinsic motivation, and few other studies have revealed the importance of intrinsic value in traditional learning environment. This current research has empirically proved that intrinsic value motivates the students in MOOCs adoption.

Test Anxiety and MOOCs adoption

An important emotion in relation to learning is test anxiety[21].Test anxiety in this study significantly motivates students'MOOCs adoption. 22% of increase in test anxiety motivates students' MOOCs adoption. This finding is in contrast to a study where test anxiety was negatively correlated with academic performance[35]. But in reality, it is essential for students to have moderate level of anxiety to get good academic performance and low level of anxiety during learning phase in MOOCs platform[36].

All the three hypotheses were positively significant, and the results revealed 57% of the r-square value (Table 5). In conformity with the previous literature, self-efficacy has a positive significance on behaviour intention, which shows that it is a key antecedent, and motivator, and it creates learning engagement among MOOCs users [17 and 25; 33 and 37]. Moreover, intrinsic value is the most dominant motivator in classrooms; this research has once again proved that it is a dominant motivational factor for MOOCs adoption[19]. Test anxiety usually contributes to academic performance and is a key contributor in motivating MOOCs adoption[15 and 21]. The hypotheses testing results revealed that 22%, 29% and 41% of changes in test anxiety, self-efficacy, and Intrinsic value, respectively, lead to changes in students' intention towards MOOCs adoption (Figure 2).

V. Conclusion

Online learning in India is still developing. It would be amazing if the government insisted on MOOCs as one compulsory allied paper among college students. The key finding revealed that students who intend to use MOOCs consider the intrinsic value a key motivational element. So, when the course becomes part of a degree, surely they would be motivated to be part of it. Similarly, the government can link the assurance and credibility of MOOCs with job opportunities, which will be an intrinsic value and motivate students to adopt more MOOCs. The study also highlighted that self-efficacy and test anxiety play a strong role as a motivator; hence, offering MOOCs generates content based on these lines. The study has not addressed other motivational factors of MOOCs adoption. In the future, the researchers can examine other motivational factors of MOOCs adoption and the impact of motivational belief and instructional support on the adoption of MOOCs. Future researchers can also examine the impact of Artifical Intelligence (AI) applied tutors in adopting

MOOCs courses. MOOCs would be successful only because of students' engagement; hence, the content creators are advised to keep the above findings in mind to motivate the users.

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