Factors affecting adoption of MOOC by hospitality students: a moderating role of Internet self-efficacy

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Abstract

The present study examines the moderating role of internet self-efficacy on the relationship between the perceived usefulness, perceived ease of use, and organisational support and behavioural intention of hospitality students in adopting the MOOC courses. This empirical study is based on the responses from hospitality students studying in one of the premier hospitality institutes in Karnataka, India. Structural equation modeling and process macro are used to test the proposed hypotheses in the study. The finding suggests that internet self-efficacy had a moderating effect only between organisational support and behavioural intention. In other words, study findings indicate that improved self-efficacy and organisational support lead to hospitality students' greater behavioural intention to adopt MOOCs for their academic accomplishments. The study outcomes are helpful for the universities' higher authorities formulate organizational support in technical and internet self-efficacy to achieve more success in adopting the MOOC.

KEYWORDS: MOOC, Hospitality Students, Internet Self-Efficacy, Organisational Support, Behavioral Intention.

1. Introduction

MOOC, an acronym for a massive open online course, is a platform that provides unlimited open access to numerous courses via the web. Introduced in 2008 by Dave Cormier, this platform emerged as a popular learning mode with several benefits. It also provides an opportunity to educate the intellectual capacities of an individual at the mass level. Additionally, MOOCs can be used as a blended learning program allowing students access to a wealth of information to supplement traditional classroom teaching. However, despite the number of advantages MOOC offers over classroom teaching, studies also suggest several barriers to adopting MOOC such as language, internet connectivity, difficulty in using the platform, non-relevance of content, and difficulty reaching the rural population, non-accreditation etc. One of the significant and often cited drawbacks of MOOC is its dropout rate (Jordan, 2014). Studies have also found that a substantial number of MOOC users do not achieve what they intend to do, in other words, usefulness of the course (Henderikx, Kreijns & Kalz, 2017). Lack of publicity, non-relevance of information, lack of accessibility, and lack of proper instructions and support have been cited as other barriers (Ma & Lee, 2020). Consistent with Ma and Lee's (2020) study, the study conducted in India (Mohan, Upadhyaya & Pillai, 2020) has identified self-control and attitude as significant individual barriers to using MOOCs. Xing and Du (2019) have also disputed the significance of behavioural dispositions in predicting the likelihood of MOOC dropout. Research findings also reveal time constraints, lesser effectiveness compared to traditional learning, technical barriers and monotonous as some of the barriers to low usage of MOOCs among business students in India (Mohan, Upadhyaya & Pillai, 2020).

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Even though MOOC has emerged as a new trend in education, the availability of hospitality courses seems scarce and narrow. Only limited subjects have been covered with primary content across a few disciplines such as marketing, food and beverage, accommodation management, and culinary. Though this is a good start, considering the diverse demand of the hospitality industry, the current supply is inadequate (Tracey, Murphy & Horton-Tognazzini, 2016). Currently, in the hospitality sector, MOOC is provided by edX, Khan Academy, Alison, Udemy, International Federation for IT and Travel and Tourism (IFITT), Coursera, and Udacity, which offer courses in core operational departments of hospitality and allied sectors under their platform. However, the research about MOOC and related issues such as adequacy and effectiveness in hospitality education is in its initial exploration phase, unlike other disciplines, such as data science, management, and information technologies (Bozkurt & Keskin, 2016). Therefore, scholars emphasize the need for more research in the hospitality discipline to investigate the effectiveness of MOOCs (Tracey et al., 2016).

Many theoretical perspectives have been developed to understand how consumers decide to use and adapt to any new technology. The Technology Acceptance Model (TAM), built on the Theory of Reasoned Action (TRA), is one of the most popular and widely used theories for studying various technology-related fields and contexts. According to TRA, behaviour is explained by people's behavioural intention (BI), attitudes, subjective norms, and beliefs (Ajzen & Fishbein, 1980). Further, this theory argues that the user acceptance of information systems mainly includes two major components: perceived usefulness (PU) and perceived ease of use (PEOU). The PU in the context of MOOC adaption can be described as the extent to which a person believes that MOOCs can be a driving force towards achieving academic goals (Chen et al., 2017). Further, literature on MOOCs suggests that PU is a significant predictor of continuing MOOCs (Alraimi, Zo & Ciganek, 2015). Meanwhile, PEOU is another important construct found to have a positive influence on behavioral intention in the context of mobile learning applications (Chen, Sivo, Seilhamer, Sugar & Mao, 2013) and is believed to be a critical predictor of behavioral intention in the adoption of MOOC (Al-Adwan, 2020). Therefore, it is reasonable to assume that when students perceive any technology to be easy to use, they are likely to exhibit positive behavioral intention towards its adoption. Thus, we propose the following research hypothesis:

H1: PU significantly influences the intention to continue using MOOCs.

H2: PEOU has a significant influence on the behavioral intention of hospitality students.

Generally, individuals rely on others' opinions and support and encouragement whenever they are new to technology. Therefore, it is expected that organisational support (OS), such as guidance and visibility of teachers (Melicherikova & Piovarci, 2016) from the teachers and training conducted by the organisation, would result in higher judgements of Internet self-efficacy (ISE), which would further influence the BI of students. It is also found that infrastructure and technical support provided by the organisation play a crucial role in shaping the perception and subsequent usage of IT in the healthcare sector (Bhattacherjee & Hikmet, 2008). Thus, we propose the following hypothesis:

H3: Organizational support has a positive influence on the behavioral intention of hospitality students.

Drawing from the social cognition theory, self-efficacy is defined as one's degree of confidence in the ability to perform a behaviour in the face of various obstacles or challenges (Bandura, Freeman, & Lightsey, 1999). Besides, MOOC also face a number of pedagogical and technological challenges (Normandi Atiaja & Segundo Guerrero Proenza, 2016). Further, a host of literature within the information technology adapted ISE for predicting consumer behaviour (Mallya, Lakshminarayanan & Payini, 2019; Sharif & Raza, 2017), and a few studies have investigated it in the MOOC context. Meanwhile, researchers in the past have successfully adapted ISE as a moderator in TAM (Kao & Chien, 2017). Thus, the following hypotheses were proposed:

Therefore, we propose the following hypotheses:

H4: ISE has a moderating effect on the relationship between PU and BI.

H5: ISE has a moderating effect on the relationship between PEOU and BI.

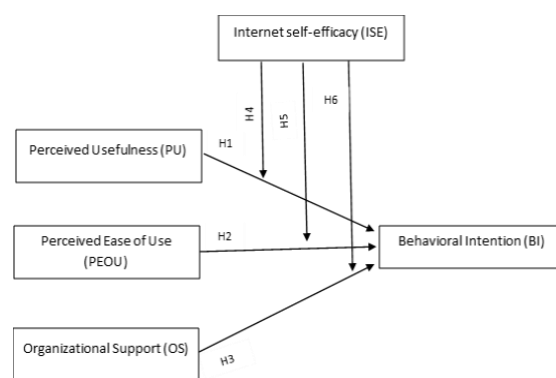H6: ISE has a moderating effect on the relationship between OS and BI.

Figure 1 - Proposed research model based on TAM (Davis, 1989).

2. Materials and method

2.1 Background

This research is conducted in one of the top-ranked hospitality institutes in India; namely, Welcomgroup Graduate School of Hotel Administration (WGSHA), jointly run by Manipal Academy of Higher Education (MAHE), Manipal certified as an institute of eminence (IoE) by UGC and ITC Hotels, a part of the ITC Limited group of companies. It offers two undergraduate courses (Bachelor of Hotel Management and Bachelor's in culinary arts), two postgraduate courses (MSc in Hospitality and Tourism and MSc Dietetics and Applied Nutrition) and one postgraduate diploma in culinary arts. Based on UGC directives on MOOCs, WGSHA integrates a few courses under the open elective scheme as part of the curriculum. Students may register for courses, such as consumer behaviour, organisational behaviour, revenue management or business ethics, corporate social responsibility, sustainable tourism, and management of human resources etc., as open electives, digital marketing, bartending, food and beverage management, culinary management, hygiene and sanitation, nutrition etc. After completing the course, the student earns credit(s) and a certificate.

2.2 Participants, data collection and sampling method

The participants of this study were undergraduate and postgraduate students of WGSHA. An online survey using Google form was used to collect the data from the students. Students who had completed at least one MOOC program were considered fit to participate in this survey. Thus, this study adopted the purposive sampling technique to collect the data. This technique is viewed as appropriate in this study because it is expected that students who have completed at least one MOOC program will be able to provide a unique and more accurate assessment of use, ease of use and the OS to adopt MOOC. The data was collected between 2nd June to 17th June 2020. In total, 189 online survey questionnaires were mailed to students, followed by two more reminders at five days of the interval. Finally, 165 responses were received, resulting in 88% of the response rate.

2.3 Measuring instrument

The survey instrument had two sections. The first section had items related to three independent variables, one dependent variable and one moderator variable. The independent dimensions were measured using the scales developed (Igbaria, 1990) with necessary modifications specifically relevant to the adoption of MOOC. The moderator variable, ISE, was measured using five items (Mallya et al., 2019). Finally, the dependent variable, i.e., BI, is measured using a scale developed by (Venkatesh, Morris, Davis & Davis, 2003). The respondents were asked to express their agreement or

disagreement regarding all the statements on a 5-point Likert scale where 1 strongly disagreed, and 5 strongly agreed. The second section of the measuring instrument captured the demographic details, such as age, gender, and education.

3. Results

The number of students participating in this survey was 165. Of these, 144 (87.3%) were undergraduates, and 21 (12.7%) were postgraduate hospitality students. The number of female students was 50 (30.3%), male 110 (66.7%) and 5 (3%) opted not to disclose their gender. The average age of the students was 21years.

Constructs	Overall mean score	Pooled SD score	Factors loading range	Cronbach's alpha
PU	3.72	0.99	0.89 to 0.94	0.95
PEOU	3.75	1.02	0.88 to 0.91	0.95
OS	3.74	1.03	0.88 to 093	0.95
ISE	3.71	1.06	0.79 to 0.94	0.94
BI	3.71	1.01	0.86 to 0.95	0.96

Table 1 - The mean, standard deviations, Cronbach's alpha and factor loadings of variables

3.1 Measurement model

A confirmatory factor analysis was performed using 165 samples to assess and validate the model fit. It was observed that all the factors were loaded onto their respective constructs. The model fit was assessed based on multiple indices. First, the chi-square ratio to the degree of freedom was 2.478, which was well within the recommended value of 3 (Hair, Black, Babin, & Anderson, 2010). Second, the Tucker-Lewis index (TLI), Incremental Fit Index (IFI), and Comparative Fit Index (CFI) were above the recommended value of 0.9 (Bentler & Bonett, 1980), i.e., 0.937, 0.926 and 0.937, respectively. Third, the RMSEA value exceeded the recommended value of 0.08 (Browne & Cudeck, 1992). Finally, the SRMR score was calculated, and it was found to be 0.0394, less than 0.08 as recommended by (Hu & Bentler, 1998), indicating the robustness of the model. Besides, it can also be inferred that the construed theoretical model is reasonably consistent with the data set.

3.2 Convergent and Discriminant Validity

The internal consistency and reliability of the measurement model and constructs in the proposed model were tested using composite reliability (CR) and average variance extracted (AVE) scores. The value of CR should be greater than 0.7 (Hair et al., 2010) to

indicate that the items measure the construct that is intended to measure. It was found that the CR scores were above these recommended values for all the constructs. Both convergent and discriminant values were calculated using the AVE score. It is recommended that the AVE should be greater than 0.5 (Hair et al., 2010). The AVE and CR values of the constructs are represented in Table II. The results suggest that the AVE scores are above the threshold value, indicating the constructs' reliability and convergent and divergent validity.

	CR	AVE	PU	PE	US	BI	ISE
PU	0.951	0.830	0.911				
PE	0.947	0.816	0.858***	0.903			
OS	0.953	0.836	0.730***	0.766***	0.914		
BI	0.956	0.813	0.874***	0.850***	0.779***	0.902	
ISE	0.942	0.764	0.712	0.803	0.696	0.756	0.874

CR=Composite reliability, AVE= Average variance extracted, values in bold are the square root of AVE, values in the off-diagonal are correlation among constructs in the model.

Table 2 - Test of reliability and validity.

3.3 Hypotheses testing

Structural equation modelling was used to test the hypotheses proposed in the model. Each path and associated hypotheses were examined using t-statistic and the associated p-values (Table III). Table III also summarises proposed hypotheses and their associated inferences. Further, another measure of the model's fitness, i.e. R^2 value, was found to be 0.784, which was well above the recommended value of 0.5 (Hair et al., 2010). This suggests that all the independent constructs altogether were able to explain 78.4 % of the BI of the hospitality students to adopt the MOOCs. Further, the structural model analysis indicates that PU is the most significant positive factor of BI for hospitality students to adopt MOOCs, followed by PEOU. OS emerged as the third significant positive predictor of BI.

		Estimate	S.E.	C.R.	P
H1	BI <--- PU	0.461	0.086	5.373	0.001***
H2	BI <--- PE	0.236	0.087	2.715	0.007**
H3	BI <--- OS	0.199	0.059	3.363	0.001***

Table 3 - Direct effect.

3.4 Moderating effect of ISE

The moderating effect of ISE on the relationship between PU, PE and OS was calculated using PROCESS macro v3.4 (Hayes, 2018) with 5,000 bootstraps (Table IV). Results suggest that ISE had a moderating effect only between the OS and BI since the index of moderation that provides a formal test for moderation does not include zero (Hayes, 2018) (index = -0.071, Boot CI = [-0.1371, 0.0051]). In other words, students

with interaction effects of ISE and OS tend to exhibit a higher level of BI towards MOOC.

	Standard β	SE)	t-statistic	p
PU×ISE→BI	-0.329	0.292	-1.1279	0.260[ns]
PE×ISE→BI	-0.0144	0.0325	-.04413	.06596[ns]
OS×ISE→BI	-0.071	0.0334	-2.1283	0.0348*

*Significant at 0.05 level, ns non-significant

Table 4 - Moderation effect of ISE between IVs and DV.

	Coefficient	SE	t	p	LLCI	ULCI
Constant	- 0.1187	.3800	-.3124	0.7551	-0.8691	-.06371
OS	0.7017	.1238	.56696	.001**	.4573	.9461
ISE	0.6185	.1240	4.9897	.001**	.3737	.8633
Interaction	-.0711	.0334	-2.1283	.035*	-.1371	-.0051

*Significant at 0.05 level, ** 0.001 level

Table 5 - Interaction effect of ISE between OS and BI.

4. Discussion and Implications

MOOC is perceived as the most evolutionary and innovative online learning platform in higher education, offering high-quality education from well-known universities around the globe. Factors such as cost efficiency of the courses, self-paced study, open access to educational resources, access to value addition courses, short duration, spot certification etc., make MOOC popular among the students. Though MOOC offers independent access to course content, specific concerns have come to light, such as low standardisation, lower effectiveness, and inflexibility, which adversely influence students' desire to enrol or continue education on MOOC. Meanwhile, this online platform is still nascent in India, especially in the hospitality and tourism sector context compared to developed countries. The hospitality stakeholders must understand the factors that affect the BI of the hospitality students in India. Thus, this study adapts the technology acceptance model to understand the ease of use and usefulness of the hospitality programs and the BI of the hospitality students to undertake these programs. This study also integrates OS as an additional independent construct to TAM to examine the BI of hospitality students. Additionally, the moderating effect of ISE between independent variables and a dependent variable is also investigated.

The findings of this study reveal that PU is a significant predictor of BI in MOOC adoption by hospitality students. This finding is in line with previous studies (Luik et al., 2019; Tao, Fu, Wang, Zhang & Qu, 2019; Tawafak, Romli, Arshah & Malik, 2020). Our findings suggest that hospitality students find MOOCs productive and effective in their academic performance

and that the courses helped them improve their academic accomplishments. The content of MOOC is found to be useful for improved decision-making among hospitality students. Further, findings also suggest that PEOU positively influences BI of hospitality students in adopting MOOCs. The findings are similar to previous studies (Al-Adwan, 2020; Al-Emran & Teo, 2020). In other words, hospitality students find it easy to use MOOCs and thus perceive courses offered on the MOOC platform to be helpful in the context of their academic activities.

Additionally, this study uncovers a positive relationship between OS and BI of hospitality students in the context of MOOC. The support and guidance provided by the teachers, mentors and top management of the organisation are found to positively influence students' behaviour to adopt MOOC for their academic accomplishment. This finding is in line with (Magid Igbaria, Parasuraman & Baroudi, 1996), who suggest that individuals are likely to exhibit favourable behaviour in an organisation where new technologies are widely used and supported. This indicates that OS plays a crucial role in implementing and adapting MOOCs in an academic environment. In-depth on-the-job training and organisation encouragement help build students' confidence and capabilities (Higgins & Gulliford, 2014), which further encourages them to adopt MOOC. Meanwhile, B. O'Mahony and G. Salmon (2014) find that higher education institutes that have provided access to non-traditional MOOC courses to on-campus students need additional support from the universities to develop learning skills for the successful completion of MOOC programs. They further propose that theoretical and liberal studies should be provided by universities using MOOCs to improve access for students in developing countries. When coupled with vocational elements such as on-the-job training, internships, etc., MOOC can provide holistic and rounded education to students. Finally, the findings of this study suggest that ISE moderates the relationship between OS and BI. Students with low ISE need higher OS to adopt MOOCs for academic purposes. However, for the students with high ISE, minimal support from the organisation is adequate. Thus, hospitality educators and trainers need to consider this observation and pay more attention to students with low ISE. The possible reasons for the positive impact of perceived usefulness and ease of use on behavioural intention can be attributed to many factors. For example, MOOC offers a variety of subjects. It also allows you to learn from peers around the world. MOOC is also available in different languages. The integration of MOOCs as an open elective subject(s) facilitates students to opt for a subject of their own choice as an elective subject to acquire knowledge in the areas that are interesting and important for them. Another reason could be the adoption of MOOCs by instructors, and universities are building different subject's MOOCs, including tourism and hospitality-related MOOCs (Lin, Cantoni & Murphy, 2018).

This study bestows few significant contributions to the hospitality education literature. First, it identifies the factors affecting the adoption of MOOCs by hospitality students by integrating TAM. Second, the inclusion of OS as an additional independent variable in TAM contributed to a better understanding of hospitality students' adoption of MOOCs. Third, this study integrates ISE as a moderator in TAM and provides better insights concerning MOOC adoption by hospitality students. Finally, this is the first study in the Indian hospitality education context to test the adoption of MOOCs using the TAM framework.

This study has several implications for hospitality educators and industry practitioners, particularly in the context of MOOC adoption for bridging the skill gap. This study demonstrates that hospitality students find MOOCs helpful in enhancing their skill sets. Also, they found the adoption of MOOCs to be an easy process. This is an encouraging finding for hospitality educators who must encourage and recommend more relevant MOOC courses to enable their students to enhance their skills. Another important finding of use is that there exists a positive relationship between the OS and students' adoption of MOOC, suggesting that verbal persuasion, encouragement from top management of the institute and module leaders play a crucial role in encouraging MOOC adoption by the students. OS plays a crucial role in creating a conducive environment to adopt new technology, in this case, MOOC. The top leadership of hospitality schools needs to accept the responsibility to identify the current and future needs of the hospitality industry and support the entire process of MOOC adoption. They also need to exhibit dynamic leadership to motivate hospitality students to register for MOOCs by identifying different courses available on the platform, thus, helping to bridge skill gaps. Besides, they should also organise IT training for those with low ISE. This is because students' ISE is a significant moderator between OS and MOOC adoption among hospitality students. Further, this study provides initial evidence for the moderating role of ISE between OS and behavioral intention among hospitality students in the context of MOOC. It confirms that ISE is a meaningful construct within the context of MOOC adoption.

6. Limitations and conclusions

The present study has a few limitations. First, it is conducted using data from a single hospitality institute, so the findings cannot be generalised to a larger context. Further, similar research is needed using data from other hospitality institutes in India. Second, the data used in the study is cross-sectional. Thus, longitudinal data are needed to assess the factors that influence the behavioral intention of hospitality students. Third, the findings are based on the behavioral intention of students. Future studies need to measure the factors that influence the actual behavior of hospitality students. This study is descriptive and thus needs further investigation by

including other stakeholders, such as module leaders, hospitality educators, and industry practitioners.

To summarise, MOOC has emerged as a game changer in higher education (Mohan et al., 2020). It is suggested that students are likely to complete the course if it is integrated into the university program (El Said, 2017). Thus, hospitality institutes must find innovative ways to adopt MOOCs in their academic curriculum based on the industry requirements. By doing so, they can play a significant role in bridging the gap between industry and academia. MOOC is considered an easy means to incorporate additional skill sets among the students. Thus, based on the literature on MOOCs and our study's findings, it can be concluded that the ISE and OS are two additional variables that can be integrated into the TAM. OS is crucial because learners can have a more streamlined and systematic learning experience, making learning more accessible, fun, meaningful and productive. Further, ISE, a belief in one's capabilities to organize and execute online learning, is a potentially critical factor in the adoption of MOOCs by hospitality students. The method and parameters used in this study can be repeated in other cultural contexts.

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