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Research Article

Factors Influencing Postgraduate Students' Behavioural Intention to Use MOOCs: An Augmented UTAUT2 Acceptance Model Approach

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ABSTRACT

Introduction: Massive Open Online Courses (MOOCs) have brought big changes to higher education, but the reasons for their popularity vary and depend on the setting. While MOOCs are becoming more popular, understanding what affects postgraduate students' decision to use MOOCs needs to be well researched in new educational environments, given that existing technology acceptance models might not be accurate for them.

Objectives: The study looks at how postgraduate students in Assam, India, are likely to use MOOCs, using an Augmentes UTAUT2 Acceptance model as a framework. In this study ten important determinants: performance expectancy, effort expectancy, facilitating conditions, social influence, hedonic motivation, price value, habit, readiness, engagement and preliminary satisfaction are analysed.

Methods: A strong quantitative approach was taken using structural equation modeling to study data from postgraduate students at institutions in Assam. A descriptive survey design was used to o collect and analyze quantitative data through standardized instruments which offered a thorough examination of how the target population behavioural intention to use MOOCs.

Results: The analysis found that in the AUTAM construct influenced behaviour intention by 41.4% and only three predictors of this model —readiness (strongest predictor), price value and hedonic motivation—were significant for behavioral intention. The structural equation modeling revealed counterintuitive findings on MOOC. Interestingly, key variables from previous studies such as performance expectancy, effort expectancy and social influence, had very little influence on students' intention to use MOOCs.

Conclusion: This study's results go against previous technology adoption ideas and reveal the thoughtful ways in which postgraduate learners decide what technology to use. The research has found that postgraduate students use MOOCs strategically, choosing preparedness, being thrifty and pleasure over just how user-friendly or necessary they seem. This research highlights four major points for actors in education, advises policymakers to develop unique models and offers a comprehensive framework to guide the use of digital technology in education around the world.

Keywords: MOOCs, Technology Adoption, UTAUT2, Higher Education, Digital Learning, Postgraduate Students, Behavioral Intention

INTRODUCTION

The rapid proliferation of Massive Open Online Courses (MOOCs) has fundamentally transformed the landscape of higher education, presenting both unprecedented opportunities and complex challenges for contemporary learners, representing a paradigm shift in knowledge dissemination and learning accessibility (Zhu et al., 2020). As digital learning platforms continue to evolve, understanding the intricate factors that influence students' behavioural intention to adopt these technologies becomes increasingly critical, particularly in emerging educational contexts like Assam. This study employs an Augmented Unified Theory of Acceptance and Use of Technology (UTAUT2) model to

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investigate the multifaceted determinants of MOOC adoption among postgraduate students, examining ten key factors including performance expectancy, effort expectancy, facilitating conditions, social influence, hedonic motivation, price value, habit, readiness, engagement, and preliminary satisfaction. By exploring these variables within the specific context of postgraduate education in Assam, the research aims to provide nuanced insights into the complex decision-making processes that drive technology adoption, challenging existing paradigms and delivering helpful advice to educational technology providers, institutions, and policymakers seeking to enhance digital learning experiences.

Contextualizing MOOC Adoption in Higher Education and Research Motivation

Postgraduate students occupy a unique position in the digital learning ecosystem. Unlike undergraduates, they bring advanced academic skills, specialized research interests, and a more nuanced approach to educational technology adoption (Zhou, 2016). The traditional technology acceptance models have often fallen short in capturing the complex decision-making processes of these advanced learners, necessitating a more sophisticated approach to understanding their behavioural intentions towards online learning platforms. The study employs an extended Unified Theory of Acceptance and Use of Technology (UTAUT2) model, a robust theoretical framework that has been widely used to understand technology adoption across various contexts. However, this research goes beyond traditional applications by introducing a comprehensive examination of multiple factors that potentially influence postgraduate students' intentions to use MOOCs. The extended model investigates ten critical determinants: performance expectancy, effort expectancy, facilitating conditions, social influence, hedonic motivation, price value, habit, readiness, engagement, and preliminary satisfaction. The significance of this research is multifaceted. First, it addresses a critical gap in the existing literature by focusing on the specific context of postgraduate students in Assam, a region with emerging digital learning capabilities. Second, it provides a nuanced understanding of technology adoption that goes beyond generic models, recognizing the unique characteristics of advanced learners. Third, the study offers practical insights for MOOC providers, educational institutions, and policymakers seeking to enhance digital learning platforms.

Literature Review: Determinants of MOOC Adoption Using UTAUT2 Framework

UTAUT2 Applications in the Field of Educational Technology Research: The Unified Theory of Acceptance and Use of Technology (UTAUT) and its extension, have proved to be highly versatile across various educational settings, thus being highly appropriate for the analysis of MOOC adoption among postgraduate students in Assam. Recent studies utilizing these models cut across various educational settings, which are of significant value to our regional context. In MOOC-focused studies, Alotaibi (2023) examined adoption determinants among Saudi Arabian government trainees, whereas Meet et al. (2022) investigated Indian Gen Z university students—a group with some similarities to our target group. Both studies emphasized performance expectancy and self-efficacy as key predictors of adoption, areas that are likely to apply in the case of postgraduate students in Assam as well. Likewise, Amid and Din (2021) in Malaysia and Altalhi (2021) in Saudi Arabia also found personal innovativeness and facilitating conditions to be determining factors of MOOC acceptance, factors that can also be vital in Assam's educational context. Zaremohzzabieh et al.'s (2022) meta-analysis also follows this trend in highlighting effort expectancy and task-technology fit as key drivers of behavioural intention across contexts. Adoption research on learning management systems also offers useful insights for our study. Bansal et al. (2022) studied LMS adoption by Indian faculty, with a focus on course quality and hedonic motivation—both potentially transferable to the Assamese postgraduate student experience. Chu and Dai (2021) in China and Haron et al. (2021) in Malaysia also contribute to our understanding by identifying time management, performance expectancy, and social influence as key predictors, all potentially applicable to postgraduate students in Assam.

Pandemic-Era Adoption Trends and their Implications: The context of the COVID-19 pandemic provides especially pertinent insights for the interpretation of technology adoption trends that could endure in the educational landscape of Assam. Ciftci et al. (2023) examined technology adoption among Turkish medical educators during this time, whereas Muangmee et al. (2021) investigated e-learning acceptance in Thailand, with a focus on social distance and facilitating conditions. These studies indicate that infrastructure support and social dynamics could potentially have a significant impact on MOOC adoption among postgraduate students, particularly with the region coming to terms with post-pandemic educational changes. Cross-sector research offers further insights for our research. Studies

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of healthcare technology adoption by Algahtani et al. (2021) indicate satisfaction and personal innovativeness as determinants—factors that can also shape educational technology uptake in Assam. In the digital services sector, Saini and Khasa (2023) investigated mobile payment systems, whereas Sharma and Gera (2022) found optimism and innovativeness to be paramount to digital adoption in India—findings that can run parallel to MOOC adoption processes among tech-savvy postgraduate students. Studies conducted by Limna et al. (2022) and Malewar and Bajaj (2020) also highlight habit and performance expectancy as drivers of adoption, and it is here recommended that habitual usage patterns and usefulness perception will affect the context of MOOC adoption among Assamese postgraduate students.

UTAUT2 Model Improvements Suitable for the Assamese Context: Recent theoretical development in UTAUT2 applications provides methodological advice for our study. Tamilmani et al.'s (2021) meta-analysis reiterates performance expectancy as the most significant predictor across studies—a result most probably generalizable to Assam's educational environment. Marikyan and Papagiannidis (2021) showed the cross-cultural validity of UTAUT2, further justifying its use in Assam's unique cultural environment. Mookerjee and Chattopadhyay's (2022) statistical methods research for UTAUT2 gives us methodological frameworks that can fortify our research design.

Specific MOOC adoption Factors for Postgraduate Students: Literature identifies some UTAUT2 factors most important for MOOC adoption that could be most significant for postgraduate students in Assam: Performance expectancy consistently comes out as the most powerful predictor across research (Wang et al., 2021; Haron et al., 2021; Tamilmani et al., 2021), indicating that Assamese students' belief in the usefulness of MOOCs for their professional and academic growth will be determinant. Individual factors outside of the fundamental UTAUT2 constructs—such as personal innovativeness (Amid & Din, 2021), self-efficacy (Govindarajan & Krishnan, 2019; Fianu et al., 2018), and attitude (Altalhi, 2021; Nordin et al., 2015)—might be especially salient in Assam's emerging educational technology context. Education-specific extensions show high value, course quality and design (Haron et al., 2020; Wang et al., 2021), virtual meeting functionality (Haron et al., 2020; Wang et al., 2021), and web quality (Govindarajan & Krishnan, 2019) being key determinants that can affect Assamese postgraduate students' MOOC adoption intentions. This integration of UTAUT2 applications offers a solid basis for exploring the particular factors that drive MOOC adoption among Assam postgraduate students, allowing the formulation of a contextually relevant extended UTAUT2 model for this specific learning environment.

Theoretical Background of the study

From UTAUT2 to Augmented UTAUT2 Acceptance Model (AUTAM)

This research extends the Extended Unified Theory of Acceptance and Use of Technology (UTAUT2) by Venkatesh et al. (2012), which represents a comprehensive technological adoption framework that integrates eight mature acceptance models and has good explanatory power of 74% in explaining variance in behavioural intention. However, the model's generalist approach necessitated contextual refinement, particularly in specialized educational technology domains. Although UTAUT2 captures technology adoption overall, the novel characteristics of MOOCs within the Assamese postgraduate learning environment require model specifications. The suggested Augmented UTAUT2 Acceptance Model (AUTAM) is a vital theoretical contribution to the complex MOOCs' technological adoption landscape in Assam's higher education environment. This model is the result of an exhaustive effort in understanding technological adoption, with the aim of specifically addressing three basic shortcomings of the original UTAUT2 model: contextual specificity, readiness evaluation, and complex engagement dynamics. The dimensional framework of AUTAM includes six advanced dimensions: Technology Acceptance, Social & Environmental, Resource Value, User Disposition & Behavioural Traits, User Experience, and the Behavioural Outcome, targeting behavioural intention as the endogenous dependent variable, that offer an overall analysis of technological adoption. AUTAM's theoretical contributions are most significant in its construct extension innovations. The readiness construct is a holistic measurement that tests technical capability, psychological openness, and environmental readiness and has been particularly useful in countries with heterogeneously developed technological infrastructures (Saikia & Padmavathy,2023). The engagement construct offers a multidimensional measurement of interactions across cognitive, behavioural, and affective domains, and the preliminary satisfaction construct is an early indicator of

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adoption with predictive value. Figure 1 illustrates the conceptual framework of the augmented UTAUT2 model used in this study.

Methodologically, AUTAM is an important innovation in studies on educational technology. It utilizes a mixed-method design that combines quantitative model testing with contextual qualitative analysis, making it an adaptive theoretical framework that can negotiate technological and educational differences. Improved predictive power, context sensitivity, and multicriteria analysis make the model a sophisticated tool for researchers and educators to dissect technological adoption processes in intricate educational systems. By situating itself at the nexus of technological adoption theory and regional educational environments, AUTAM offers a sophisticated framework for understanding the multifaceted factors that drive MOOC adoption. Its approach is more nuanced and context-sensitive than conventional technological acceptance models, providing a deeper, context-dependent understanding of how educational technologies are adopted in distinctive regional environments.

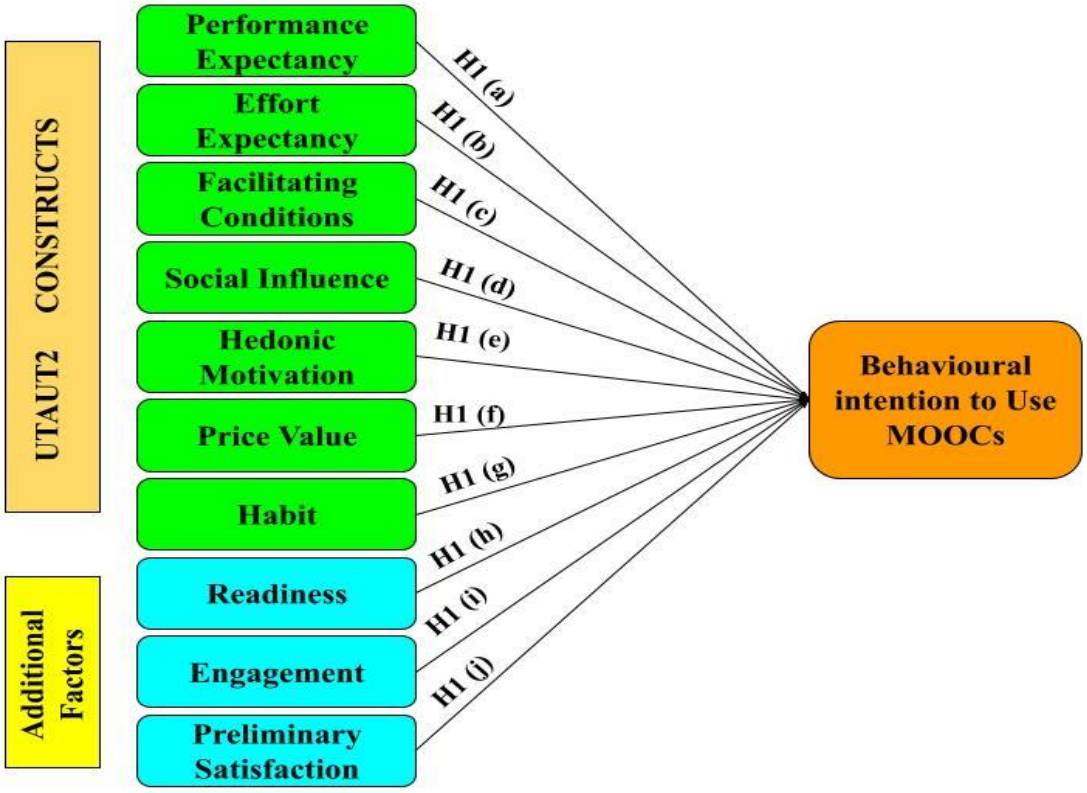


Fig. 1: ***Augmented UTAUT2 Acceptance Model***

This integrated framework provides unique benefits for the analysis of MOOC adoption by Assamese postgraduate students, especially considering the complicated nature of educational technology deployment in this context. The model's increased predictive power renders it particularly useful for analyzing technologies that necessitate extensive Preparation, recurring engagement cycles, and substantial feedback loops are all essential features for the successful implementation of MOOCs in higher education settings. By using AUTAM instead of default UTAUT2, this study addresses the original developers' suggestion to make contextual modifications for certain learning environments, thus offering a more refined insight into educational technology acceptance factors among postgraduate students in Assam's distinctive sociocultural and educational context.

OBJECTIVES

The research objective of the study is to determine the impact and relative influence of AUTAM constructs performance expectancy, effort expectancy, facilitating conditions, social influence, hedonic motivation, price value, habit, readiness, engagement, and preliminary satisfaction on postgraduate students' behavioural intention to use MOOCs, and identify which of these factors serve as the strongest predictors of such intention.

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METHODS

The research adopts a descriptive survey design focused on systematic data collection through standardized instruments to quantitatively analyze and describe the current state of behavioural intention to use MOOC among postgraduate students. The study's population consists of full-time postgraduate students enrolled in recognized higher education institutions in Assam, who actively use free MOOCs as auxiliary learning tools or to explore additional academic interests. A multistage sampling process integrating cluster and stratified random sampling techniques was used to select 675 postgraduate students. The process of stratification enabled adjustments for oversampling or under sampling particular groups in proportion to their size in the population, thereby making the sample more representative. 135 students were chosen from each university cluster, and a total of 675 students were selected over the five clusters. This two-stage sampling strategy with the accuracy of stratification, giving a methodologically strong framework to data collection that remained operationally practical in its applicability to Assam's geographically spread-out target population.

The data was collected using Comprehensive MOOC-BIND (Behavioural INtention Determinants) scale having 84 items rated on a five-point Likert scale (strongly disagree to strongly agree) prepared and validated by the researchers. Composite scores are grouped into low, moderate, and high-performance bands based on statistical norms to enable interpretation and relative positioning of respondents. The MOOC-BIND scale has internal consistency reliability of $\alpha = 0.886$, and test-retest reliability indicated important temporal stability ($r = 0.751$ to 0.977, $p < 0.001$), validating measurement stability across time. Content validity was ensured using the expert review and systematic item development procedures. These extensive validation procedures make the MOOC-BIND scale a strong instrument for measuring factors affecting MOOC adoption among Assam postgraduate students.

RESULTS

The study employed Structural Equation Modeling (SEM) to test the augmented UTAUT2 acceptance model (AUTAM) and its impact on postgraduate students' behavioral intention to use MOOCs. The analysis included path coefficients, standard deviation, statistical significance testing, effect size (f^2), and R^2 values to comprehensively evaluate the model. Table 1 and Fig 2 presents the detailed results of this statistical testing.

Table 1: Path Coefficient—Summary of Hypothesis Testing Results

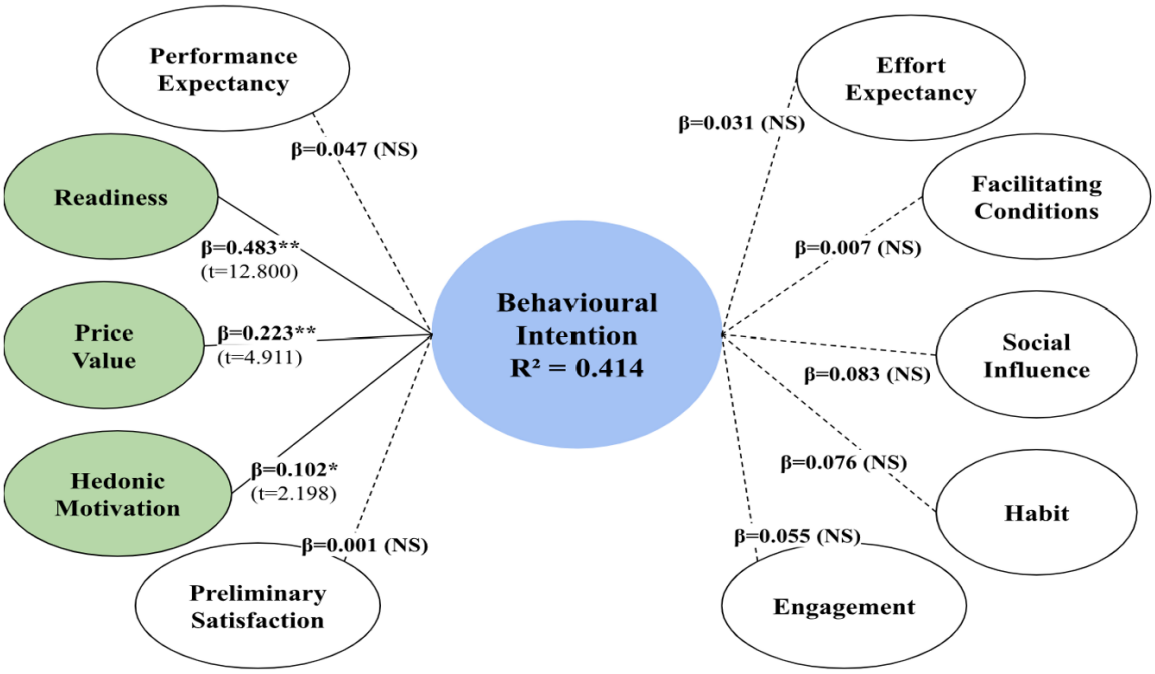
Path Constructs with Original Sample Effect		SD	t-value	p-value	f-square	Decision
Performance Expectancy → BI	0.047	0.026	1.796	0.073	0.004	Not Supported
Effort Expectancy → BI	0.031	0.037	0.848	0.397	0.001	Not Supported
Facilitating Condition →BI	0.007	0.045	1.852	0.064	0.006	Not Supported
Social Influence→ BI	0.083	0.043	0.151	0.037	0.001	Not Supported
Hedonic Motivation→ BI	0.102	0.046	2.198	0.028	0.106	Supported
Price Value → BI	0.223	0.045	4.911	0.001	0.152	Supported
Habit → BI	0.076	0.027	1.784	0.085	0.005	Not Supported
Readiness → BI	0.483	0.038	12.80	0.001	0.256	Supported
Engagement → BI	-0.055	0.039	1.417	0.157	0.003	Not Supported
Preliminary Satisfaction → BI	-0.001	0.042	0.016	0.987	0.001	Not Supported
Combined Effect: BI to use MOOCs; $R^2 = 0.414$				Partially Supported		

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Fig 2: Showing the Augmented UTAUT2 Acceptance Model (AUTAM) Results



According to the structural equation modeling result, only three of the ten factors considered were found to be predictors of postgraduate students' intention to use MOOCs. Students' readiness and skills turned out to be the strongest predictors (β = 0.483, t = 12.800, p = 0.001) with a strong effect size (f^2 = 0.256), meaning that their motivation and readiness are what most influences their MOOC adoption intention. The research shows that if institutions help students get ready, MOOC enrolments could increase a lot. Price value strongly impacted students' choice (β = 0.223, t = 4.911, p = 0.001, f^2 = 0.152), proving that what something costs has a major impact on students' decision. Moreover, hedonic motivation which is the pleasure and satisfaction from using MOOCs led to slightly stronger adoption intentions (β = 0.102, t = 2.198, p = 0.028, f^2 = 0.106). It turned out that seven important factors identified in technology acceptance models were unable to prove their significance statistically. All variables—performance expectancy, effort expectancy, facilitating conditions, social influence, habit, engagement and preliminary satisfaction—showed little relationship with behavioral intention (f^2 < 0.01) and were not statistically significant. This result opposes the usual view which sees the main drivers of technology acceptance as usefulness, simplicity and social reasons. The model was able to explain 41.4% of the differences in behavioral intention (R^2 = 0.414, adjusted R^2 = 0.403) which is moderate and suggests other unmeasured factors might play a role in MOOC adoption among postgraduate students.

DISCUSSION

The research extensively examined the determinants affecting postgraduate students' behavioural intention to use MOOCs, unveiling a sophisticated and intricate scenario of technology adoption. In contrast with conventional models of technology adoption (Dwivedi et al., 2019), the research identified that just three factors namely readiness, price value, and hedonic motivation. were significant predictors of behavioural intention to use MOOCs. User readiness was the single most significant predictor, underscoring the significance of students' technological readiness and self-efficacy in online learning contexts. This result is consistent with Hung et al. (2010), who indicated that student readiness strongly predicts success and persistence in e-learning. Moreover, Joo et al. (2018) stressed that digital competence and self-directed learning skills are key factors in e-learning acceptance.

Price value was the second strongest predictor indicates that students have a more pragmatic attitude towards educational investments. This finding is in line with Meet et al. (2022), who reported that Generation Z students make practical cost-benefit analyses, weighing the trade-off between MOOC costs and perceived benefits. Hedonic motivation was present, but it was relatively limited, indicating that excitement and pleasure in learning are

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important, although they are less significant than the willingness to learn and financial considerations. This accords with El-Masri &Tarhini (2017) and Baptista & Oliveira (2015), who concluded that enjoyment is still a strong variable by demographic. It indicates that MOOC developers need to concentrate on generating value-led, preparatory, and pleasing learning experiences instead of making the platform more user-friendly.

The study also revealed some counterintuitive results, constructs such as engagement, initial satisfaction, and habit had minimal influence on behavioral intention. The finding suggests that postgraduate students' choice to utilize MOOCs is more thoughtful and strategic, guided by thorough consideration of their learning requirements, cost, and personal preparedness. This conclusion is in line with Limayem& Cheung (2008), who posited that initial satisfaction yields to more meaningful factors as users become familiar with learning technologies. Surprisingly, long-established variables such as performance expectancy, effort expectancy, and social influence revealed little influence over students' adoption intentions for MOOCs. This is in contradiction with current technology adoption models, especially as it pertains to postgraduate education (Wu & Chen, 2017). The low level of influence on these variables implies that sophisticated learners embrace MOOC adoption through a more mature set of priorities, placing importance on preparedness, affordability, and fun above ease of use or perceived usefulness (Alraimi et al., 2015).

Theoretically, the research contributes to the developing knowledge base of technology adoption in learning environments. The model was able to account for 41.4% of the behavioural intention variance. The moderate explanatory power ($R^2 = 0.414$) is in alignment with earlier studies by Dwivedi et al. (2019), who reported R^2 values between 0.38 and 0.52, and Gupta et al. (2018), who found an R^2 value of 0.412 for e-learning adoption in India. The results indicate that although the UTAUT2 model is insightful, there are other context-specific factors affecting MOOC adoption, especially in the Indian education system. In a practical sense, the study provides essential advice to MOOC providers as well as educational institutions. As Zhu et al. (2020) recommend, the study indicates the need for a move from platform usability to preparatory resources and explicit value propositions. Providers must look at segmented strategies that acknowledge the distinct needs and decision-making of postgraduate students, especially with regard to pricing models, learning support, and content delivery. According to Al-Samarraie et al. (2018), the strategy must transcend the conventional adoption factors to respond to the more subtle considerations of advanced learners.

CONCLUSION

The research identifies that postgraduates' adoption intention for MOOCs is motivated by a mix of factors, with readiness, price value, and hedonic motivation standing out as significant determinants. The limited role played by conventionally accepted factors such as performance and effort expectancy points toward a more strategic adoption of educational technology among higher-level learners. Key findings of the study are that readiness is the most significant factor in MOOC adoption, financial factors become more important for the acceptance of technology, fun is still critical but a secondary issue to functional needs and today's technology adoption frameworks need adjustment to reflect the nuances of deep thinkers' decision processes. The findings offer a pivotal guide to MOOC providers, institutions, and policymakers working to improve online learning platforms. Prioritizing students' preparedness, value proposition, and captivating learning experiences helps stakeholders better aid the new order of e-learning. Although the research provides useful insights, it is not without its limitations. The study is in a particular geographical and educational context, and the results may not be generally applicable. The model's moderate explanatory power indicates the presence of other factors not accounted for in the present research framework.

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