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Developing a Holistic Framework for Teaching Effectiveness: An Analytical Study on Multiple Dimensions and Stakeholder Perspectives

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Abstract: Online learning management systems have become well-known resources for students all across the globe. Since the COVID-19 pandemic abruptly shifted conventional education online, there has been a prenominal growth in the number of e-learning systems providing diverse services, reflecting the clear relevance of e-learning in higher education. Therefore, evaluating e-learning platforms is crucial for their efficient use and smooth rollout. With the help of the relevant literature, we were able to construct a comprehensive model that combines the ISSM and TAM to show how various aspects of e-learning systems affect their performance. Using empirical data collected from a survey questionnaire of 537 students from three private institutions in India, the suggested model is used to evaluate theory-based hypotheses using structural equation modeling.

Keywords: e-learning, Holistic, Teaching Effectiveness, stakeholders

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INTRODUCTION

Despite the limitations of traditional classroom time, self-paced learning technologies provide a great way to augment education. Students may work with adaptive learning tools at their own speed and get extra assistance when they need it, and they can also get feedback and support depending on their requirements. Even if the technologies are readily available, students may not use them successfully if they do not get enough guidance and motivation to do so. Therefore, it is critical to study students' interactions with self-paced learning tools and think about a comprehensive framework that can guide researchers and teachers in the field of education to develop ways to encourage and support students who might not use these tools to their full potential.

Integrated land use initiatives strive to preserve ecosystems and natural resources while enhancing livelihood outcomes for local populations. They take a comprehensive and systemic approach by considering the interconnected environmental, social, and economic systems that rely on landscapes. Countries may strive toward achieving their climate objectives, such as their NDCs under the Paris Climate Agreement, and development goals, such the SDGs, via these often massive efforts. These endeavors often cover a wider area, perhaps even an entire jurisdiction, and have a longer time horizon. Integrated land use initiatives are large-scale, ambitious endeavors that involve ongoing learning and adaptive management in order to successfully include a wide range of stakeholders and operate across many sectors. Complexity and difficulty in implementation are inherent characteristics of such applications. Furthermore, among the expanding group of worldwide practitioners, there is no agreement on critical terminology, ideas, or best

practices. Projects that follow this broad strategy are known by a number of names, such as the landscape approach, integrated land use planning, or integrated landscape management. Instead of using just one of these names, this study refers to a range of methods under the umbrella phrase "integrated land use initiatives" to include all the creative work occurring in this field and to help with the exchange of best practices.

LITERATURE REVIEW

Ghalia Al-Thani et.al (2024) This study examines the role of stakeholders in the educational policymaking processes of two nations with well-known and highly effective education systems: Singapore and Finland. Both nations have strong academic requirements, but they include different groups in making policy decisions about education. Under Singapore's centralized paradigm, the MOE (Ministry of Education) mostly directs decisions with little input from other parties. In contrast, Finland adopts a decentralized approach, empowering local authorities and schools with significant autonomy and actively involving stakeholders in policymaking. Teachers, parents, students, and business all have important responsibilities to play in how each country's education system is run. In Finland, stakeholders actively guide basic policy orientations via participation and consensus-building, in contrast to Singapore where they are formally consulted but have little say in decision-making. In terms of educational results, the article compares and contrasts the various approaches. Education for everyone, social harmony, and comprehensive growth are top priorities in both nations, notwithstanding their different approaches to government. In order to create successful education policies that are in line with national goals and ideals, the study highlights the significance of substantial stakeholder involvement.

Susan Nicolai et.al (2023) Many schools relied on educational technology (EdTech) to keep students' education going while schools were closed due to the COVID-19 epidemic. Using a comprehensive framework, we synthesise the results of ten main research papers on the efficacy of educational technology interventions in low- and middle-income nations during the pandemic. Learning outcomes, improving fairness, implementation context, cost and affordability, alignment and scalability are the five primary lenses that make up the framework. Although traditional classroom instruction has mostly resumed, educational technology (EdTech) is becoming more and more integrated into educational institutions across the world. This study sheds light on knowledge gaps and offers evidence-based insights that may inform future research on the successful use of EdTech to promote learning as well as more comprehensive analyses of EdTech mainstreaming.

Riitta-Leena Metsäpelto et.al (2022) Our primary objective in doing this research was to identify and illustrate, as a whole, the most important areas of competence that are seen to be fundamental to being an effective educator. The procedure was overseen by an expert panel of members from seven units in Finland that provide basic teacher preparation programs at the university level. In order to actively develop a common understanding and interpret the field's discourse, the specialists combed through educational literature. The multidimensional adaptive process model of teaching (MAP), which emerged as a model for teacher competency, is a conceptualization of the current discourses and relevant empirical research on education. The MAP takes its cues from the model proposed by Blömeke et al. (2015) in Zeitschrift für Psychologie, 223, 3–13. This model differentiates between general competencies that teachers need to do

their jobs well, more specific abilities that are situationally relevant to teaching and learning, and general competencies that are necessary for effective instruction. The discussion is on the MAP's potential effects on student selection in initial teacher education programs and on teacher education as a whole.

Bonny Brandenburger (2022) The fast advancement of technology in the 21st century has given participatory methods of teaching and learning a fresh lease of life. In higher education, open-source technologies, Massive Open Online Courses (MOOCs), and Open Educational Resources (OER) allow for the cross-border and cross-temporal sharing of knowledge, practices, and tools. Here, the Open Education Movement is advocating for different ways of teaching in order to get more students involved in traditional university settings. Researchers and practitioners may use the analytical framework created in this study—which is based on a representative literature review and focus group research—to evaluate the type of involvement in formal, collaborative teaching and learning activities. The analytical framework zeroes in on the nitty-gritty of college life, namely the dynamic between professors and their students as they craft course offerings. To achieve this goal, the study rethinks participation as a concept, factoring in preexisting models of involvement in the classroom. Methods, goals, material, etc., are all components of the learning and teaching processes that are then combined with these. By broadening the conversation around potential ways of understanding Open Educational Practices, this article hopes to make a significant contribution to the freeing up of education.

Dhruba Borah et.al (2023) It is still not apparent how multi-helix or multi-party university-industry research partnerships (UIRCs) including business, government, and community groups affect classroom instruction, despite universities' best efforts to benefit society and the economy in this way. This research gap is intended to be filled by this publication. Evidence from seven multi-helix UIRCs occurring at five Indian institutions are presented in the report, which employs a multiple case study method. We start by revealing the various responsibilities of the various actors from the partner organizations that work together on the multi-helix UIRCs. These include industry scientists from the company that is collaborating, funding administrators from the government agency that is sponsoring the collaboration, community representatives from the group that is working together, and academics affiliated with the UIRC who are teaching at the university that is working together. We continue by outlining the many organizational and individual factors that either facilitate or limit the participation of these players in the classroom and, by extension, their effectiveness. Our comprehensive methodology for integrating UIRC players into partner institutions' pedagogical practices is informed by these results.

METHODOLOGY

Participants and Target System

The target e-learning system, Moodle, is utilized as an adjunct to conventional (in-person) instruction at three private institutions in Jordan that participated in this research. Teachers create what is known as a hybrid course by combining conventional classroom instruction with online resources like Moodle. Participants in this research were students who have made use of Moodle in their coursework at least once. To choose the students, researchers used the accidental (convenience) sampling technique. Gravetter and Forzano state that this sample technique motivates respondents to complete the survey in accordance with their availability and interest. Since there is no alternative approach that is both simpler to use and quicker

in handling the survey, the accidental (convenience) sampling method was used for this research. The official authorities in Jordan began collecting data in March 2020, when the lockdown activities began, and continued until December 2019. Officials in the nation took what seemed like preventative steps rather than worrying ones back then. However, many companies, including HEIs, were compelled to go online due to the widespread impact on businesses throughout the nation. This dramatic shift happened in an instant. Students' genuine, unprepared, and untrained acceptance of e-learning systems is therefore captured by this study's survey.

We used convenience sampling to choose those kids. A web-based questionnaire survey was used to gather data. In theory, the survey was sent out at the conclusion of a three-month school term, or the academic semester. On the Moodle course sites, the instructors were requested to provide the survey link. Consequently, 1200 students enrolled in 80 randomly chosen Moodle classes, where the survey link was presented. The researchers also requested that teachers urge their pupils to fill out the survey one week after it was posted in an effort to boost the response rate. For over three weeks, anybody could take the survey. The poll had a 48% response rate, meaning that 577 out of 1200 students took the time to fill it out. A total of 537 valid replies were retrieved and used for research model validation and testing after 40 responses were excluded due to being incomplete or invalid (N = 40). The profile of the responders is shown in Table 1.

Table 1. Respondents' profile

Variable		Frequency	Percentage
Gender	Male	357	66%
	Female	180	34%
Age in years	<20	202	38%
	20–30	241	45%
	>30	94	17%
Enrolled course	Bachelor's	493	92%
	Master's	44	8%
Experience using the e-learning system	<1 year	163	30%
	1–2 years	331	62%
	>2 years	43	8%

Instrument Design

Data were gathered by a two-part online questionnaire survey, as indicated before. Respondents' demographic information was gathered in the first part of the study. The second part of the study model included measures for the nine constructs that were suggested. In particular, there were forty objects measuring various constructs in the second segment. Using a 5-point Likert scale ranging from 1 (strongly agree) to 5 (strongly disagree), all questions were adapted from the relevant literature (Appendix A). Two approaches were used to verify the questionnaire survey's validity and appropriateness before final data collecting. An expert academic panel consisting of four persons with extensive knowledge in IS evaluated the measuring items in the first step of the process. According to the results of the evaluation, there is a 90.5% level of agreement among the four individuals. We also took into account the panel's recommendations to improve the dependability and readability. The second step was to test the 10 constructions' dependability with a small sample of 60 pupils. Because Cronbach's alpha was more than 0.7 for every construct, the findings show that there is sufficient internal consistency across all structures.

RESULT

The suggested research model's construct linkages were investigated using structural equation modeling (SEM). Because SEM allows researchers to examine and handle complicated models with several dependent and independent variables simultaneously and completely, it is considered suitable for data analysis. As a result, the data was analyzed using partial least square-SEM (PLS-SEM). When it comes to estimating more complicated models and verifying predictive capability, Ketchen claims that PLS-SEM is sufficient. Researchers in numerous domains, including e-commerce, information systems, e-government, and educational technology, have made use of PLS-SEM. Data analysis using SmartPLS v.3.3.3 was carried out during two critical phases, in agreement with Anderson and Gerbing. The initial step was to check whether the measurement model was valid and reliable. Following that, the structural model was put to the test in order to evaluate the hypothesis about the estimate of path coefficients. The bootstrapping re-sampling process was used to evaluate the relevance of the predicted path coefficients and loadings. The procedure included 5000 re-samples. We checked the common method variance before moving on to the measurement model. In order to determine if CMV was present, the Harman's one factor test was run. Therefore, all of the measuring items were factorized into a single factor using an exploratory component analysis (EFA). The outcome shows that 10 variables were identified, as none of them explained more than half of the variation in the measurement items. With 30.2% of the total variation explained, the academic performance (ACP) construct was the most highly-explained. Therefore, it was clear that CMV was not present.

Measurement Model

This step included checking the study model's components and the reliability of the measurement items that went along with it. Internal consistency reliability, discriminant validity, and convergent validity were among the tests conducted in the same vein as Hair et al. To verify convergent validity, the items must have a loading of 0.708 on the specified theoretical constructs and an average variance extracted value of ≥0.5. It is necessary to have composite reliability and Cronbach's alpha estimations of at least 0.7 when it comes to internal reliability. Table 2 displays all items that achieved a loading higher than the suggested standard of 0.708. Every construct obtained an AVE value of ≥0.5 and composite reliability and Cronbach's alpha values above 0.7. Both internal reliability and convergent validity are confirmed by these findings. We used two criteria to check for discriminant validity. To begin, the criteria proposed by Fornell and Larcker was used. Each construct's AVE square root should be larger than its correlation with all other constructs in the model, according to the results. The existence of discriminant validity was confirmed by Table 3, which shows that this criterion was met. Another method that was used was the heterotrait-monotrait ratio. The findings of the Fornell-Larcker criteria and the presence of discriminant validity are verified since all values in Table 4 are less than or equal to 0.85. All things considered, the validity and reliability of the studies' assessments were adequate.

Table 2. Construct reliability and validity

Construct	Item	Loading	α	CR	AVE
Academic Performance (ACP)	APC1	0.93	0.94	0.96	0.85
	APC2	0.92			
	APC3	0.91			
	APC4	0.92			
Course Content Quality (CCQ)	CCQ1	0.85	0.90	0.93	0.77
	CCQ2	0.89			
	CCQ3	0.88			
	CCQ4	0.90			
Educational System Quality (ESQ)	ESQ1	0.89	0.90	0.93	0.77
	ESQ2	0.88			
	ESQ3	0.87			
	ESQ4	0.87			
Instructor Quality (IQ)	IQ1	0.88	0.86	0.91	0.71
	IQ2	0.82			
	IQ3	0.85			
	IQ4	0.83			
Perceived Usefulness (PU)	PU1	0.94	0.94	0.96	0.85
	PU2	0.93			
	PU3	0.90			
	PU4	0.93			
Satisfaction (SAT)	SAT1	0.94	0.96	0.97	0.88
	SAT2	0.94			
	SAT3	0.93			
	SAT4	0.94			
Self-regulated learning (SRL)	SRL1	0.82	0.87	0.91	0.72
	SRL2	0.88			
	SRL3	0.83			
	SRL4	0.85			
Support Service Quality (SSQ)	SSQ1	0.84	0.86	0.91	0.71
	SSQ2	0.82			
	SSQ3	0.85			
	SSQ4	0.86			
Technical System Quality (TSQ)	TSQ1	0.86	0.88	0.92	0.74
	TSQ2	0.87			
	TSQ3	0.85			
	TSQ4	0.86			
System Use (USE)	USE1	0.89	0.90	0.93	0.78
	USE2	0.86			
	USE3	0.89			
	USE4	0.89			

To evaluate the suggested model's predictive power, R^2 and Q^2 were used. A 5000 bootstrap re-samples process was used to examine all pathways, as suggested by Hair et al. Estimates for Q^2 were also calculated using the blindfolding approach. According to Table 3, the dependent variables all have Q^2 estimates more than 0, and the R2 values are all greater than 0.25. This suggests that the proposed model has sufficient predictive accuracy.

Table 3. Fornell and Larcker's test

	IQ	APC	CCQ	ESQ	PU	SAT	SRL	SSQ	TSQ	USE
IQ	* **0.84**									
APC	** 0.63	**0.92**								
CCQ	0.59	0.63	**0.88**							
ESQ	0.62	0.65	0.60	**0.88**						
PU	0.64	0.69	0.70	0.64	**0.92**					
SAT	0.65	0.66	0.66	0.67	0.69	**0.94**				
SRL	−0.56	−0.58	−0.59	−0.63	−0.62	−0.62	**0.85**			
SSQ	0.55	0.56	0.60	0.61	0.62	0.63	−0.56	**0.84**		
TSQ	0.62	0.60	0.62	0.59	0.66	0.65	−0.57	0.61	**0.86**	
USE	0.62	0.67	0.64	0.64	0.69	0.63	−0.62	0.61	0.63	**0.88**

* Correlation between the constructions, **square roots of AVE for each construct, **numbers on the leading diagonal CCQ: standard of course materials, Quality of the technological system, Quality of instruction (IQ) and quality of support (SSQ) S.A.T., PU (perceived utility), SRL (self-regulated learning), and ESQ (quality of educational systems) Academic Performance Criteria (APC): System Use (USE).

Table 4. Heterotrait–monotrait test

	IQ	APC	CCQ	ESQ	PU	SAT	SRL	SSQ	TSQ	USE
IQ	-									
APC	0.70	-								
CCQ	0.66	0.68	-							
ESQ	0.70	0.70	0.67	-						
PU	0.71	0.73	0.76	0.69	-					
SAT	0.71	0.69	0.71	0.72	0.72	-				
SRL	0.64	0.65	0.66	0.71	0.68	0.68	-			
SSQ	0.64	0.62	0.68	0.69	0.68	0.69	0.64	-		
TSQ	0.71	0.65	0.69	0.66	0.73	0.71	0.65	0.70	-	
USE	0.70	0.73	0.71	0.72	0.75	0.68	0.69	0.69	0.70	-

CCQ means quality of course material, TSQ means quality of technological systems, IQ means quality of instructors, SSQ means quality of support services, and ESQ means quality of educational systems. Learning that is self-regulated (SRL), SAT refers to contentment, PU stands for perceived utility, Academic Performance Criteria (APC): System Use (USE).

CONCLUSION

This study developed a comprehensive research model that included TAM and the ISSM to investigate the main factors that contribute to the effectiveness of e-learning systems. A total of twenty-three hypotheses were put out by the recommended model. This study gathered empirical data from three private institutions in Jordan to analyze the research model. Out of the 23 hypotheses that were tested, 20 were found to be supported. Perceived utility, happiness, and usage of e-learning were positively affected by the proposed quality aspects. The quality of the educational system, the technological system, the support services, the course material, and the instructors were all considered quality considerations. Also, students' academic performance was favorably affected by their use behavior, perceived usefulness, and contentment. Not surprisingly, self-regulated learning has a negative impact on the perceived utility, pleasure, and usage of e-learning systems, and thus is a fundamental inhibitor of these systems' success. Stakeholders in online education should, therefore, implement effective measures to address students' inability to self-regulate their learning. The study's cross-sectional model records users' thoughts and actions at a single instant in time.

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