



Factors Influencing Satisfaction for Continuance Intention to Use E-Learning Systems in Higher Education: Delphi Technique

Maha Farhan Alshammari

Faculty of Artificial Intelligence,
Universiti Teknologi Malaysia

Rasimah Che Mohd Yusoff

Faculty of Artificial Intelligence,
Universiti Teknologi Malaysia

Hazlifah Mohd Rusli

Faculty of Artificial Intelligence,
Universiti Teknologi Malaysia

Hafiza Abas

Faculty of Artificial Intelligence,
Universiti Teknologi Malaysia

ABSTRACT

E-learning has been widely adopted by universities globally, transforming teaching and learning practices in higher education. While much research has focused on adopting and accepting e-learning, less attention has been paid to students' satisfaction and their continuance intention (CI) to keep using these systems. A literature review reveals low student satisfaction and the intention to continue using e-learning platforms. Despite the extensive studies on continuance intention in e-learning, there is no clear consensus on the factors influencing student satisfaction with continuance intention. This indicates a knowledge gap regarding individual and system aspects contributing to e-learning satisfaction. This study seeks to identify key satisfaction factors affecting continuance intention using a two-round Delphi technique involving ten experts and to develop an initial model of these factors for higher education institutions. This model is expected to help institutions better understand the critical factors driving continuance intention, enabling more informed decisions in evaluating and implementing e-learning projects.

Keywords: E-learning, Higher Education, Student Satisfaction, Continuance Intention (CI), Delphi Technique.

INTRODUCTION

E-learning systems have emerged as a contemporary approach to disseminating knowledge within educational settings. These digital platforms enable higher education institutions to deliver lectures, coursework, and assessments without the necessity for physical attendance. The rapid proliferation of e-learning technologies is one of the most significant developments in the education sector, offering substantial benefits that complement traditional learning

methods [1-3]. With advancements in educational technology, these systems have become widely integrated into academic environments [4, 5]. However, despite their advantages, understanding the factors influencing student satisfaction is essential for ensuring their ongoing success [6].

Many students have expressed dissatisfaction with e-learning systems, often favouring face-to-face instruction. The absence of direct interaction with instructors in online settings has been cited as a source of confusion [7]. This dissatisfaction and lack of intention to continue using e-learning platforms were observed before the COVID-19 pandemic but became more evident afterwards [8-11]. During the pandemic, e-learning was mandatory, but once in-person classes resumed, many students showed diminished interest in voluntarily engaging with these systems. Investigating the factors contributing to student satisfaction and their willingness to continue using e-learning systems is vital, as the long-term viability of such platforms relies on students' intention to continue their usage. These systems require significant financial and operational investment from universities, and if students are unwilling to use them, it may lead to their failure, wasting institutional resources.

Although technologies such as mobile learning have been explored [7], research explicitly examining the factors influencing Satisfaction and Continuance Intention (CI) in e-learning systems remains limited. While previous studies have primarily focused on instructor satisfaction or have reviewed continuance satisfaction factors in older contexts [12-14], there has been little exploration into students' perspectives.

The rest of the paper is organized as follows: Section 2 explores the satisfaction factors related to continuous improvement (CI) in e-learning systems. Section 3 describes the methodology used in the study. Section 4 reports the results, followed by Section 5, which discusses the findings. Section 6 concludes with the conclusions and future work.

RELATED WORK

Satisfaction and Continuance Intention (CI) are crucial components in determining the long-term success and sustainability of e-learning systems. Satisfaction is often defined as the emotional and cognitive response users experience while using a system. It reflects their perceptions and expectations regarding ease of use, system quality, and alignment with their needs [15-18]. Conversely, CI refers to the user's intent to continue using the system over time, which is vital for ensuring its ongoing success [19]. In e-learning systems, students' Satisfaction is directly linked to their willingness to continue using these platforms, with dissatisfaction leading to disengagement and dropouts [20].

Many studies have emphasized the interdependence between Satisfaction and CI in e-learning environments [21, 22]. When an e-learning system is well-designed and meets students' expectations, it fosters positive attitudes and increases their intention to continue using it. Conversely, usability challenges and unmet expectations can cause frustration, resulting in negative perceptions and a decline in CI [22]. This relationship makes Satisfaction a key predictor of students' continuance behaviour, as confirmed by multiple studies [1, 3].

However, while Satisfaction and CI are often studied in isolation, few models comprehensively capture all the factors influencing these constructs. A literature review by Rahman, Zamri [23]

identified significant gaps in understanding the link between Satisfaction and CI in e-learning systems. Their comparison of 30 studies revealed that while numerous factors influence Satisfaction for CI, no single model fully addresses the range of influencing factors. This highlights the need for more holistic approaches to analyzing students' Satisfaction and their intentions to continue using e-learning systems.

Recognizing this gap, a Systematic Literature Review (SLR) was conducted to identify the key factors influencing Satisfaction and CI in e-learning [14, 24]. The review identified ten critical satisfaction factors: Self-efficacy, Perceived Ease of Use, Motivation, System Quality, Information Quality, Service Quality, Confirmation, Perceived Usefulness, Satisfaction, and Continuance Intention. This paper examines these satisfaction factors further using the Delphi technique, refining and validating them for application in higher education institutions.

METHODOLOGY

The Delphi technique, developed by Linstone and Turoff [25], was employed to review the satisfaction factors for students' Continuance Intention (CI) in e-learning systems, which were initially identified through a Systematic Literature Review (SLR) [24]. The Delphi technique is a structured group communication process designed to achieve consensus among experts on a particular topic through iterative rounds of questionnaires [26-28]. This method was selected for the current study as it allowed experts to collaboratively evaluate and refine the identified satisfaction factors without the distractions and logistical constraints typically associated with face-to-face meetings. By using the Delphi method, the experts were able to focus on providing in-depth feedback and reaching a consensus on the critical factors influencing students' Satisfaction and CI. As a result, this approach facilitated a more efficient and effective collection of expert insights [29].

Delphi Process

The Delphi technique is widely used for building consensus through a series of questionnaires distributed over multiple rounds to a panel of selected experts [30]. The process involves iterative feedback collection, where responses from each round are aggregated and shared with the group to refine and adjust until a consensus is reached. Typically, the Delphi process is concluded once consensus is achieved, theoretical saturation is obtained, or when sufficient information has been gathered [29, 31, 32]. In this study, two rounds of the Delphi method were employed, generally considered enough to collect the necessary data and reach a consensus [33].

The review process of the students' satisfaction factors for CI to use e-learning systems spanned from March 2024 to August 2024. The first step involved sending an invitation letter to identified experts, and the process continued until all feedback was collected and analyzed. The detailed steps of the Delphi process are presented in Figure 1.

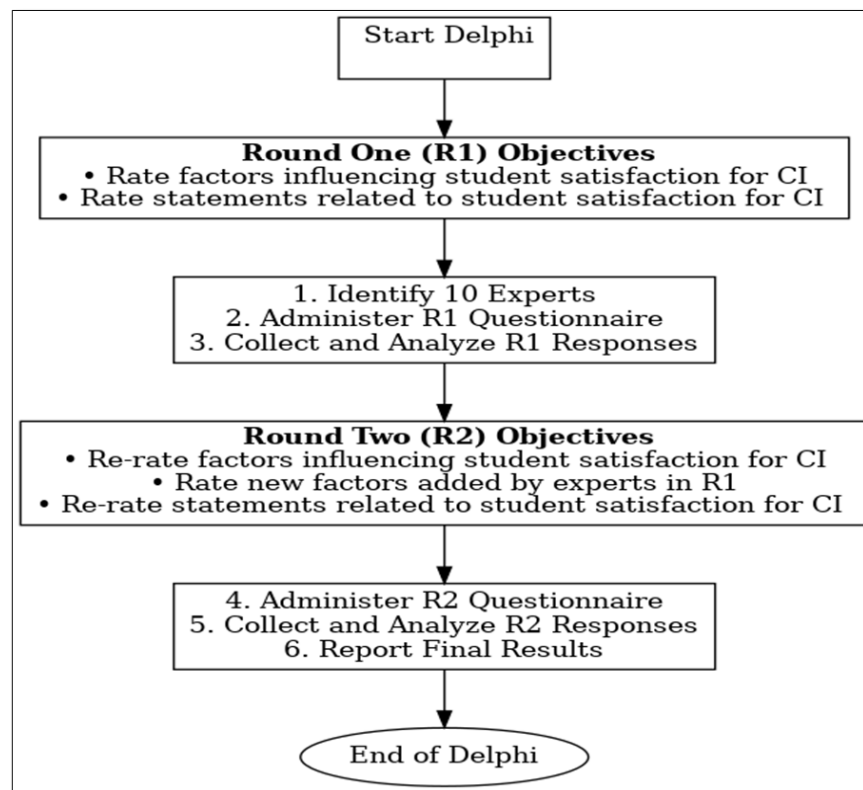


Figure.1: Delphi Process

Selection of Experts

The Delphi technique relies on expert opinions to provide supporting evidence for evaluation [25]. Therefore, the participants in this method are a group of experts, and selecting the right experts is crucial to achieving the objectives of the Delphi method. Proven expertise is the most critical factor in selecting Delphi participants [34]. The experts are expected to contribute diverse perspectives and knowledge on the relevant factors and issues in the e-learning domain. In this study, experts were selected based on the following criteria:

- Holding a PhD degree.
- Having more than five years of experience in e-learning systems.
- Being familiar with and experienced in e-learning systems.
- Having publications in the field of e-learning systems.

An expert panel's cognitive diversity is crucial for ensuring the reliability and validity of the results [35-37]. In line with this, a thorough review of university websites in Saudi Arabia and other countries was conducted to identify potential experts. The search focused on academic staff profiles in the Colleges of Information Technology and Computer and Information Sciences. Twenty experts were carefully selected for the Delphi phase. An invitation letter was emailed to each expert, requesting their preliminary agreement to participate in the Delphi process. The letter outlined the Delphi process, provided instructions on how to complete the questionnaire, and demanded that the questionnaire be returned to the researcher within a week. As a result, ten experts agreed to participate and returned the completed forms during a week. These experts were from higher education institutions in Malaysia, Saudi Arabia, the

United States, Jordan, and Libya. The summary of the experts' demography based on Delphi panel is shown in Table 1.

Table 1: Demographic Profiles of Respondents (n=10)

Demographic	Categories	Frequency	Percentage
Gender	Male	4	40%
	Female	6	60%
Working Experience	10-15 Years	4	40%
	16-20 Years	3	30%
	20-30 Years	3	30%
Current Job Position	Lecturer	2	20%
	Professor	1	10%
	Associate Professor	7	70%
Country	Saudi Arabia	5	50%
	Jordan	2	20%
	Malaysia	1	10%
	United States	1	10%
	Libya	1	10%

Size of Delphi Panel

The size of a Delphi panel can vary, typically ranging from 10 to 18 experts. The goal is to include enough participants to represent diverse informed opinions while keeping the group manageable for coordination and analysis. Larger panels may be chosen for broader or more complex topics, whereas smaller panels may be preferable for focused inquiries. The primary objective is to reach a consensus or a thorough understanding of the issue rather than conforming to a specific panel size.

According to Fowles and Fowles [38], the panel should have at least seven members, while Linstone and Turoff [25] recommended a range of 10 and 50 experts. Adler and Ziglio [39] later noted that "good results can be obtained even with small panels of 10-15 individuals." Crance [40] suggested that a panel of 10 experts is optimal. Similarly, several studies in literature have employed panels of 10 experts for satisfactory results [41]. Consequently, the Delphi panel for this study was composed of 10 experts in the field of e-learning.

Questionnaire Design

To evaluate the satisfaction factors and create a model for students (CI) in e-learning, a two-round Delphi questionnaire process was conducted as follows:

1. The **first round** was divided into five parts. Part A used a 5-point Likert scale, ranging from '1 = Strongly Disagree' to '5 = Strongly Agree' to assess expert agreement on student satisfaction factors for (CI) to use e-learning systems. Part B allowed experts to propose or modify new factors, providing justifications. Part C gathered expert agreement on student satisfaction for CI-related statements in e-learning. Part D invited experts to propose or revise statements justifying new factors. Part E included an open-ended question for any additional comments not covered in the questionnaire.
2. The **second round** of the Delphi questionnaire consisted of four parts: A, B, C, and D. Part A involved re-rating the satisfaction factors for continuous improvement (CI) using a 5-point Likert scale, ranging from '1 = Strongly Disagree' to '5 = Strongly Agree'. In Part

B, experts were asked to re-rate the new satisfaction factors for CI that had been added to the existing factors in Round One using the 5-point Likert scale. Part C focused on experts rating their level of agreement with the new statements, again using the same scale from '1 = Strongly Disagree' to '5 = Strongly Agree'. Finally, Part D included an open-ended question, inviting experts to provide additional comments or suggestions regarding Round Two of the Delphi process.

The Validity

Before starting the Delphi study, conducting a face validity check to pre-test the survey instruments are essential, as suggested by several researchers [42-44]. To achieve this, the initial version of the questionnaire was sent to three e-learning experts for review to ensure its validity. This validation process aimed to evaluate the clarity of the statements, the overall format, and the wording. The experts provided valuable feedback, identifying spelling errors, recommending revisions for more explicit descriptions of certain factors, and suggesting modifications to improve the accuracy of specific sentences. Based on their feedback, the questionnaire was refined and enhanced. The final version was then prepared for distribution to the selected expert panel for the main Delphi study.

Data Collection and Analysis

The Delphi technique utilized questionnaires with both closed-ended and open-ended questions for data collection. Closed-ended questions assessed expert agreement using a 5-point Likert scale, ranging from '1 = Strongly Disagree' to '5 = Strongly Agree.' Descriptive statistics, such as the mean and standard deviation (SD), were used to interpret the results, providing insights into the collective judgments of the participants [45, 46]. This study retained satisfaction factors for CI with a mean score of 3.40 or above, as shown in Table 2 [47]. This threshold reflects the "Agree" or "Strongly Agree" categories on the Likert scale.

Standard deviation values were used to measure the consensus among respondents, with a value of less than 1.00 indicating strong agreement [48]. Open-ended questions were utilized in the first round to gather expert opinions on satisfaction factors for CI, including suggestions for new factors or modifications to existing ones. Experts were required to provide justifications for their responses, and the qualitative data from these open-ended responses were carefully analyzed to determine their relevance to the study's objectives.

The feedback from experts was analyzed following guidelines adapted from [30, 48]. Fundamental principles included respecting the majority opinion in cases of disagreement, considering changes suggested by multiple experts, and adopting single-expert recommendations only if they did not arise from a misunderstanding of CI concepts.

Table 2: Mean Range and Interpretation of the Likert Scale Type

Mean	Interpretation
1.00-1.79	Strongly disagree
1.80-2.59	Disagree
2.60-3.39	Neutral
3.40-4.19	Agree
4.20-5.00	Strongly agree

Source: Rodríguez-Peñarroja, (2021)

RESULTS OF ANALYSIS BASED ON THE DELPHI TECHNIQUE

The study conducted two rounds of Delphi questionnaires, and the results are as follows:

The Results of Delphi Round One (R1)

Round one of the Delphi studies consisted of five sections: A, B, C, D, and E. In Part A, experts were asked to express their level of agreement or disagreement on a 5-point Likert scale (from '1 = Strongly Disagree' to '5 = Strongly Agree') regarding factors that impact students' Satisfaction with the continued use of e-learning systems. The descriptive statistics, including the mean and standard deviation (SD), are reported in Table 3, which highlights the results for six key constructs: Self-Efficacy, Perceived Enjoyment, Perceived Ease of Use, System Quality, Information Quality, and Service Quality, presented in the same sequence as in the questionnaire.

Table 3: Descriptive Statistics for Round 1 on The Satisfaction Factors for CI

No	Factors	Mean	SD	Rank	Interpretation
1	Self-efficacy	4.450	0.729	2	Strongly Agree
2	Perceived Ease of Use	4.267	0.813	6	Strongly Agree
3	Perceived Enjoyment	4.360	0.771	4	Strongly Agree
4	System Quality	4.575	0.727	1	Strongly Agree
5	Information Quality	4.400	0.883	3	Strongly Agree
6	Service Quality	4.325	0.764	5	Strongly Agree

The results presented in Table 3 reveal that the highest mean score was 4.575 (SD = 0.727), while the lowest mean score was 4.267 (SD = 0.813), both of which fall within the "Strongly Agree" category, as shown in Table 2. Specifically, System Quality achieved the highest mean score of 4.575 out of 5.0 (SD = 0.727), whereas Perceived Ease of Use had the lowest score of 4.267 out of 5.0 (SD = 0.813). These results indicate that the respondents strongly agreed that all satisfaction factors significantly influence students' intention to continue using e-learning systems. Additionally, the standard deviation for all satisfaction factors was below 1.00, demonstrating a high level of consensus among the experts.

In Part B of Round 1, the experts were asked to propose new factors, rename existing ones, or revise their descriptions, with justifications required for their suggestions. The experts' feedback regarding satisfaction factors for (CI), including proposed changes, is presented in Table 4, where the modifications are tracked for clarity.

Table 4: Tracked Changes for Satisfaction Factors for CI

No	Satisfaction Factors	Experts Feedback
1	Perceived Enjoyment	Expert1, 5 and 8: They suggested renaming (Perceived Enjoyment) to (Motivation). The justification from one of them was, "It will be great if you can integrate it with motivation factor. Motivation is quite an important key used in an education setting for students to continue to use e-learning". The new factor name was accepted to be included in the existing factors.
2	System Quality	Expert 1 and 4: Two experts suggest amending the statements to reflect the factor of System Quality.

The Results of Delphi Round Two (R2)

Table 5 presents the descriptive statistics for the second round of the Delphi study, which focused on the satisfaction factors for CI. The table includes each factor's mean and standard deviation (SD) based on the experts' ratings in the second round. Overall, the descriptive statistics for Round 2 indicate very high satisfaction levels across all factors, with Information Quality and Service Quality receiving the highest ratings. The relatively low standard deviations suggest a strong consensus among the experts regarding their positive assessments of the e-learning system's various aspects.

Table 5: Descriptive Statistics for Round 2 on Satisfaction Factors for CI

No	Factors	Mean	SD	Rank	Interpretation
1	Self-efficacy	4.883	0.209	3	Strongly Agree
2	Perceived Ease of Use	4.840	0.324	6	Strongly Agree
3	Motivation	4.860	0.313	5	Strongly Agree
4	System Quality	4.950	0.158	2	Strongly Agree
5	Information Quality	4.875	0.279	4	Strongly Agree
6	Service Quality	4.975	0.079	1	Strongly Agree

The results for Round 2 focus on the satisfaction factor, now renamed "Motivation," of the original "Perceived Enjoyment" factor, as presented in Table 5, incorporating enjoyment and other intrinsic motivational components. The high mean score of 4.860 indicates a strong consensus among the experts regarding the motivational aspects of using the e-learning system. A standard deviation of 0.313 suggests some response variation, yet the overall agreement remains consistent.

The descriptive statistics from Round 2 show a high level of expert agreement concerning both the motivational aspects and system quality of the e-learning system. The uniformly high mean scores across all statements indicate that the system effectively fulfils students' needs and expectations in terms of motivation and technical performance. This high level of Satisfaction is critical to maintaining students' intention to continue using the system, as they are more likely to do so if it is perceived as valuable, enjoyable, and reliable. It was determined that Round 2 would be the final round of the Delphi study, as the expert panel did not introduce any new factors.

DISCUSSION

Round 2 concludes the study, presenting the finalized satisfaction factors for Continuance Intention (CI) in e-learning, as detailed in Table 6. Along with the factors confirmed through the Delphi technique, the model incorporates critical elements from the Expectation Confirmation Model (ECM). The ECM, a well-established and extensively validated framework, plays a foundational role in understanding continuance intention across various contexts, making its factors essential for inclusion. Unlike the factors derived from the Systematic Literature Review (SLR), the ECM factors were not subjected to the Delphi technique. This decision was made based on the following considerations:

- **Established Validity:** The ECM factors have been rigorously validated through numerous studies over time. Given the robust empirical support for their inclusion, additional validation through the Delphi method was deemed unnecessary.

- **Face and Content Validity:** While not included in the Delphi rounds, the ECM factors underwent face and content validity checks to ensure their relevance to the specific context of this study. These checks confirmed that the ECM factors align with the research objectives and are appropriate for inclusion in the model.

Table 6: The final satisfaction factors for students' CI

Factor	Definition
1. Self-efficacy	Self-efficacy refers to an individual's belief in their ability to successfully perform tasks, particularly in the context of e-learning [49].
2. Perceived Ease of Use	The extent to which an individual believes that using a specific system requires minimal effort [50].
3. Motivation	The internal or external factors that drive learners' interest, dedication, and persistence in completing online educational activities.
4. Perceived Usefulness	The degree to which a person believes that using a system enhances their performance or productivity [50].
5. Confirmation	Users' perception of how well a system's actual performance aligns with their initial expectations regarding its usefulness [19].
6. Satisfaction	The feelings users experience when their expectations regarding the use of technology or an information system are met [19].
7. Continuance Intention	Users' ongoing intention to continue using an information system or technology after initial adoption [19].
8. System Quality	The degree to which a system exhibits desirable characteristics, such as ease of use and the ability to perform tasks efficiently [51].
9. Information Quality	The relevance and accuracy of the content or outputs provided by the system, as perceived by the user [51].
10. Service Quality	The overall support offered by the service provider, whether through the IT department, help desk, or external support [51].

Based on the student satisfaction factors for Continuance Intention (CI) as outlined in Table 6, the following hypotheses have been formulated:

- H1: Self-Efficacy positively influences Satisfaction.
- H2: Perceived Ease of Use positively influences Satisfaction.
- H3: Motivation positively influences Satisfaction.
- H4: System Quality positively influences Satisfaction.
- H5: Information Quality positively influences Satisfaction.
- H6: Service Quality positively influences Satisfaction.
- H7: Confirmation positively influences Perceived Usefulness.
- H8: Confirmation positively influences Satisfaction.
- H9: Perceived Usefulness positively influences Satisfaction.
- H10: Perceived Usefulness positively influences Continuance Intention.
- H11: Satisfaction positively influences Continuance Intention.

The proposed model, which outlines the hypotheses, is presented in Figure 2. It is referred to as an initial model because it has yet to be tested. The diagram represents an initial model of satisfaction factors for students' CI to use e-learning systems. The model integrates individual characteristics and system characteristics to explain how different factors influence Satisfaction and the intention to continue using the e-learning system. The model shows the ten satisfaction factors for CI (Self-efficacy, Perceived Ease of Use, Motivation, System Quality, Information Quality, Service Quality, Confirmation, Perceived Usefulness, Satisfaction, and Continuance Intention).

Information Quality, Service Quality, Confirmation, Perceived Usefulness, Satisfaction, and Continuance Intention) to use e-learning systems.

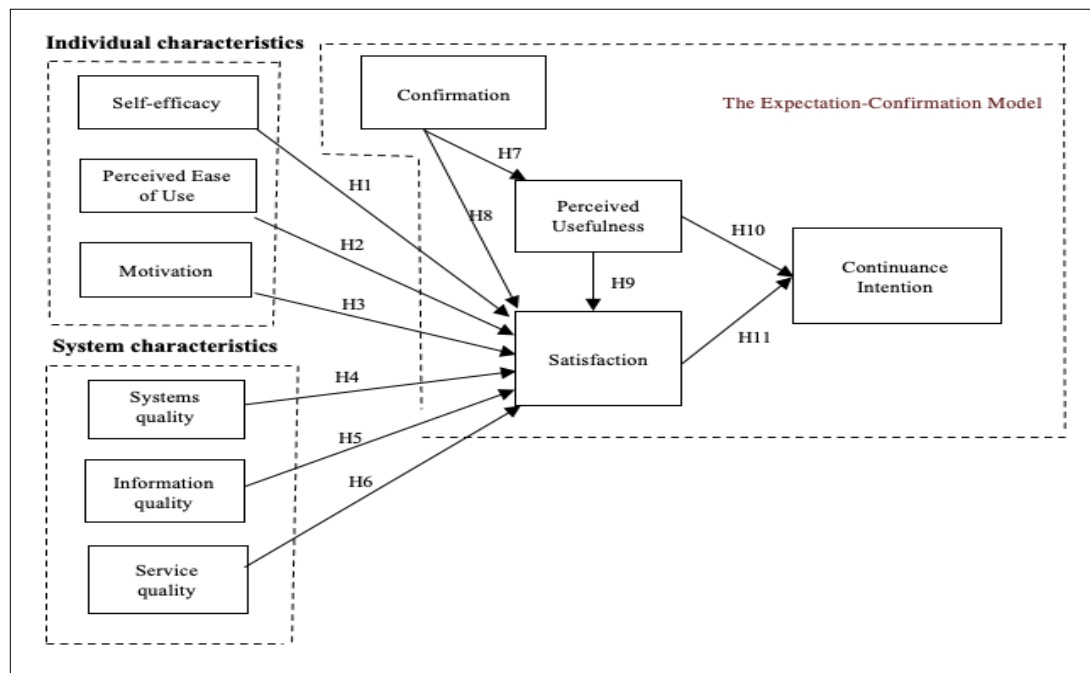


Figure 2: Initial Model of Satisfaction Factors for Students' (CI) to Use E-Learning Systems

The importance of the proposed model lies in its comprehensive approach to understanding the critical satisfaction factors that influence students' (CI) use of e-learning systems. By integrating both individual characteristics (such as self-efficacy, motivation, and perceived ease of use) and system characteristics (like system quality, information quality, and service quality), the model provides a holistic view of how students interact with and respond to e-learning environments. The model considers not only the individual factors that influence a student's personal engagement with e-learning but also the system-related factors that determine the quality and usability of the learning platform. This dual approach ensures a more complete understanding of what drives Satisfaction and continuance in e-learning contexts. By highlighting ten critical factors (such as self-efficacy, perceived usefulness, and service quality), the model identifies areas where educators, administrators, and system designers can focus their efforts to improve the overall user experience and, consequently, boost student retention in online learning environments.

This model serves as a guide for institutions and developers seeking to enhance the quality of their e-learning platforms. Understanding these factors allows decision-makers to make targeted improvements that directly influence user satisfaction and long-term usage intentions. The integration of the Expectation Confirmation Model (ECM) further strengthens the model by providing a validated theoretical framework to explain how user expectations, perceived usefulness, and confirmation of system performance contribute to continued usage. Since the model is in its initial stages, it provides a foundation for further empirical testing and validation. By examining these factors in different contexts, future research can refine and expand the understanding of how e-learning systems can be optimized for diverse learner populations. In summary, this model is essential because it serves as a detailed roadmap for enhancing both

student satisfaction and CI in e-learning systems, which are becoming increasingly critical in modern education.

CONCLUSION

E-learning has significantly transformed higher education, but despite its widespread adoption, students' Satisfaction and Continuance Intention (CI) to continue using e-learning systems remain areas of concern. Current research lacks consensus on the key factors driving student satisfaction in relation to CI. This paper addresses this gap by identifying critical satisfaction factors through the Delphi technique and proposes an initial model for higher education institutions. The model is designed to help universities better understand the factors that influence student satisfaction and CI, enabling them to make more informed decisions when implementing or assessing e-learning systems. This research is expected to contribute to improving e-learning satisfaction and, ultimately, the sustained use of these systems by students.

References

1. Roy, S.K., *E-learning Portal Success in higher education organizations: A multi-group comparison*. *Journal of Social, Humanity, and Education*, 2023. 3(3): p. 197-218.
2. Jaoua, F., et al., *E-Learning Success Model in the Context of COVID-19 Pandemic in Higher Educational Institutions*. *International Journal of Environmental Research and Public Health*, 2022. 19(5): p. 2865.
3. Popescu, M.-L., *THE IMPACT OF E-LEARNING IN HIGHER EDUCATION*. *Journal of Information Systems & Operations Management*, 2012. 6(1).
4. Anderson, T. and J. Dron, *Three Generations of Distance Education Pedagogy*. *International Review of Research in Open and Distributed Learning*, 2011. 12(3): p. 80-97.
5. Ally, M., 1. *Foundations of Educational Theory for Online Learning*, in *The Theory and Practice of Online Learning*, A. Terry, Editor. 2008, Athabasca University Press: Athabasca. p. 15-44.
6. Widyaningrum, T., Q. Sholihah, and B. Haryono, *The Delone and McLean Information System Success Model: Investigating User Satisfaction in Learning Management System*. *Journal of Education Technology*, 2024. 8: p. 86-94.
7. Al-Emran, M., H.M. Elsherif, and K. Shaalan, *Investigating attitudes towards the use of mobile learning in higher education*. *Computers in Human Behavior*, 2016. 56: p. 93-102.
8. Stoian, C.E., et al., *Transition from Online to Face-to-Face Education after COVID-19: The Benefits of Online Education from Students' Perspective*. *Sustainability*, 2022. 14(19): p. 12812.
9. Rajeh, M.T., et al., *Students' satisfaction and continued intention toward e-learning: a theory-based study*. *Medical Education Online*, 2021. 26(1): p. 1961348.
10. Al-Zubaidi, R., et al., *Sustainable Development Through Effective Project Management: The Petromasila in Yemen*. *Advances in Social Sciences Research Journal*, 2023. 10(3): p. 269-290.
11. Abdulhadi, A.R., et al., *The Impact of Internal Control on Project Management in Construction Site Among Small and Medium Enterprises in Iraq*. *Advances in Social Sciences Research Journal*, 2023. 10(3): p. 247-268.

12. Al-Samarraie, H., *E-learning continuance satisfaction in higher education: a unified perspective from instructors and students*. Studies in Higher Education, 2017. 43.
13. Al-Refaei, A.A.-A., et al., *A Conceptual Framework for the Impact of Entrepreneurial Leadership on Innovation Work Behavior and Sustainable Innovation Performance*, in *Entrepreneurship Innovation and Education for Performance Improvement*, S.A. Salman and A. Bhaumik, Editors. 2024, IGI Global: Hershey, PA, USA. p. 577-598.
14. Al-Zubaidi, R., et al., *Promoting Sustainability in Yemeni Construction SMEs: Self-Efficacy Mediates Planning and Risk Management*, in *Entrepreneurship Innovation and Education for Performance Improvement*, S.A. Salman and A. Bhaumik, Editors. 2024, IGI Global: Hershey, PA, USA. p. 72-113.
15. Asmri, M.A., et al., *The public health care system and primary care services in Saudi Arabia: a system in transition*. Eastern Mediterranean Health Journal, 2020. 26(4): p. 468-476.
16. Nyandara, Z.I., *Challenges and opportunities of technology based instruction in open and distance learning: A comparative study of Tanzania and China*. 2012.
17. Alghamdi, M.A.A., et al., *Antecedents and Consequences of Employee Well-Being: Empirical Study on Saudi Aramco*. Advances in Social Sciences Research Journal, 2021. 8(9).
18. Al-Sharif, A., et al., *Effects of Innovation Capability and Environmental Dynamism on the Relationship between Entrepreneurial Leadership and Innovation Performance in the SMEs Service Industry*. International Journal of Academic Research in Business and Social Sciences, 2023. 13: p. 1547-1570.
19. Bhattacharjee, A., *Understanding Information Systems Continuance: An Expectation-Confirmation Model*. MIS Quarterly, 2001. 25(3): p. 351-370.
20. Garg, S. and S. Sharma, *User Satisfaction and Continuance Intention for Using E-Training: A Structural Equation Model*. Vision, 2020. 24(4): p. 441-451.
21. Binyamin, S.S., *Using the technology acceptance model to measure the effects of usability attributes and demographic characteristics on student use of learning management systems in Saudi higher education*. 2019.
22. Keramati, A., M. Afshari-Mofrad, and A. Kamrani, *The role of readiness factors in E-learning outcomes: An empirical study*. Computers & Education, 2011. 57(3): p. 1919-1929.
23. Rahman, M.N.A., S. Zamri, and L.K. Eu, *A meta-analysis study of satisfaction and continuance intention to use educational technology*. International Journal of Academic Research in Business and Social Sciences, 2017. 7(4): p. 1059-1072.
24. Alshammari, M.F., R.C.M. Yusoff, and H. Abas, *A Systematic Literature Review of Factors Influencing Satisfaction and Continuance Intention to Use E-Learning Systems in Higher Education*. Advances in Social Sciences Research Journal, 2024. 11(8): p. 326-346.
25. Linstone, H.A. and M. Turoff, *The delphi method*. 1975: Addison-Wesley Reading, MA.
26. Gordon, G.M. and M. Steyn, *An investigation into the accuracy and reliability of skull-photo superimposition in a South African sample*. Forensic science international, 2012. 216(1-3): p. 198. e1-198. e6.
27. Al-Zubaidi, R., et al., *The Effect of Self-efficacy on Sustainable Development: The PetroMasila in Yemen*. Advances in Social Sciences Research Journal, 2022. 9(12): p. 35-49.

28. Abdulhadi, A.R., et al., *The Impact of Risk Management on the Dimensions of Project Management Among Small and Medium Enterprises in Iraq*. *Advances in Social Sciences Research Journal*, 2022. 9(11): p. 469-481.
29. Hsu, C.-C. and B.A. Sandford, *The Delphi Technique: Making Sense of Consensus*. Practical Assessment, Research and Evaluation, 2007. 12: p. 10.
30. Okoli, C. and S. Pawlowski, *The Delphi method as a research tool: An example, design considerations and applications*. *Information & Management*, 2004. 42: p. 15-29.
31. Jandab, A., et al., *IT-Based Innovation and New Product Development Performance in Yemen: The Moderating Role of Intellectual Property*. *International Journal of Business Society*, 2019. 3(11): p. 1-8.
32. Abdulsamad, A., et al., *The Importance of Entrepreneurial Orientation's Dimensions in Influencing the Organizational Performance of Food and Beverage SMEs*. *Advances in Social Sciences Research Journal*, 2020. 7: p. 81-99.
33. Schmalz, U., S. Spinler, and J. Ringbeck, *Lessons Learned from a Two-Round Delphi-based Scenario Study*. *MethodsX*, 2021. 8: p. 101179.
34. Zaçe, D., et al., *The Development and Validation of a Questionnaire to Investigate the Association Between Maternal Food Insecurity and Fetal Structural Anomalies: Delphi Procedure and Pilot Study*. *Maternal and Child Health Journal*, 2023. 27(9): p. 1518-1528.
35. Niederberger, M. and J. Spranger, *Delphi Technique in Health Sciences: A Map*. *Frontiers in Public Health*, 2020. 8.
36. Jandab, A., et al., *THE INFLUENCE OF IT CAPABILITY ON IT-BASED INNOVATION: THE MEDIATING ROLE OF ORGANIZATIONAL LEARNING CAPABILITY*. 2020: p. 2020.
37. Abdulsamad, A., et al., *The Impact of Market Orientation Components on Organizational Performance of SMEs. The single-industry approach "Food and Beverage Sector"*. *Advances in Social Sciences Research Journal*, 2021. 8: p. 504-516.
38. Fowles, J. and R.B. Fowles, *Handbook of futures research*. 1978.
39. Adler, M. and E. Ziglio, *Gazing into the oracle: The Delphi method and its application to social policy and public health*. 1996: Jessica Kingsley Publishers.
40. Crance, J.H., *Guidelines for using the Delphi technique to develop habitat suitability index curves*. 1987: National Ecology Center, Division of Wildlife and Contaminant Research, Fish
41. Foth, T., et al., *The use of Delphi and Nominal Group Technique in nursing education: A review*. *International Journal of Nursing Studies*, 2016. 60: p. 112-120.
42. Stribing, A., et al., *Content/face validity of motor skill perception questionnaires for youth with visual impairments: A Delphi method*. *British Journal of Visual Impairment*, 2022. 40(2): p. 369-377.
43. Alghamdi, M.A.A., et al., *Employee Well Being and Knowledge Sharing Behavior Among Employees of Saudi Aramco*. *Advances in Social Sciences Research Journal*, 2021. 8(8).
44. Al-Sharif, A.M., et al., *The Role of Innovation Capability in the Relationship between Entrepreneurial Leadership and Innovation Performance in the SMEs Service Industry*. *Advances in Social Sciences Research Journal*, 2023. 10(1).
45. Helmer, O., *Analysis of the future: The Delphi method*. *Technological Forecasting for Industry and*, 1968.

-
46. Keeney, S., F. Hasson, and H. McKenna, *Keeney S, Hasson F, McKenna HP. A critical review of the Delphi technique as a research methodology for nursing. Int J Nurs Stud. 38: 195-200.* International journal of nursing studies, 2001. 38: p. 195-200.
 47. Rodríguez-Peñarroja, M., *Blended Learning in Higher Education During Covid-19 Pandemic: Students' Assessment of Digital Transition.* 2021. 10613-10621.
 48. Powell, C., *The Delphi technique: myths and realities.* J Adv Nurs, 2003. 41(4): p. 376-82.
 49. Bandura, A., *Self-efficacy: Toward a unifying theory of behavioral change.* Psychological Review, 1977.
 50. Venkatesh, V., et al., *User Acceptance of Information Technology: Toward a Unified View.* MIS Quarterly, 2003. 27(3): p. 425-478.
 51. DeLone, W.H. and E.R. McLean, *Information Systems Success Measurement.* Foundations and Trends® in Information Systems, 2016. 2(1): p. 1-116.