

## Online Learning Satisfaction: A Pilot Study

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**Abstract:** Despite physical distances, online learning allows institutes to continue their education. Student enrolment and retention are essential concerns for all higher education institutions. During the COVID-19 pandemic, most educational institutions worldwide shifted to online learning. With the growth of online e-learning usage around the world, it became necessary to improve the accessibility of teaching and learning, and it was imperative to assess student satisfaction to understand their behavior. This study aims to explore student opinions about online learning and provide educators, policymakers, and researchers with a comprehensive understanding of the state of online learning, guiding informed decisions and inspiring further exploration of this dynamic field. These opinions were investigated through qualitative research, which involved distributing surveys to students and analyzing their responses to open-ended questions. This paper presents insights into the impact of the COVID-19 pandemic on online learning and its potential long-term effects on the educational landscape. Responses were analyzed using data mining algorithms and NVIVO software to extract key themes. The results identify factors that can affect students' satisfaction with online learning and are discussed in focus groups with students in years 2, 3, and 4. In conclusion, the study acknowledges the limitations of the small and institution-specific sample while highlighting factors institutions must consider when implementing online learning systems.

**Keywords:** Online learning, Factors, Learners, Qualitative, Survey.

### 1. Introduction

The rapid global expansion of online e-learning has profoundly transformed higher education, creating new opportunities and challenges for both students and educators. As virtual learning environments become increasingly prevalent, assessing student satisfaction has emerged as a critical component in understanding learner behaviour and improving instructional quality. Many educational institutions have integrated digital communication technologies and online learning platforms to ensure continuity of education and enhance accessibility.

#### 1.1 Background of the Study

Student satisfaction is widely recognized as a key indicator of educational effectiveness and institutional quality in online learning contexts. It reflects the extent to which learners' expectations are met and influences their engagement, motivation, and academic success. However, satisfaction levels are often affected by factors such as delayed instructor responses,

limited student–instructor interaction, and reduced social presence, all of which can diminish the overall learning experience. To address these challenges, decision-makers must account for both technological and social dimensions when designing or refining e-learning systems. The Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) have frequently been employed to explain user acceptance and satisfaction with educational technologies (Taherdoost, 2018; Mailizar et al., 2021).

## **1.2 Problem Statement**

Despite the widespread adoption of online learning systems, maintaining a high level of student satisfaction remains a persistent challenge for many universities. The transition to online education during the COVID-19 pandemic exposed limitations in system usability, instructional design, and learner engagement. Insufficient interaction, delayed feedback, and technical difficulties have contributed to lower satisfaction and hindered the overall learning process. Consequently, there is a pressing need to identify the underlying factors influencing student satisfaction and to explore innovative methods for assessing these perceptions, particularly within the context of Arabic-speaking learners.

## **1.3 Research Objectives**

This study aims to achieve the following objectives:

1. To identify and examine the factors that influence student satisfaction with online learning.
2. To explore the use of Arabic language sentiment analysis as a method for evaluating student satisfaction in online learning environments.

## **1.4 Research Questions**

Q1: What are the factors that affect student satisfaction with online learning?

Q2: How can Arabic language sentiments be identified and utilized to evaluate student satisfaction with online learning?

## **1.4 Significance of the Study**

This research contributes to the growing body of literature on e-learning quality and user experience by focusing on student satisfaction from both behavioural and linguistic perspectives. The findings are expected to provide valuable insights for educators, instructional designers, and policymakers seeking to enhance the effectiveness of online education.

Furthermore, by incorporating Arabic sentiment analysis, the study introduces a novel approach to evaluating satisfaction in a linguistic and cultural context that remains underexplored in existing research. The results may serve as a foundation for improving online learning systems, promoting user engagement, and strengthening institutional decision-making.

### **1.5 Scope and Limitations**

The study is confined to university students who utilized online learning platforms during the COVID-19 pandemic. It focuses primarily on identifying determinants of satisfaction and analyzing sentiments expressed in the Arabic language. While the findings may offer valuable implications for e-learning design and implementation, the scope does not extend to other languages, educational levels, or post-pandemic learning environments. Additionally, external factors such as socioeconomic status or institutional policies are acknowledged but not examined in depth.

## **2. Literature Review**

### **2.1 Overview of Online Learning**

Online learning, also known as e-learning, refers to the process of acquiring knowledge and skills through digital platforms and Internet-based technologies. It is commonly regarded as a form of distance education that eliminates the limitations of physical classrooms and geographical boundaries (Griffith et al., 2021). The evolution of online learning has allowed institutions to reach diverse populations, offering flexible access to education at various levels. Since the mid-2000s, the adoption of online and blended learning has grown exponentially, with enrolments increasing by nearly 47% since 2007 (Wong et al., 2019). This growth reflects the rising demand for accessible, technology-enhanced education. During the COVID-19 pandemic, universities worldwide rapidly adopted online learning platforms such as Blackboard, Microsoft Teams, and Zoom to ensure continuity of instruction (Muthuprasad et al., 2021). The pandemic accelerated digital transformation across the education sector, highlighting both the potential and challenges of online learning systems.

### **2.2 Factors Influencing Online Learning Satisfaction**

Student satisfaction is a critical determinant of online learning success and institutional quality. It reflects learners' perceptions of how well their educational needs and expectations are met.

The literature identifies several categories of factors that influence satisfaction in online environments.

Technological and institutional factors—such as the availability of reliable technical infrastructure, user-friendly platforms, and institutional or governmental support—play a significant role in determining satisfaction (Castro & Tumibay, 2021). Similarly, psychological factors, including learner confidence, enjoyment, and self-efficacy, have been shown to enhance motivation and engagement (Cicha et al., 2021; Bettayeb et al., 2020).

Socio-cultural influences, such as language proficiency, time management challenges, and the quality of instructor feedback, also contribute to varying levels of satisfaction (Kurdi et al., 2020). Furthermore, environmental and social factors, including home-related distractions and societal expectations, may hinder learners' ability to stay focused and motivated (Rasmitadila et al., 2020). In light of these findings, it is essential for universities to design flexible, learner-centered systems that address the diverse needs of students and support sustained engagement in online learning contexts. During the COVID-19 pandemic, universities worldwide adopted platforms such as Blackboard, Microsoft Teams, and Zoom (Muthuprasad et al., 2021). To ensure sustainable adoption, researchers developed theoretical models including TAM (Mailizar et al., 2021), UTAUT (Rataj & Wójcik, 2020), DOI (Scott & McGuire, 2017), and ECT (Fu et al., 2018)

### **2.3 Theoretical Framework**

Several theoretical models have been developed to explain the factors influencing user satisfaction and technology adoption in online learning environments. Among the most widely applied are the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT).

#### **– Technology Acceptance Model (TAM)**

The Technology Acceptance Model, proposed by Davis (1989), explains user behavior toward technology adoption based on two primary constructs: perceived usefulness and perceived ease of use. These constructs influence users' attitudes toward technology, which in turn shape their behavioral intention to use it. In the context of online learning, TAM has been extensively used to evaluate how students' perceptions of platform usability and usefulness affect their satisfaction and continued engagement (Mailizar et al., 2021).

#### **– Unified Theory of Acceptance and Use of Technology (UTAUT)**

The Unified Theory of Acceptance and Use of Technology, developed by Venkatesh et al. (2003), integrates elements from several prior models, including TAM, the Theory of Planned Behavior, and the Diffusion of Innovations theory. UTAUT identifies four key determinants of technology acceptance: performance expectancy, effort expectancy, social influence, and facilitating conditions (Rataj & Wójcik, 2020). In online learning, these dimensions are used to predict students' willingness to adopt and effectively use digital platforms, emphasizing both technological and social aspects of engagement. Together, TAM and UTAUT provide a comprehensive framework for understanding how learners' attitudes, beliefs, and contextual factors influence satisfaction with online education.

## **2.4 Summary of Literature and Research Gap**

The reviewed literature demonstrates that online learning has become an essential component of modern education, offering flexibility and accessibility to diverse learners. However, sustaining student satisfaction remains a persistent challenge influenced by multiple interrelated factors—technological, psychological, and socio-cultural.

While numerous studies have applied TAM, UTAUT, and other models such as the Diffusion of Innovations (DOI) and Expectation Confirmation Theory (ECT) to examine online learning adoption, limited research has explored these frameworks within the context of Arabic-speaking learners. Moreover, the use of Arabic language sentiment analysis as a tool for evaluating student satisfaction remains underexplored.

This gap highlights the need for further investigation into how cultural and linguistic factors influence students' perceptions of online learning. By integrating traditional acceptance models with computational sentiment analysis, this study seeks to contribute a novel methodological approach to assessing student satisfaction in Arabic-language online education contexts.

## **3. Research Methodology**

### **3.1 Research Design**

This study adopted a quantitative research design supported by qualitative insights to examine factors influencing student satisfaction with online learning. The research focused on university students' perceptions of e-learning during the COVID-19 pandemic. Online learning was the primary mode of course delivery at Sohar University throughout this period (Griffith et al., 2021). Data were collected through a structured questionnaire and supplemented with a small focus group discussion to provide additional context and validation of quantitative findings.

The mixed-method approach enabled both statistical analysis and thematic interpretation, ensuring a more comprehensive understanding of students' experiences with online learning systems.

### **3.2 Population and Sampling**

The study targeted 100 students enrolled at Sohar University, selected through voluntary participation. Participants represented a range of academic disciplines and year levels. Following data screening and validation, a total of 45 complete responses were retained for analysis. Although the sample size was relatively small, it provided valuable preliminary insights into student satisfaction patterns and attitudes toward online learning. The limited number of respondents, however, restricts the generalizability of the results to the wider student population.

### **3.3 Research Instrument and Survey Design**

Data were collected using a structured questionnaire designed to measure students' perceptions of various factors influencing satisfaction with e-learning. The instrument utilized a five-point Likert scale ranging from *1 = strongly disagree* to *5 = strongly agree*. In addition to the main survey items, demographic questions were included to capture participants' background information such as age, gender, and field of study.

The questionnaire addressed key dimensions related to technology use, instructor interaction, student motivation, and institutional support.

### **3.4 Ethical Considerations**

Ethical approval for the study was obtained from the Research Committee at Sohar University prior to data collection. Participants were informed about the purpose of the research, assured of confidentiality, and given the right to withdraw at any stage without penalty. Data were collected anonymously through Google Forms, ensuring participant privacy and voluntary consent.

### **3.5 Data Cleaning and Preparation**

The collected data underwent a rigorous data cleaning process to ensure accuracy, completeness, and reliability. Inconsistent, incomplete, or duplicate responses were removed from the dataset. Errors identified in data entry were corrected, and only valid responses were retained for subsequent analysis. After cleaning, the final dataset comprised 45 valid cases suitable for statistical and qualitative examination.

### **3.6 Data Cleaning and Preparation**

The study employed both **quantitative** and **qualitative** data analysis techniques to evaluate the findings comprehensively.

### Reliability Testing (Cronbach’s Alpha)

To assess the internal consistency of the questionnaire, Cronbach’s alpha was computed. A coefficient value of 0.70 or higher is generally considered indicative of acceptable reliability (Harris et al., 2014). The reliability analysis confirmed that the instrument demonstrated strong internal consistency across key constructs. For future research, it is recommended that advanced statistical analyses such as regression or correlation tests be conducted to further examine the relationships between the identified variables.

### Sentiment Analysis Using NVivo

In addition to quantitative data, qualitative comments and feedback were analyzed using NVivo software to extract themes and sentiment patterns. Student responses were cleaned, coded, and categorized based on recurring concepts. Thematic coding facilitated the identification of dominant themes related to satisfaction, engagement, and system usability. The results from NVivo sentiment analysis were triangulated with survey data to enhance the validity and depth of interpretation. This approach provided richer insights into students’ emotional and perceptual responses toward online learning during the pandemic

## 4. Results and Discussion

### 4.1 Demographic Profile of Respondents

A total of 45 valid responses were obtained from the participants after data cleaning. The demographic analysis revealed that the majority of respondents were female (86.7%), primarily enrolled in the Faculty of Computing and Information Technology (93.3%). Most participants were in their fourth year of study (64.4%), pursuing a bachelor’s degree (97.8%).

In terms of technological access, 64.4% of students reported having high-speed Internet connections, while 35.6% indicated limited or no access to such connectivity. Daily Internet usage varied, with 42.2% of respondents using the Internet for 4–8 hours per day, and 37.8% exceeding eight hours of daily use. These findings suggest that participants were digitally active and reliant on online platforms for both academic and personal purposes.

Table 1 presents a detailed demographic summary of the respondents.

		Frequency	Percentage
Gender	Male	6	13.3
	Female	39	86.7
Field of study	FCIT	42	93.3
	FB	2	4.4
	FE	1	2.2
Year of Study	3	1	2.2
	4	29	64.4

	5	15	33.3
Level of study	Advance Diploma	1	2.2
	Bachelor	44	97.8
Availability of high-speed internet for e-learning	Yes	29	64.4
	No	16	35.6
My daily Internet uses	1-4 hrs.	9	20.0
	4-8 hrs.	19	42.2
	More than 8 hrs.	17	37.8
Number of courses that need access to e-learning materials in the current semester	1	4	8.9
	2	9	20.0
	3	14	31.1
	4 or more	12	26.7
	N/A	6	13.3
Number of courses that need access to e-learning materials in the previous semester	1	7	15.6
	2	14	31.1
	3	11	24.4
	4 or more	9	20.0
	N/A	4	8.9

#### 4.2 Reliability and Validity of the Instrument

Reliability analysis was conducted to assess the internal consistency of the constructs measured in the survey. Using Cronbach's alpha, all constructs exceeded the threshold value of 0.70, confirming strong internal consistency and reliability (Siron et al., 2020). The results demonstrated that the survey instrument effectively captured the intended variables related to student satisfaction with online learning.

#### 4.3 Quantitative Findings (Survey Analysis)

Quantitative data from the structured questionnaire were analyzed to identify trends and patterns in student perceptions of online learning. The results indicated that the majority of students expressed satisfaction with accessibility, ease of use, and instructional support. However, several participants reported challenges related to delayed feedback and inconsistent interaction with instructors.

The findings highlight a positive perception of online learning's technological infrastructure but also underscore the importance of continuous instructor engagement to sustain satisfaction and motivation among students.

#### 4.4 Qualitative Findings (NVivo Analysis)

The qualitative component of the study involved analyzing open-ended feedback using NVivo software. A word frequency analysis generated a word cloud (see *Figure 1*), revealing frequently mentioned terms such as *accessibility*, *resources*, *communication*, and *support*. These terms reflect students' key concerns and priorities in the online learning environment.



*Figure 1: Word cloud frequency using NVIVO*

The NVivo thematic analysis identified three major themes:

1. Accessibility and Technical Resources – Students emphasized the importance of reliable Internet connections and well-structured learning materials.
2. Instructor Support and Feedback – Frequent communication and constructive feedback were cited as central to satisfaction.
3. Engagement and Motivation – Learners valued interactive activities and timely responses to maintain motivation in a virtual setting.

These qualitative insights reinforced the quantitative findings and provided contextual depth to the survey results.

#### 4.5 Discussion of Findings

The findings of this study align with prior literature emphasizing the central role of both technical and social factors in determining online learning satisfaction (Chen & Tat Yao, 2016; Taghizadeh et al., 2021). The following subsections elaborate on these dimensions and their theoretical implications.

##### Technical Factors

The study confirmed that technological accessibility and system usability significantly influence students' satisfaction with e-learning. Participants with high-speed Internet access and sufficient digital resources reported greater satisfaction levels. These results correspond

with the facilitating conditions construct within the UTAUT framework, underscoring that technical readiness and infrastructure are prerequisites for effective online learning.

### **Social and Behavioral Factors**

Beyond technical elements, social interaction emerged as a key determinant of satisfaction. The analysis revealed that instructor feedback, communication frequency, and peer collaboration strongly affected learner engagement. This supports the notion that online learning success depends not only on system design but also on fostering a sense of community and connectedness among learners.

### **Theoretical Implications (TAM/UTAUT)**

The integration of results within the Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT) frameworks highlights that perceived usefulness, ease of use, and facilitating conditions are pivotal in shaping students' attitudes toward online learning. The findings reinforce TAM's emphasis on user perceptions as predictors of satisfaction and UTAUT's focus on contextual factors influencing technology adoption.

Collectively, these insights suggest that institutions should enhance both technological infrastructure and pedagogical practices to optimize online learning experiences. Ensuring system usability, reliable connectivity, and strong instructor–student communication can substantially improve student satisfaction and learning outcomes.

## **5. Conclusion and Recommendations**

### **5.1 Summary of Findings**

This study examined the factors influencing student satisfaction with online learning at Sohar University during the COVID-19 pandemic. The findings indicate that both technical and social dimensions play critical roles in shaping students' overall satisfaction with e-learning platforms.

From a technical perspective, access to high-speed Internet, availability of updated resources, and system usability were key determinants of satisfaction. Socially, instructor feedback, student–instructor interaction, and peer engagement emerged as vital components in maintaining motivation and positive learning experiences.

By aligning these findings with the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), the study confirms that perceived usefulness, ease of use, and facilitating conditions significantly influence students' satisfaction

and continued use of online learning systems. These results underscore the interconnectedness of technological readiness and social engagement in determining the success of online education.

## 5.2 Practical Implications

The outcomes of this research provide several **practical insights** for higher education institutions, particularly within the Omani context. To enhance student satisfaction, universities should prioritize:

- Improving technological infrastructure, ensuring all students have access to reliable, high-speed Internet and updated e-learning resources.
- Strengthening instructor presence by providing timely feedback, interactive communication, and personalized support to foster engagement.
- Encouraging blended learning models that combine the flexibility of online learning with the social interactivity of traditional classrooms.
- Providing professional development for faculty, equipping them with digital pedagogical skills and awareness of learner engagement strategies.

Implementing these measures can promote a more inclusive, interactive, and student-centered online learning environment that supports both academic performance and learner satisfaction.

## 5.3 Limitations of the Study

While this pilot study provides meaningful insights, several limitations must be acknowledged. First, the sample size was relatively small ( $n = 45$ ), which restricts the generalizability of findings beyond the context of Sohar University. Second, the study was conducted within a single institution, and therefore, cultural or institutional factors unique to Sohar University may have influenced the results.

Additionally, the analysis primarily relied on descriptive and reliability statistics. Although these methods are appropriate for exploratory studies, they do not establish causal relationships between variables. Future studies should therefore employ inferential statistical techniques, such as correlation or regression analyses, to better understand the strength and direction of these relationships.

## 5.4 Recommendations for Future Research

Building upon the findings and limitations of this study, several recommendations are proposed for future research:

- Expand the sample scope to include multiple universities across Oman or the wider Gulf region to enhance the representativeness of results.
- Incorporate advanced quantitative methods, such as structural equation modeling (SEM) or multiple regression, to examine relationships between variables more rigorously.
- Explore longitudinal perspectives to assess how satisfaction and technology acceptance evolve over time as e-learning systems mature.
- Integrate qualitative approaches such as interviews or focus groups to gain deeper insights into the emotional and experiential dimensions of online learning satisfaction.
- Examine cross-cultural variations in technology acceptance and satisfaction to identify how social and cultural norms influence learning experiences in different contexts.

Despite its limitations, this study contributes valuable empirical evidence linking student satisfaction with established theoretical frameworks such as TAM and UTAUT. The findings emphasize that both technological and social factors must be considered to design effective, student-centered online learning systems capable of meeting the evolving demands of higher education in the digital age.

## References

- Bączek, M., Zagańczyk-Bączek, M., Szpringer, M., Jaroszyński, A., & Wożakowska-Kapłon, B. (2021). Students' perception of online learning during the COVID-19 pandemic: A survey study of Polish medical students. *Medicine*, 100(7), e24821.
- Chen, W. S., & Tat Yao, A. Y. (2016). An empirical evaluation of critical factors influencing learner satisfaction in blended learning: A pilot study. *Universal Journal of Educational Research*, 4(7), 1667–1671.
- Griffith, J. C., Faulconer, E. K., & McMasters, B. L. (2021). The relationship between learning mode and student performance in an undergraduate statistics course. *International Review of Research in Open and Distance Learning*, 22(1), 166–178.
- Mailizar, M., Almanthari, A., & Maulina, S. (2021). Examining teachers' behavioral intention to use e-learning in mathematics teaching: An extended TAM model. *Contemporary Educational Technology*, 13(2), 1–16.
- Siron, Y., Wibowo, A., & Narmaditya, B. S. (2020). Factors affecting the adoption of e-learning in Indonesia: Lessons from COVID-19. *Journal of Technology and Science Education*, 10(2), 282–295.
- Taghizadeh, S. K., Rahman, S. A., Nikbin, D., Alam, M. M. D., Alexa, L., Ling Suan, C., & Taghizadeh, S. (2021). Factors influencing students' continuance usage intention with

online learning during the pandemic: A cross-country analysis. *Behaviour & Information Technology*, 0(0), 1–20.

Taherdoost, H. (2018). A review of technology acceptance and adoption models and theories. *Procedia Manufacturing*, 22, 960–967.

Harris-Haywood, S., Goode, T., Gao, Y., Smith, K., Bronheim, S., Flocke, S. A., & Zyzanski, S. (2014). Psychometric evaluation of a cultural competency assessment instrument for health professionals. *Medical Care*, 52(2), e7-e15.