Impact of teacher lecturing skills, ICT resources, physical classroom environment and library facilities on university image: student satisfaction as a mediator

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Abstract

Purpose – The objective of this research was to test the effect of information and communication technology (ICT) resources, library facilities, teacher lecturing skills and physical classroom environment on student satisfaction and university image. This paper also sought to contribute to the existing body of knowledge by confirming the role of student satisfaction as a mediator among the stated factors and university image.

Design/methodology/approach – Data were collected from 314 students at higher education institutions (HEIs) in the United Arab Emirates (UAE) using a survey instrument. Throughout the data analysis stage, the partial least squares structural equation modeling (PLS-SEM) was employed in order to validate the research instrument and test the hypotheses.

Findings – The findings verified that teacher lecturing skills and ICT resources have a positive effect on both student satisfaction and university image. Moreover, the study revealed that the library facilities and physical classroom environment positively affect both student satisfaction and university image. Lastly, the analysis showed that student satisfaction mediates the link between the stated factors and university image.

Originality/value – This paper adds to the published literature by investigating the direct and indirect effects of teacher lecturing skills, ICT resources, physical classroom environment and library facilities on university image via student satisfaction at HEIs in the UAE. This study is the first to integrate all of these factors into a single research model.

Keywords ICT resources, Library facilities, Physical classroom environment, Student satisfaction, Teacher lecturing skills, University image

Paper type Research paper

1. Introduction

Building and maintaining a positive institutional image is one of the key priorities at higher education institutions (HEIs) (Moslehpour, Chau, Zheng, Hanjani, & Hoang, 2020). Consequently, HEIs have been obliged to manage their relationships with various groups of stakeholders to satisfy their needs and attain the desired objectives (Langrafe, Barakat, Stocker, & Boaventura, 2020). The rise of globalization, empowered students and perceived international rankings have presented many challenges for higher learning institutions (Díaz-Méndez & Gummesson, 2012). Therefore, building a distinctive brand identity is an imperative approach for educational institutions in order to thrive in a fiercely competitive market. According to Traxler (2018), a distinctive image has a substantial impact on students'

perceptions and can significantly impact their experiences at educational institutions. A solid reputation is a selling point for a university and conveys a positive message to potential students. Panda, Pandey, Bennett, and Tian (2019) added that a strong reputation and image contribute significantly to student enrollment rates, and subsequently cultivate loyalty and favorable word-of-mouth. Therefore, the management at HEIs should continuously strive to invest in building a favorable image.

Although earlier studies on student satisfaction and university image have been conducted in the context of higher education, these two research directions are largely independent of one another. This needs to be looked into, given the sizable marketing expenditures made to develop an institution's reputation and image (Panda *et al.*, 2019). Additionally, the factors that affect student satisfaction should be examined regularly so that universities can create tactical plans to fulfill the wishes of this significant stakeholder (Douglas, Douglas, & Barnes, 2006; Osman & Saputra, 2019). The goal of the strategic approach is to enable HEIs to optimize their assets and resources in a proper way, hence building their strengths and generating healthier earnings (James & Casidy, 2018). When students are happy with their experiences at an institution, they tend to remain loyal and recommend it to others.

According to previous studies, various aspects such as facilities and physical classroom environment play a significant role in the process of decision-making for enrollment at a college or university (Durvasula, Lysonski, & Madhavi, 2011; Kotler & Fox, 1995). Earlier literature has also highlighted the importance of teacher lecturing skills and information and communication technology (ICT) resources in shaping the reputation of a university. However, the link between these factors and university image may benefit from various mechanisms of mediation. Some researchers have explored student satisfaction as a crucial mediator among some variables and university reputation. For instance, Sultan and Wong (2019) investigated student satisfaction as a mediating variable among university facilities and image. Additionally, James and Casidy (2018) proposed that students' satisfaction could mediate the link between the university environment and its image. Nevertheless, locating a study in the prior literature that that empirically tested the role of student satisfaction as a mediating variable among the chosen variables and university image in a single research framework is challenging.

In view of the stated gaps above, the aim of this research is centered on exploring the four predictors of university image: teacher lecturing skills, ICT resources, physical classroom environment and library facilities, and verifying whether student satisfaction mediates the link among them. This study differs from previous studies through the examination of the selected factors in one unique research model where others have examined them separately. Another contribution brought by this study is the examination of student satisfaction as a mediator between the selected factors and university image. This is the first study that merged all of them in one research framework and used student satisfaction as a mediator between them. Finally, there is a lack of research on the drivers of university image in the Middle East region. The findings of this study will be highly beneficial to professionals, strategists, educators and executives at HEIs. The findings will also provide insights into students' behaviors, help improve their satisfaction, enhance the university's reputation and guide the implementation of specific strategies. Furthermore, building a strong brand name in the context of higher education is deemed a key priority in today's dynamic environment. In order to clearly comprehend the connections between the stated factors, a concise summary of the relevant literature is provided in the next section.

2. Literature review

2.1 University image

A university's image can be thought of as the overall perception of the associations, experiences and impressions that the institution has imprinted in the public's minds (Caywood, 1997). It demonstrates how well a university can meet students' aspirations, provoke

confidence in its capability to provide specific types and levels of advanced education and enables employees to make clear career decisions (Nguyen, Yu, Melewar, & Hemsley-Brown, 2016). University image was defined by Arpan, Raney, and Zivnuska (2003) as the total beliefs a person holds towards a particular university. Therefore, when the name of a prestigious university is mentioned in a conversation, it should evoke strong, positive associations, feelings and visual cues among others, which will help the institution stand out from the competition. In the digital world, social media platforms are powerful tools for marketing purposes (Salunke & Jain, 2022). Although university image holds a noteworthy importance in the academic field, there has been a limited empirical research to demonstrate how it can be influenced by student satisfaction. Perna (2005) reported that developing favorable emotions toward an academic institution is crucial for increasing enrollment rates through an "admissions funnel" where students feel valued and have a sense of belonging. Previous research has also confirmed that a greater degree of satisfaction is positively correlated with corporate image (Palacio, Meneses, & Pérez, 2002).

According to Nguyen *et al.* (2016), both functional (tangible) and emotional (intangible) factors contribute to a university's image. A favorable university image cultivates a feeling of pride and inclusion among students, which can result in increased levels of involvement in institutional activities, extracurricular clubs and social groups (Akens, Wright-Mair, & Stevenson, 2019). The positive image also reinforces the perceived value of the degree acquired by present students. Consequently, this can result in improved employment opportunities, better salary and enhanced reputation among employers (Ali, Amir & Ahmed, 2024). Moreover, university image normally demonstrates a dedication to rigorous academic policies, outstanding research achievements and updated curriculum, thereby providing students with access to a wide range of adequate resources. HEIs which possess a positive image are more inclined to secure collaborations with leading firms that may open avenues to students for networking, internships and industry visits (Borah, Malik, & Massini, 2021). Panda *et al.* (2019) highlighted the significance of brand cues in evaluating service quality in high-risk and complex environments where customers do not have sufficient knowledge or experience to make objective decisions about brand choice.

2.2 Student satisfaction

This research is grounded in the theory of customer satisfaction from a cognitive and emotional point of view, as well as the theory of psychological and social needs. Satisfaction is a concept in relationship marketing that has been widely discussed in the literature (Bhattacharya & Sharma, 2022). Students' satisfaction was described by Elliott and Healy (2001) as the short-term attitudes that result from their evaluations of educational experiences. It was also defined in the literature (Alsheyadi & Albalushi, 2020) as the perceptions of students toward the services quality and learning experiences provided by a HEI and the ability to fulfill their expectations and needs. According to Navarro, Iglesias, and Torres (2005), academic satisfaction is a reliable indicator of a student's commitment to a particular institution and is the outcome of an effective system of education. This view point contends that both the efficiency of the HEIs in delivering the services of education and the relative perceived quality of students' experience are important drivers of their satisfaction (Weerasinghe & Fernando, 2018). Earlier literature has further supported that student satisfaction is a key driver of brand loyalty (Garcia-Rodriguez & Gutierrez-Tano, 2024). In the present paper, we view satisfaction as an emotional response that mostly comes from how students feel about the teaching effectiveness and study support services at their universities. Elliott and Shin (2002) outlined that students' satisfaction is a temporary feeling that arises from evaluating how they felt about the service received in the college/university. Nguyen and LeBlanc (2001) added that satisfaction is an emotional response that mostly comes from how students feel about the teaching and study support services at their universities. Students who feel satisfied about the services provided by their institutions tend to develop favorable word-

of-mouth and encourage others to enroll (Selnes, 1998). Certain studies showed that student satisfaction positively influences university image (Ali, Amir *et al.*, 2024; Shehzadi *et al.*, 2020; Sultan & Wong, 2019). Hence, the following hypothesis is postulated:

H1. Student satisfaction has a positive impact on university image.

2.3 Teacher lecturing skills

The concept of teacher lecturing skills was defined in the literature as the lecturer's profound understanding of the subject matter, the effectiveness of their teaching methods, their ability to facilitate the learning process and the quality of their assessments (López-Martín, Gutiérrez-de-Rozas, González-Benito, & Expósito-Casas, 2023). Teacher lecturing skills also refer to the abilities and skills that are adopted by a teacher for engaging students in classrooms and enhancing their learning experiences (Stronge, McColsky, Ward, & Tucker, 2005). Highly competent educators possess a deep knowledge in their field, use effective pedagogical techniques and ICT resources and have the ability to actively involve their students, resulting in improved educational outcomes (Stronge, 2007). They also implement instructional approaches that suit a wide range of learning styles and requirements, thus ensuring equal opportunities for all students to achieve success (Alstete & Flavian, 2024). Moreover, component teachers have the ability to establish a captivating and interesting educational setting, thereby creating a passion for knowledge acquisition and promoting critical thinking (Moore, 2014). Therefore, the ability to effectively manage the classroom environment, maintain discipline and establish a conducive learning atmosphere is an important attribute of competent educators. Elliott and Shin (2002) examined various aspects of students' academic experiences and found that teacher competency was the primary factor for influencing student satisfaction.

Furthermore, Shirazi (2017) suggested that student satisfaction could be impacted by a teacher's proficiency in the subject matter and his/her interpersonal skills. The satisfaction of students can also be greatly influenced by treating them with respect and fulfilling their expectations (Elliott & Shin, 2002). Past studies have also acknowledged that the competency of academic staff has a significant effect on students' degree of satisfaction (Martono, Nurkhin, Pramusinto, Afsari, & Arham, 2020; Yusoff, McLeay, & Woodruffe-Burton, 2015) and the reputation of the institute (Latip, Newaz, & Ramasamy, 2020). According to Arpan *et al.* (2003), universities can enhance their reputation by employing competent lecturers. Additional support was verified by Appuhamilage and Torii (2019) who concluded that student satisfaction and university image are positively correlated. Nevertheless, it is challenging to come across a study that investigated the role of student satisfaction as a mediating variable in the link between teacher lecturing skills and university image. Therefore, the following hypotheses are proposed:

H2. Teacher lecturing skills have a positive effect on student satisfaction.

H3. Teacher lecturing skills have a positive effect on university image.

H4. Student satisfaction mediates the link between teacher lecturing skills and university image.

2.4 Information and communication technology resources

Information provision is one of the foremost important services that organizations provide in order to facilitate the exchange of ideas among individuals or groups (Gembali, Kumar, & Sarma, 2022). In the literature, ICT resources are defined as a set of tools and technologies that can be utilized to process, store, retrieve and share information (Selinger, 2009). Based on the established literature, there are multiple means by which unrestricted Internet access can enhance educational quality. It provides students the abilities to access a large database,

expertise and instructional resources, thereby enhancing their capacity to learn both within and beyond the confines of the classroom (Talebian, Mohammadi, & Rezvanfar, 2014). Acquiring valuable information and knowledge is undeniably a vital component of higher education. The continuous advancement of ICT contributes to improved academic performance among students (Hong, Liu, & Zhang, 2024). Due to the rapid spread of the new coronavirus, the demand for ICT in the context of student learning has grown. Before the appearance of COVID-19, the usage of ICT in the UAE was satisfactory. However, in response to the lockdown imposed as a result of the pandemic, nearly all HEIs enthusiastically adopted ICT and provided their students with commendable online learning opportunities while complying with governmental regulations. Moreover, during the lockdown period, most of the institutions in the UAE (educational and non-educational) used ICT resources to organize virtual meetings with their stakeholders. Consequently, the use of ICT in the UAE has spread to every institution during COVID-19. The disruption has also caused a decrease in physical interaction between educational institutions and students, resulting in an increased need for ICT among students worldwide.

ICT resources boost the engagement and interactivity of learning among students, therefore facilitating their comprehension and academic achievements (Kilag *et al.*, 2023). They also enable students to conveniently access study materials from any location and at any time, thus eliminating geographical boundaries (Wang, 2008). Through ICT resources, students can have access to various instructional materials, such as videos, webinars, electronic journals and communicate through video conferencing (Idhalama, Igbinovia, & Ezeabasili, 2021). Prior studies have shown that ICT resources positively impact students' satisfaction (Diep, Zhu, Struyven, & Blieck, 2017; Pandita & Kiran, 2023; Shehzadi *et al.*, 2020) as well as university image (Šeric, Gil-Saura, & Mollá-Descals, 2016; Šerić & Gil-Saura, 2012). Furthermore, past research studies have verified that student satisfaction has a positive association with university image (Osman & Saputra, 2019) and may mediate the link between ICT resources and university image. However, based on current literature, there are a limited number of research studies that investigated student satisfaction as a mediating variable in the connection among ICT resources and university image. Therefore, the next hypotheses are proposed:

H5. ICT resources have a positive effect on student satisfaction.

H6. ICT resources have a positive effect on university image.

H7. Student satisfaction mediates the link between ICT resources and university image.

2.5 Physical classroom environment

In recent years, students' assessments of a HEI's physical environment have been regarded as a key factor in their enrollment choices. Prior studies have indicated that students' impressions about an educational institution can be positively impacted by various aspects of the classroom environment, including color, room design and layout, seat arrangement, flooring, photographs/paint, temperature and noise level (Almusharraf, 2023; Han, Kiatkawsin, Kim, & Hong, 2018; Shalaway, 2016; Phillips, 2014). When assessing the physical classroom environment in an HEI, students pay a considerable attention to the degree of comfort, chairs and seating areas, humidity and temperature, TV screen, adequate air quality levels, lighting, whiteboard, odor and silence (Han *et al.*, 2018). Other primary elements of a classroom's physical setting also include seating places, air conditioning, television displays, desks, arrangement of tables and chairs, whiteboards, and audio and heating systems. According to Ali, Kim, and Ryu (2016), ambient conditions, which refer to the surrounding elements of the environment, stimulate our five senses. Darawong and Sandmaung (2019), Han, Moon, and Lee (2019), and Dai, Xiong, Zhao, and Zhu (2023) found that the classroom environment positively influences the satisfaction of students. Osman and Saputra (2019) also concluded that there is a positive link between the classroom environment and university reputation. Prior

research studies have supported these findings, demonstrating a strong correlation between the classroom environment and corporate image (Nguyen & Leblanc, 2002; Zhong & Moon, 2020). Nevertheless, in the existing body of research, it is challenging to find any study that investigated the mediating effect of student satisfaction in the connection between the physical classroom environment and university image. Thus, the subsequent hypotheses are proposed:

H8. Physical classroom environment has a positive effect on student satisfaction.

H9. Physical classroom environment has a positive effect on university image.

H10. Student satisfaction mediates the link between physical classroom environment and university image.

2.6 Library facilities

The significance of library facilities in fostering the educational experience has been acknowledged in earlier literature. Library facilities are a set of different resources and services intended to support students in learning, conducting research and recreation (Morris, 2010). Such facilities include the availability of learning materials, study rooms, computers and internet service. The facilities and management of a university library play a key role in establishing an optimal environment for lecturers and students to engage in learning activities and achieve the institution's goals (Kärnä, Julin, & Nenonen, 2013). The amenities provided by an institution's library are widely recognized as a crucial factor in shaping students' attitudes toward it (Nguyen & LeBlanc, 2001). Conversely, insufficient resources have a detrimental impact on the motivation of students (Hassanbeigi & Askari, 2010). Singh and Jasial (2021) outlined that a convenient use of the necessary physical resources for learning activities enhances a university's standing. Furthermore, the provision of such facilities has a significant effect on students' perceptions and their overall assessments. In their study, Douglas, Douglas, McClelland, and Davies (2015) indicated that having an adequate access to various facilities of an institution include the ability to utilize both physical resources (such as buildings, dormitories, libraries and laboratories) and non-physical resources (such as faculty instructions and desired services). Wong and Chapman (2023) also showed that campus facilities positively affect student satisfaction. The prevailing literature has further established that levels of students' satisfaction (Woo & Ennew, 2004) and university reputation (Chandra, Hafni, Chandra, Purwati, & Chandra, 2019; Weerasinghe & Fernando, 2018) are directly related to their use of hostel and cafeteria services. Therefore, the impact of students' impressions of library facilities on both the admissions of new students and the overall reputation of the institution is evident. Certain studies also showed that student satisfaction positively affects university image (Hwang & Choi, 2019; Chandra *et al.*, 2019). However, it is observed in the existing literature that there is a scarce research that has explored whether student satisfaction mediates the link between library facilities and university image. Consequently, the subsequent hypotheses are proposed:

H11. Library facilities have a positive effect on student satisfaction.

H12. Library facilities have a positive effect on university image.

H13. Student satisfaction mediates the relationship between library facilities and university image.

3. Methodology

This paper utilized a quantitative approach to collect the necessary data from several students enrolled at HEIs in the UAE. The survey involved students' participation from various emirates at both private and public universities. Specifically, the data were collected from

full-time students using an online survey over the period of June to October, 2022. Due to the pandemic of COVID-19, an online survey was deemed the most appropriate approach for gathering data. We shared the survey link through WhatsApp and Facebook in order to motivate them to participate in this study and get the targeted sample size. In addition, the necessary data were collected using a convenience sampling method due to its various advantages, such as cost-effectiveness, quick data collection and broad utilization in previous similar previous researches. Many prior research studies have also used convenience sampling for gathering the data from students at HEIs (Ali, Ahmad, Shakeel, & Ahmad, 2024; Chahal, Dagar, Dagher, Rao, & Udemba, 2023; Lin, Huang, Othman, & Luo, 2020). In total, 321 surveys were filled by the participants, out of which only 314 were deemed usable and valid for data analysis.

This paper relied on prior research studies to design the survey for measuring the constructs. More precisely, four measurement items were taken from Almarghani and Mijatovic (2017) to measure library facilities. In addition, a total of six items were adapted from Almarghani and Mijatovic (2017) to measure teacher lecturing skills. Moreover, the physical classroom environment scale is comprised of five questions adapted from López *et al.* (2018). Likewise, five items were used with reference to the study of Almarghani and Mijatovic (2017) for measuring ICT resources. Also, the student satisfaction scale was developed based on four items taken from Schlesinger, Cervera, and Pérez-Cabañero (2017), Panda *et al.* (2019) and Canny (2014). Finally, university image was measured via four items adapted from the research of Schlesinger *et al.* (2017) and Sultan and Wong (2019). All of the items were measured using a five-point Likert scale, where 1 signifies strongly disagree and 5 signifies strongly agree. The stated measurement scales are considered reliable and were selected because the Cronbach's alpha for each was in a tolerable range (between 0.7 and 1). They were also used in several previous studies that focused on higher education sector.

Prior to data analysis, an initial assessment of the possibility of non-response bias was conducted. Next, we utilized the extrapolation method to see if the late replies differed significantly from the early ones (Armstrong & Overton, 1977). We looked at the mean values to compare them for each of the selected variables: university image, student satisfaction, teacher lecturing skills, ICT resources, physical classroom environment and library facilities while gathering the data for the first and last weeks. Both groups' means and variances were determined through the use of an independent *t*-test to be identical. Hence, there was no evidence of early/late response bias.

4. Analysis of results

Among the 314 students who took part in answering the administered survey, males made up 54.4% of the sample, while females accounted for 45.6%. The distribution of the participants based on age was as follows: 65.6% were aged from 18 to 25 years, 25.8% were aged from 26 to 35 years and 8.6% were aged more than 35 years. In addition, approximately 76.1% of the respondents were enrolled in the bachelor's degree programs, 16.9% in postgraduates and 7% in the diploma. The frequency tables also indicated that the respondents encompassed several grade levels, comprising seniors, freshmen, juniors, and, sophomores.

During the data analysis, the PLS-SEM software was utilized in order to estimate both the measurement and structural model using a 5,000-bootstrap procedure (Ringle & Sarstedt, 2016). PLS-SEM is particularly suitable for analyzing data where the goal is to determine the connections between constructs that are measured using multiple items (Hair, Sarstedt, Ringle, & Gudergan, 2017). Additionally, it is well-suited for researches that have smaller sample sizes, often less than 500. Following the recommendations of Podsakoff, MacKenzie, Lee, and Podsakoff (2003), we implemented different preventive approaches to mitigate the possible influence of any common method bias. Initially, the principal component method was used to execute factor analysis and the analysis showed that each construct accounts for almost an equal degree of variance. Secondly, the correlations among the constructs are below 0.8, while

strong correlations ($r > 0.90$) often suggest that common method bias is existent. The data indicate that the study's validity is not compromised by the common method bias.

The data analysis process consisted of two distinct stages. Firstly, the measurement model's validity and reliability were assessed. Secondly, the structural model was evaluated by calculating the p-values and path coefficients. In the first phase, the measurement model (refer to Figure 1) was tested and the results showed that three items were eliminated due to loadings (one items for library facilities (0.42) and two items for teacher lecturing skills (0.44 and 0.39). Hair *et al.* (2017) stated that the measurement model allows us to evaluate the composite reliability, item loadings and Cronbach's alpha of all items and their constructs. The findings indicated that each variable attained a strong internal consistency, as evidenced by Cronbach's alpha and its composite reliability, both surpassing the value of 0.7 (refer to Table 1) (Nunnally & Bernstein, 1994). In addition, the average variance extracted (AVE) was employed to assess the convergent validity of the model. All constructs achieved AVE values that exceeded the suggested cut-off value of 0.5, as shown in Table 1; therefore, they successfully met the AVE criterion as stated by Hair *et al.* (2017). Furthermore, the standardized factor loading was employed to establish construct validity. The results displayed that the factor loadings of all remaining indicators surpassed the recommended threshold of 0.50 and are significant statistically, with a range from 0.650 to 0.954. On the whole, the analysis supports construct validity assumptions for all constructs used in the model of this paper. Appendix 1 shows the remaining items for each construct after attaining validity and reliability assumptions.

In addition, the assessment of discriminant validity was conducted in accordance with the recommendations proposed by Fornell and Larcker (1981). Starting with each variable, we ensured that the AVE is much greater than the squared correlation among any two different variables. Overall, all values satisfied the specified criteria, hence, confirming the model's discriminant validity. Table 2 displays that discriminant validity was attained since the square roots of the AVEs were higher than the corresponding correlations for the latent variables (Hair *et al.*, 2017).

In addition, we assessed the hypotheses suggested in the literature review section using the structural model. Hair, Hult, Ringle, and Sarstedt (2016) stated that the *t*-value must exceed
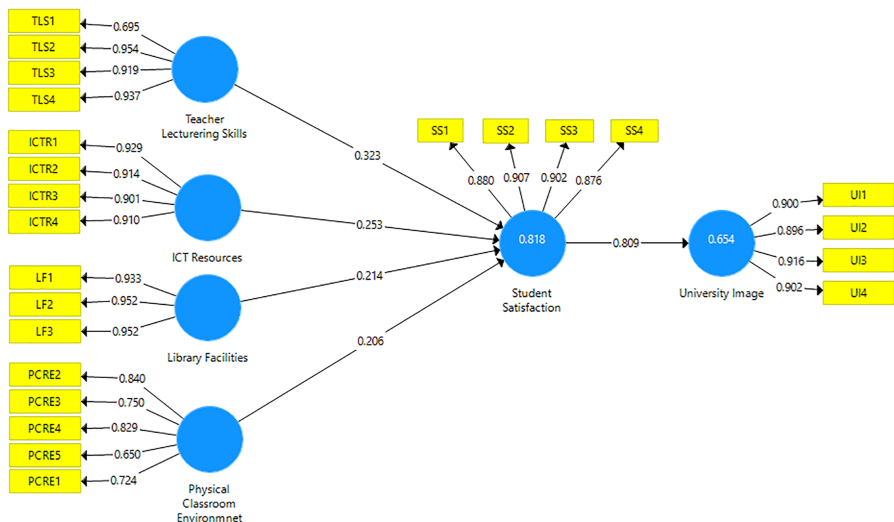
Source(s): Authors' own work

Figure 1. Measurement model

Table 1. CFA analysis

Construct	Item	Factor loadings	Cronbach's alpha	Composite reliability	AVE
University image	UI1	0.900	0.925	0.947	0.817
	UI2	0.896			
	UI3	0.916			
	UI4	0.902			
Student satisfaction	SS1	0.880	0.914	0.939	0.794
	SS2	0.907			
	SS3	0.902			
	SS4	0.876			
ICT resources	ICTR1	0.929	0.934	0.953	0.834
	ICTR2	0.914			
	ICTR3	0.901			
	ICTR4	0.910			
Teacher lecturing skills	TLS1	0.695	0.900	0.933	0.779
	TLS2	0.954			
	TLS3	0.919			
	TLS4	0.937			
Library facilities	LF1	0.933	0.941	0.962	0.894
	LF2	0.952			
	LF3	0.952			
Physical classroom environment	PCRE1	0.724			
	PCRE2	0.840	0.817	0.873	0.580
	PCRE3	0.750			
	PCRE4	0.829			
	PCRE5	0.650			

Source(s): Authors' own work

Table 2. Test of discriminant validity

	1	2	3	4	5	6
1. ICT resources	0.913					
2. Teacher lecturing skills	0.723	0.883				
3. Physical classroom environment	0.823	0.810	0.762			
4. Student satisfaction	0.797	0.851	0.727	0.891		
5. Library facilities	0.653	0.830	0.703	0.793	0.946	
6. University image	0.875	0.762	0.635	0.809	0.655	0.904

Source(s): Authors' own work

1.96 and the *p*-value must be below 0.05 in order to accept the hypothesis. In accordance with the results displayed in Table 3, it can be seen that student satisfaction positively affects university image; therefore, hypothesis H1 is confirmed. Additionally, the findings showed that teacher lecturing skills positively influence both student satisfaction and university image, hence confirming hypotheses H2 and H3. The analysis further displayed that ICT resources have a positive effect on both student and university image, hence providing support for hypotheses H5 and H6. Furthermore, the findings confirmed that physical classroom environment positively influence student satisfaction and university image; therefore, H8 and H9 are supported. The path model analysis also revealed that library facilities have a positive effect on student satisfaction and university image, and this provides support for hypotheses H11 and H12. In summary, the independent variables account for around 49.5% of the overall

Table 3. Results of hypotheses

	Hypotheses			Beta	Sample mean	*t*-value	*p*-value
H1	Student Satisfaction	→	University Image	0.809	0.812	16.68	0.000
H2	Teacher Lecturing Skills	→	Student Satisfaction	0.323	0.339	2.290	0.022
H3	Teacher Lecturing Skills	→	University Image	0.261	0.276	2.229	0.026
H5	ICT Resources	→	Student Satisfaction	0.253	0.261	2.139	0.033
H6	ICT Resources	→	University Image	0.205	0.214	1.997	0.046
H8	Physical Classroom Environment	→	Student Satisfaction	0.206	0.205	1.961	0.050
H9	Physical Classroom Environment	→	University Image	0.167	0.165	1.996	0.046
H11	Library Facilities	→	Student Satisfaction	0.214	0.195	2.053	0.041
H12	Library Facilities	→	University Image	0.173	0.157	2.058	0.040

Source(s): Authors' own work

variation in student satisfaction. Collectively, the independent factors and the mediator (student satisfaction) explain approximately 68.1% of the variance in the university's image.

To test whether student satisfaction mediates the link between the independent variables (teacher lecturing skills, ICT resources, physical classroom environment and library facilities) and the dependent variable (university image), this study was based on the recommendations of Preacher and Hayes (2008). First, it is essential to check the indirect impact of every independent variable on the university image. Next, lower and upper bound values should be calculated. According to the authors, in order to meet the first condition for the mediation test, it is necessary for the indirect effect to be both positive and significant. The hypotheses can be confirmed when there is no zero between the lower and upper level values at a 95% of confidence interval (CI). Without this, we cannot affirm the mediating effect.

It was hypothesized in H4 that the association between teacher lecturing skills and university image may be mediated by student satisfaction. As presented in Table 4, the analysis reveals that teacher lecturing skills have a positive and significant indirect effect on university image ($\beta = 0.261$, $p < 0.05$). Furthermore, the results showed that the value of zero was not within the range of the lower level (0.032) and the upper level (0.491). This indicates that student satisfaction has a full mediating effect in the link between teacher lecturing skills and university image, thereby confirming H4. It was also found that the mediating effect of student satisfaction in the association between ICT resources and university image is confirmed as the indirect effect is positive and also significant ($\beta = 0.205$, $p < 0.05$). The results further showed

Table 4. Mediation test

	Hypotheses	Indirect effect	SE	*t*-value	*p*-value	95% LL	95% UL	Decision
H4	TLS→SS→UI	0.261	0.117	2.233	0.026	0.032	0.491	Supported
H7	ICTR→SS→UI	0.205	0.048	4.264	0.046	0.111	0.299	Supported
H10	PCRE→SS→UI	0.167	0.084	1.984	0.046	0.002	0.331	Supported
H13	LF→SS→UI	0.173	0.084	2.061	0.040	0.008	0.338	Supported

Note(s): TLS: teacher lecturing skills; ICTR: ICT resources; SS: student satisfaction; PCRE: physical classroom environment; UI: university image; LF: library facilities
Source(s): Authors' own work

that the value of zero was not existent between the value of lower level (0.111) and the upper level (0.299), therefore H7 is confirmed. The results also showed that physical classroom environment has a positive as well significant indirect effect on university image ($\beta = 0.167$, $p < 0.05$). A zero value was also not detected between the lower (0.002) and upper levels (0.331), consequently H10 is accepted. Finally, the outcomes revealed that library facilities have a positive and statistically significant indirect impact on university image via student satisfaction ($\beta = 0.173$, $p < 0.05$). Considering that the zero value is not existent within the range of the lower level (0.008) and the upper level (0.338), the results support H13.

5. Discussion and conclusion

The primary goal of this paper was to explore the impact of teacher lecturing skills, ICT resources, library facilities and the physical classroom environment on student satisfaction and university image. Consistent with earlier research (Khalil-Ur-Rehman, Farooq, Bekmyrza, Younas, & Raju, 2018; Shehzadi *et al.*, 2020), the findings showed that student satisfaction positively affects university image. Our results also confirmed that ICT resources both directly and indirectly affect university image via student satisfaction. More evidence was documented in past research (Amin, Yousaf, Walia, & Bashir, 2022; Sayaf, Alamri, Alqahtani, & Al-Rahmi, 2021), which concluded that ICT resources have a positive effect on student satisfaction. According to Wilkins, Stephens Balakrishnan, and Huisman (2012), ICT is crucial in maintaining consistency between the academic resources offered at different campuses of an institution. It allows all students, regardless of their location, to have access to the same educational materials. ICT resources facilitate the communication between academic staff and students by fostering feedback and information exchanges. They increase their engagement in the learning process, hence enhancing their interest in the covered subjects and overall satisfaction. Accordingly, integrating ICT into educational methods can potentially improve student satisfaction and university reputation. Policymakers in HEIs should emphasize on investing in reliable, easy to use ICT resources that accommodate teachers' and students' needs. They should also establish robust systems in order to gather regular input from students about their experiences with ICT infrastructure and utilize their feedback to implement ongoing enhancements and developments. Besides that, policymakers should conduct training programs to both students and staff frequently regarding how to efficiently use ICT resources and implement strong technical support mechanisms to rapidly resolve any problems if they emerge. Prioritizing these key aspects would enable policymakers in HEIs to efficiently utilize ICT resources for improving overall student satisfaction and strengthening the institutional image.

The results also verified that teacher lecturing skills positively affect university image through student satisfaction. Earlier studies also outlined that students' perceptions about the efficiency and quality of their teachers can serve as a reliable indicator of their satisfaction levels (Marsh & Roche, 1997; Rasheed & Rashid, 2024). Furthermore, Clayson and Sheffet (2006) indicated that students' impressions of lecturers' personalities are positively correlated with their satisfaction. Well-qualified teachers not only enrich the process of education, but also boost the standing and image of the institution. Since teaching is the backbone of what HEIs offer, it should come as no surprise that students place a high value on teachers' ability to convey course materials clearly and concisely (Bigne, Moliner, & Sánchez, 2003). Thus, in order to create a classroom setting where students can successfully get the skills and information they need to thrive, teachers must first understand their students' needs and expectations (Xiao & Wilkins, 2015). Furthermore, competent lecturers put extra efforts into lesson planning, resource distribution and classroom delivery and these factors influence how students perceive and value their learning qualities, which would ultimately improve institutional image. Therefore, policymakers in HEIs should recruit and maintain competent lecturers who possess profound knowledge, expertise and relevant skills in their field and lecturing approaches. This would improve students' learning experiences and higher academic

achievement, therefore creating greater satisfaction and better university image. Furthermore, in order to enhance students' satisfaction and institutional image, lecturers should maintain a calm and encircling classroom environment, in which students have a sense of feeling appreciated and inspired to participate in the class.

The aim of this research was also to investigate the effect of library facilities on university image and student satisfaction. It further aimed to confirm whether student satisfaction mediates the link among them. The findings displayed that library facilities positively affect student satisfaction and university image. Student satisfaction also has a noteworthy effect in mediating the link between library facilities and university image. Previous research showed further support for the empirical link among these variables (Ali, Amir, *et al.,* 2024; Yusoff *et al.*, 2015; Hanssen & Solvoll, 2015). In addition, this finding matches with that of Kärnä and Julin's (2015) who indicated that physical environment aspects, such as a welcoming learning environment and accessibility, are essential for fostering student satisfaction. Hanssen and Solvoll (2015) also demonstrated that high-quality auditoriums, libraries and social areas significantly increase students' satisfaction with their HEIs. On the whole, the results of this research reveal that the presence and quality of library facilities have a substantial impact on students' level of satisfaction and university image. Accordingly, policymakers in HEIs should regularly update the library facilities of their institutions by using upgraded technologies, developing internet service and improving learning environments in order to provide students with favorable learning experiences and ensure their satisfaction. They should also focus on maintaining superior cleaning standards in libraries, mainly in corridor, common room areas. Through the emphasis on these aspects, the practitioners in HEIs can improve institutional image and increase student satisfaction.

Finally, the results indicated that physical classroom environment positively affects the university image, directly and also via student satisfaction. It also exerts both a direct and indirect influence on individuals' perception of universities. The results align with previous studies that verified the positive influence of the physical environment on institutional image (Erkan, Unal, & Acikgoz, 2023; Suherni, Wahyudin, & Mu'in, 2023) and student satisfaction (Han *et al.*, 2018). Hence, professionals in the HEIs should make the most of all accessible resources to enhance the classroom environment of a university and consistently allocate sufficient resources to enhance it. These endeavors, which seek to improve the overall university ambiance (such as temperature, noise levels, quality of air, dryness/humidity and odor), besides the utilization and arrangement of spaces (such as higher-quality electronics, convenient seating arrangements and essential amenities) have the potential to improve both the satisfaction of students and university's image. Our results offer valuable implications for decision-makers in the higher education sector and indicate that they should regularly invest in developing a classroom environment that can nurture students' perceptions and satisfaction toward the educational institutions. Moreover, the practitioners in HEIs should ensure that their classrooms are neat, well-structured, have comfortable seats and supplemented with modern technology. They should also keep proper space for activities in order to efficiently optimize the learning process and ensure students' satisfaction. In addition to that, ensuring the availability of adequate lighting, temperature and colors is necessary for creating a comfortable learning environment and boosting students' satisfaction. By focusing on these aspects, the practitioners in HEIs can improve overall students' perceptions, and ultimately improve university image.

6. Limitations and future research

While the outcomes of this study will be valuable to scholars and decision-makers in HEIs in comprehending the relationships among the selected factors such as student satisfaction, teacher lecturing skills, ICT resources, library facilities, physical classroom environment and university image, it is crucial to admit some of its limitations. Primarily, given its narrow scope limited to HEIs situated in the UAE, the findings of the current research may not be applicable to other settings. Hence, it is

imperative to carry out comparable research in both public and private institutions across different nations to enhance the findings' generalizability. Secondly, this study focused only on four predictors of student satisfaction and university image. Therefore, future research studies may examine other factors, such as relationships with teachers, administrative processes, fee structure and extracurricular activities. Furthermore, the study was conducted during the pandemic of COVID-19. Therefore, the findings may be more applicable to HEIs in the UAE during the COVID-19 pandemic and may not necessarily reflect the pre-pandemic or post-pandemic contexts. Similarly, given the rapid evolution of ICT resources, the study's findings may become outdated as new technologies emerge. Upcoming studies may further conduct cross-cultural studies to compare the perceptions of students toward HEIs across diverse cultures and test how this influences their satisfaction and university image. Finally, the moderating effects of students' personal and social conditions among the selected factors and university image can be examined in future studies.

References

Akens, C., Wright-Mair, R., & Stevenson, J. M. (2019). *College students and their environments: Understanding the role student affairs educators play in shaping campus environments.* Charles C Thomas Publisher.

Ali, F., Kim, W. G., & Ryu, K. (2016). The effect of physical environment on passenger delight and satisfaction: Moderating effect of national identity. *Tourism Management, 57,* 213–224. doi: 10.1016/j.tourman.2016.06.004.

Ali, M., Amir, H., & Ahmed, M. (2024). The role of university switching costs, perceived service quality, perceived university image and student satisfaction in shaping student loyalty. *Journal of Marketing for Higher Education, 34*(1), 201–222. doi: 10.1080/08841241.2021.1975184.

Ali, N., Ahmad, N., Shakeel, A., & Ahmad, F. (2024). An application of the PLS-SEM model for evaluating e-learning user satisfaction during the COVID-19 pandemic. *SN Social Sciences, 4* (6), 106. doi: 10.1007/s43545-024-00912-x.

Almarghani, E. M., & Mijatovic, I. (2017). Factors affecting student engagement in HEIs-it is all about good teaching. *Teaching in Higher Education, 22*(8), 940–956. doi: 10.1080/13562517.2017.1319808.

Almusharraf, N. (2023). Incorporation of a game-based approach into the EFL online classrooms: Students' perceptions. *Interactive Learning Environments, 31*(7), 4440–4453. doi: 10.1080/10494820.2021.1969953.

Alsheyadi, A. K., & Albalushi, J. (2020). Service quality of student services and student satisfaction: The mediating effect of cross-functional collaboration. *The TQM Journal, 32*(6), 1197–1215. doi:10.1108/TQM-10-2019-0234.

Alstete, J. W., & Flavian, H. (2024). Advice from the editor's desk: An introductory guide to success in education publishing. *Quality Assurance in Education, 32*(2), 232–245. doi:10.1108/QAE-09-2023-0161.

Amin, I., Yousaf, A., Walia, S., & Bashir, M. (2022). What shapes e-learning effectiveness among tourism education students? An empirical assessment during COVID19. *Journal of Hospitality, Leisure, Sports and Tourism Education, 30,* 100337. doi: 10.1016/j.jhlste.2021.100337.

Appuhamilage, K. S. M., & Torii, H. (2019). The impact of loyalty on the student satisfaction in higher education: A structural equation modeling analysis. *Higher Education Evaluation and Development, 13*(2), 82–96. doi: 10.1108/heed-01-2019-0003.

Armstrong, J. S., & Overton, T. S. (1977). Estimating nonresponse bias in mail surveys. *Journal of Marketing Research, 14*(3), 396–402. doi:10.1177/002224377701400320.

Arpan, L. M., Raney, A. A., & Zivnuska, S. (2003). A cognitive approach to understanding university image. *Corporate Communications: An International Journal, 8*(2), 97–113. doi: 10.1108/1356328031047535.

Bhattacharya, S., & Sharma, R. P. (2022). Advanced services accelerating servitization: A review synthesis and future research agenda. In S. Rana, Sakshi, & J. Singh (Eds.), *Exploring the latest trends in management literature (Review of management literature*. (Vol. 1, pp. 169–183). Emerald Publishing. doi: 10.1108/s2754-586520220000001009.

Bigne, E., Moliner, M. A., & Sánchez, J. (2003). Perceived quality and satisfaction in multiservice organisations: The case of Spanish public services. *Journal of Services Marketing*, *17*(4), 420–442. doi: 10.1108/08876040310482801.

Borah, D., Malik, K., & Massini, S. (2021). Teaching-focused university–industry collaborations: Determinants and impact on graduates' employability competencies. *Research Policy*, *50*(3), 104172. doi: 10.1016/j.respol.2020.104172.

Canny, I. U. (2014). Measuring the mediating role of dining experience attributes on customer satisfaction and its impact on behavioral intentions of casual dining restaurant in Jakarta. *International Journal of Innovation, Management and Technology*, *5*(1), 25–29. doi: 10.7763/ijimt.2014.v5.480.

Caywood, C. L. (1997). *The handbook of strategic public relations and integrated communications*. New York: McGraw Hill.

Chahal, J., Dagar, V., Dagher, L., Rao, A., & Udemba, E. N. (2023). The crisis effect in TPB as a moderator for post-pandemic entrepreneurial intentions among higher education students: PLS-SEM and ANN approach. *International Journal of Management in Education*, *21*(3), 100878. doi: 10.1016/j.ijme.2023.100878.

Chandra, T., Hafni, L., Chandra, S., Purwati, A. A., & Chandra, J. (2019). The influence of service quality, university image on student satisfaction and student loyalty. *Benchmarking: An International Journal*, *17*(4), 420–442.

Clayson, D. E., & Sheffet, M. J. (2006). Personality and the student evaluation of teaching. *Journal of Marketing Education*, *28*(2), 149–160. doi: 10.1177/0273475306288402.

Dai, Z., Xiong, J., Zhao, L., & Zhu, X. (2023). Smart classroom learning environment preferences of higher education teachers and students in China: An ecological perspective. *Heliyon*, *9*(6), 1–14. doi: 10.1016/j.heliyon.2023.e16769.

Darawong, C., & Sandmaung, M. (2019). Service quality enhancing student satisfaction in international programs of higher education institutions: A local student perspective. *Journal of Marketing for Higher Education*, *29*(2), 268–283. doi: 10.1080/08841241.2019.1647483.

Díaz-Méndez, M., & Gummesson, E. (2012). Value co-creation and university teaching quality: Consequences for the European higher education area (EHEA). *Journal of Service Management*, *23*(4), 571–92. doi: 10.1108/09564231211260422.

Diep, A. N., Zhu, C., Struyven, K., & Blieck, Y. (2017). Who or what contributes to student satisfaction in different blended learning modalities?. *British Journal of Educational Technology*, *48*(2), 473–489. doi: 10.1111/bjet.12431.

Douglas, J., Douglas, A., & Barnes, B. (2006). Measuring student satisfaction at a UK university. *Quality Assurance in Education*, *14*(3), 251–267. doi: 10.1108/09684880610678568.

Douglas, J. A., Douglas, A., McClelland, R. J., & Davies, J. (2015). Understanding student satisfaction and dissatisfaction: An interpretive study in the UK higher education context. *Studies in Higher Education*, *40*(2), 329–349. doi: 10.1080/03075079.2013.842217.

Durvasula, S., Lysonski, S., & Madhavi, A. D. (2011). Beyond service attributes: Do personal values matter?. *Journal of Services Marketing*, *25*(1), 33–46. doi: 10.1108/08876041111107041.

Elliott, K. M., & Healy, M. A. (2001). Key factors influencing student satisfaction related to recruitment and retention. *Journal of Marketing for Higher Education*, *10*(4), 1–11. doi: 10.1300/j050v10n04_01.

Elliott, K. M., & Shin, D. (2002). Student satisfaction: An alternative approach to assessing this important concept. *Journal of Higher Education Policy and Management*, *24*(2), 197–209. doi: 10.1080/1360080022000013518.

Erkan, I., Unal, S., & Acikgoz, F. (2023). What affects university image and students' supportive attitudes: The 4Q model. *Journal of Marketing for Higher Education*, *33*(2), 205–222. doi: 10.1080/08841241.2021.1927933.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, *18*(1), 39–50. doi: 10.2307/3151312.

Garcia-Rodriguez, F. J., & Gutierrez-Tano, D. (2024). Loyalty to higher education institutions and the relationship with reputation: An integrated model with multi-stakeholder approach. *Journal of Marketing for Higher Education*, *34*(1), 223–245. doi: 10.1080/08841241.2021.1975185.

Gembali, V., Kumar, A., & Sarma, P. (2022). Realization of sociotechnical systems theory for developing quality 4.0-based production service systems: A literature perspective. In S. Rana, & J. Sakshi and Singh (Eds.), *Exploring the Latest Trends in Management Literature (Review of Management Literature*. (Vol. 1, pp. 207–223). Leeds: Emerald Publishing. doi: 10.1108/s2754-586520220000001011.

Hair, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2016). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Thousand Oaks: Sage Publications.

Hair, Jr, J. F., Sarstedt, M., Ringle, C. M., & Gudergan, S. P. (2017). *Advanced issues in partial least squares structural equation modeling*. Thousand Oaks: SAGE publications.

Han, H., Kiatkawsin, K., Kim, W., & Hong, J. H. (2018). Physical classroom environment and student satisfaction with courses. *Assessment and Evaluation in Higher Education*, *43*(1), 110–125. doi: 10.1080/02602938.2017.1299855.

Han, H., Moon, H., & Lee, H. (2019). Physical classroom environment affects students' satisfaction: Attitude and quality as mediators. *Social Behavior and Personality: An International Journal*, *47* (5), 1–10. doi: 10.2224/sbp.7961.

Hanssen, T. E. S., & Solvoll, G. (2015). The importance of university facilities for student satisfaction at a Norwegian University. *Facilities*, *33*(13/14), 744–759. doi: 10.1108/f-11-2014-0081.

Hassanbeigi, A., & Askari, J. (2010). A study of the most important risk factors of motivational deficiencies in university students. *Procedia-Social and Behavioral Sciences*, *5*, 1972–1976. doi: 10.1016/j.sbspro.2010.07.398.

Hong, J., Liu, W., & Zhang, Q. (2024). Closing the digital divide: The impact of teachers' ICT use on student achievement in China. *Journal of Comparative Economics*, *52*(3), 697–713. doi: 10.1016/j.jce.2024.06.003.

Hwang, Y. S., & Choi, Y. K. (2019). Higher education service quality and student satisfaction, institutional image, and behavioral intention. *Social Behavior and Personality: International Journal*, *47*(2), 1–12. doi: 10.2224/sbp.7622.

Idhalama, O. U., Igbinovia, M. O., & Ezeabasili, C. A. (2021). Use of webinar tools for teaching and learning by library and information professionals in Nigeria. *Information Development*, *37*(3), 334–344. doi: 10.1177/02666669211003923.

James, L. T., & Casidy, R. (2018). Authentic assessment in business education: Its effects on student satisfaction and promoting behavior. *Studies in Higher Education*, *43*(3), 401–415. doi: 10.1080/03075079.2016.1165659.

Kärnä, S., & Julin, P. (2015). A framework for measuring student and staff satisfaction with university campus facilities. *Quality Assurance in Education*, *23*(1), 47–66. doi: 10.1108/QAE-10-2013-0041.

Kärnä, S., Julin, P., & Nenonen, S. (2013). User satisfaction on a university campus by students and staff. *Intelligent Buildings International*, *5*(2), 69–82. doi: 10.1080/17508975.2013.778810.

Khalil-Ur-Rehman, F., Farooq, M., Bekmyrza, T., Younas, W., & Raju, V. (2018). Investigating the factors impacting the student satisfaction with the universities: A comparative study of Malaysia and Pakistan. *The Journal of Social Sciences Research*, 117–126.

Kilag, O. K. T., Segarra, G. B., De Gracia, A. M. L., Del Socorro, A. S., Abendan, C. F. K., Camangyan, G. A., & Mahasol, E. T. (2023). ICT application in teaching and learning. *Science and Education*, *4*(2), 854–865.

Kotler, P., & Fox, K. (1995). *Strategic marketing for educational institutions* (2nd ed). Englewood Cliffs, NJ: Prentice Hall.

Langrafe, T. D. F., Barakat, S. R., Stocker, F., & Boaventura, J. M. G. (2020). A stakeholder theory approach to creating value in higher education institutions. *The Bottom Line, 33*(4), 297–313. doi: 10.1108/bl-03-2020-0021.

Latip, M. S. A., Newaz, F. T., & Ramasamy, R. (2020). Students' perception of lecturers' competency and the effect on institution loyalty: The mediating role of students' satisfaction. *Asian Journal of University Education, 16*(2), 183–195. doi: 10.24191/ajue.v16i2.9155.

Lin, L., Huang, Z., Othman, B., & Luo, Y. (2020). Let's make it better: An updated model interpreting international student satisfaction in China based on PLS-SEM approach. *PLoS One, 15*(7), e0233546. doi: 10.1371/journal.pone.0233546.

López, V., Torres-Vallejos, J., Ascorra, P., Villalobos-Parada, B., Bilbao, M., & Valdés, R. (2018). Construction and validation of a classroom climate scale: A mixed methods approach. *Learning Environments Research, 21*(3), 407–422. doi: 10.1007/s10984-018-9258-0.

López-Martín, E., Gutiérrez-de-Rozas, B., González-Benito, A. M., & Expósito-Casas, E. (2023). Why do teachers matter? A meta-analytic review of how teacher characteristics and competencies affect students' academic achievement. *International Journal of Educational Research, 120,* 1–14. doi:10.1016/j.ijer.2023.102199.

Marsh, H. W., & Roche, L. A. (1997). Making students' evaluations of teaching effectiveness effective: The critical issues of validity, bias, and utility. *American Psychologist, 52*(11), 1187–1197. doi: 10.1037//0003-066x.52.11.1187.

Martono, S., Nurkhin, A., Pramusinto, H., Afsari, N., & Arham, A. F. (2020). The relationship of good university governance and student satisfaction. *International Journal of Higher Education, 9*(1), 1–10.

Moore, K. D. (2014). *Effective instructional strategies: From theory to practice.* Thousand Oaks: Sage Publications.

Morris, B. J. (2010). *Administering the school library media center.* London: Bloomsbury.

Moslehpour, M., Chau, K. Y., Zheng, J., Hanjani, A. N., & Hoang, M. (2020). The mediating role of international student satisfaction in the influence of higher education service quality on institutional reputation in Taiwan. *International Journal of Engineering Business Management, 12,* 1–16. doi: 10.1177/1847979020971955.

Navarro, M. M., Iglesias, M. P., & Torres, P. R. (2005). A new management element for universities: Satisfaction with the offered courses. *International Journal of Educational Management, 19*(6), 505–526. doi: 10.1108/09513540510617454.

Nguyen, N., & LeBlanc, G. (2001). Image and reputation of higher education institutions in students' retention decisions. *International Journal of Educational Management, 15*(6), 303–311. doi: 10.1108/eum0000000005909.

Nguyen, N., & Leblanc, G. (2002). Contact personnel, physical environment and the perceived corporate image of intangible services by new clients. *International Journal of Service Industry Management, 13*(3), 242–262. doi: 10.1108/09564230210431965.

Nguyen, B., Yu, X., Melewar, T. C., & Hemsley-Brown, J. (2016). Brand ambidexterity and commitment in higher education: An exploratory study. *Journal of Business Research, 69*(8), 3105–3112. doi: 10.1016/j.jbusres.2016.01.026.

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory.* New York: McGraw-Hill.

Osman, A. R., & Saputra, R. S. (2019). A pragmatic model of student satisfaction: A viewpoint of private higher education. *Quality Assurance in Education, 27*(2), 142–165. doi: 10.1108/qae-05-2017-0019.

Palacio, A. B., Meneses, G. D., & Pérez, P. J. P. (2002). The configuration of the university image and its relationship with the satisfaction of students. *Journal of Educational Administration, 40*(5), 486–505. doi: 10.1108/09578230210440311.

Panda, S., Pandey, S. C., Bennett, A., & Tian, X. (2019). University brand image as competitive advantage: A two-country study. *International Journal of Educational Management, 33*(2), 234–251. doi: 10.1108/ijem-12-2017-0374.

Pandita, A., & Kiran, R. (2023). The technology interface and student engagement are significant stimuli in sustainable student satisfaction. *Sustainability, 15*(10), 7923. doi: 10.3390/su15107923.

Perna, M. C. (2005). The enrollment funnel. *Techniques: Connecting Education and Careers, 80*(8), 36–37.

Phillips, M. (2014). A place for learning: The physical environment of classrooms, Available from: http://www.edutopia.org/blog/the-physical-environment-of-classrooms-mark-phillips (accessed 23 September 2022).

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879–903. doi: 10.1037/0021-9010.88.5.879.

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*(3), 879–891. doi: 10.3758/brm.40.3.879.

Rasheed, R., & Rashid, A. (2024). Role of service quality factors in word of mouth through student satisfaction. *Kybernetes, 53*(9), 2854–2870. doi: 10.1108/k-01-2023-0119.

Ringle, C. M., & Sarstedt, M. (2016). Gain more insight from your PLS-SEM results: The importance-performance map analysis. *Industrial Management and Data Systems, 116*(9), 1865–1886. doi: 10.1108/imds-10-2015-0449.

Salunke, P., & Jain, V. (2022). Instagram marketing (2015–2021): A review of past trends, implications, and future research. In S. Rana, Sakshi, & J. Singh (Eds.), *Exploring the Latest Trends in Management Literature (Review of Management Literature.* (Vol. 1, pp. 129–146). Leeds: Emerald Publishing. doi: 10.1108/s2754-586520220000001007.

Sayaf, A. M., Alamri, M. M., Alqahtani, M. A., & Al-Rahmi, W. M. (2021). Information and communications technology used in higher education: An empirical study on digital learning as sustainability. *Sustainability, 13*(13), 7074. doi: 10.3390/su13137074.

Schlesinger, W., Cervera, A., & Pérez-Cabañero, C. (2017). Sticking with your university: The importance of satisfaction, trust, image, and shared values. *Studies in Higher Education, 42*(12), 2178–2194. doi: 10.1080/03075079.2015.1136613.

Selinger, M. (2009). *ICT in education: Catalyst for development* (pp. 206–248). Cambridge: Cambridge University Press.

Selnes, F. (1998). Antecedents and consequences of trust and satisfaction in buyer-seller relationships. *European Journal of Marketing, 32*(3/4), 305–322. doi: 10.1108/03090569810204580.

Šerić, M., & Gil-Saura, I. (2012). ICT, IMC, and brand equity in high-quality hotels of Dalmatia: An analysis from guest perceptions. *Journal of Hospitality Marketing and Management, 21*(8), 821–851. doi: 10.1080/19368623.2012.633211.

Šeric, M., Gil-Saura, I., & Mollá-Descals, A. (2016). Can advanced technology affect customer-based brand equity in service firms? An empirical study in upscale hotels. *Journal of Service Theory and Practice, 26*(1), 2–27. doi: 10.1108/jstp-10-2014-0239.

Shalaway, L. (2016). Classroom organization: The physical environment, Available from: http://www.scholastic.com/teachers/article/classroom-organization-physical-environment (accessed 18 September 2022).

Shehzadi, S., Nisar, Q. A., Hussain, M. S., Basheer, M. F., Hameed, W. U., & Chaudhry, N. I. (2020). The role of digital learning toward students' satisfaction and university brand image at educational institutes of Pakistan: A post-effect of COVID-19. *Education and Development Studies, 10*(2), 276–294. doi: 10.1108/aeds-04-2020-0063.

Shirazi, M. (2017). Student satisfaction analysis and its factors (2014 to 2016). *Education, 7*(4), 71–81.

Singh, S., & Jasial, S. S. (2021). Moderating effect of perceived trust on service quality–student satisfaction relationship: Evidence from Indian higher management education institutions. *Journal of Marketing for Higher Education*, *31*(2), 280–304. doi: 10.1080/08841241.2020.1825029.

Stronge, J. H. (2007). *Qualities of effective teachers* (2nd ed.). Alexandria, VA: Association of Supervision and Curriculum Development.

Stronge, J. H., McColsky, W., Ward, T., & Tucker, P. (2005). Teacher effectiveness, student achievement, and national board for professional teaching standards. Greensboro, NC: SERVE, University of North Carolina at Greensboro.

Suherni, E. S., Wahyudin, A., & Mu'in, A. (2023). Maintaining the quality of the institution by implementing the education services mix. *Journal of Educational Analytics*, *2*(4), 503–514. doi: 10.55927/jeda.v2i4.6709.

Sultan, P., & Wong, H. Y. (2019). How service quality affects university brand performance, university brand image and behavioural intention: The mediating effects of satisfaction and trust and moderating roles of gender and study mode. *Journal of Brand Management*, *26*(3), 332–347. doi: 10.1057/s41262-018-0131-3.

Talebian, S., Mohammadi, H. M., & Rezvanfar, A. (2014). Information and communication technology (ICT) in higher education: Advantages, disadvantages, conveniences and limitations of applying e-learning to agricultural students in Iran. *Procedia-Social and Behavioral Sciences*, *152*, 300–305. doi: 10.1016/j.sbspro.2014.09.199.

Traxler, J. (2018). Distance learning—predictions and possibilities. *Education Sciences*, *8*(1), 1–13. doi: 10.3390/educsci8010035.

Wang, Q. (2008). A generic model for guiding the integration of ICT into teaching and learning. *Innovations in Education and Teaching International*, *45*(4), 411–419. doi: 10.1080/14703290802377307.

Weerasinghe, I. M. S., & Fernando, R. L. S. (2018). Critical factors affecting students' satisfaction with higher education in Sri Lanka. *Quality Assurance in Education*, *26*(1), 115–130. doi: 10.1108/qae-04-2017-0014.

Wilkins, S., Stephens Balakrishnan, M., & Huisman, J. (2012). Student satisfaction and student perceptions of quality at international branch campuses in the United Arab Emirates. *Journal of Higher Education Policy and Management*, *34*(5), 543–556. doi: 10.1080/1360080x.2012.716003.

Wong, W. H., & Chapman, E. (2023). Student satisfaction and interaction in higher education. *Higher Education*, *85*(5), 957–978. doi: 10.1007/s10734-022-00874-0.

Woo, K. S., & Ennew, C. T. (2004). Business-to-business relationship quality: An IMP interaction-based conceptualization and measurement. *European Journal of Marketing*, *38*(9/10), 1252–1271. doi: 10.1108/03090560410548960.

Xiao, J., & Wilkins, S. (2015). The effects of lecturer commitment on student perceptions of teaching quality and student satisfaction in Chinese higher education. *Journal of Higher Education Policy and Management*, *37*(1), 98–110. doi: 10.1080/1360080x.2014.992092.

Yusoff, M., McLeay, F., & Woodruffe-Burton, H. (2015). Dimensions driving business student satisfaction in higher education. *Quality Assurance in Education*, *23*(1), 86–104. doi: 10.1108/qae-08-2013-0035.

Zhong, Y., & Moon, H. C. (2020). What drives customer satisfaction, loyalty, and happiness in fast-food restaurants in China? Perceived price, service quality, food quality, physical environment quality, and the moderating role of gender. *Foods*, *9*(4), 1–19. doi: 10.3390/foods9040460.

Further reading

Akyuz, G. A., & Balkan, D. (2024). A literature review on smart technologies in service systems: How should we work in future? In Rana, S., Kaurav, R. P. S., & Mishra, V. (Eds.), *Review of technologies and disruptive business strategies (review of management literature* (Vol. 3, pp. 255-273). Leeds Emerald Publishing Limited. doi: 10.1108/S2754-586520240000003013.

Azoury, N., Daou, L., & Khoury, C. E. (2014). University image and its relationship to student satisfaction-case of the Middle Eastern private business schools. *International Strategic Management Review, 2*(1), 1–8. doi: 10.1016/j.ism.2014.07.001.

Clemes, M. D., Gan, C. E., & Kao, T. H. (2008). University student satisfaction: An empirical analysis. *Journal of Marketing for Higher Education, 17*(2), 292–325. doi: 10.1080/08841240801912831.

Dawar, N., & Parker, P. (1994). Marketing universals: Consumers' use of brand name, price, physical appearance, and retailer reputation as signals of product quality. *Journal of Marketing, 58*(2), 81–95. doi: 10.2307/1252271.

Fauzel, S., Tandrayen-Ragoobur, V., & Matadeen, S. J. (2024). A literature survey of technological disruptions in the service sector. In Rana, S., Kaurav, R. P. S., & Mishra, V. (Eds.), *Review of technologies and disruptive business strategies (review of management literature* (Vol. 3, pp. 185-202). Leeds Emerald Publishing Limited. doi: 10.1108/S2754-586520240000003010.

Appendix 1

Table A1. Measurement items of constructs

Construct	Item
ICT resources	I regularly use computers for my educational activities at my university
	Modern and advanced teaching aids (e.g. computers, projectors, electronic boards) are available to the students
	We use modern audio and visual equipment in our classes
	Electronic services and the Internet are available in our university library
Teacher lecturing skills	Our teachers link the new lecture and the previous one
	Our teachers highlighted the key points of the lectures
	Our teachers define the topics that will be presented in the next lecture
	Our teachers provide examples from practice related to the theoretical topics
	Our teachers use eye contact and gestures to enhance the students' responses
	Our teachers move among the students during the lecture
Library facilities	The contents of our university library help me complete my assignments, and I am able to find the books I need there
	Our university library conducts student surveys to develop and improve its services
	The library seating in our university is adequate for the number of library visitors
Physical classroom environment	The classrooms in our university are clean and tidy
	In our university classrooms, there is enough light to work during class
	We can hear the teacher and other classmates clearly from anywhere in the classrooms of our university
	In our university, there is enough space to work during class
	I can see the whiteboard clearly from any place in our university classrooms
University image	Our university is one of the best HEIs in the country
	Our university maintains ethical standards
	The staff in our university pay a close attention to the students
	Overall, I have a positive impression about our university
Student satisfaction	I am pleased that I have selected this university for my study
	I really enjoyed myself at this university
	My choice to enroll in this university was wise
	Overall, I am satisfied with my decision to enroll at this university

Source(s): Created by the authors

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