

The influence of service quality on student satisfaction and student loyalty in Vietnam: the moderating role of the university image

Student
satisfaction
and student
loyalty

37

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Abstract

Purpose – Improving service quality, student satisfaction and student loyalty is important to higher education institutions' sustainable growth. The objectives of this study are a twofold: first, the study seeks to determine the dimensions of higher education service quality with a specific focus on Vietnam. Second, it examines how the service quality dimensions impact student satisfaction and student loyalty, with the moderating role of the university image.

Design/methodology/approach – This study followed a rigorous procedure, including interviews, a survey, exploratory factor analysis (EFA) and reliability analysis to identify higher education service quality dimensions and their measures. After that, using the data obtained from 1,550 university students in Vietnam, confirmatory factor analysis was used to validate the identified dimensions and structural equation modeling was used to test a proposed model explaining the outcomes of higher education service quality.

Findings – The findings reveal five dimensions of higher education service quality: academic aspect, nonacademic aspect, programming issues, facilities and industry interaction. Most of these factors have a positive influence on student satisfaction. In addition, the university image moderates the positive relationship between student satisfaction and student loyalty.

Practical implications – This study's findings highlight the complexity of service quality in the higher education context and encourage higher education institutions to improve their service quality in image to enhance student satisfaction and loyalty.

Originality/value – This study suggests a unique measure of higher education service quality dimensions and provides fresh insights into how they impact student satisfaction and loyalty in Vietnam.

Keywords Service quality, Higher education, Student satisfaction, Student loyalty, University image, Academic aspect, Nonacademic aspect, Programming issues, Industry interaction, Facilities, Sustainable development in higher education

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1. Introduction

Higher education, as a service sector (Galeeva, 2016), plays a significant role in personal, social and economic development globally (Marginson, 2010; Statista, 2023). Moreover, higher education institutions have increasingly been recognized as key contributors to the achievement of the United Nations Sustainable Development Goals (SDGs) (Žalėnienė and Pereira, 2021). Among the 17 SDGs quality education (SDG4) is identified as an important goal focusing on equal access to higher education and promoting lifelong learning opportunities for each individual. Notably, universities have an important responsibility: to become an essential driving force in achieving all SDGs through training, knowledge production and innovation (Chankseliani and McCowan, 2021). The higher education sector has been expanding substantially (Latif *et al.*, 2019), with over 30,000 universities worldwide (Statista, 2023). This rapid growth has called more attention to the issue of service quality and its related impact on student satisfaction and loyalty (Teeroovengadum *et al.*, 2019; Üstünlüoğlu, 2017). Given the intense competition in higher education, improving service quality, student satisfaction and loyalty is essential for the sustainable growth of universities (Chen, 2019; Qian *et al.*, 2022).

Prior studies have examined the relationships among service quality, university image, student satisfaction and loyalty in higher education in several countries including Malaysia, Mauritius and Portugal (Alves and Raposo, 2007; Ali *et al.*, 2016; Teeroovengadum *et al.*, 2019; Annamdevula and Bellamkonda, 2016; Chandra *et al.*, 2019). However, their results vary across different research contexts. For example, Chandra *et al.* (2019) reported that service quality improves student satisfaction but does not impact student loyalty. Annamdevula and Bellamkonda (2016) demonstrated that service quality could promote student satisfaction and loyalty. Furthermore, these studies conceptualize service quality in different ways and their findings are inconsistent or even conflicting. As an example, while Ali *et al.* (2016) found that five service quality dimensions (academic aspect, nonacademic aspect, program issues, reputation and access) positively enhance student satisfaction, Teeroovengadum *et al.* (2019) reported that, among two aspects of service quality including functional service quality and transformative service quality, the impact of the latter on student satisfaction is insignificant. These inconsistencies and variations suggest the need for further studies that clarify the dimensions of higher education service quality and the mechanism through which these dimensions generate outcomes, such as student satisfaction and loyalty. Similar to corporate image, university image is gradually becoming an essential element of universities when communication channels have become more diverse (Manzoor *et al.*, 2021). Businesses with a good image can attract customers and improve business performance (Andreassen and Lindestad, 1998) and some empirical evidence implies that universities with a good image may be better at attracting learners, making learners more satisfied and enhancing learner loyalty (Schlesinger *et al.*, 2023; Le *et al.*, 2023). However, many scholars advocate that more research is needed to increase understanding of university image (Manzoor *et al.*, 2021). In particular, limited studies investigate the moderating role of the university image in the relationship between student satisfaction and loyalty.

Recent policies that increase investment in higher education and university autonomy have brought many advantages to universities in Vietnam, such as improving financial resources, flexibility in operation and opportunities to expand. There are currently 237 universities in Vietnam, of which 172 are public universities and 65 are private institutions, with more than 1.6 m registered students. It should be noted that the demand for higher education is decreasing. As an illustration, 518,587 new students were enrolled in 217 universities during the 2014–2015 academic year, while the number of new enrollments was only 447,483 for the 2019–2020 academic year. This situation has led to an aggressive competition in the higher education sector and put much pressure on higher education institutions to attract potential students and retain current students and, consequently,

improving service quality, image, student satisfaction and loyalty is of utmost importance and has become a top priority for many higher education institutions.

The objectives of this study are a twofold: first, it seeks to determine the dimensions of higher education service quality with a specific focus on Vietnam. Second, it examines how the service quality dimensions impact student satisfaction and student loyalty, with the moderating role of the university image. The current study contributes to the literature relating to service quality and its impact on students' evaluations, gratifications and behaviors. The findings of this study assist researchers and higher education institutions that seek to understand service quality dimensions and promote student satisfaction and loyalty.

2. Literature review

2.1 *Service quality in higher education*

According to [Parasuraman et al. \(1988, p. 15\)](#), service quality is defined as “a form of attitude related but not equivalent to satisfaction, and results from the comparison of expectations with perceptions of performance.” Service quality is considered an essential factor that creates competitive advantage for enterprises ([Ghobadian et al., 1994](#)). Hence, the concept and measure of service quality has received much attention from researchers and managers ([Nguyen et al., 2022](#)). Notably, their mixed views exist on service quality dimensions due to the diversity of service types and characteristic variations.

[Grönroos \(1984\)](#) proposes to evaluate service quality based on technical quality and functional quality. Meanwhile, based on the theories of customer expectation and perception, [Parasuraman et al. \(1988\)](#) postulate the SERVQUAL (service quality) scale with five main dimensions, namely (1) Reliability, (2) Responsiveness, (3) Empathy, (4) Tangibility and (5) Assurance. The SERVQUAL scale has been widely recognized and applied in various studies on service quality. [Cronin and Taylor \(1992\)](#) argued that the assessment of service quality associated with expectation can cause confusion for customers when collecting data. They, therefore, propose the SERVPERF scale, with dimensions similar to the SERVQUAL scale but with reduced statements measuring customer expectations and instead a focus on customer perception.

Due to the nature of the services provided and the unique characteristics of the educational environment in each country, the dimensions used to evaluate quality of higher education services vary. [Table 1](#) summarizes key higher education service quality dimensions from past studies.

According to [Table 1](#), key service quality dimensions investigated in previous studies include nonacademic aspects, programming issues, facilities/physical evidence, location and industry interaction. In general, service quality dimensions are essential determinants of student satisfaction ([Chandra et al., 2019](#); [Alves and Raposo, 2007](#); [Brown and Mazzarol, 2009](#); [Teeroovengadam et al., 2019](#)).

Based on the results summarized in [Table 1](#), the selected dimensions for service quality in higher education are diverse, and there are differences in selection of dimensions from studies to studies. For example, studies that were conducted in India and Europe use career opportunities and enterprise interaction as a critical component of service quality in higher education ([Jain et al., 2013](#); [Tsinidou et al., 2010](#); [Vanniarajan et al., 2011](#)). Meanwhile, in other studies in Asian countries, academic factors are more common ([Gamage et al., 2008](#); [Abdullah, 2006](#)). Differences in the development orientation of higher education and culture in different countries partly explain these differences.

Table 1.
The dimensions of
higher education
service quality

Authors	Dimensions	Country
LeBlanc and Nguyen (1997)	Contact personnel: faculty; reputation; physical evidence; contact personnel: administration; curriculum; responsiveness and access to facilities	N/A. The survey was conducted at a small business school
Kwan and Ng (1999)	Course content; concern for student; facilities; assessment; instruction medium; social activities and people	Hong Kong and China
Abdullah (2006)	Academic aspect; nonacademic aspect; program issues; access and understanding	Malaysia
Gamage <i>et al.</i> (2008)	Academic aspect; nonacademic aspect and facilities aspect	Thailand and Japan
Tsinidou <i>et al.</i> (2010)	Academic staff; administration services; library services; curriculum structure; location; infrastructure and carrier prospects	Greece
Vanniarajan <i>et al.</i> (2011)	Programming issues; physical aspect; academic reputation; career opportunities; location and promotion	India
Jain <i>et al.</i> (2013)	Input quality; curriculum; academic facilities; industry interaction; interaction quality; support facilities and nonacademic processes	India
Mattah <i>et al.</i> (2018)	Physical facilities; teaching staff; administrative/ supporting staff; physical environment; services (teaching/counseling/mentoring, etc.) and programs/courses	Ghana
Teeroovengadum <i>et al.</i> (2019)	Functional service quality and transformative quality	Mauritius
Source(s): Table by the authors		

2.2 Student satisfaction

Customer satisfaction has been defined in different ways (Nesset and Helgesen, 2009). Anderson (1994) described customer satisfaction as a generalized evaluation of a service based on the experience gathered during provision of the service. Giese and Cote (2000, p. 3) stated that customer satisfaction is a “summary, affective and variable intensity response centered on specific aspects of acquisition and/or consumption, and which takes place at the precise moment when the individual evaluates the object.” Customer satisfaction appears to be an important motivator of customer loyalty (El-Adly, 2019).

2.3 Student loyalty

Oh (1995) suggests that there are three main approaches to measuring customer loyalty including attitudinal, behavioral and integrated measures. While there are different definitions of customer loyalty, most focus on behavioral measurement, which thus far has included purchase rate (Lee and Cunningham, 1996), probability of purchase (Farley, 1964), probability of product repurchases (Kuehn, 1976), repurchase behavior (Brown, 1953), frequency of purchase (Brody and Cunningham, 1968), customer engagement (Hennig-Thurau *et al.*, 2001) and positive word of mouth (Ferguson *et al.*, 2006). Customer loyalty is considered to be a consequence of customer satisfaction (Fornell *et al.*, 1996; Athanassopoulos *et al.*, 2001) and in higher education studies, student loyalty is not only concerned with the frequency of use of the university services but also related perceptions, attitudes and motivations for behavior (Hennig-Thurau *et al.*, 2001). Specifically, student loyalty refers to the extent to which students feel connected to the organization and how their attitudes and behaviors demonstrate this association (Nesset and Helgesen, 2009). According to Rojas-

Méndez *et al.* (2009), student loyalty can be used to evaluate the university's success and their efforts in retaining students. Loyal students tend to use additional services provided by the universities in the future. In the context of increasing competition in the higher education market, understanding student loyalty will assist the universities in attracting learners to continue using services in the future.

2.4 University image

Barich and Kotler (1991) stated that image was defined as a general impression of a company that anyone was familiar with in their mind. Corporate image is perceived to result from many factors, including beliefs, experiences, knowledge and feelings individuals give to an organization (Kazoleas *et al.*, 2001). According to Nguyen and LeBlanc (2001, p. 303), the university image is related to "physical and behavioral attributes of the organization, such as business name, architecture, variety of products/services, tradition, ideology, and to the impression of quality communicated by each person interacting with the organization's clients." Each organization could create a message to the public, and the corporate image was an element that stood out and represented what was communicated (Kotler and Fox, 1995). According to Andreassen and Lindestad (1998), the communication and experience process is essential in forming the corporate image. In a theoretical basis, the university image included cognitive and emotional factors (Palacio *et al.*, 2002).

3. Study 1: determining service quality dimensions for this study

3.1 Methodology

3.1.1 Research procedure. In the analysis of the diversity in the selection of dimensions to measure service quality in higher education, to select the components constituting the quality of higher education services in Vietnam, the group of authors followed the specific process as follows:

Stage 1: Extracting constructs and items from past studies and the Vietnamese legal documents system regarding higher education activities.

Stage 2: Conducting seven expert interviews and focus group discussions with 30 students to identify dimensions and items relevant to the research context in Vietnam.

Stage 3: Collecting data from 140 students using a survey method, which were then subjected to the exploratory factor analysis (EFA) and reliability analysis to explore the dimensions of higher education service quality.

3.1.2 Measurement scale. In determining the dimensions of the service quality scale, we referred to the items used in many different studies. The list of items was referenced and developed from past studies related to service quality, university image and student satisfaction. The initial item count included 46 statements extracted from the findings of previous studies (Ali *et al.*, 2016; Hennig-Thurau *et al.*, 2001; Nettet and Helgesen, 2009; LeBlanc and Nguyen, 1997; Kwan and Ng, 1999; Abdullah, 2006; Gamage *et al.*, 2008; Tsinidou *et al.*, 2010; Vanniarajan *et al.*, 2011; Jain *et al.*, 2013; Nguyen and LeBlanc, 2001; Peng and Samah, 2006). All items were selected from highly reliable studies that were conducted in countries with many similarities to the research context in Vietnam, and the scale of the study was adapted from past studies. To avoid linguistic problems when translating the scale statements, two linguists were invited to test the translation. The student loyalty scale included four items taken from Hennig-Thurau *et al.* (2001). The student satisfaction scale consisted of three items applied from the study of Nettet and Helgesen (2009). The university image scale included three items applied from the results of Nguyen and LeBlanc (2001). The

service quality scale included 29 items representing five dimensions developed from studies by LeBlanc and Nguyen (1997), Kwan and Ng (1999), Abdullah (2006), Peng and Samah (2006), Gamage *et al.* (2008), Tsinidou *et al.* (2010), Vanniarajan *et al.* (2011) and Jain *et al.* (2013). The questions were applied on a five-point Likert scale, ranging from 1 (very poor) to 5 (excellent). Student satisfaction and loyalty items were designed with a slightly different scale: 1 (strongly disagree) to 5 (strongly agree).

3.2 Result of study 1

3.2.1 Item selection for measurement scale. After extracting the constructs and items from past studies and Vietnamese legal documents system regarding higher education activities, in-depth interviews were conducted with experts, including two doctors in business administration, a doctor in education, two university lecturers with over 10 years of teaching experience and two senior-level managers at the universities. The participating experts represent individuals with extensive knowledge of service marketing and higher education (two doctors in business administration and one in education). Senior lecturers represent individuals who are directly involved in delivering higher education services and have a wealth of knowledge about the university activities while university managers represent individuals involved in developing higher education services. Thus, the instrument development process will ensure a multi-dimensional perspective and high reliability. From the 46 selected items, the expert team reached a consensus on the finalized 41 items representing service quality, student satisfaction and university image and student loyalty. Next, the items were put into focus group discussions with 30 students (divided into three groups). As a result (Table 2), when evaluated from students' perspectives, 41 items were reduced to 39 items. The results of the qualitative study are described in Table 2.

3.2.2 Exploratory factor analysis and Cronbach's alpha test. In order to explore the service quality dimensions, 29 items related to higher education service quality were identified through interviews were included in EFA) with sample size $N = 140$. Through the extraction of principal components, varimax rotation and Bartlett's test, the results show that the KMO value = 0.814 (range 0.5–1). Sig of Bartlett test = 0.000 (less than 0.05), the eigenvalues of the item groups are all greater than 1; the total variance is 60.842%. Factor loadings value ranges from 0.558 to 0.842 (greater than 0.5). Meanwhile, the Cronbach's alpha values ranged from 0.776 to 0.866 (greater than 0.7). Thus, the scale ensures reliability and is consistent with the collected data (Hair, 2009). The results of EFA and Cronbach's alpha tests are described in Table 3.

In terms of EFA, there were 29 observed variables of higher education service quality selected from the interview, which were then categorized into five groups of factors. As illustrated in Table 4, we evaluated the reflected content of the items in the groups and named the dimensions accordingly.

Through the interview process and checking the reliability of items using the Cronbach's alpha and EFA tests, the research has identified 29 items representing service quality in higher education in Vietnam. These items are guaranteed to be consistent from the perspective of both experts and students' perceptions. This result is an essential foundation for evaluating the outcome of higher education service quality in Study 2.

4. Study 2: the influence of higher education service quality on student satisfaction and student loyalty, with the moderating role of the university image

4.1 Hypotheses development and conceptual model

The relationship between service quality and customer satisfaction is an essential concept of marketing studies. The positive impact of service quality on customer satisfaction is

Items	Literature support	Interview support	In-depth interview result	Focus group interview result
X1: Academic qualification	<i>Tsinidou et al. (2010)</i>	Yes	7/7	30/30
X2: Professional experience		Yes	7/7	30/30
X3: Communication skills		Yes	7/7	30/30
X4: Positive attitude of lecturers	<i>Abdullah (2006)</i>	Yes	7/7	30/30
X5: Support from lecturers outside of class time	<i>Peng and Samah (2006)</i>	Yes	6/7	28/30
X6: Lecturers research productivity	<i>Gamage et al. (2008)</i>	No	6/7	9/30
X7: Lecturers' ability to use information technology	<i>Leblanc and Nguyen (1997)</i>	Yes	7/7	28/30
X8: Options available of the program	<i>Vanniarajan et al. (2011)</i>	Yes	6/7	25/30
X9: The usefulness of the course syllabus in fulfilling	<i>Peng and Samah (2006)</i>	Yes	7/7	30/30
X10: The program is useful for career development		Yes	7/7	30/30
X11: The program is highly up-to-date	<i>Gamage et al. (2008)</i>	Yes	7/7	30/30
X12: Flexible syllabus and structure	<i>Abdullah (2006)</i>	Yes	7/7	29/30
X13: Specialist programs provided	<i>Vanniarajan et al. (2011)</i>	Yes	6/7	25/30
X14: Flexibility of program to more within campus		No	2/7	12/30
X15: The availability of quiet places to study in the university	<i>Kwan and Ng (1999)</i>	Yes	6/7	30/30
X16: The amount and availability of library facilities		Yes	7/7	30/30
X17: The places provided for students to relax and lounge		Yes	7/7	29/30
X18: The amount and availability of sports and recreational facilities		Yes	7/7	27/30
X19: Layout of classrooms	<i>Leblanc and Nguyen (1997)</i>	Yes	7/7	26/30
X20: Medical facilities	<i>Tsinidou et al. (2010)</i>	Yes	7/7	30/30
X21: Transport facilities	<i>Vanniarajan et al. (2011)</i>	No	3/7	13/30
X22: Directional signposts on campus	<i>Gamage et al. (2008)</i>	No	3/7	10/30
X23: Rapid service	<i>Tsinidou et al. (2010)</i>	Yes	7/7	30/30
X24: Opportunities to participate and organize social activities	<i>Jain et al. (2013)</i>	Yes	7/7	30/30
X25: Administrative process like registration, examination, etc		Yes	7/7	26/30
X26: Convenient opening hours	<i>Abdullah (2006)</i>	Yes	7/7	29/30
X27: Counseling services		Yes	6/7	28/30
X28: Positive attitude of nonacademic staff		Yes	7/7	27/30

(continued)

Table 2.
Summary qualitative
research results

Items	Literature support	Interview support	In-depth interview result	Focus group interview result
X29: Applying contemporary teaching methods	Jain <i>et al.</i> (2013)	Yes	7/7	28/30
X30: Industrial tours for the students		Yes	6/7	22/30
X31: Guest lectures from industry experts are organized		Yes	6/7	21/30
X32: Summer training for student		No	2/7	9/30
X33: Seminars/workshops are organized by enterprises and university		Yes	6/7	23/30
X34: The institute organizes for on-the-job training		Yes	5/7	24/30

Table 2.

Source(s): Table by the authors

Items	Academic	Industry interaction	Component Facilities	Nonacademic	Programming issue
ACA4 (X4)	0.787				
ACA3 (X3)	0.779				
ACA6 (X7)	0.765				
ACA2 (X2)	0.759				
ACA1 (X1)	0.715				
ACA5 (X5)	0.634				
INI2 (X30)		0.842			
INI1 (X29)		0.837			
INI5 (X34)		0.824			
INI3 (X31)		0.807			
INI4 (X32)		0.788			
FACI4 (X18)			0.775		
FACI3 (X17)			0.742		
FACI5 (X19)			0.729		
FACI1 (X15)			0.722		
FACI6 (X20)			0.713		
FACI2 (X16)			0.659		
NACA5 (X27)				0.727	
NACA6 (X28)				0.720	
NACA3 (X25)				0.696	
NACA2 (X24)				0.695	
NACA4 (X26)				0.678	
NACA1 (X23)				0.670	
PROG1 (X8)					0.790
PROG3 (X10)					0.706
PROG5 (X12)					0.680
PROG4 (X11)					0.676
PROG2 (X9)					0.624
PROG6 (X13)					0.558
Eigenvalue	7.660	3.321	2.856	2.186	1.622
Cronbach's alpha	0.872	0.885	0.832	0.829	0.843

Table 3.

Exploratory factor analysis and Cronbach's alpha test results for dimensions of higher education service quality (N = 140)

KMO = 0.814; Sig Bartlett's test = 0.000; Total explained variance = 60.842%

Source(s): Table by the authors

Table 4.
Summary of the
identified dimensions

Dimension	Number of items	Definition	References
Academic (ACA)	6	This dimension assesses the qualifications and attitudes of the teaching staff	Abdullah (2006) , Gamage <i>et al.</i> (2008) , Tsinidou <i>et al.</i> (2010) , Peng and Samah (2006)
Nonacademic (NACA)	6	This dimension reflects support for administrative procedures, extracurricular activities and attitudes and skills of administrative staff	Abdullah (2006) , Jain <i>et al.</i> (2013)
Programming issues (PROG)	6	This dimension refers to the structure of the training program, the updating of the training program and the ability to operate the training program	Abdullah (2006) , Vanniarajan <i>et al.</i> (2011)
Facilities (FACI)	6	This dimension evaluates the quality of the equipment system for teaching, room conditions and the system of facilities for extracurricular activities and entertainment	LeBlanc and Nguyen (1997) , Abdullah (2006) , Tsinidou <i>et al.</i> (2010)
Industry interaction (INI)	5	This dimension denotes the corporate activities of universities and enterprises to serve training, creating a practice environment for students in the learning process, events about job opportunities and career skills	Jain <i>et al.</i> (2013) , Joseph and Joseph (1997)

Source(s): Table by the authors

confirmed in various studies ([Cronin *et al.*, 2000](#)). Many researchers proposed evaluating the influence of dimensions of service quality on customer satisfaction ([Slack *et al.*, 2020](#)). In the higher education context, investigating the impact of dimensions of higher education service quality on customer satisfaction is familiar approach of many studies ([Ali *et al.*, 2016](#); [Teeroovengadum *et al.*, 2019](#)). This study focuses on five dimensions, namely, academic, nonacademic, programming issue, industry interaction and facilities, which are identified clearly in Study 1.

Several previous studies mentioned the path between the above dimensions and student satisfaction. [Elliott and Shin \(2002\)](#) and [Thomas \(2011\)](#) reported that academic aspect is essential attribute of higher education service quality and this component could enhance student satisfaction. Similarly, [Van *et al.* \(2020\)](#) provided empirical evidence, which demonstrated academic staff and academic environment promote significantly student satisfaction in Vietnam. Hence, the hypothesis H1a is proposed:

H1a. Academic aspect has a positive impact on student satisfaction.

Nonacademic factors positively impact the operation and activities of higher education institutions and influence student satisfaction ([Abdullah, 2006](#)) and the relationship between nonacademic factors and student satisfaction has also been tested in many studies ([Arambewela *et al.*, 2009](#); [Gibson, 2010](#)). The nature of educational services is not simply to provide academic values and knowledge but also to support students in developing skills. In Vietnam in recent years, with the increasing competition in the business environment, the universities have focused on student support services in addition to the core activity of providing knowledge to students. The benefits of recreational and extracurricular activities

gradually show their importance to the development of students. From the above arguments, research hypothesis H1b is proposed as follows:

H1b. Non-academic aspect has a positive impact on student satisfaction.

In this study, the authors also evaluated the programming issues from the perspective of student access, focusing on flexibility, diversity and updates. Several empirical evidences highlighted the role of programming issues to customer satisfaction. For example, [Huang \(2010\)](#) implied that the suitable study program could improve student satisfaction. [Hai \(2022\)](#) pointed out education programs enhance service quality and has indirect effect on student satisfaction in Vietnam. Thus, hypothesis H1c was formulated and is proposed:

H1c. Programming issues have a positive impact on student satisfaction.

Facilities play an important role in supporting enterprises in producing and providing customer services ([Parasuraman et al., 1988](#)). In higher education services, issues of facilities such as classrooms, libraries, computer rooms and teaching equipment are highly essential. [Picus et al. \(2005\)](#) found a close relationship between facilities and student learning outcomes. The positive impact of facilities on student satisfaction is also mentioned in many studies ([Douglas et al., 2006](#); [Hanssen and Solvoll, 2015](#); [Darawong and Sandmaung, 2019](#)). From the above arguments, the hypothesis H1d is proposed:

H1d. Facilities have a positive impact on student satisfaction.

Industry interaction quality is relevant to the cooperation between universities, enterprises and students ([Jain et al., 2013](#)). In higher education, collaborative activities between schools and businesses are increasingly common. Furthermore, the labor market's requirements for practical knowledge and job skills of students upon graduation are gradually being focused. Therefore, training cooperation between universities and enterprises is an important solution to this problem. The experience, updated knowledge and skills from natural working environments outside the business contribute significantly to helping students strengthen and develop themselves. Activities linking enterprises and schools in training and finding job opportunities for students bring much value and positively impact student satisfaction ([Hussien and La Lopa, 2018](#); [Jaradat, 2017](#)). However, in Vietnam, studies have not yet to evaluate the impact of business interaction factors on student satisfaction. Thus, the hypothesis H1e is proposed:

H1e. Industry interaction has a positive impact on student satisfaction

In the higher education sector, students can be considered the main customers of universities ([Oldfield and Baron, 2000](#)). The concept of "student satisfaction" denotes "a student's subjective evaluation of the various outcomes and experiences with education and campus life" ([Elliott and Shin, 2002](#), p. 198). Several studies conducted by [Alves and Raposo \(2007\)](#), [Brown and Mazzarol \(2009\)](#) and [Teeroovengadum et al. \(2019\)](#) demonstrate a positive effect of student satisfaction on student loyalty. Hence, the following hypothesis is developed:

H2. Student satisfaction has a positive impact on student loyalty.

[Kipkirong Tarus and Rabach \(2013\)](#) argued that enterprises with a good image would bring psychological satisfaction to customers and customers with psychological satisfaction were expected to be loyal to the business. There is an observable tendency for customers to want to be associated with good enterprises. Therefore, a positive business image will enhance customer loyalty to the business. The university's image reflects its reputation and contributions to society in higher education and is an essential reference for educational institutions to attract learners. It can promote re-enrollment to use and encourage word-of-mouth behavior from learners, as they are satisfied with their learning experience. [Kipkirong](#)

Tarus and Rabach (2013) through empirical research of data from 140 customers using mobile services, have demonstrated the role of image in enhancing the relationship between customer satisfaction and loyalty. Thus, the following hypothesis is proposed:

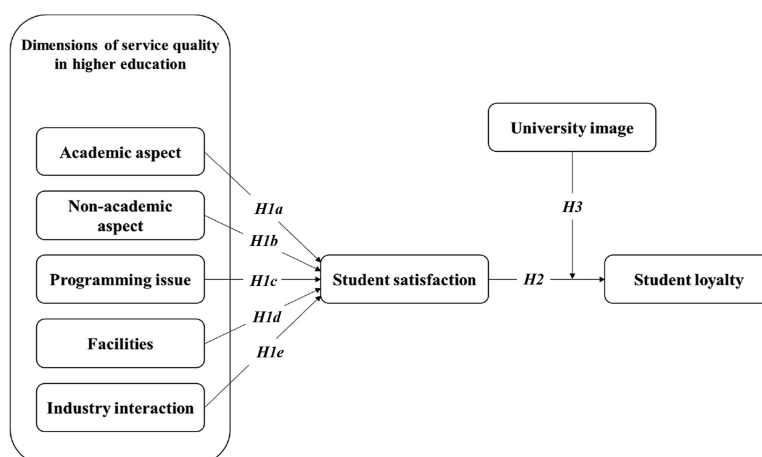
H3. University image positively moderates the relationship between student satisfaction and student loyalty.

Figure 1 illustrates the proposed research model.

4.2 Methodology

4.2.1 Measures approach. In this phase, a conceptual model is proposed based on the hypotheses development to reflect the role of dimensions of higher education service quality on student satisfaction and student loyalty. Afterward, the structural modeling equation (SEM) is employed to test the hypotheses and paths analysis. Quantitative analysis for the primary data was performed by two applications: IBM SPSS 26 and IBM AMOS 26. The authors performed descriptive statistical tests, EFA and Cronbach's alpha coefficients by SPSS 26. The construct reliability, SEM model analysis and a multigroup test to evaluate the moderator variable's role were carried out by AMOS 26 software. Chi-square/df (chi-square to degree of freedom ratio), adjusted goodness of fit index (AGFI), goodness of fit index (GFI), comparative fit index (CFI), Tucker and Lewis index (TLI), normed fit index (NFI) and Root mean square error of approximation (RMSEA) was used to test the suitability of the model. According to Hair (2009), the thresholds for the above indicators include Chi-square/df < 3; p -value < 0.05; the value of AGFI, GFI, NFI, CFI, TLI > 0.9 and RMSEA < 0.08.

Higher education service quality dimensions were measured by the 29 items identified in Study 1. The student satisfaction scale includes three items adopted from Nesset and Helgesen (2009): "The university I am studying is similar to the ideal university", "The university met my expectations" and "Overall, I am satisfied with the university I attended." Student loyalty was measured by four items from Hennig-Thurau *et al.* (2001): "I am very interested in keeping in touch with my faculty," "I would recommend my university to someone else", "I will attend other courses/further education at my university" and "I would become a member of any alumni organizations at my university". Finally, the university image includes three items, which were adapted from Nguyen and LeBlanc (2001): "The



Source(s): Figure by the authors

Figure 1.
Conceptual model

university I am attending has a good reputation,” “My university contributes many values to society” and “The university I participated in has good social links”. It should be important to note that two items from the original scale were eliminated after in-depth interviews with four experts because they were not relevant to the Vietnamese context.

4.2.2 Data collection and sample. The convenience sampling method was applied in this study with the research sample collected from students studying at five public universities in Vietnam and face-to-face and online surveys were used to collect the data. For the face-to-face approach, researchers went to selected universities to collect data and before conducting interviews respondents were required to confirm they were not under any time or psychological pressure during the process. These interviews were then processed by a team of research assistants. For the online survey collection method, Google Forms was used, and the surveys were designed to simulate an equivalent question list that could otherwise have been delivered in person. Each question had an option that allowed the respondents to indicate if they lacked understanding about the content of the question (if available).

Data collection lasted from January to March 2022. After screening and removing invalid surveys, the number of validated questionnaires in the sample was 1,550, equivalent to a 77.5% rate of response. Details of the sample are described in [Table 5](#).

4.3 Research results

4.3.1 Descriptive, construct reliability and validity. The confirmatory factor analysis (CFA) was conducted to validate the dimensions of higher education service quality, student satisfaction, student loyalty and university image. The results of descriptive statistical

Demographic characteristic	Frequency	%
<i>Gender</i>		
Male	728	46.97
Female	822	53.03
<i>Academic year</i>		
Second-year student	522	33.68
Third-year student	588	37.93
Fourth-year student	440	28.39
<i>University</i>		
Thuongmai University	396	25.55
National Economics University	324	20.90
Foreign Trade University	258	16.65
Academy Finance – University in Vietnam	308	19.87
University Of Economics Ho Chi Minh City	264	17.03
<i>Major in</i>		
Business administration	216	13.94
Marketing	204	13.16
Accounting	142	9.16
Commercial law	132	8.52
Economics	170	10.97
International trade	68	4.39
Brand management	112	7.23
Finance and banking	158	10.19
Human resource management	150	9.68
Tourism services and tour management	198	12.77

Table 5.
Demographic profile of
the respondents

Source(s): Table by the authors

Items	Factor loadings	CR	AVE	MSV	Mean	Standard deviation
<i>Academic aspect – ACA</i>						
ACA1	0.685	0.858	0.503	0.436	3.755	0.841
ACA2	0.674				3.575	0.846
ACA3	0.696				3.441	0.853
ACA4	0.721				3.568	0.777
ACA5	0.816				3.632	0.809
ACA6	0.653				3.528	0.676
<i>Nonacademic aspect – NACA</i>						
NACA1	0.743	0.867	0.522	0.312	3.421	0.884
NACA2	0.697				3.526	0.874
NACA3	0.755				3.587	0.840
NACA4	0.700				3.607	0.860
NACA5	0.712				3.464	0.970
NACA6	0.724				3.455	0.973
<i>Programming issues – PROG</i>						
PROG1	0.713	0.864	0.514	0.436	3.399	0.858
PROG2	0.732				3.485	0.875
PROG3	0.732				3.383	0.877
PROG4	0.718				3.600	0.858
PROG5	0.710				3.341	1.044
PROG6	0.694				3.326	1.039
<i>Facilities – FACI</i>						
FACI1	0.754	0.868	0.524	0.169	3.226	0.891
FACI2	0.668				3.169	1.041
FACI3	0.765				3.200	0.931
FACI4	0.732				3.211	0.879
FACI5	0.696				3.017	0.841
FACI6	0.724				3.015	0.827
<i>Industry interaction – INI</i>						
INI1	0.793	0.864	0.561	0.083	3.253	0.990
INI2	0.728				3.283	0.987
INI3	0.754				3.106	1.035
INI4	0.741				3.350	1.073
INI5	0.726				2.994	1.076
<i>University – IMA</i>						
IMA1	0.777	0.788	0.556	0.012	3.231	1.262
IMA2	0.808				3.207	1.289
IMA3	0.641				3.364	1.205
<i>Satisfaction – SAT</i>						
SAT1	0.744	0.782	0.545	0.218	3.222	0.826
SAT2	0.801				3.257	0.811
SAT3	0.664				3.059	0.834
<i>Student loyalty – LOY</i>						
LOY1	0.709	0.812	0.522	0.218	3.272	0.767
LOY2	0.663				3.345	0.815
LOY3	0.657				3.341	0.786
LOY4	0.845				3.277	0.778

Source(s): Table by the authors

Table 6.
Descriptive, factor
loadings, CR, AVE
and MSV

Table 7.
Correlation and
discriminant validity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) IMA	0.746							
(2) NACA	0.092	0.722						
(3) FACI	0.067	0.411	0.724					
(4) PROG	0.081	0.532	0.318	0.717				
(5) ACA	0.056	0.559	0.346	0.660	0.709			
(6) INI	−0.023	0.288	0.185	0.236	0.242	0.749		
(7) LOY	0.034	0.326	0.216	0.275	0.307	0.152	0.722	
(8) SAT	0.108	0.396	0.357	0.418	0.447	0.182	0.467	0.738

Source(s): Table by the authors

analysis and CFA are demonstrated in [Table 6](#) and [Table 7](#). Accordingly, the measurement model includes 645 degrees of freedom, $\chi^2/\text{df} = 2,470$ (less than 3); p -value = 0.000 (less than 0.05); AGFI = 0.939; GFI = 0.950; TLI = 0.959; CFI = 0.964; NFI = 0.942 (greater than 0.9); RMSEA value = 0.031 (less than 0.08). The loading factor values ranged from 0.641 to 0.845 (greater than 0.6). Average variance extracted (AVE) values > 0.5 and greater than maximum shared variance (MSV); composite reliability (CR) ranges from 0.782 to 0.868 (greater than 0.7). AVE's square root values (SQRT AVE) were greater than the correlation values between the variables, so the thresholds for convergent and discriminant validity are accepted. In addition, the correlation values are less than 0.7, so multicollinearity does not appear in this study ([Hair, 2009](#); [Fornell and Larcker, 1981](#)).

4.3.2 Common bias method. Choosing the dimensions and items from many different studies can lead to the common bias method problems. The common bias method can negatively affect the measurement performance of the research model ([Podsakoff et al., 2012](#)). To limit these potential risks, we followed the suggestions based on [Podsakoff et al. \(2012\)](#) in securing respondents' personal information during the interview process (demographics information of respondents is coded and the collected data will only be used for research purposes), shuffling the order of questions in the questionnaire to limit respondents' perceptions about the structure of the research model and testing. We also strictly controlled the research data collection process. Finally, Harman's single test and common latent factor test were applied to assess the likelihood of problems related to the common bias method.

After data collection, quantitative analyses resulted in single-factor explanations of 23.909% of variables' variance for Harman's single-factor test. For the latent common factor test performed by IBM AMOS 26 software, the latent common method variance factors test results demonstrated that the factor method accounted for less than 25% of the total variance. Furthermore, the differences between the standardized estimate of the measurement model and the common latent factor test model are less than 0.2. Therefore, according to the suggestion of [Malhotra et al. \(2006\)](#), the common bias method problems do not appear in this study.

4.3.3 Hypotheses testing. The SEM model analysis method was applied to test the research hypotheses. The model fit indexes of the SEM model such as: $\chi^2/\text{df} = 2.810$ (less than 3); p -value = 0.000 (less than 0.05); AGFI = 0.936; GFI = 0.947; TLI = 0.955; CFI = 0.960; NFI = 0.940 (greater than 0.9) and RMSEA value = 0.034 (less than 0.08). These values all meet the thresholds suggested by [Hair \(2009\)](#); therefore, the model is suitable for the collected data.

The results of testing the research hypotheses in [Table 8](#) have shown that, except for the hypothesis of the relationship between the industry interaction and student satisfaction being rejected, the remaining hypotheses are accepted with p -value < 0.05. Among the service

quality factors, the academic aspect showed the strongest impact on student satisfaction with $\beta = 0.219$ (t-value = 5.093; p -value <0.001), followed by facilities with $\beta = 0.183$ (t-value = 5.944; p -value <0.001). The impact of programming issues is reflected in $\beta = 0.152$ (t-value = 3.736; p -value <0.001). Finally, the nonacademic aspect has $\beta = 0.127$ (t-value = 3.369; p -value <0.001). Student satisfaction also shows an important role in student loyalty with the coefficient $\beta = 0.488$ (t-value = 15.496; p -value <0.001). The independent variables explained 29.2% of the variation in student satisfaction ($R^2 = 0.292$) and 23.8% of the variation in student loyalty ($R^2 = 0.238$).

4.3.4 Moderating effect hypotheses testing. The study uses the multigroup test method in SEM (Hair, 2009) to evaluate the difference between two groups of samples divided by the perceived degree of university image. After applying the K-means cluster division method by IBM SPSS 26 software, two groups of samples were determined, including Group 1: 680 people (43.87%) have a low perception of university image. Group 2: 870 people (56.13%) have a high perception of university image.

The method applied in the multigroup analysis is multigroup SEM (Hair, 2009), which is performed in two steps: (1) perform an invariance test and (2) analysis of the structural model (structural invariance) to evaluate the different relationships.

The results of the evaluation of invariance through configurational invariance (CI) and metric invariance (MI) showed that the model has suitable fitting parameters such as AGFI, GFI, CFI and TLI greater than 0.9, $\chi^2/df < 3$; RMSEA <0.08 (see Table 9). Besides, the p -value reached $0.157 > 0.05$. Thus, there is no difference in factor loadings coefficient between the groups. The structural model is considered to evaluate the differences in the effects of the independent variables with the dependent variable of the two sample groups.

Regarding the test, the difference between the structural weight model and the measurement weight mode indicated $\Delta \chi^2 = 17.843$ with p -value = 0.007 (less than 0.05), so the unconstrained model will be used to compare the difference in student impact satisfaction for student loyalty in two sample groups (Byrne, 2004).

Regarding the test for chi-square with one difference of degrees of freedom between two models, the restricted model showed the difference of chi-square in the support threshold for the H3 hypotheses with statistical significance $p < 0.05$. According to the results in Table 10, for the group with a low perception of university image, the relationship between satisfaction

Hypotheses			β	S.E.	t-value	p-value	Findings
Nonacademic aspect	→	Satisfaction	0.127	0.035	3.369	***	Accepted
Programming issues	→	Satisfaction	0.152	0.041	3.736	***	Accepted
Academic aspect	→	Satisfaction	0.219	0.063	5.093	***	Accepted
Facilities	→	Satisfaction	0.183	0.031	5.944	***	Accepted
Industry interaction	→	Satisfaction	0.032	0.026	1.096	0.273	Rejected
Satisfaction	→	Loyalty	0.488	0.032	15.496	***	Accepted

Note(s): *** p -value <0.001

Source(s): Table by the authors

Table 8.
Hypotheses testing and
direct effects

	χ^2	df	χ^2/df	AGFI	GFI	CFI	TLI	RMSEA	$\Delta \chi^2$	p-value
CI	1879.783	1,088	1.728	0.923	0.937	0.968	0.963	0.022		
MI	1924.262	1,124	1.712	0.923	0.935	0.968	0.964	0.021	44.479	0.157

Source(s): Table by the authors

Table 9.
Result of measurement
invariance test

and loyalty is lower than that of the group with a high perception of university image ($\beta = 0.401$ compared to $\beta = 0.573$).

4.3.5 Indirect effect analysis result. The bootstrapping method, as introduced by Preacher and Hayes (2008) was used to test the indirect impact of service quality parameters on student loyalty. The IBM AMOS 26 software was utilized in this test. Table 11 summarizes the findings in detail.

Thus, except for industry interaction, all the remaining four factors of service quality indirectly influence student loyalty with statistical significance p -value <0.01 . The order in descending order of magnitude is academic, facilities, program and nonacademic.

5. Discussion, implications and limitations

5.1 Discussion

The most important contribution of this study was the successful construction of a scale of higher education service quality in the context of research in Vietnam from the findings and development of past research results and assessing the impact of these dimensions on student satisfaction and loyalty (Alves and Raposo, 2007; LeBlanc and Nguyen, 1997; Jain et al., 2013; Abdullah, 2006; Gamage et al., 2008; Tsinidou et al., 2010). Based on the direct and indirect effect analysis, this study highlighted the role of academic aspects and facilities, dimensions that significantly enhanced student satisfaction and student loyalty. Subsequently, programming issues and nonacademic aspects also improved two independent variables, but the levels of impact was lower than the academic aspect and facilities.

In addition, the study also demonstrated the role played by the university image in enhancing the relationship between student satisfaction and loyalty and results reinforced the views on the role of service quality in customer satisfaction and loyalty (Fornell et al., 1996; Gong and Yi, 2018) and both contexts in higher education (Alves and Raposo, 2007; Ali et al., 2016). In addition, the moderating role of the university image was the new finding of this study. Some scholars have examined the role of corporate image in enhancing the

Table 10.
Moderating effect
hypotheses testing

Paths	Low		High		Unconstrained model	Constrained model
	β	p -value	β	p -value		
<i>University image as moderator</i>						
Satisfaction $\rightarrow$ Loyalty	0.401	***	0.573	***	$\chi^2(1,098) = 1922.104$	$\chi^2(1,099) = 1929.601$
Note(s): Chi-square difference test: $\Delta \chi^2 (1) = 7.497, p = 0.006 < 0.05$ (significant). H_3 is supported *** p -value <0.001						
Source(s): Table by the authors						

Table 11.
Indirect effect analysis
result

Construct	Indirect effect
Facilities $\rightarrow$ Satisfaction $\rightarrow$ Loyalty	0.089**
Programming issues $\rightarrow$ Satisfaction $\rightarrow$ Loyalty	0.074**
Nonacademic $\rightarrow$ Satisfaction $\rightarrow$ Loyalty	0.062**
Academic $\rightarrow$ Satisfaction $\rightarrow$ Loyalty	0.107**
Industry interaction $\rightarrow$ Satisfaction $\rightarrow$ Loyalty	0.015 ^{NS}
Note(s): *** $p < 0.001$; ** <0.01 ; * <0.05 and ^{NS} . Nonsignificant	
Source(s): Table by the authors	

relationship between customer satisfaction and customer loyalty in mobile services (Kipkirong Tarus and Rabach, 2013) but in higher education services there have not been many studies verifying the moderating role of the university image. These findings will add to the theories of customer behavior in the higher education service environment and enrich understanding of the causal relationship between customer satisfaction and loyalty.

In addition, beyond the essential roles of academic, programming issues, facilities or nonacademic factors in student satisfaction verified in many studies (Nesset and Helgesen, 2009; Teeroovengadum *et al.*, 2019), concerning the relationship between service quality and student satisfaction, the effects of industry interaction were not apparent. This result was partly due to the joint activities of universities and enterprises in Vietnam in training and creating an internship environment for students having only been implemented in recent years. The results of descriptive statistics have shown the outstanding limitations of this activity: the universities are only focusing on organizing workshops and enterprise trips. However, they have not been able to promote such activities as on-the-job training or inviting experts to teach students directly. Therefore, the values gained from the industry interaction activities may not be able to satisfy the needs of students, which are to have access to efficient knowledge and skills to create competitive advantages when entering the labor market.

5.2 Implications

From the above-mentioned empirical research results and comparisons, the research contributes to some implications for the university management teams and higher education management in improving customer satisfaction. Student satisfaction and loyalty are based on service quality and university image.

Firstly, universities need to focus on improving the quality of human resources and facilities. These are the factors that have a significant influence on the quality of academic and nonacademic experiences. In particular, the academic staff needs to improve their qualifications, knowledge and teaching methods through training activities and worthy remuneration policies. For support activities, it will be necessary to create more extracurricular activities, improve the efficiency of administrative procedures and improve the skills of administrative staff to increase student satisfaction. In addition, the training program needs to be flexible and updated to keep up with the advancements in knowledge. The contents of the training program need to be selective to better match the labor market requirements.

Secondly, while the research results indicate that there was no significant impact on student satisfaction, developing links with enterprises is an inevitable development trend to increase the efficiency of training activities. Therefore, the universities need to promote linkages with enterprises to focus on practical skills training activities through on-the-job training methods combined with increasing the invitation of experts to participate directly in teaching. For higher education authorities, it will be necessary to conduct a comprehensive assessment of the effectiveness of policies to promote the industry interaction at higher education institutions. Management agencies need to support universities by issuing policies to create flexibility in learning and practicing at enterprises as well as remuneration mechanisms for learners when doing internships at enterprises. These solutions will contribute to increased benefits for universities, enterprises and students.

Thirdly, the role of university image in enhancing the relationship between satisfaction and student loyalty shows the importance of this factor for the sustainable development of universities. In order to improve the image of the university, the universities need to focus more on communication, activities serving the community's interests and, most importantly, comprehensive improvement of the quality of training to improve academic reputation.

Among the selected items for the interview, the item with content about the faculty's research ability was excluded because the students did not perceive them. Therefore, developing a university reputation based on the quality of scientific research and international publication will be a solution that should be considered and promoted.

Finally, based on the research findings, several implications were suggested for policymakers. This study shows the vital role of higher education service quality in student satisfaction and loyalty, two essential criteria for achieving the goal of sustainable development in higher education. Therefore, policymakers need to focus on strategies to strengthen the assessment and control of the quality of higher education services. In addition, service-marketing theories are used effectively in this research, so higher education should be viewed as a pure service with the customer at the center.

5.3 Conclusion, limitations and future research

Improving the quality of higher education is the key to achieving the United Nations SDGs. This study provides empirical evidence on the role of higher education service quality in the university student satisfaction and loyalty. In addition, the analysis helps identify important service quality dimensions in higher education and their impact on learners. These findings help improve the understanding of higher education and the awareness of the importance of service quality in higher education. This study also provides new perspectives on higher education through the lens of marketing in Vietnam – an emerging country, which has many challenges in developing higher education toward achieving the SDGs' goals. Thus, the universities need to continue to apply strategies to improve service quality to attract learners, improve the quality of student outcomes and provide learners with knowledge and skills that meet the needs of the enterprise. This study is one of the first attempts to identify the attributes of service quality of higher education in Vietnam as a Southeast Asian emerging economy. These findings highlight five critical dimensions: academic, nonacademic, facilities and industry interaction and programming issues. This study also investigates the influence of these dimensions on student satisfaction and student loyalty. Furthermore, our research explores the profound findings about the moderating role of the university image. Based on the results, several implications were suggested to stakeholders including universities, enterprises and policymakers.

While this study has achieved its objectives, there are still some limitations: first, it applied the convenience sampling method. While the sample size is relatively large at 1,550, it is still a small portion extracted from the overall population. In addition, this research only focused on students studying at the universities of economics and business administration. Hence, future research should use a more reliable sampling method (e.g. probability sampling) and seek to collect data from a more representative sample, including students from different majors. Second, the rates of explaining the variation of the dependent variables were relatively low (29.2% and 23.8%), indicating a need to improve the research model with possible modifications, including additional factors such as personal values and individual personality to increase the validity of the model. Finally, future research is encouraged to test this study's model in other emerging countries.

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