

THESES OF THE DOCTORAL (PhD) DISSERTATION

THE INFLUENCE OF SERVICE QUALITY ON INTERNATIONAL STUDENTS' LOYALTY: THE MEDIATING ROLE OF STUDENTS' AFFECTIVE COMMITMENT AND PERCEIVED ACADEMIC COMPETENCE IN HIGHER EDUCATION INSTITUTIONS IN HUNGARY

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1. INTRODUCTION, THEORETICAL BACKGROUND, AND LITERATURE REVIEW

Expanding globalization in the education area in the last few years has led to a flourishing demand for higher education services (LIM et al., 2011). The huge demand for the services of education is also followed by the rise of higher education service providers (NAIDU and DERANI, 2016).

The higher education sector has significantly experienced reforms and changes all over the world. Globalization has created several challenges for the higher education sector linked with the flow of information advancements, technology, communication, and the increasing demand for knowledge (ENAYATI et al., 2013). These challenges are considered as threats to the system of education; however, they can be considered as opportunities if they are invested, too. Besides, higher education institutions have to compete drastically with each other in order to attract and retain new and current students (ARAMBEWELA and HALL, 2006). Higher education is, therefore, being driven towards commercial competition as a consequence of the impact of economic forces caused by the development of global education markets (RACHMADHANI et al., 2018), so higher education institutions, too, should understand the needs and desires of their customers, in line with marketing principles.

Higher education as a service is a special type of service due to the intensity of contact between the consumer, i.e., “student” and service provider, i.e., “higher education institution” (KHANNA et al., 2014). In the business world, the most crucial part is the customers. Organizations, including higher education institutions, must fulfill the customer’s needs and wants in order to develop and improve market share and profitability, they need to obviously pinpoint what the customers need and want, and developing and sustaining the quality of service is definitely required for the higher education institutions (BAHARUN et al., 2012). The prevailing higher education landscape is a dynamic and increasingly competitive one (CHEUNG et al., 2011; DEHGHAN et al., 2014), where higher education institutions (universities and colleges) need to continuously develop their services by maximizing their efforts (CLEMES et al., 2013). In the 21st century, higher education institutions offer their products and services in the form of innovations, training services, and research achievements that contribute to and are engaged with the countries’

development (FAZLI-SALEHI et al., 2019). GOVENDER et al. (2014) showed the necessity of universities and their contributions to economic growth and the need for continuous improvement of the quality of service in the education sector.

The increasing number of higher education institutions, local, and international students in recent years make competition between higher education institutions more complicated. As a result, most universities and colleges nowadays are seeking to use and find various methods and ways to attract new talented students and retain current students as well as to improve their services. Keeping and retaining current customers is less costly than attracting new customers (NADIRI et al., 2008; SAHA, 2009). Moreover, thanks to quality service delivery, institutions might gain new clients through the contributions of satisfied customers (SAHA, 2009). CARLOS and RODRIGUES (2012) confirmed that higher education institutions should use their resources as a marketing instrument for the purpose of recruiting students, due to the competitive environment of the education sector.

The quality of service perceived by international students has been identified as a means of crucial differentiation to the creation of their satisfaction and loyalty (ALVES, 2011). According to the SERVQUAL model that is developed PARASURAMAN et al. (1988), quality of service could be measured by the gaps between expectations of customers and their perceptions of the actual performance of the service. SERVQUAL is based on five dimensions of service quality, which are tangibility, reliability, responsiveness, assurance, and empathy. ZEITHAML et al. (1996) studied the behavioral consequences of the SERVQUAL model, it includes loyalty which the results asserted has significant proof of their being affected positively by service quality.

The customer's loyalty, on the other hand, according to DICK and BASU (1994), involves both behavioral and attitudinal components. The behavioral component refers to the customer's actual purchasing behavior, such as repeat purchases and referrals to others. The attitudinal component refers to the customer's positive feelings and emotional attachment toward the company or brand. More specifically, the student's loyalty, involves such practices as providing positive or negative word-of-mouth toward the university, recommending the higher education institutions to others, and selecting the same institution again in the future (DADO et al., 2012). The second concept is the attitudinal loyalty, which speaks to the emotional bond a student has with the university that motivates them to want

to keep doing business with it (DAY, 1976). Therefore, measuring the student's loyalty towards higher education institutions is essential, it promotes the competitive advantage of higher education institutions (ISMANOVA, 2019).

In a quickly changing competitive environment, the reputation of the university is necessary to the recognition or subjective and collective evaluation of stakeholders to the university, which explains their attitudes, views, trust level, evaluations, admiration, good feelings, and appreciation of the university from time to time as a result of the university's past actions, which can contribute to reaching and maintaining the university's sustainable competitive advantage (LUPIYOADI, 2016). TELCI and KANTUR (2014) defined the academic competence as the education quality and general competence of the university. According to ALESSANDRI et al. (2006), the perceived academic competence was extracted from the university reputation concept, which is exclusively applied just to higher education institutions field.

ALLEN and MEYER (1990) defined the organizational commitment as the psychological ties that link customers to a business and their level of loyalty. Any industry, company, or organization needs to build customer commitment in order to achieve a high degree of relational bonding and the success of long-term relationships (MORGAN and HUNT, 1994). ALLEN and MEYER (1990) proposed a three-component model of the organizational commitment, including affective commitment, continuance commitment, and normative commitment. In higher education context, the influential variable that links the students with the academic staff is affective commitment, it indicates an individual's emotional attachment to an institution (ALLEN and MEYER, 1990).

The purpose of the current study is to investigate the nature of the gap between the expectations and perceptions that represent the perceived service quality and to study the link between the perceived service quality and international students' loyalty in the Hungarian higher education institutions. The authors of the SERVQUAL model confirmed a significant effect of the perceived service quality on customers' loyalty (ZEITHAML et al., 1996). Furthermore, the study aims at gauging how students' affective commitment and perceived academic competence predict the loyalty of international students, and how they are affected by the service quality factors, where all of the variables could be applied in the higher education context. Perceived academic competence and student affective

commitment are limited-used in the educational context, which encouraged me to employ them as mediators in the current study.

In Hungary, the number of international students studying in higher education institutions has increased dramatically in recent years. The international orientation of Hungarian higher education institutions began at the beginning of the 2000s in order to bring in more foreign students whose number almost quadrupled between 2001 and 2021: the number of international students was 3,310 in 1990, 11,783 in 2001, 14,491 in 2005 and 26,682 in 2016 (KOVÁTS, 2018). According to the HUNGARIAN CENTRAL STATISTICAL OFFICE (2020), in 2020 it was 37,071 students, and in 2021/2022 it has raised to 40,292 (OFFICE OF EDUCATION, 2021). This enormous increase in the number of international students studying in Hungary pushed me to choose this sector to apply the study.

1.1. Research Objectives

This research focuses on the higher education sector, more specifically, higher education institutions in Hungary. The objectives of the research are as follows:

1. To analyze the gap between the expectations and perceptions of international students towards the quality of higher education services in Hungary.
2. To measure the impact of service quality factors (tangibility, reliability, responsiveness, assurance, and empathy) on perceived academic competence and students' affective commitment.
3. To measure and discover which variables (service quality factors, perceived academic competence, and students' affective commitment) predict international students' loyalty.
4. To investigate the mediating role of perceived academic competence and students' affective commitment in explaining the relation between perceived service quality and international students' loyalty.
5. To test the international students' perception differences toward service quality, perceived academic competence, affective commitment, and student loyalty attributed to demographic variables, including gender, age, level of study, year of study, student status (scholarship and self-financed students), university, and field of study.

6. Also, the study aims to examine the impact of demographic variables, including gender, age, level of study, year of study, student status (scholarship and self-financed students), university, and field of study on international students' loyalty.

1.2. Research Questions

The research questions could be formulated as follows:

1. What are the differences between the expectations and perceptions of international students related to service quality in higher education institutions in Hungary?
2. Is there an impact of perceived service quality (tangibility, reliability, responsiveness, assurance, and empathy) on perceived academic competence and students' affective commitment?
3. Is there an impact of perceived service quality (tangibility, reliability, responsiveness, assurance, and empathy) on international students' loyalty?
4. Is there an impact of perceived academic competence and students' affective commitment on international students' loyalty?
5. Does perceived academic competence play a significant role in mediating the relationship between perceived service quality and international students' loyalty?
6. Does students' affective commitment play a significant role in mediating the relationship between perceived service quality and international students' loyalty?
7. Are the international students' perceptions different toward service quality, perceived academic competence, affective commitment, and student loyalty attributed to demographic variables, including gender, age, level of study, year of study, student status (scholarship and self-financed students), university, and field of study?
8. Is there a significant impact of demographic variables, including gender, age, level of study, year of study, student status, university, and field of study, on international students' loyalty?

1.3. The SERVQUAL model

The quality of service perceived by international students has been identified as a means of crucial differentiation to the creation of their satisfaction and loyalty (ALVES, 2011). According to the SERVQUAL model (PARASURAMAN et al., 1988), quality of service

could be measured by the gaps between expectations of customers and their perceptions of the actual performance of the service. SERVQUAL is based on the following five dimensions of service quality.

- Reliability, which is the ability of an institution to fulfill and deliver promised services precisely and convincingly. It also means institutions conduct the service perfectly for the first time (PARASURAMAN et al., 1988).
- Responsiveness, which is the willingness of the company to provide and assist services immediately. It is relevant to ensuring that customers are stayed informed. For instance, it includes how long customers should wait to get the service, the readiness to answer the questions of customers, and the ability to meet consumers' demands (PARASURAMAN et al., 1988).
- Assurance, which is related to the knowledge and skills that the employees must have in order to serve customers and then gain their confidence. It is also defined as the courtesy and the knowledge of employees and their ability to deliver trust and confidence to customers (PARASURAMAN et al., 1988).
- Empathy, which is giving attention to each customer individually through concern about customers' needs and wants. The essence of empathy is getting the customers' sense that they are exceptional and special, regardless of the kind of service, i.e., individualized (customized or personalized) attention is paid to the consumers (ZEITHAML et al., 1996).
- Tangibility, which contains all equipment, staff, physical facilities, and communication materials that enhance the service. Besides, good-looking equipment, physical facilities, and neatly dressed and groomed employees indicate the quality level of the services (PARASURAMAN et al., 1985).

Figure 1 illustrates the SERVQUAL model's gap.

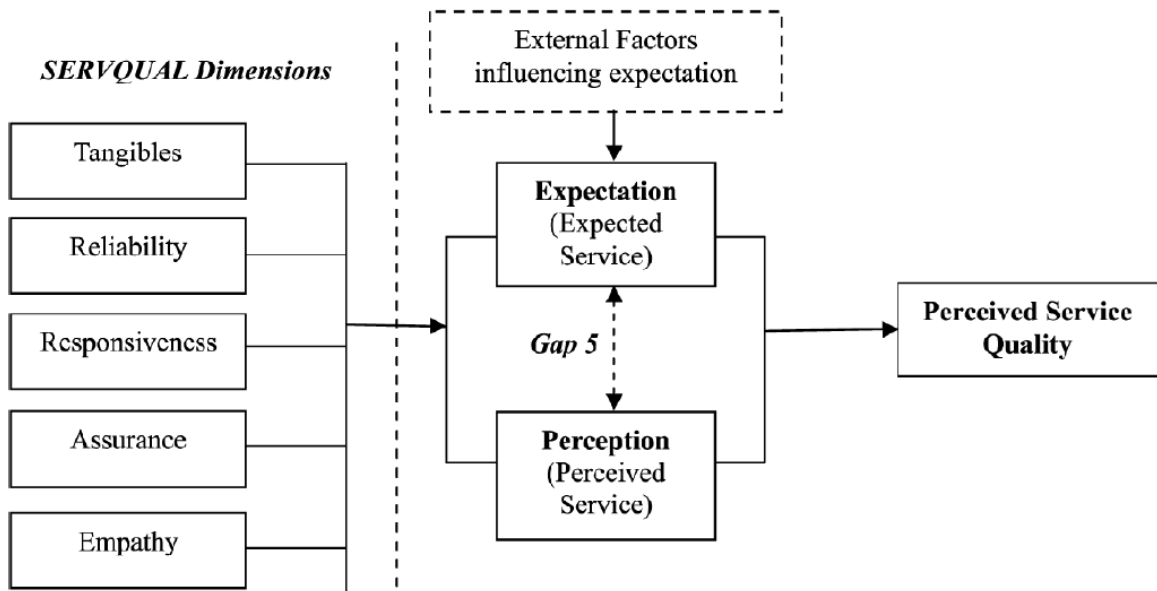


Figure 1: SERVQUAL model

Source: Parasuraman et al. (1988)

The gap number 5 refers to discrepancies between quality expected and quality perceived by a consumer, which had been studied by standards of the SERVQUAL approach in most current research.

1.4. Perceived Academic Competence

In a quickly changing competitive environment, the reputation of the university is necessary to the recognition or subjective and collective evaluation of stakeholders to the university, which explains their attitudes, views, trust level, evaluations, admiration, good feelings, and appreciation of the university from time to time as a result of the university's past actions (LUPIYOADI, 2016). When students have experience in the university, they can form a type of reputation, which is academic competence, it is one of the important reputation factors (ALESSANDRI et al., 2006). Academic competence deals with the education quality of the university, the ability to attract highly motivated and intelligent students, and the rate of having successful alumni. The current study adopted the notion of academic competence that was confirmed by the measurements of ARPAN et al. (2003), ALESSANDRI et al. (2006), and TELCI and KANTUR (2014). Academic competence is consistent with the principles of the resource-based theory. According to this theory, a firm's reputation is based on the perception of its stakeholders' (students) about the quality and uniqueness of its resources, including its people, processes, products, and brands (DEEPHOUSE, 2000).

1.5. Students' Affective Commitment

In the context of higher education, the nature and type of a student's commitment towards their institution considered as a crucial factor in creating, fostering, and sustaining social connections between the student and the institution (BOWDEN, 2013). Students' affective commitment refers to the quality of relationships students have with their faculty members. For students and their institutions to develop strong relationships, there should be a mutually beneficial arrangement in place (DAGGER et al., 2011). The students' affective commitment is based on the student-faculty relationship quality approach, its definition is varied depending on the study context. A relational perspective to higher education that emphasizes continual exchanges between students, organizations, and academics is a useful analytical lens that is increasingly being used by researchers writing about the field (BOWDEN, 2013). Additionally, the development of strong relationships between students and their academics must be mutually beneficial to both squads. The concept of students' affective commitment agrees with the principles of the social exchange theory developed by HOMANS (1958), where the relationship between students and their institution is based on the mutual exchange of resources and benefits such as high-quality teaching. Also, it is in line with the three-component organizational commitment theory formulated by MEYER and ALLEN (1991), especially with the affective commitment concept, which indicated the emotional bonds that existed between two parties (customer and provider). In the current study, the role of students' affective commitment in enhancing their loyalty is sought, as well as the mediation role of the students' affective commitment in the relationship between the service quality factors and students' loyalty.

1.6. International Students' Loyalty

High customer loyalty, which includes student loyalty in higher education services, is a particular point for an organization (QOMARIAH et al., 2020). In the context of higher education, VERHOEF et al. (2002) defined student loyalty as a psychological connection to their universities based on other feelings of identity and affiliation. TINTO (1993) defined it as an attitudinal and behavioral commitment toward an organization. Regarding the special character of student loyalty, the explanation provided by OLIVER (1999) is adapted as a greatly held commitment to repeat selection of a higher education institution for

academic requirements in highly competitive options. GINER and RILLO (2016) and SCHLESINGER et al. (2017) even argued that loyalty can refer to the period students were registered at the university as well as the time after the student has graduated. According to the behavioral loyalty theory, consumers stay with a business because of routine or habit rather than a strong emotional bond. Consumers who exhibit behavioral loyalty are more inclined to stick with a certain business as long as it's convenient and the goods or services are what they require. According to the attitudinal loyalty theory, which speaks about the emotional bond a client has with a specific brand or business that motivates them to want to keep doing business with it (DAY, 1976). BALDINGER and RUBINSON (1996) stated their opinion that brand loyalty may be better understood by expanding the behavioral definitions of loyalty to include attitudes (along with behavior) for assessing loyalty. Attitudinal loyalty is different from behavioral loyalty in that it is based on a customer's beliefs, values, and attitudes toward a business or brand. Increased client spending, improved customer retention rates, and favorable word-of-mouth recommendations can all result from attitudinal loyalty. In the current study, student loyalty agrees with the attitudinal loyalty theory that highlighted the loyalty of customers comes from their fully internal conviction toward the brand, and from instilled emotional bonds to the brand.

1.7. The Higher Education System in Hungary

In terms of the higher education system, in 2003, Hungary began preparing for and subsequently implementing the multi-cycle degree system (Bologna system). The majority of degree programs and every higher education institution in Hungary were involved in the change (DERÉNYI, 2010). According to DERÉNYI (2022), the long-standing higher education system in Hungary consists of 25 colleges and 39 universities, of which 10 are universities of applied sciences. Six universities are run by churches, 18 are privately owned, and 5 are state-run. There is a difference between universities, colleges, and universities of applied sciences regarding some aspects, including the number of qualified instructors, levels of training, and number of courses. Additionally, there are differences in the training material and concentration between a university and an applied sciences university: the latter is more practice-oriented. The majority of colleges are small, private, or religious organizations that offer theological education to different faiths and denominations. Only one minor public college exists (Table 1).

Table 1: Classification of Higher Education Institutions in Hungary

		University	University of applied sciences	College	Total
State-maintained		5	0	1	6
Not state-maintained	Privately operated	18	8	7	33
	Operated by church	6	2	17	25
Total		29	10	25	64

Source: Derényi (2022)

1.8. The Proposed Study Model

I highlighted several theories to rely on in order to form the hypotheses of the study and propose its model. The first theory represents the SERVQUAL model proposed by PARASURAMAN et al (1988). Its purpose is to differentiate between what customers expect and what they perceive. The second theory followed in the current study is the resource-based view theory, which indicates that the reputation of higher education institutions is based on the perception of its stakeholders' (students) about its quality. The third theory is the Social Exchange Theory (SET), which indicates the social behavior of humans regarding the mutual benefits between two parties or more. Also, the three-component organizational behavior theory is in line with the current study where the affective commitment is one of the factors it proposed. The fourth theory is attitudinal loyalty, which indicates that the truly loyal person is who has emotional bonds with the brands. Figure 2 represents the proposed model of the study.

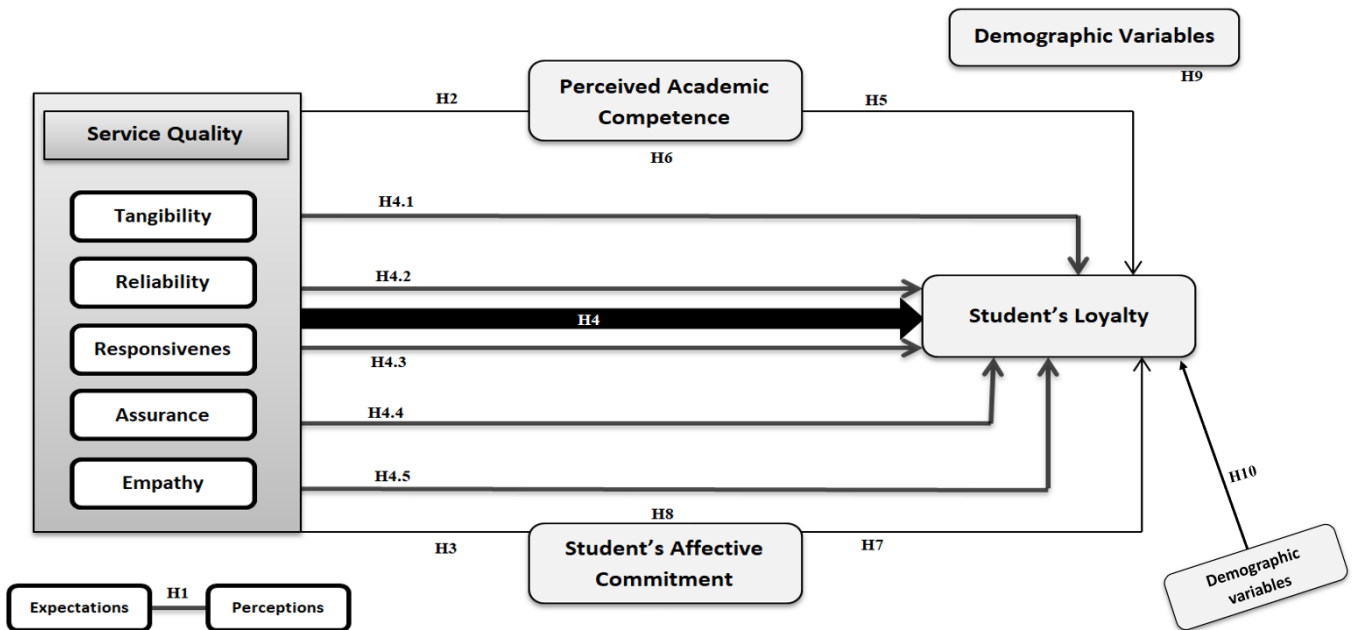


Figure 2: The Proposed Study Model

Source: Author's own compilation

1.9. Research Hypotheses

The hypotheses of the study are as followed:

- H1: There are negative significant gaps between the expectations and perceptions of international students (expectations are higher than perceptions) related to tangibility (H1.1), reliability (H1.2), responsiveness (H1.3), assurance (H1.4), and empathy (H1.5) dimensions of service quality in higher education institutions in Hungary.
- H2: Service tangibility (H2.1), reliability (H2.2), responsiveness (H2.3), assurance (H2.4), and empathy (H2.5) quality dimensions have a positive direct impact on academic competence perceived by international students in higher education institutions in Hungary.
- H3: Service tangibility (H3.1), reliability (H3.2), responsiveness (H3.3), assurance (H3.4), and empathy (H3.5) quality dimensions have a positive direct impact on international students' affective commitment in higher education institutions in Hungary.
- H4: Service tangibility (H4.1), reliability (H4.2), responsiveness (H4.3), assurance (H4.4), and empathy (H4.5) quality dimensions have a positive direct impact on international students' loyalty in higher education institutions in Hungary.

- H5: Perceived academic competence has a positive direct impact on international students' loyalty in higher education institutions in Hungary.
- H7: International students' affective commitment has a positive direct impact on their loyalty in higher education institutions in Hungary.
- H6: Perceived academic competence plays a mediating role in explaining the relationship between service quality dimensions, i.e., tangibility (H6.1), reliability (H6.2), responsiveness (H6.3), assurance (H6.4), and empathy (H6.5) and international students' loyalty in higher education institutions in Hungary.
- H8: International students' affective commitment plays a mediating role in explaining the relationship between service quality dimensions, i.e., tangibility (H8.1), reliability (H8.2), responsiveness (H8.3), assurance (H8.4), and empathy (H8.5) and international students' loyalty in higher education institutions in Hungary.
- H9: Specific demographic groups of international students based on gender (H9.1), age (H9.2), level of study (H9.3), year of study (H9.4), student status (H9.5), university (H9.6), and field of study (H9.7) have significantly different perceptions toward service quality, perceived academic competence, affective commitment, and student loyalty.
- H10: Specific demographic variables, including gender (H10.1), age (H10.2), level of study (H10.3), year of study (H10.4), student status (H10.5), university (H10.6), and field of study (H10.7) have a significant impact on the international students' loyalty.

2. MATERIAL AND METHODS

2.1. Research Philosophy, Approach, and Methods

The study aims to measure the effect of the SERVQUAL dimensions on the perceived academic competence, affective commitment, and student loyalty, therefore I adopted the positivism philosophy and deductive approach, where the researcher relies on existing theory to develop hypotheses. Also, the study utilized a mixed-methods approach to achieve its objectives. To formulate the research hypotheses, a qualitative approach was employed to gather information about the research variables and context through the previous studies. Based on information from TEMPUS PUBLIC FOUNDATION (2021), there are 64 higher

education institutions in Hungary that have been officially recognized by the State. And the number of international students in Hungary according to Hungarian Central Statistical Office (2020) is 37,071. Subsequently, a self-administered questionnaire based on existing literature has been designed to collect data from the sample of research. The data were collected online using a Google Forms questionnaire, through distributing the questionnaire via social media platforms, including Facebook groups and WhatsApp, in international student groups, and a private message was sent to a large number of international students of the five Hungarian universities. Two of five universities have helped distribute the questionnaire to their international students, the University of Debrecen has sent the questionnaire to the international students via email on the university electronic system (Neptun), and the University of Pécs communicated with its international students through email via a newsletter inviting them to fill out the questionnaire. The data gathering process was fulfilled in about three and a half months, from 03 January 2022 to 14 April 2022. Figure 3 explains the methodology of the study.

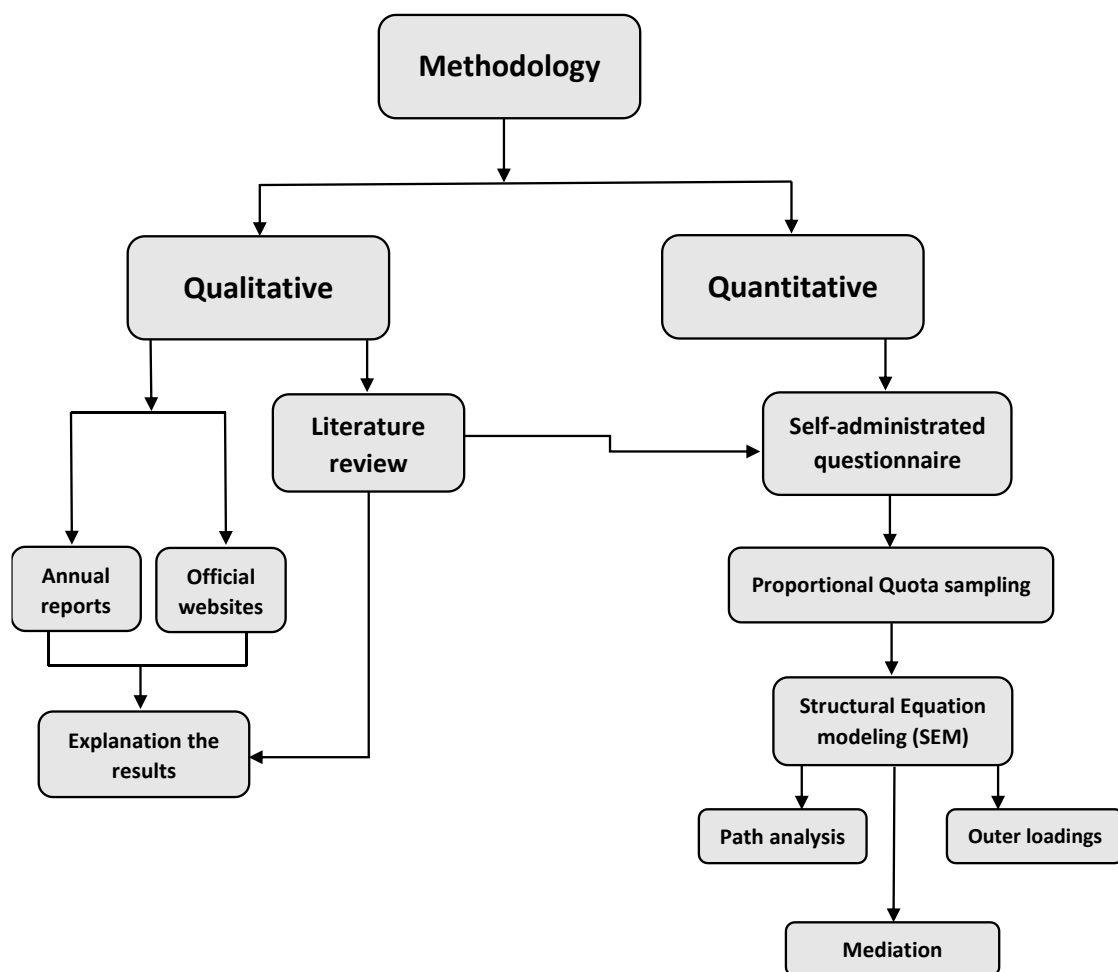


Figure 3: Study Methodology

Source: Author's own construction

2.2. Sampling Design

According to BRYMAN (2016), some guidelines have been determined to perform quota sampling. The first step is determining the subgroups; the subgroups in the current research have been determined as follows: university, gender, and level of study. They have been chosen based on the data available. Secondly, decide proportions where the population of the study has been distributed according to the subgroups. In the third step, selecting the sample size, the target population of the study is 20,522 students. ROSCOE (1975) proposed a set of population sizes and their corresponding sample sizes to obtain meaningful results, population ranging from 10,000 to 50,000 has a sample size of 381, I used this range to arrive at the minimum sample size required. The fourth step is the survey according to quotas, the researcher conducts the survey on the participants until the predetermined quota is met.

To provide the study sample, the biggest five higher education institutions were determined based on the number of their international students and the best Hungarian universities according to QS World University Rankings 2021, which standards resulted in the same five universities (University of Debrecen, University of Pécs, University of Szeged, Eötvös Loránd University, Budapest University of Technology and Economics).

The population of the current research is the international students studying in Hungarian universities for Tertiary level vocational training, BA/BSC programs, MA/MSc programs, One-tier training programs, Postgraduate specialization programs, and PhD (DLA) programs. According to the HUNGARIAN CENTRAL STATISTICAL OFFICE (2020), the number of foreign students studying in Hungarian higher education institutions was 37,071 students in 2020 (when the study started), the number of international students studying at the five target universities was 20,522 that represents 54.6% of the total number.

Table 2 shows the five chosen universities and their population distribution attributed to gender and level of study.

Table 2: Population Distribution Attributed to Gender and Level of Study

Universities	UD	UP	US	ELTE	BME	Total
Variables						
Number of international students	6,126	4,170	4,087	3,606	2,533	20,522
Rank in QS World University Rankings 2021	2	4	1	3	5	-

Universities		UD	UP	US	ELTE	BME	Total
Gender	Male	3,409 (55.64%)	2,056 (49.30%)	1966 (48.10%)	1487 (41.23%)	1708 (67.43%)	10,626
	Female	2,717 (44.35%)	2,114 (50.69%)	2121 (51.89%)	2119 (58.76%)	825 (32.57%)	9,896
Tertiary level vocational training programs		13	4	56	1	0	74
BA/BSc programs		2,755	1,422	1,560	2,290	1,461	9,488
MA/MSc programs		782	304	413	845	675	3,019
One-tier programs		2,283	2,205	1,681	63	186	6,418
Postgraduate specialization		14	12	58	35	9	128
PhD (DLA) programs		279	223	319	372	202	1,395

Notes: UD: University of Debrecen, UP: University of Pécs, US: University of Szeged, ELTE: Eötvös Loránd University, BME: Budapest University of Technology and Economics

Source: Hungarian Central Statistical Office (2020), QS (2021)

Table 3 shows the distribution of the planned sample size according to university and gender, and Table 4 according to level of study. The tertiary vocational training and postgraduate specialization have low numbers of international students; therefore, they have been merged into the closest levels of study (BA/BSc and PhD, respectively).

Table 3: Distribution of the Planned Sample According to University and Gender

University	Number of international students	Final sample	Gender		Final sample	
			Male	Female	Male	Female
UD	114 (30%)	148	63	51	79	69
UP	77 (20.31%)	135	38	39	66	69
US	76 (19.91%)	79	37	39	43	36
ELTE	67 (17.57%)	67	28	39	33	34
BME	47 (12.34%)	50	32	15	40	10
Total	381 (100%)	479	198	183	261	218

Notes: UD: University of Debrecen, UP: University of Pécs, US: University of Szeged, ELTE: Eötvös Loránd University, BME: Budapest University of Technology and Economics

Source: Author's own calculations based on Hungarian Central Statistical Office (2020)

Table 4: Distribution of the Planned Sample According to Level of Study

Level of study	Number of international students	Final sample
BA/BSC programs	178 (46.23%)	157
MA/MSc programs	56 (14.71%)	123
One-tier programs	119 (31.27%)	49
PhD (DLA) programs	28 (7.87%)	150

Total	381	479
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Source: Author's own calculations based on Hungarian Central Statistical Office (2020)

2.3. Instruments and Procedures

The data were gathered through a structured questionnaire which covers four areas: the service quality represented by the students' expectations of the university before beginning their studies and students' perceptions (actual experience), in addition to students' loyalty, academic competence, and affective commitment. Finally, respondents' background information was asked which represent the demographic variables (gender, age, nationality, level of study, year of study, student status – i.e., self-financed or scholarship student, university name, and field of study).

2.4. Research Constructs and Variables

The constructs of the study include the dimensions of the SERVQUAL model which are tangibility (TY), reliability (RY), responsiveness (RS), assurance (AE), and empathy (EY) in addition to students' loyalty (SL) as well as perceived academic competence (AC) and students' affective commitment (SA) as mediator variables. Based on PARASURAMAN et al. (1988), the construct perceived service quality with its five dimensions (tangibility, reliability, responsiveness, assurance, and empathy) are calculated in the form of difference scores using the formula $Q = P - E$, where Q = perceived service quality, P = perceived performance, E = expected performance; then the calculated values could be negative, positive, and zero, where zero separates good quality from bad quality. Then, the mean of each item (question) was calculated.

In the current study, the PLS (Partial Least Squares) method is adopted. The PLS doesn't assume the normality of data (VINZI et al., 2010). Thus, it is a useful strategy to achieve structural equation modeling, especially, when the data normality is not confirmed and the prediction of the dependent variable is not clear (WONG, 2013).

2.5. Pilot Study

Thirty international students filled out the questionnaire for the purpose of ensuring its reliability and validity. The thirty students had no criteria to be chosen, and most of them

were from the University of Debrecen from different faculties using online social media platform which is WhatsApp groups of the international students.

Table 5 shows the results of the reliability and validity tests.

Table 5: Cronbach's Alpha and Composite Reliability Values (N=30)

Constructs	Cronbach's Alpha	Composite reliability	Average variance extracted (AVE)
TY	0.886	0.914	0.681
RY	0.895	0.917	0.652
RS	0.910	0.915	0.611
AE	0.846	0.854	0.551
EY	0.888	0.914	0.688
AC	0.849	0.897	0.646
SA	0.886	0.929	0.813
SL	0.912	0.931	0.660

Notes: TY: Tangibility, RY: Reliability, RS: Responsiveness, AE: Assurance, EY: Empathy, AC: Perceived Academic Competence, SA: Students' Affective Commitment, SL: Students' Loyalty
Source: Based on author's calculations (2022)

Based on the results, we can conclude that all values of Cronbach's alpha and composite reliability tests are higher than 0.70, thus, values have high reliability. And regarding average variance extracted, the findings indicate that all values exceed 0.5, ranging from 0.551 to 0.813 which are acceptable ratios. Additionally, Heterotrait-Monotrait (HTMT) ratio was performed to quantify the degree of similarity between latent variables or constructs, the findings indicate that all values are below 0.90, with the exception of four values that exceed 0.90 but are smaller than 0.95, which indicates that the discriminant validity is not high but it is adequate. The values of the four tests of the reliability and validity of the scale have been achieved after removing nine items (AC1, AC7, AE3, AE4, EY1, EY7, RS4, RY7, RY8) because the factor loading indicators on the assigned construct were lower than loadings of some other constructs. According to the results of the internal consistency, convergent validity, and discriminant validity, it can be said the questionnaire items are reliable, have convergent validity, and have adequate discriminant validity. I decided to collect data with all 52 items because the change of the AVE values after removing the items is not high. The reliability and validity of the items will be checked again after the final analysis.

3. MAIN FINDINGS OF THE DISSERTATION

3.1. Descriptive Analysis

The scores for the constructs in the valid dataset range from 4.7 to 5.6 for the SERVQUAL factors for both expectations and perceptions that were measured using a 7-point Likert scale. Regarding the other constructs that used a 5-point Likert scale, the scores ranged from 3.3 to 3.8. The dependent variable students' loyalty (SL) has a mean value of 3.6 and the standard deviation is 0.9. The mediating variable, perceived academic competence (AC) has a mean value of 3.7 and the standard deviation is 0.69, which indicates that the perception about the academic competence is high, while the other mediating variable, i.e., students' affective commitment (SA) has a mean value of 3.3 with a standard deviation 1.03, so it is possible to say that students' sense of belonging and connection to their educational teachers and staff are moderate.

Regarding service quality's five factors, perceived tangibility (PTY) has a mean value of 5.0 and the standard deviation is 1.25, which indicates a very good perception; perceived reliability (PRY), responsiveness (PRS), assurance (PAE), and empathy (PEY) have almost the same mean value of 4.88, 4.82, 5.20, and 4.77, respectively. It is noticeable that the perception of students about the service quality for its five factors is above the average (4 on the 7-point scale). In addition, one of the study's objectives is to measure the expectations of international students in order to measure the SERVQUAL model. We can notice that the means of all five expectation constructs (expected reliability (ERY), responsiveness (ERS), assurance (EAE), and empathy (EEY)) are ranging from 5 to 6, which indicates that the expectations of international students are above the average 4 and it means high expectations. This result gives a signal of the nature of negative differences between the international students' expectations and perceptions toward the service quality of higher education institutions in Hungary; i.e., perceptions fall short of expectations.

3.2. Reliability and Validity of the Measurement Model

HAIR et al. (2016) suggested a systematic method for evaluating the measurement model. Various tests are used to assess the loading, consistency, distance, and differences between items and variables in the conceptual framework. Indicator reliability (outer and cross-loading), internal consistency (composite reliability), convergent validity (AVE value),

discriminant validity (AVE numbers, and latent variable correlations), and collinearity analysis are the primary stages.

3.2.1. Indicator Reliability, Internal Consistency, and Validity of Research Variables

The proposed design model has proper loadings above 0.708 for all items except five (AC7, EY1, RS4, TY3, and TY4). The five items that were found to be weak were removed from the final analysis. Every construct's item must be consistent and represent the same idea, which means internal consistency. The results of reliability tests of all of the study's major constructs have a satisfactory level of reliability. All of the results for composite reliability are between 0.892 and 0.957, indicating sufficient internal consistency. Cronbach's alpha reliability scores ranged from 0.821 to 0.947, indicating that internal consistency is adequate. The dataset is internally reliable and extremely consistent because all of the values are over 0.70. Convergent validity which means the degree of similarity between variables in the same construct was tested by the AVE values, the results reveal that all values are in the range of 0.612 to 0.872, which is a safe level above the 0.5 criterion. As a result, the dataset is free of convergent validity problems and is suitable for further analysis.

Furthermore, discriminant validity measures the extent of non-relatedness between variables, whereas convergent validity indicates the extent of relatedness. For this research, two tests were conducted, the Fornell–Larcker matrix and the cross-loading test. The Fornell & Larcker criterion matrix is a refined matrix of the correlations of the latent variables. If the value in the diagonal is greater than any other number in the crossing column and row, the test is successful (FORNELL & LARCKER, 1981). The constructs in the study had a sufficient enough level of discriminant validity based on the matrix. Cross-loading scale was used to ensure that the loading within the associated construct is higher than any other loading in the remaining constructs for each item (HAIR et al., 2016; HULLAND, 1999). All items comply with the stated rule and every item has a sufficient loading in its encompassing variable, which is higher than any loading in the other variables.

3.3. Relationships and Effectiveness of the Structural Model

3.3.1. Evaluating the Differences Between Expectations and Perceptions

Table 6 shows the main gaps of the five factors of the SERVQUAL model, and based on the findings, the results indicate that in all five SERVQUAL dimensions, there were negative quality gaps. The most and least negative quality gaps were in the responsiveness (RS) and assurance (AE) dimensions, respectively.

Table 6: Mean Scores of Students' Expectations, Perceptions, Gap Score, and p-Value (N=479)

Variable	Mean (perceived)	Mean (expected)	Gap score	p-value
Tangibility	5.002	5.432	-0.430	<0.001
TY1	4.730	5.367	-0.637	<0.001
TY2	4.989	5.459	-0.470	<0.001
TY3	5.204	5.354	-0.150	0.003
TY4	5.311	5.417	-0.106	0.034
TY5	4.774	5.563	-0.789	<0.001
Reliability	4.886	5.494	-0.608	<0.001
RY1	4.832	5.588	-0.756	<0.001
RY2	4.695	5.480	-0.785	<0.001
RY3	4.981	5.528	-0.547	<0.001
RY4	4.864	5.461	-0.597	<0.001
RY5	4.872	5.367	-0.495	<0.001
RY6	4.931	5.519	-0.589	<0.001
RY7	4.989	5.513	-0.524	<0.001
RY8	4.908	5.480	-0.572	<0.001
Responsiveness	4.826	5.471	-0.644	<0.001
RS1	4.732	5.386	-0.653	<0.001
RS2	4.732	5.455	-0.722	<0.001
RS3	5.043	5.536	-0.493	<0.001
RS4	4.764	5.446	-0.683	<0.001
RS5	4.872	5.473	-0.601	<0.001
RS6	4.770	5.402	-0.633	<0.001
RS7	4.956	5.561	-0.605	<0.001

Variable	Mean (perceived)	Mean (expected)	Gap score	p-value
RS8	4.724	5.494	-0.770	<0.001
Assurance	5.204	5.615	-0.411	<0.001
AE1	5.691	5.933	-0.246	0.003
AE2	4.903	5.413	-0.509	<0.001
AE3	5.365	5.630	-0.265	0.003
AE4	5.020	5.557	-0.537	<0.001
AE5	4.924	5.450	-0.526	<0.001
AE6	5.336	5.626	-0.290	0.001
AE7	5.192	5.697	-0.507	<0.001
Empathy	4.771	5.367	-0.596	<0.001
EY1	5.304	5.678	-0.374	<0.001
EY2	4.749	5.277	-0.528	<0.001
EY3	4.705	5.300	-0.595	<0.001
EY4	4.563	5.244	-0.681	<0.001
EY5	4.705	5.317	-0.612	<0.001
EY6	4.722	5.359	-0.637	<0.001
EY7	4.651	5.398	-0.752	<0.001

Notes: TY: Tangibility, RY: Reliability, RS: Responsiveness, AE: Assurance, EY: Empathy, AC: Perceived Academic Competence, SA: Students' Affective Commitment, SL: Students' Loyalty
Source: Based on author's calculations (2022)

3.3.2. Path Coefficients of Proposed Relationships

The path coefficient analysis is shown in Table 7, together with the t statistics and beta values. The research looked at seventeen relationships, with sixteen hypotheses/sub-hypotheses being supported and one being rejected.

Table 7: Path Coefficient Assessment of the Study Constructs (N=479)

Relationship	Hypothesis	Path coefficient	t statistics	p-value	f ²
TY -> AC	H2.1	0.169	4.933	<0.001	0.050
RY -> AC	H2.2	0.282	8.559	<0.001	0.121
RS -> AC	H2.3	0.201	5.758	<0.001	0.068
AE -> AC	H2.4	0.289	7.988	<0.001	0.125

Relationship	Hypothesis	Path coefficient	t statistics	p-value	f ²
EY -> AC	H2.5	0.178	4.918	<0.001	0.051
TY -> SA	H3.1	0.170	4.039	<0.001	0.043
RY -> SA	H3.2	0.215	5.518	<0.001	0.060
RS -> SA	H3.3	0.104	2.770	0.006	0.016
AE -> SA	H3.4	0.297	7.505	<0.001	0.113
EY -> SA	H3.5	0.185	4.748	<0.001	0.047
TY -> SL	H4.1	0.054	3.516	0.039	0.013
RY -> SL	H4.2	0.081	3.516	<0.001	0.024
RS -> SL	H4.3	-0.008	0.385	0.701	0.000
AE -> SL	H4.4	0.084	3.598	<0.001	0.025
EY -> SL	H4.5	0.126	4.890	<0.001	0.066
AC -> SL	H5	0.440	12.878	<0.001	0.417
SA -> SL	H6	0.366	10.790	<0.001	0.337

Notes: Tangibility, RY: Reliability, RS: Responsiveness, AE: Assurance, EY: Empathy, AC: Perceived Academic Competence, SA: Students' Affective Commitment, SL: Students' Loyalty

Source: Based on author's calculations (2022)

3.3.3. Mediating Effect Assessment

In the relationship between the independent variables of service quality factors (tangibility, reliability, responsiveness, assurance, and empathy) and the dependent variable of students' loyalty to higher education institutions in Hungary. Tables 8 and 9 display the mediating role of perceived academic competence (AC) and students' affective commitment (SA), respectively.

Table 8: Perceived Academic Competence (AC) as a Mediator (N=479)

		Direct Effect		Indirect Effect		Total Effect		Status (mediation)
		Path Coeff.	p value	Path Coeff.	p value	Path Coeff.	p value	
AE -> AC -> SL	H7.1	0.084	<0.001	0.127	<0.001	0.211	<0.001	Partial mediation
RY -> AC -> SL	H7.2	0.081	<0.001	0.124	<0.001	0.205	<0.001	Partial mediation

		Direct Effect		Indirect Effect		Total Effect		Status (mediation)
		Path Coeff.	p value	Path Coeff.	p value	Path Coeff.	p value	
RS -> AC -> SL	H7.3	-0.008	0.701	0.088	<0.001	0.080	<0.001	Full mediation
EY -> AC -> SL	H7.4	0.126	<0.001	0.078	<0.001	0.204	<0.001	Partial mediation
TY -> AC -> SL	H7.5	0.054	0.039	0.074	<0.001	0.128	<0.001	Partial mediation

Source: Based on author's calculations (2022)

Table 9: Students' Affective Commitment (SA) as a Mediator (N=479)

		Direct Effect		Indirect Effect		Total Effect		Status (mediation)
		Path Coeff.	p value	Path Coeff.	p value	Path Coeff.	p value	
AE -> SA -> SL	H8.1	0.084	<0.001	0.108	<0.001	0.192	<0.001	Partial mediation
RY -> SA -> SL	H8.2	0.081	<0.001	0.079	<0.001	0.160	<0.001	Partial mediation
RS -> SA -> SL	H8.3	-0.008	0.701	0.038	0.007	0.030	<0.001	Full mediation
EY -> SA -> SL	H8.4	0.126	<0.001	0.068	<0.001	0.194	<0.001	Partial mediation
TY -> SA -> SL	H8.5	0.054	0.039	0.062	<0.001	0.116	<0.001	Partial mediation

Source: Based on author's calculations (2022)

Figure 4 shows the structure equation model.

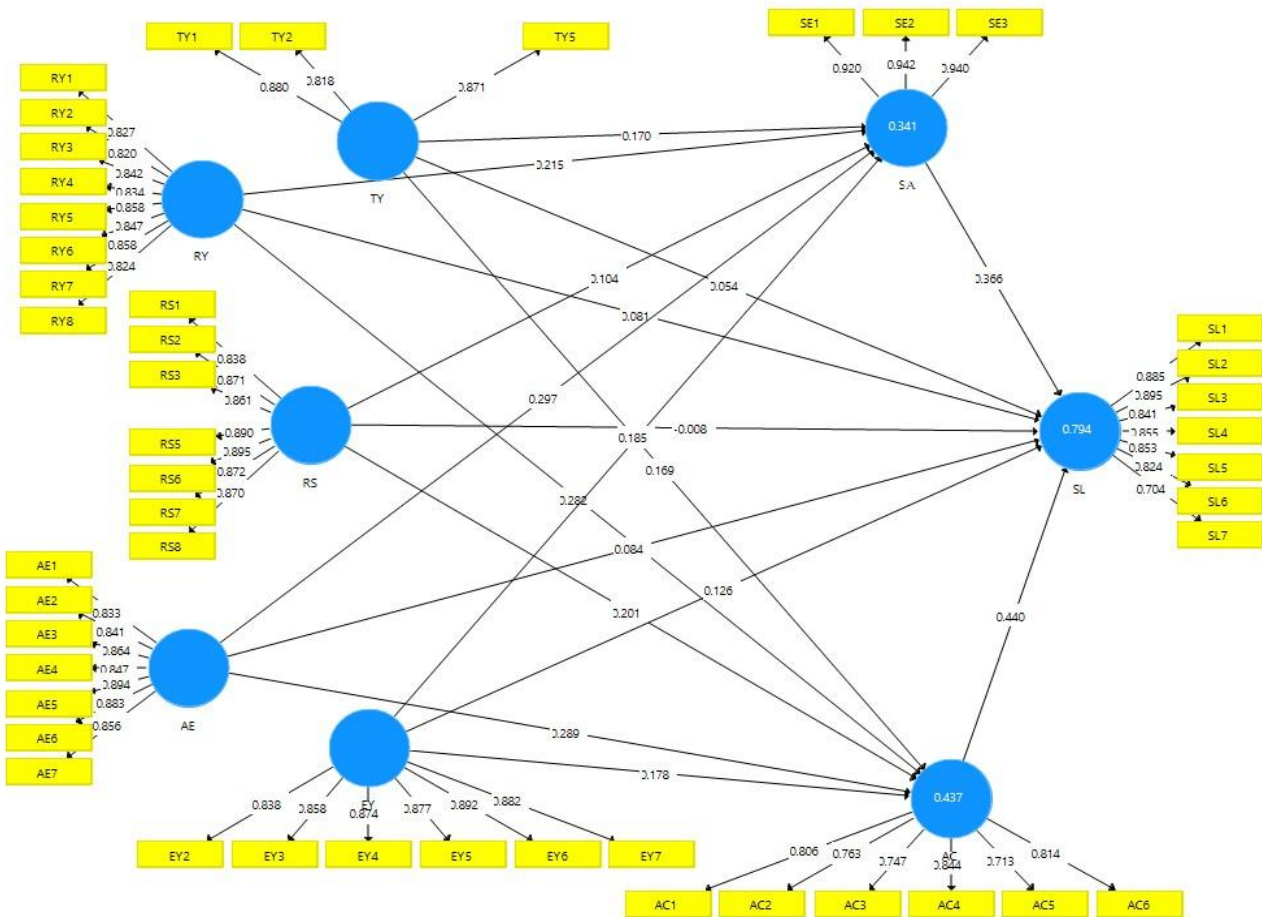


Figure 4: Structural Model Outer Loading Estimates

Source: Based on author's calculations using Smart-PLS (2022)

3.3.4. Measuring the Perception Differences Among Demographic Groups

In order to measure the influence of demographic variables (gender, age, level of study, year of study, student status, university, and field of study), the independent samples t-test and the one-way ANOVA have been used. For variables that have two groups (gender and student status), the differences are measured using the independent samples t-test. Otherwise, the one-way ANOVA is the suitable test to use for the other variables.

The analysis (see Table 10) revealed the significant impact of some demographic variables, most of variables' effects are partially accepted except those of gender and level of study. The perception differences between the male and female groups are not significant toward the study's variables. In terms of age, the differences are remarkable for some constructs, students in higher age groups have more positive responses than the other age categories. Moreover, regarding the level of study, PhD students have better perceptions toward the study's variables.

Table 10: Findings on the Differences based on Demographic Variables (N=479)

	Variable values	TY	RY	RS	AE	EY	AC	SA	SL
Gender	Male	-0.365	-0.606	-0.738	-0.390	-0.561	3.760	3.399	3.694
	Female	-0.508	-0.611	-0.511	-0.436	-0.639	3.804	3.371	3.678
	t value	1.554	0.029	-1.618	0.304	0.542	-0.686	0.296	0.187
Age	18–22 years	-0.476	-0.665	-0.776	-0.570	-0.794	3.711	3.234	3.581
	23–27 years	-0.461	-0.640	-0.621	-0.489	-0.812	3.692	3.262	3.554
	28–32 years	-0.359	-0.733	-0.538	-0.408	-0.313	3.865	3.514	3.749
	33 years & Above	-0.378	-0.279	-0.492	0.040	-0.200	3.958	3.741	4.042
	F value	0.402	1.563	0.837	2.700*	4.724**	3.546*	5.640***	5.987***
Level of Study	Bachelor	-0.424	-0.734	-0.817	-0.471	-0.777	3.736	3.298	3.637
	Master	-0.487	-0.573	-0.555	-0.365	-0.469	3.770	3.368	3.664
	One-tier training	-0.628	-0.755	-0.536	-0.901	-0.851	3.673	2.986	3.344
	PhD	-0.330	-0.455	-0.537	-0.192	-0.416	3.879	3.624	3.889
	F value	1.275	1.014	1.105	2.486	2.091	1.604	5.564***	5.027**
Year of Study	First Year	-0.544	-0.389	-0.507	-0.101	-0.401	3.912	3.440	3.841
	Second Year	-0.320	-0.452	-0.640	-0.369	-0.607	3.831	3.411	3.742
	Third Year	-0.344	-0.906	-0.759	-0.828	-0.789	3.569	3.296	3.442
	Fourth Year	-0.409	-0.849	-0.815	-0.493	-0.608	3.697	3.399	3.614
	Fifth Year	-0.544	-0.946	-0.306	-0.356	-0.920	3.873	3.518	3.746
	Sixth Year	-1.257	-1.662	-0.857	-2.020	-1.204	3.122	2.428	2.836
	F value	1.900	2.835*	0.704	3.809**	1.129	4.559***	1.503	3.627**
Student Status	Scholarship student	-0.360	-0.562	-0.571	-0.241	-0.492	3.852	3.491	3.826
	Self-financed student	-0.594	-0.717	-0.783	-0.806	-0.840	3.615	3.143	3.362
	t value	2.358*	1.016	1.387	3.517***	2.258*	3.450***	3.410***	5.209***
Univer-sity	UD	-0.624	-0.748	-0.790	-0.739	-0.730	3.612	3.011	3.443
	US	-0.326	-0.482	-0.337	-0.001	-0.625	3.918	3.784	3.931
	UP	-0.536	-0.598	-0.870	-0.434	-0.619	3.804	3.380	3.670
	ELTE	-0.056	-0.704	-0.355	-0.213	-0.414	3.895	3.636	3.842
	BME	-0.236	-0.295	-0.385	-0.293	-0.337	3.842	3.553	3.857
	F value	4.925***	1.035	2.851*	3.121*	0.868	3.586**	9.751***	5.091***
Field of Study	Economics & Business	-0.173	-0.491	-0.954	-0.187	-0.271	3.817	3.563	3.842
	Humanities, Social science, & Education	-0.472	-0.385	-0.170	-0.101	-0.468	4.055	3.680	4.006
	Engineering, Manufacturing, & Construction	-0.523	-0.566	-0.560	-0.552	-0.762	3.637	3.182	3.537

	Variable values	TY	RY	RS	AE	EY	AC	SA	SL
	Science, Mathematics, & Computer	-0.363	-0.736	-0.589	-0.248	-0.681	3.845	3.517	3.748
	Medical & Health	-0.569	-0.779	-0.660	-0.623	-0.737	3.673	3.167	3.453
	Agriculture, Environment, & Veterinary	-0.061	-0.293	-1.314	-0.631	-0.193	3.829	3.679	4.071
	F value	2.465*	1.111	3.060**	1.683	1.541	3.991***	4.387***	5.797***

Notes: TY: Tangibility, RY: Reliability, RS: Responsiveness, AE: Assurance, EY: Empathy, AC: Perceived Academic Competence, SA: Students' Affective Commitment, SL: Students' Loyalty, UD: University of Debrecen, UP: University of Pécs, US: University of Szeged, ELTE: Eötvös Loránd University, BME: Budapest University of Technology and Economics

* Significant at $p \leq 0.05$, ** Significant at $p \leq 0.01$, *** Significant at $p \leq 0.001$

Source: Based on author's calculations (2022)

Post-hoc test (also known as a post-doc comparison test), i.e., the Least Significant Difference type is utilized. At this point, what matters is which groups significantly differ from others in terms of the mean. The results of the post-hoc test revealed that there are significant differences between the demographic groups (age, level of study, year of study, university, and field of study).

3.3.5. Measuring the Effect of Demographic Variables on International Students' Loyalty

In this section, the effect of the demographic variables (gender, age, level of study, year of study, student status, university, and field of study) has been tested through the path coefficients using Smart-PLS software. The results indicate that neither demographic variables has significant effect on international students' loyalty except student status (scholarship and self-financed students). Student status has a significant impact on international students' loyalty (path coefficient = -0.157, $p = 0.001$). That indicates that student loyalty decreases by 0.157 when a scholarship student is replaced by a self-financed student.

3.4. Hypotheses Discussion

The study has 10 main hypotheses, the following is the discussion for every hypothesis in a separated section to summarize the previously discussed results.

H1: *There are negative significant gaps between the expectations and perceptions of international students (expectations are higher than perceptions) related to tangibility*

(H1.1), reliability (H1.2), responsiveness (H1.3), assurance (H1.4), and empathy (H1.5) dimensions of service quality in higher education institutions in Hungary.

The mean scores of the 35 questions were compared using item-by-item and factor-by-factor analyses to determine the gaps between students' expectations and perceptions and whether the gap is positive or negative.

The general findings of the gap analyses are negative. All mean gaps for the 35 items are negative and significant at $p \leq 0.05$, which means that all expectations are higher than perceptions. As for the dimensions, all five of them show negative differences between the students' expectations and perceptions, ranging from -0.430 for tangibility to -0.644 for responsiveness. Thus, we can draw the conclusion that students' expectations and perceptions of higher education institutions in Hungary differ significantly, and the service quality of higher education institutions in Hungary is unsatisfactory as perceived by international students. Therefore, H1 with the sub-hypotheses (H1.1, H1.2, H1.3, H1.4, and H1.5) are supported.

H2: Service tangibility (H2.1), reliability (H2.2), responsiveness (H2.3), assurance (H2.4), and empathy (H2.5) quality dimensions have a positive direct impact on perceived academic competence perceived by international students in higher education institutions in Hungary.

The SERVQUAL model contains five service quality factors (tangibility, reliability, responsiveness, assurance, and empathy), and based on the results, they are predictors of perceived academic competence. All the five factors have a significant effect on perceived academic competence. Assurance has the highest effect size with a path coefficient of 0.289. Results, therefore, reveal that the perception of the academic competence in Hungary that is formed by international students during their studies is affected by the service quality factors. As a result, H2 with the sub-hypotheses (H2.1, H2.2, H2.3, H2.4, and H2.5) are supported.

H3: *Service tangibility (H3.1), reliability (H3.2), responsiveness (H3.3), assurance (H3.4), and empathy (H3.5) quality dimensions have a positive direct impact on international students' affective commitment in higher education institutions in Hungary.*

According to the study results, tangibility, reliability, responsiveness, assurance, and empathy have a positive direct impact on students' affective commitment. It indicates that

the students' feelings of wanting to belong or be connected to their educational faculty and staff are influenced by the service quality factors. Accordingly, H3 with the sub-hypotheses (H3.1, H3.2, H3.3, H3.4, and H3.5) are supported.

H4: Service tangibility (H4.1), reliability (H4.2), responsiveness (H4.3), assurance (H4.4), and empathy (H4.5) quality dimensions have a positive direct impact on international students' loyalty in higher education institutions in Hungary.

Based on the results, the service quality factors of tangibility, reliability, assurance, and empathy are considered predictors of the international students' loyalty, while responsiveness is not a predictor of the international students' loyalty. Therefore, students' willingness to recommend, talk positively, reselect and continue studying in the university is influenced by tangibility, reliability, assurance, and empathy. As a consequence, H4 is partially supported, the sub-hypotheses H4.1, H4.2, H4.4, and H4.5 are supported, while the sub-hypothesis H4.3 is rejected.

H5: Perceived academic competence has a positive direct impact on international students' loyalty in higher education institutions in Hungary.

According to the results, perceived academic competence has a strong and direct effect on international students' loyalty in higher education institutions in Hungary. This result is strong evidence that perceived academic competence plays an important role in students' willingness to recommend, talk positively, reselect and continue studying in the university. Overall, H5 is supported.

H6: Perceived academic competence plays a mediating role in explaining the relationship between service quality dimensions, i.e., tangibility (H6.1), reliability (H6.2), responsiveness (H6.3), assurance (H6.4), and empathy (H6.5) and international students' loyalty in higher education institutions in Hungary.

In the proposed conceptual framework, perceived academic competence can mediate all relationships between services quality factors and the international students' loyalty. Four relations out of five are partially mediated by perceived academic competence (tangibility, reliability, assurance, and empathy), while one relation (responsiveness) is fully mediated by perceived academic competence. Therefore, H6 with the sub-hypotheses (H6.1, H6.2, H6.3, H6.4, and H6.5) are supported.

H7: International students' affective commitment has a positive direct impact on their loyalty in higher education institutions in Hungary.

The results show that students' affective commitment has a direct and strong influence on international students' loyalty in higher education institutions in Hungary. As a result, H7 is supported.

H8: International students' affective commitment plays a mediating role in explaining the relationship between service quality dimensions, i.e., tangibility (H8.1), reliability (H8.2), responsiveness (H8.3), assurance (H8.4), and empathy (H8.5) and international students' loyalty in higher education institutions in Hungary.

According to the results, four of the five relationships (tangibility, reliability, assurance, and empathy) are partially mediated by a student's affective commitment because both direct and indirect effects are significant, while the responsiveness and students' loyalty relationship is completely mediated by students' affective commitment. Therefore, it can be said that students' affective commitment mediates all relationships between service quality factors and international students' loyalty. As a result, H8 with the sub-hypotheses (H8.1, H8.2, H8.3, H8.4, and H8.5) are supported.

H9: Specific demographic groups of international students based on gender (H9.1), age (H9.2), level of study (H9.3), year of study (H9.4), student status (H9.5), university (H9.6), and field of study (H9.7) have significantly different perceptions toward service quality, perceived academic competence, affective commitment, and student loyalty.

Based on the results, two sub-hypotheses are rejected attributed to gender (H9.1) and level of study (H9.3), while five sub-hypotheses attributed to age, year of study, student status, university, and field of study (H9.2, H9.4, H9.5, H9.6, and H9.7) are partially supported. Accordingly, hypothesis 9 is partially supported.

H10: Specific demographic variables, including gender (H10.1), age (H10.2), level of study (H10.3), year of study (H10.4), student status (H10.5), university (H10.6), and field of study (H10.7) have a significant impact on the international students' loyalty.

Gender, age, level of study, year of study, university, and field of study have no significant impact on international students' loyalty, while student status has a significant impact on it,

therefore, sub-hypotheses H10.1, H10.2, H10.3, H10.4, H10.6, H10.7 are rejected, while sub-hypothesis 10.5 is supported. So, hypothesis 10 is rejected.

4. NEW AND NOVEL RESULTS OF THE DISSERTATION

4.1. Conclusions

In today's competitive environment, attracting new customers and retaining the existing ones is not an easy process, businesses seek to develop their services, essentially, the quality of their services. It is also true for the higher education sector, which is one of the crucial sectors in society, its role is not limited to offering educational services, but also has been becoming a factor that contributes to the country's economic growth.

The current study used a model that reveals the differences between international students' perceptions and expectations of service quality dimensions as well as the impact of those dimensions (tangibility, reliability, responsiveness, assurance, and empathy) on international students' loyalty, perceived academic competence, and students' affective commitment. The study, in which 479 international students enrolled in the biggest and best five universities in Hungary were involved, also examined the role of perceived academic competence and students' affective commitment as mediators, identifying the variations related to demographic factors as well. The study fulfilled its objectives by using the appropriate statistical tools (Smart-PLS and SPSS) in order to test the hypotheses.

The international students studying at higher education institutions in Hungary have above than average perception of the five factors of the SERVQUAL model (tangibility, reliability, responsiveness, assurance, and empathy), but at the same time, they had high expectations before they enroll in the university, which causes a negative gap between their expectations and perceptions, but the gaps are not high, the highest gap is found to be for responsiveness (-0.?? on a 7 point scale). This result matches with results of ALMEKHLAFI and ABDULGHANI (2022), GOVENDER et al. (2014), IBRAHIM et al. (2013), BOZBAY et al. (2020), and RASLI et al. (2012), the results of all these studies that have applied in higher education sector revealed a negative gap between the students' expectations and perceptions toward the quality of higher education services. This negative direction of the gap indicates an important reality, i.e., students put high expectations before they enroll in their universities, which likely makes their perceptions lower than their expectations; it is possible to say it is

the nature of humans that seek to obtain the best thing they need. In this case, the small negative gaps found in the current study do not reflect high dissatisfaction level; in contrast, big negative gaps would reflect it.

Also, the dimensions of the SERVQUAL model are directly related to perceived academic competence. Therefore, tangibility, reliability, responsiveness, assurance, and empathy dimensions of service quality affect the perception of academic competence that is formed during the students' studies. This result is logical, since when a student has a high perception of the service quality of a university, it reflects positively on the perception of academic competence. In addition, it was also found that the service quality factors contribute positively to the affective commitment of students. The students' emotions of desiring to belong or be related to their educational faculty and staff are vital for the educational environment of the faculty. Based on the results, tangibility, reliability, responsiveness, assurance, and empathy that represent the perceived service quality have significant positive impacts on and can predict the international students' affective commitment to higher education institutions in Hungary. This result agrees with the study of QURESHI et al. (2022), which indicates that service quality contributes to students' affective commitment.

Furthermore, international students' loyalty is predicted and influenced by tangibility, reliability, assurance, and empathy dimensions of service quality, while responsiveness doesn't influence the loyalty of students. Accordingly, good-looking equipment, physical buildings and structure, neatly dressed and groomed employees, and the willingness of the higher education institution to provide and assist services immediately are significant to raise the level of loyalty of the international students. At the same time, the perception of academic competence that is constructed during the students' studies affects the loyalty of international students positively. Besides, findings indicate that when international students are committed affectively, their loyalty grows strongly. Therefore, it is evident that quality service has a notable positive impact on the loyalty of international students. This result supports the findings of prior studies by BORISHADE et al. (2021), MULYONO et al. (2020), and ALI et al. (2016), which found that by enhancing service quality, universities may also increase the loyalty of their international students. This is a top priority for higher education institutions because they compete to attract students who want to enroll in their programs.

Perceived academic competence and students' affective commitment mediates the relationship between service quality factors and international students' loyalty. Based on the results, they have full mediation between responsiveness and students' loyalty; between the other service quality factors and loyalty, they have partial mediation. It is an expected result based on the high importance of these factors as mentioned in the study of QURESHI et al. (2022) and RIBEIRO et al. (2022) that asserted the critical role of affective commitment as a mediator.

The demographic characteristics of the study sample are represented by gender, age, level of study, year of study, student status (scholarship student or not), university, and field of study. The perception differences between the male and female groups are not significant toward the study's variables. In terms of age, the differences are remarkable for some constructs, students in higher age groups have more positive responses than the other age categories. Moreover, regarding the level of study, PhD students have better perceptions toward the study's variables. These results lead to an important conclusion, i.e., higher ages with a higher level of studies indicate the lowest negative gap as well as better perceptions of students. This result is also related to the level of experience the students have, PhD students are usually older than 27 years old, and they may be engaged in the academic work environment before or they are part of an academic staff in their countries, therefore, they are able to evaluate the service quality better, and have better perception about the academic competence, affective commitment, and higher level of loyalty than students in other age groups and at other levels of study. Moreover, the results show that the two groups of student status (scholarship and self-financed students) have significant differences in their perception of the study variables, where the higher perception is for scholarship students. This is an indicator of the significance of the financial factor on the student's perception. Finally, student status is the only demographic variable that affects the loyalty of international students, and when it entered the model, the tangibility becomes insignificant in the influence on international students' loyalty.

4.2. Limitation and Future Research

Limitations of the current study that could serve as bases for future research are as follows.

- First, the study examined the higher education sector with the target population of international students only, studying at five Hungarian universities. Therefore, for future research, researchers may make a comparison between the service quality perceived by Hungarian and international students and their loyalty level studying at those universities.
- Second, as mentioned before, the target population of the study is the international students studying at five Hungarian universities, using a non-probability sample technique. Therefore, for further studies, a larger and preferably probability sample would be favorable, consisting of more Hungarian higher education institutions.
- Third, researchers can apply the same model in various European countries and make a comparative study, it will be a valuable contribution to the topic.
- Finally, the study used two mediator variables, perceived academic competence and students' affective commitment; further variables can also be used and related with the SERVQUAL model. Moreover, other models of the service quality could be applied (e.g., Grönroos model, SERVPERF model) and results of the different models could be compared.

4.3. Novel Results

- The main objectives of the dissertation were to measure the service quality gaps from the point of view of students of various nationalities studying at five universities in Hungary, as well as to measure the effect of service quality factors on their loyalty, the academic competence perceived by them, and their affective commitment; to test the mediation role of perceived academic competence and students' affective commitment; and to measure the perception differences of various demographic groups related to the study's constructs. The novelty of the dissertation's results could be summarized in the following.
- The proposed model proved its validity and reliability to measure the relationships between its constructs using outer loadings (all items have loadings above 0.70), internal consistency (Cronbach's Alpha and composite reliability values for all items >0.70), convergent validity (AVE values for all items >0.50), and discriminant validity (Fornell & Larcker Criterion Matrix provides positive results).

- Service quality dimensions which are the independent variables in the current study (tangibility, reliability, responsiveness, empathy, and assurance) have a significant prediction on the mediators which are perceived academic competence ($R^2 = 0.437$) and affective commitment ($R^2 = 0.341$). Besides, constructs of the study predict international students' loyalty significantly ($R^2 = 0.794$), except responsiveness.
- The perceived academic competence (the perception that was formed during the international student's study about the reputation of academic competence) and affective commitment (that comes from the relationship quality between the staff and international students) were employed as mediators, and they confirmed their ability to play the mediation role, where the significant path coefficient values in the indirect and total effects lead to a partial mediation effect between all but one service quality factors and students' loyalty, and full mediation effect between responsiveness and students' loyalty.
- The proposed model succeeded in evaluating the service quality of Hungarian higher education institutions perceived by international students using the SERVQUAL model, and to the best of the author's knowledge, it is the first study that adopted international students at Hungarian universities as a population of the research in this field. The target population of the study was 20,522 international students and the sample size was 479, consisting of international students from five Hungarian universities (University of Debrecen, University of Pécs, University of Szeged, Eötvös Loránd University, Budapest University of Technology and Economics).
- The study also measures the perception differences of the demographic groups. The findings indicated that international students with higher ages (i.e., 27 years and above) and higher study levels (i.e., PhD) have better perceptions toward academic competence, they have higher level of affective commitment and loyalty, and they have lower negative gaps regarding their expectations and perceptions of service quality dimensions than students in other age groups and at other study levels. Furthermore, among all demographic variables, only student status (scholarship and self-financed students) has a significant impact on international students' loyalty (path coefficient = -0.157, p-value = 0.001).

5. PRACTICAL APPLICABILITY OF THE RESULTS

Based on the results of the study, several recommendations could be presented regarding the service quality and its relationship with perceived academic competence, international students' affective commitment, and their loyalty to higher education institutions in Hungary. The following recommendations are suggested in the context of the present study's results.

1. Regarding tangibility, the gaps between the international students' expectations and perceptions are negative. The perceptions have to exceed expectations; accordingly, decision-makers should focus on making continuous investments in purchasing modern equipment and facilities; moreover, courses, newsletters, etc. should all have better visual appeal, readability, and accessibility for students.
2. In terms of reliability, due to the negative gap, the ability of the academic and support staff to fulfill and deliver promised services precisely and convincingly should be more accurate. In addition, the intention of the university staff with regard to solve the international students' problems should be higher.
3. As for responsiveness, the recommendation based on the negative gap is that students should be informed by the support staff in time when service will be done without delay, furthermore, responding to the students' requests all the time by academic and support staff is very important.
4. With respect to assurance, the full knowledge about the services and activities of the university should be a trait that support staff should have in order to reply to students' queries better. The academic and support staff have a crucial role in raising students' self-confidence, and based on the results, the related questions show large negative gaps. Therefore, it is recommended that when a student asks about a scientific point or a specific procedure, the academic and support staff's reaction should not harm the student's confidence.
5. With regard to negative empathy gap, the most important point is that understanding the specific needs of international students by academic and support staff is certainly important as well as giving individual attention to them, having their best interests, too.

6. Higher education institutions should avoid artificially increasing expectations above the offered service level. For instance, in online advertising campaigns, what they offer for international students should be reflected in the reality, especially when the online campaigns focus on the infrastructure of the university.
7. The six previous points are recommendations related to the service quality factors, it can be said, higher education institutions should care continuously about their service quality, following the continuous improvement approach, such as the Kaizen approach which is a continuous improvement process involving everyone, managers and workers alike (SINGH and SINGH, 2009). Continuous improvement can be achieved by measuring the service quality continuously and improving the weak sides.
8. To raise the perception of international students about the academic competence of the faculty/university, based on the research results, the most important task is to attract highly intelligent and motivated students, since this item had the lowest perception. It is also necessary to focus on the academic quality.
9. The strong relationship between international students and the faculty staff is crucial and essential for higher education institutions, keeping interaction between students and staff is required, and to be more effective, it can be implemented in various forms, e.g., supervisors can invite their students to participate in activities of the faculty (scientific and social events). Logically, the high affective commitment of students enhances their perception of academic competence and their loyalty.
10. The loyalty of international students is not just essential for universities; it is the spirit of the university. In the current study, tangibility, reliability, assurance, empathy, perceived academic competence, and students' affective commitment predict the international students' loyalty, they explain 79.4% of its variance. Since this value is high, I recommend for higher education institutions to concern as much as possible about these predictors to sustain the loyalty of international students, which leads universities to have a competitive advantage.
11. Regarding the data collection process, two universities among the five universities cooperated with me to distribute the questionnaire among their international students. This is a good example of a relatively low level of cooperation between universities and

international students. Therefore, I recommend enhancing the cooperation of Hungarian universities with international students.

12. The study proposed a model that has eight constructs, five of them are independent and represent the service quality, two variables are considered mediators, and one variable is dependent. Based on the results, universities can evaluate the level of the students' loyalty and service quality by adapting this model.

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List of publications related to the dissertation

Articles, studies (5)

1. **Salem, O.**, Kiss, M.: Using the servqual model to assess service quality of internet service providers: evidence from Jordan.
Oradea Journal of Business and Economics. 8 (1), 61-71, 2023. ISSN: 2501-1596.
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5. **Salem, O.**: Social Media Marketing In Higher Education Institutions.
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