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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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The aim of this dissertation is to obtain a doctoral (PhD) degree in the scientific field of „Management and Business"

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DECLARATION

I undersigned (name: **Omar T. O. Salem**, date of birth: 11.07.1991) declare under penalty of perjury and certify with my signature that the dissertation I submitted in order to obtain doctoral (PhD) degree is entirely my own work.

Furthermore, I declare the following:

- I examined the Code of the Károly Ihrig Doctoral School of Management and Business Administration and I acknowledge the points laid down in the code as mandatory;
- I handled the technical literature sources used in my dissertation fairly and I conformed to the provisions and stipulations related to the dissertation;
- I indicated the original source of other authors' unpublished thoughts and data in the references section in a complete and correct way in consideration of the prevailing copyright protection rules;
- No dissertation which is fully or partly identical to the present dissertation was submitted to any other university or doctoral school for the purpose of obtaining a PhD degree.

Debrecen, ……..

Omar T. O. Salem

signature

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List of Abbreviations

AC = Perceived Academic Competence

AE = Assurance

EAY = Expected Assurance

EEY = Expected Empathy

ERS = Expected Responsiveness

ERY = Expected Reliability

ETY = Expected Tangibility

EY = Empathy

HEIs = Higher Education Institutions

PAY = Perceived Assurance

PEY = Perceived Empathy

PLS = Partial Least Squares

PRS = Perceived Responsiveness

PRY = Perceived Reliability

PTY = Perceived Tangibility

RS = Responsiveness

RY = Reliability

SA = Student's Affective Commitment

SEM = Structural Equation Modeling

SL = Student's Loyalty

SPSS = Statistical Product and Service Solutions

SQ = Service Quality

TY = Tangibility

1. INTRODUCTION OF THE TOPIC AND OBJECTIVES

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 new and retain 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, and therefore, 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), 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 different 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 (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 and presented by 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 is 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 institution to others, and selecting the same institution again in the future. 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 the fulfillment of the university's sustainable competitive advantage (LUPIYOADI, 2013). According to ALESSANDRI et al. (2006), the perceived academic competence was extracted from the university reputation concept, which is exclusively applied to higher education institutions field.

ALLEN and MEYER (1990) defined the organizational commitment as the psychological ties that link customers to a businees 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 components model of the organizational commitment, 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 study is to investigate the nature of the gap between the expectations and perceptions of international students studying in Hungary that represent the perceived service quality and to study the link between the perceived service quality and the students' loyalty similarly to the authors of the SERVQUAL model, who confirmed the considerable effect of the perceived service quality on customer's loyalty (ZEITHAML et al., 1996). Furthermore, the study aims at gauging how international students' affective commitment and perceived academic competence predict their loyalty, 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: based on the official statistics, 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), the number of foreign students studying in Hungarian higher education institutions in 2020 was 37,071, and in 2021/2022 it has raised to 40,292 based on the statistics of 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, in the context of international students studying in those institutions. The goals of the research are as follow:

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. Structure of Processing the Research Topic

This dissertation includes six chapters, the current ***first chapter*** entitled the "Introduction of the Topic and Objectives" provides a description of the framework and essential elements of the study (introduction, study's research objectives, and study's research questions). The aim of this chapter is to give an explanation to the essential elements of the study.

The ***second chapter*** falls under the name of "Theoretical Background and Literature Review" which discusses the theoretical framework of the study along with the theories that the current study based on, and discussing the previous studies aiming to describe the variables of the study. Also, the link between the study's variables is presented to develop the hypotheses. This chapter ends with a summary of relevant literature sources and formulating the proposed model.

The ***third chapter*** is "Materials and Methods", in this chapter, I explain the research philosophy and approach embraced in the dissertation. Moreover, it delivers an examination of the research methods, and research design along with the justification for the research population, and techniques of sampling. Then, the pilot study is also discussed with its results. Finally, it introduces the data analysis process along with the statistical tests and the software employed. The aim of this chapter is to design the methodology to meet the objectives of the study.

The ***fourth chapter*** is entitled "Results and Discussion" which is designed to fulfill the objectives of the study, its questions, and its hypotheses. It illustrates the descriptive analysis, reliability and validity results, normality analysis, evaluation of the differences between expectations and perceptions, the path results of the model, the mediation results, and the results of the perceptions differences of the demographic groups, and their effect on international students' loyalty.

In ***chapter five***, "Conclusions and Recommendations," the current study is concluded, and the research objectives and hypotheses are reviewed. Additionally, it emphasizes the key recommendations before summarizing the research limitations and promising directions for future research.

In ***chapter six***, titled "The Major Findings of the Dissertation", new and novel scientific results have been examined.

2. THEORETICAL BACKGROUND AND LITERATURE REVIEW

This chapter provides a comprehensive discussion of various subjects regarding the current research. It describes the essential model, a description of the emerging service quality, the terms used to study the gap between expectations and perceptions of international students studying in Hungarian universities, and factors of SERVQUAL model which are tangibility, reliability, responsiveness, assurance, and empathy are discussed in this chapter as well. Besides, it gives a description of the theories related to the variables of the study, which are service quality, perceived academic competence, affective commitment, and students' loyalty. Finally, the development of hypotheses is described along with the study's proposed model and a summary of the objectives, questions, and hypotheses.

The population of the research is international students studying in Hungarian universities. Therefore, I focus on providing information about the environment of the education system in Hungary including the higher education institutions' system. Furthermore, I pinpoint the gap aimed to be filled by the study along with summarizing the previous studies that used the SERVQUAL model.

2.1. Service Quality

Service quality has gained higher awareness from marketing specialists and academics during the prior few decades (IBRAHIM et al., 2013). Taking the measurement of service quality for various sectors has been one of the most repeated issues in marketing and management science (PARASURAMAN et al., 1988; GRÖNROOS, 1984; CRONIN and TAYLOR, 1992).

PARASURAMAN et al. (1988) described the quality of service as a customer's evaluation of the overall excellence of service. BRINK and BERNDT (2004) defined quality as the measurement of to what extent the companies' products or services meet customers' wants and expectations. It has also been examined as a type of attitude that results from the comparison of expectations with performance, linked but not the same as satisfaction (GARVEN, 1983). GRÖNROOS (1984) defined service quality as the outcome of the comparison of customers of the service performance and service expectations. Services can differ from time to time, moment to moment, from consumer to consumer, and from buyer to buyer because they are heterogeneous in nature (PARASURAMAN et al., 1985).

To realize consumer demands and wants, what they assess, and what they are truly seeking, in marketing, it is essential to comprehend business development and service management theory (KOTLER & ARMSTRONG, 1991). And, in order to satisfy existing customers and attract

new ones, businesses need to understand how customers experience services in order to deliver better services (GHOTBABADI et al., 2015). For that kind of goal, businesses require a specific model to gauge how well customers feel toward the services provided.

Prior to the 1980s, products were the principal component of the marketing process which led to a huge increase in production, the products industries have made the bulk of their efforts in defining and measuring quality. The prevailing Japanese idea holds that quality is "zero" defects, or executing something correctly for the first time (PARASURAMAN et al., 1985). However, during the 1980s, the focus turned to the market and the competitive position rather than products, and the marketing mix was developed, then the focus has been becoming on the service beginning from 2000s (HARWOOD et al., 2008). Figure 1 shows the change of the marketing focus over years.

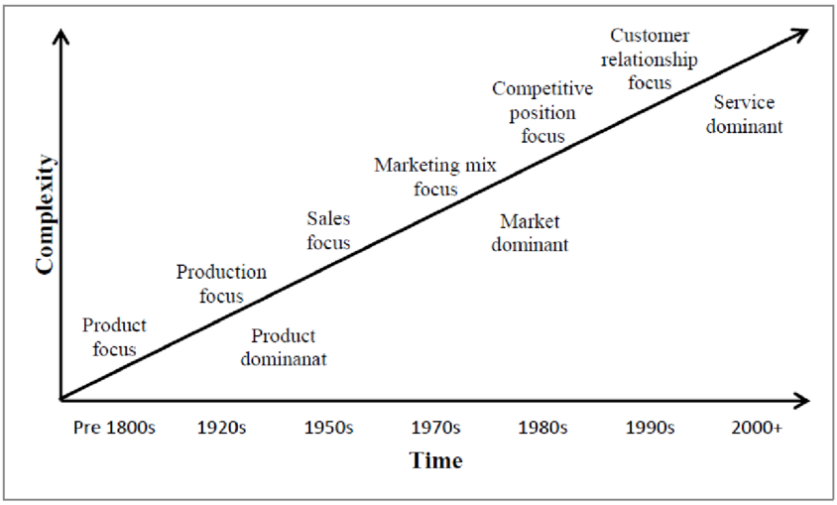

Figure 1: Marketing Focus Change

Source: Harwood et al. (2008)

Due to the intangibility of services, it may be challenging for the business to comprehend how well its offerings are received by customers (ZEITHAML, 1981). There are three types of product attributes: search, experience, and credence attributes. Physical products are high on search and experience attributes. On the other hand, because of the distinctive features of the services and the predominance of experience and credence attributes in them, it is often argued that marketing in the sector of services is somewhat challenging (MOURAD et al., 2011). Credence attributes indicate that the customer cannot readily assess the quality of the service while and after consumption. This is due to the possibility that the customer lacks the knowledge or experience necessary to evaluate the service's quality (DARBY and KARNI, 1973). In contrast, experiential attributes come from the idea that the customer can judge the quality of the service based on their own personal experience (FORD et al., 1990). Finally, search attributes are those that can be assessed well before the purchase.

According to ZEITHAML (1981), there is very few literature sources before 1985 that discusses service quality. She suggested three points: firstly, measuring service quality is a hard process, it is more difficult than measuring the quality of goods; secondly, consumer expectations and actual service delivery are compared to determine perceptions of service quality; and thirdly, quality assessments include evaluations of the service delivery process in addition to the service's final results. The author also mentioned that color, feel, style, hardness, label, package, and fit are just a few of the tangible indicators that consumers use to assess the quality of products while making purchases. Less obvious indicators are present when acquiring services. The majority of the time, tangible evidence is restricted to the service provider's actual properties, tools, and staff (ZEITHAML, 1981).

As a result of these reasons, while there have been models for the quality of physical goods, scientists and researchers acknowledged the necessity of creating a model to measure service quality in particular. In 1985, an exploratory qualitative study was conducted by PARASURAMAN et al. (1985) to research the idea of service quality because the literature on the topic was not yet sufficiently developed to offer a solid conceptual foundation for doing so; this methodology is recommended from the marketing theory developed by DESHPANDE (1983).

To create a conceptual model of service quality for the first time, in-depth interviews with executives and focus groups with consumers were done by PARASURAMAN et al. (1985). As a result of the study, five gaps of the service quality were derived. The gaps are summarized in Figure 2.

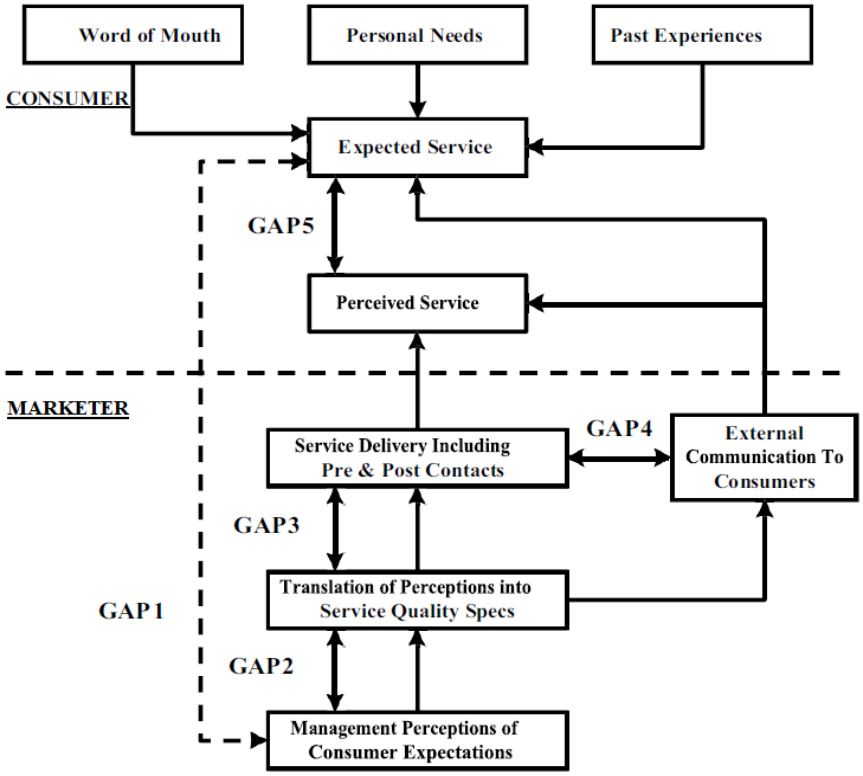

Figure 2: Gaps Diagram

Source: Parasuraman et al. (1985)

The following paragraphs provide a description of the five gaps in service quality.

Gap 1: Not knowing what customers expect (Knowledge Gap)

It is related to what extent the company understands the customer's expectations toward the institution's services. The core point in a lot of companies is that the institutions have no clear understanding of the customer's expectations. Several reasons could cause this misunderstanding between the managers' and customers' expectations, managers may not interact and engage directly and effectively with customers, and as a result, a chain of unsuitable decisions could be made. Therefore, the gap of understanding becomes wider (ZEITHAML et al., 2006).

Gap 2: Not having the right service quality designs and standards (Design Gap)

For offering high-quality service, it is not enough for customers to get true perceptions about service quality. The performance criteria and service designs that represent those correct perceptions are also required. Gap 2 reflects the difference between the institution's understanding of customers' expectations and customer-driven service designs and standards development based on them (ZEITHAML et al., 2006).

Gap 3: Not delivering to service designs and standards (Delivery Gap)

Gap 3 is related to inconsistency between the real service performance by company workers and the developed customer-driven service criteria. Standards should be supported by suitable resources (technology, systems, and people) and should be implemented to be efficient, that is, an employee has to be compensated and evaluated depending on performance along with those criteria. In sum, it is the lack of ability and/or willingness to comply with the standards (ZEITHAML et al., 2006).

Gap 4: Not matching performance to promises (Communication Gap)

This gap describes the difference between outside communications of service providers and service delivery. Sales force, media advertising campaigns, and other various communications created by the service provider might increase the expectations of customers. Then, the difference between the promised and actual service that the customer gets has a negative influence on the customer's gap. Several reasons cause broken promises and extend the gap: overpromising in personal selling or advertising campaigns, inappropriate coordination between marketing and operations (e.g., new promises are already communicated, while employees providing the service do not know about them), and variations in systems and procedures over service outlets (ZEITHAML et al., 2006).

Gap 5: Not matching expected service to perceived service (Customer Satisfaction Gap)

The crucial point to ensure high service quality is meeting and exceeding what customers expect. It is the result of the above-mentioned gaps, and it is the only gap, which 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. Such a perspective is appropriate given the assertion that Gap 5 is a result of the other gaps (WOLNIAK and SKOTNICKA-ZASADZIEN, 2012). The service quality in this gap is measured by five dimensions (reliability, responsiveness, assurance, tangibles, and empathy), which are widely used in several sectors (PARASURAMAN et al., 1988).

2.1.1. SERVQUAL Model

PARASURAMAN et al. (1985) proposed the most used and common model to measure service quality, called the SERVQUAL model. Firstly, ten dimensions have been suggested for the service quality before being developed in 1988 (see Figure 3); eventually, the dimensions have been reduced to five. SERVQUAL model is based on the differences between the expectations and perceptions of service quality through the five dimensions. These five dimensions of service quality proposed by PARASURAMAN et al. (1985, 1988) are reliability,

responsiveness, assurance, tangibles, and empathy, which have become broadly adopted in the past periods in measuring the service quality in various sectors.

PARASURAMAN et al. (1985), ISLAM et al. (2015), and LADHARI (2009) justified why they applied the SERVQUAL model in their studies as the following:

1. By examining the difference between expectations and perceptions, SERVQUAL is a validated and reliable scale that allows organizations to better understand the expectations and perceptions of their customers (PARASURAMAN et al., 1985).
2. The SERVQUAL model is based on the rationale that the service quality level observed could be measured by the difference between the expectations of customers and what they actually receive from the company (ISLAM et al., 2015).
3. The original SERVQUAL model is a general tool that has been used to assess service quality in a number of service-related industries, including banking, fast food, healthcare, education sector, telecommunications, retail chains, information systems, and library services. It has good reliability and validity as well as a wide range of applications. It has been also applied in most countries over the world, particularly the USA, the UK, and Australia (LADHARI, 2009).

PARASURAMAN et al. (1988) employed eleven steps to develop the service quality scale, the steps are shown in Figure 3.

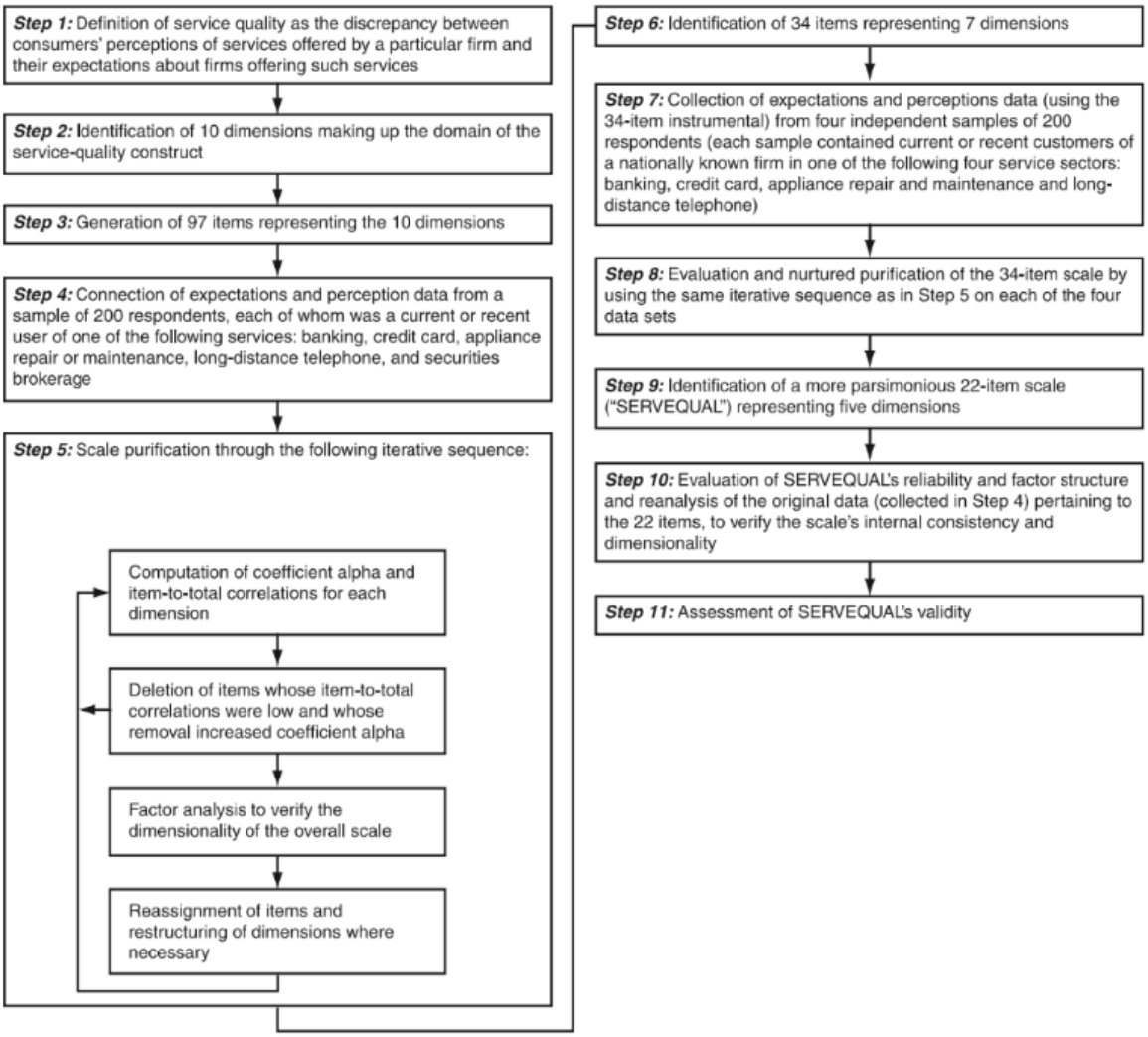

Figure 3: Summary of Steps Employed in Developing the Service Quality Scale

Source: PARASURAMAN et al. (1988)

Figure 4 represents Gap 5 in service quality. As observable, the model has five crucial dimensions (reliability, responsiveness, empathy, assurance, tangibles) that are used to measure the service quality.

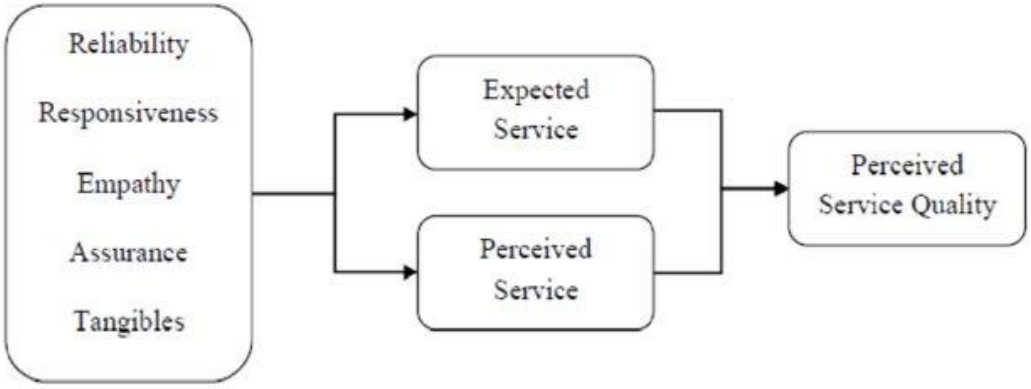

Figure 4: SERVQUAL Model

Source: Parasuraman et al. (1988)

2.1.2. SERVQUAL Factors

The five dimensions of the SERVQUAL model are described as follows:

1. ***Reliability*** is the ability of an institution to fulfill and deliver promised services precisely and convincingly. Institutions have to have the full ability to meet what they promised to the consumers such as what features and specifications of service will be delivered to customers. It also means institutions conduct the service perfectly for the first time. Furthermore, the institution seeks to meet its promises and pay attention to the outcome (PARASURAMAN et al., 1988).
2. ***Responsiveness*** 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). NEWMAN (2001) stated that responsiveness is demonstrated by telling consumers when things would be done, giving them full attention, promoting the service, and exhibiting responses to their demands.
3. ***Empathy*** is giving attention to each customer individually through concern about customers' needs and wants. Each customer is different and has his/her own preferences. Therefore, the enterprise should provide individual concern for each consumer depending on their desires and needs. 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 their consumers (ZEITHAML et al., 1996).
4. ***Assurance*** 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). According to NEWMAN (2001), assurance refers to employees' attitudes and actions, and it reflects the staff's capacity to deliver friendly, discreet, courteous, and proficient service.
5. ***Tangibility*** contains all equipment, staff, physical facilities, and communication materials that enhance the service. Good-looking equipment, physical facilities, and neatly dressed and groomed employees indicate the quality level of the services (PARASURAMAN et al., 1985).

2.1.3. Criticisms of the SERVQUAL Model

Although the SERVQUAL model has many advantages mentioned in the previous section, it also generated criticisms by several scientists and researchers. One of the main theoretical objections as stated by CUTHBERT (1996) is that the service quality = perceptions–expectations is established on disconfirmation instead of the attitudes of customers. The disconfirmation base indicates that the quality of the service doesn't rely on the definitive performance level perceived by customers, it takes into consideration the level expected by the customers, too. The author mentioned a second criticism as well, which is the SERVQUAL model focuses on how service is delivered rather than the final form of the service. GRÖNROOS (1990) also asserted this criticism as confirmed that the SERVQUAL model completely concerns the service-delivery process which is "functional", and it has a lack in measuring the final outcome of the service "technical dimension".

TEAS (1993) aimed to focus on the SERVQUAL model's conceptual and practical problems. The author indicated that the model has questionable validity related to a number of conceptual and definitional problems concerning the expectations' conceptual definition, and theoretical justification of the expectations component of the perception-expectation framework. Similarly, CRONIN and TAYLOR (1992) proposed that the way service quality (SERVQUAL) is conceptualized and implemented is unsatisfactory because it has a weak theoretical basis. They also mentioned that the model is based on observation and intuition instead of a strong theoretical ground.

BROWN et al. (1993) stated that the gap scores' reliability is not adequate and there are issues with variance because the scores' reliability is decreased as the correlation between the factors is raised. Other researchers stated that the discrepancies scores don't give more valuable information than the perception side. For instance, BABAKUS and BOLLER (1992) said that the perceptions score was the major contributor to the gap scores (perception-minus-expectation scores) because consumers had the propensity to rank expectations higher than perceptions.

Moreover, a number of authors have argued that using a single generic scale is inadequate to measure service quality across a variety of service industries and that industry-specific measuring tools may be preferable (BABAKUS and BOLLER, 1992; BROWN et al., 1993). Another objection to the SERVQUAL model stated by CARMAN (1990) is based on the argument that the quality of service is not just multidimensional but furthermore hierarchical.

From my point of view, although the SERVQUAL model has been criticized by different researchers, it is still the most used scale in various industries, to be more specific, it is the

appropriate scale to measure service quality in higher education context because it measures the experiential attributes where students consume services for at least two years studying at the higher education institutions. Furthermore, measuring the expectation side of the customers help the institutions to identify the weaknesses accurately for improvement and set strategies for the improvement of service quality in order to meet or exceed the expectations of customers.

2.1.4. Why Choosing the SERVQUAL Model

Despite the criticisms of the researchers and scientists about using the SERVQUAL model discussed in the previous section, the model has been used in this study because of the following reasons:

- The SERVQUAL model has a high number of citations (above 46,300 in April 2023) on Google Scholar, which indicates its popularity and widespread usage.
- The authors of the model (PARASURAMAN et al., 1988) employed eleven steps to develop the model to ensure the reliability and validity of the scale (see Figure 3).
- Although CUTHBERT (1996) criticized the SERVQUAL model, he recommended using it in the higher education context because the nature of this sector depends on the delivery of service instead of the final result where monitoring the service is required to ensure its quality. The author also mentioned that the real outcome is not just a certificate, the real benefit may just appear after the experience. And to reach a high-quality real outcome, higher education institutions should ensure the high-quality delivering process of the service.
- The SERVQUAL model is used to measure the service quality for different areas, higher education is a popular sector in which the model is applied. Using Emerald Insight search hits by keyword (SERVQUAL, universities, higher education institutions), the number of studies is over 1000, and it is over 4000 studies when using just SERVQUAL as a keyword (April 2023). Fourteen recent studies were added in Table 1 as a small sample of the studies that used the SERVQUAL model in the higher education context.
- Looking deeply at the factors of the SERVQUAL model, they have experiential attributes, which students are able to evaluate while studying. For example, in terms of tangibility, students can assess the physical facilities of the university and the materials provided like magazines and brochures. Also, regarding assurance, students can evaluate the knowledge that the staff has regarding the services of the university, and the same is true for the other factors (reliability, responsiveness, and empathy).

2.1.5. Other Models of the Service Quality

Besides the SERVQUAL model, several researchers and scientists created models to measure the service quality. In this section, I examine several prominent and commonly utilized models for measuring service quality that have gained wide acceptance in the field. The advantages and disadvantages of every model are also discussed.

The Grönroos Model (1984)

GRÖNROOS (1984) developed the first framework for the service quality model. He argued that to achieve success, it is crucial for business owners to comprehend how their customers perceive the services offered. He proposed three aspects of service quality (see Figure 5). The first aspect, referred to as Technical, relates to what customers obtain from a service firm after engaging with them. The second aspect, known as Functional or Process, pertains to how the technical service is delivered to the customer. The third aspect of service quality is referred to as Corporate Image, which represents how the customers perceive the company or brand. The perception of customers toward the institution's service is significant to other customer's expectations. This perception is what shapes the image of the company in the customers' minds. The technical quality and functional quality of the company's services play a crucial role in building this image.

The Grönroos model was the first effort to create a genuine model for evaluating perceived service quality. However, its major drawback was its failure to provide a clear method for assessing technical and functional quality, there is limited empirical evidence to support its validity and reliability, and it fails to consider the customer's perspective. It also has been criticized for failing to capture the emotional aspects of service quality (GHOTBABADI et al., 2015). Later, RUST and OLIVER (1994) improved upon this model by introducing a new dimension, Service Environment, to address this limitation.

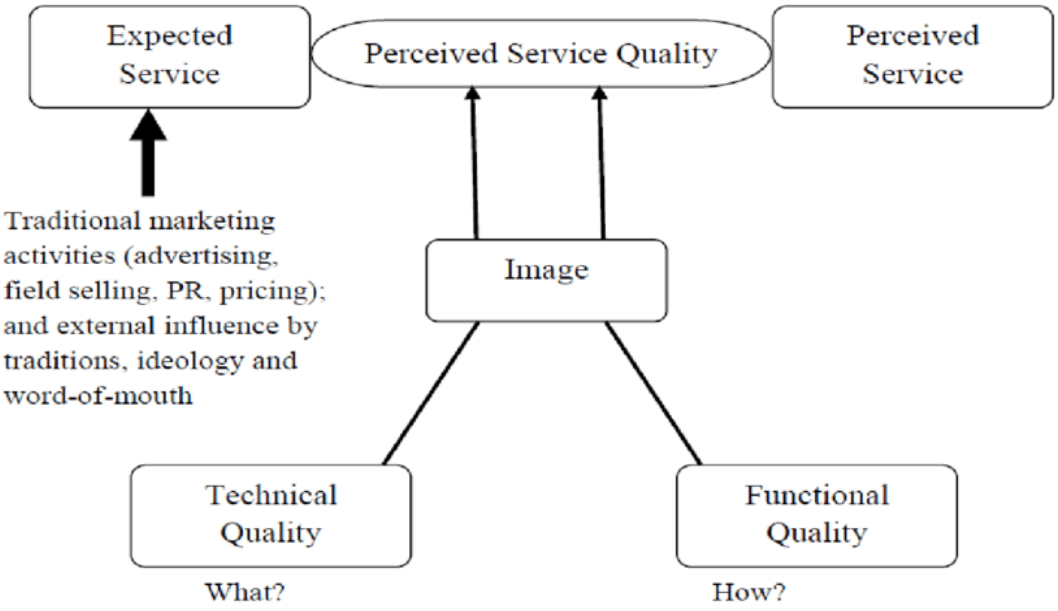

Figure 5: The Grönroos Model of Service Quality

Source: Grönroos (1984)

The SERVPERF Model (1992)

CRONIN and TAYLOR (1992) suggested a model that concerns gauging service performance as the only determinant to assess the quality of services. The goal of the study was to discover the association between three frequently used variables which are service quality, the satisfaction of customers, and customer purchase intention. In their development of the model, they adopted the SERVQUAL model as a reference for the measurement and conceptualization. Their model is known as SERVPERF, it just focuses on the performance side as a measurement tool of service quality. They utilized the same five dimensions as the SERVQUAL model, but they neglected the gap measure. According to their study's outcomes, the SERVPERF scale is more accurate than the SERVQUAL scale.

The main criticism stated by PARASURAMAN et al. (1994) is that the SERVPERF model's exclusive reliance on performance measures for evaluating service quality may fall short of capturing the customers' perceptions of the service. It has been criticized for neglecting the influence of customer expectations on shaping their perceptions of service quality.

The Hierarchical Model of Dabholkar et al. (1996)

DABHOLKAR et al. (1996) noticed that the SERVQUAL and SERVPERF models are not certified for the retail store sector. Therefore, they proposed and examined a novel approach to service quality that involved creating factors and constructions using the SERVQUAL and SERVPERF models. They proposed a new hierarchical structural model for service quality, which built upon previous research and includes different levels of dimensions and sub-

dimensions (Figure 6). Their model comprises three main stages: the overall concept of service quality, which is specifically tailored to the retail industry, primary dimensions that include physical aspects, reliability, personal interaction, problem-solving, and policy, and sub-dimensions that further elaborate on each of these primary dimensions. For instance, appearance and convenience are sub-dimensions of the physical aspect dimension, while promises and doing it right represent sub-dimensions of the reliability dimension, and inspiring confidence and being courteous/helpful are sub-dimensions of the personal interaction dimension. To ensure the model's accuracy and validity, the researchers assessed customer perception and analyzed their responses to prevent any issues with varying scores. However, the model and its components were developed using the disconfirmation method to identify gaps in service quality. Nonetheless, additional proof and further refinement are required for this model to be suitable for wider application in various service sectors (GHOTBABADI et al., 2015).

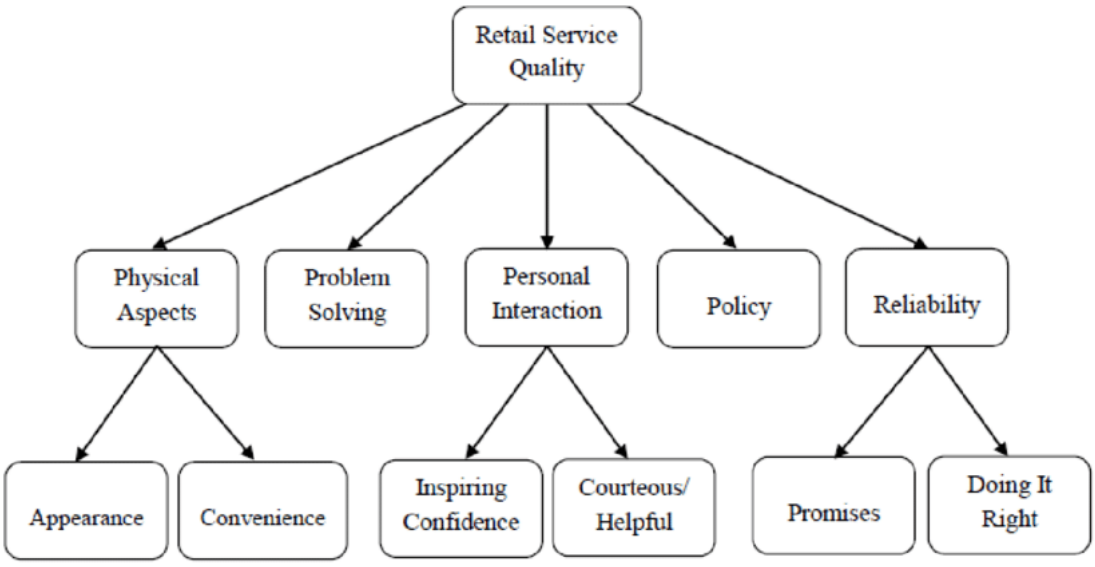

Figure 6: Dabholkar et al.'s Hierarchical Model of Service Quality

Source: Dabholkar et al. (1996)

Hierarchical Model of Brady and Cronin (2001)

BRADY and CRONIN (2001) put forward a developed hierarchical model, building upon earlier models. Their model was influenced by DABHOLKAR et al.'s (1996) concept that service quality perception is complex and has multiple levels. The authors aimed to enhance the SERVQUAL dimensions by redefining them to include reliability, responsiveness, empathy, assurance, and tangibility. BRADY and CRONIN (2001) argued that it is essential to have precise definitions for the SERVQUAL dimensions. Two aspects of GRÖNROOS's (1984) model were incorporated, namely the quality of interaction between consumers and

employees (also referred to as functional quality), and the final result or outcome (also known as technical quality). Additionally, the service environment was included as the third dimension, which was adopted from RUST and OLIVER's (1994) model. The authors proposed three subcategories for each of the three main categories that make up the dimensions of service quality. These subcategories include attitude, behavior, and expertise for the interaction quality dimension; ambient condition, design, and social factors for the environment quality dimension; and waiting time, tangibles, and valence for the outcome quality dimension. By identifying and defining these factors, the authors were able to establish the qualities of reliability, responsiveness, and empathy as outlined in the SERVQUAL model.

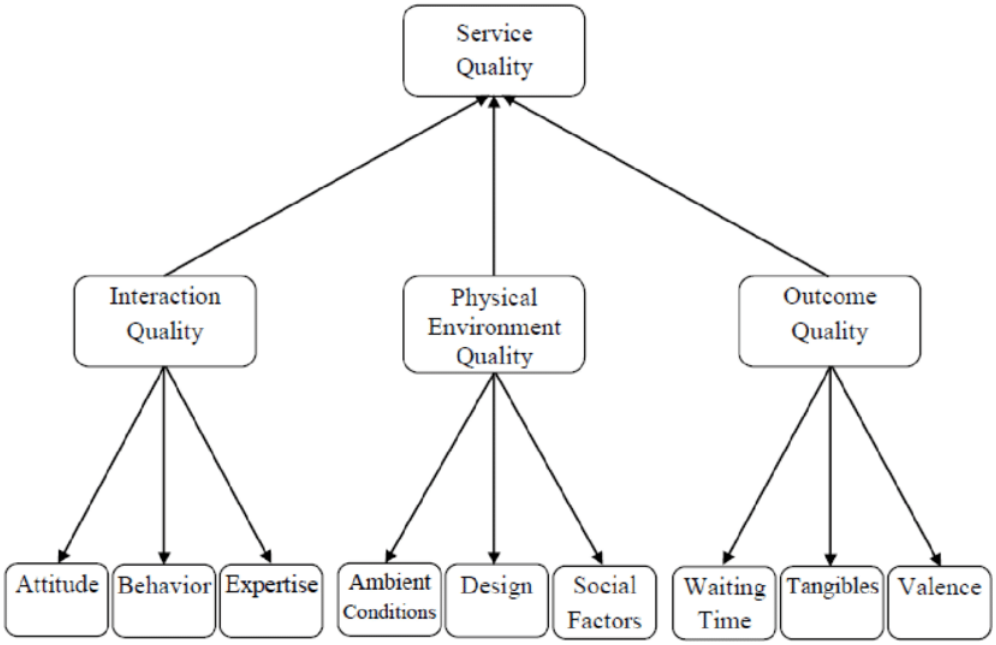

Figure 7: Brady and Cronin's Hierarchical Model of Service Quality

Source: Brady and Cronin (2001)

2.2. Service Quality in Higher Education Institutions

Nowadays, part of the stakeholders of universities could be current and prospective students around the world. Gathering information about student satisfaction supports universities to achieve their goals efficiently because understanding the students' opinions and perspectives helps decision-makers in order to improve their educational programs (HSU et al., 2016).

In recent decades, service quality has been identified as an essential performance measure for educational superiority. AHMED et al. (2010) and DONALDSON and RUNCIMAN (1995) mentioned that service quality is a principal strategic factor for universities to raise their market share and build an influential image in consumers' perceptions. The high quality of higher education institutions perceived by students creates a positive image in their minds that

eventually leads to their satisfaction (ALVES and RAPOSO, 2010). MAZZAROL (1998) asserted higher education institutions have to retain a unique image to sustain a competitive advantage.

OTTO et al. (2016) described that the perception of students of service quality comes before their satisfaction, students' satisfaction could be reached when the perception of service quality is positive, as a result, it might lead to attracting new students over many factors such as positive word of mouth. IACOVIDOU et al. (2009) proposed that quality in higher education is not a unidimensional term and is actually best explained as a group of dimensions. Several studies pursued to measure the quality of service in higher education institutions (ALMEKHLAFI and ABDUL-GHANI, 2022; BOZBAY et al., 2020; QURESHI et al., 2021) by adopting the SERVQUAL model dimensions (responsiveness, assurance, tangibles, empathy, and reliability) developed by PARASURAMAN et al. (1988). The study of RASLI et al. (2012), developed the SERVQUAL model further based on the original scale in order to be university-based regarding the five factors of the model. Using the reliability and validity analysis, the scale adopted 35 questions.

The following paragraphs highlight some previous studies which are related to the current study. In Selçuk University (Turkey), ERDOGAN and ŞIRIN (2022) addressed the vital role of service quality in raising the students' loyalty and their recommendation intentions. The study's findings showed that perceived service quality with its dimensions had positive and significant effects on the students' loyalty as well as favorable and significant effects on their intentions to recommend the institution to others. In a study that was applied at the University of Ishik (Iraq), JAF et al. (2019) showed that the students highly appreciate the service quality of students' affairs at the university.

FAZLI-SALEHI et al. (2019) described and discussed the factors and components of quality perceived by students, then developed a model that is one of the important results of the study. Findings showed that quality of prestige, lecturers, connection with the outside world, extra-curriculum activities, facilities, research potential, design and ambiance, diversity, and responsiveness could be determined as components of perceived quality. According to NKIRUKA and OLANREWAJU (2014), to promote academic excellence, service quality at the higher educational level is mainly required to be achieved.

The study applied in higher education institutions in South Africa by GOVENDER et al. (2012) revealed that there is a gap between international students' expectations and perceptions relevant to the five service quality dimensions of SERVQUAL. The same findings have been discussed in the study of IBRAHIM et al. (2013), but this study applied to Scotch universities.

The study of KRSMANOVIC et al. (2014) illustrated that all dimensions of the SERVQUAL model are close to being negative toward the service quality (expectations were higher than perceptions). Likewise, the findings of the study of ABILI et al. (2012) were almost the same, the negative trend of the service quality was prevalent, and it demonstrated that three of the five dimensions were negative quality gaps. ENAYATI et al. (2013) chose a sample of students studying at Azad University (Iran), and the study confirmed a significant difference between the students' expectations and perceptions in all five dimensions of service quality, and in all dimensions, students' expectations had a higher level than their perceptions. Similarly, the study of SHEKARCHIZADEH et al. (2011) applied to international postgraduate students of the top five public universities in Malaysia, revealed that all factors of the SERVQUAL model were obviously negatively perceived as compared to expectations. GORGODZE et al. (2019) also conducted a study using the SERVQUAL model to assess the service quality in Turkish universities. The study used a sample of international students studying at public and private universities, and they found that a negative gap has existed between expectations and perceptions of international students for all parts of the questionnaire. Similarly, GREGORY (2019) in his study applied to the doctoral program at the University of Connecticut in the USA indicated that there was a small gap between the expectations and perceptions of students in the five factors of the SERVQUAL model. In a study conducted in a Philippine state university, the service quality perceived by students commonly also came short of their expectations across all variables. The highest negative gap was the responsiveness while tangibles had the lowest negative gap among all dimensions (SARSALE and CADAY, 2020). The results of the study of MAKOE and NSAMBA (2019) indicated that students' perceptions were lower than their expectations in three factors, and tangibility had the largest gap.

Based on the results of MUNSHI et al. (2019), the five factors of the SERVQUAL model have a direct influence on the students' satisfaction. The study of MANSORI et al. (2014) focused on the five factors of the service quality model and their relationships with students' satisfaction and loyalty among undergraduate students at private Malaysian universities. Findings illustrated that the overall satisfaction level of students is clearly influenced by tangibility. Besides, the physical facility on the campus performs a principal role in fulfilling the students' satisfaction. Additionally, tangibility is the highest influencing factor directly and indirectly on the students' word of mouth as well as intention to continue to study at a higher level. In the study of DARAWONG and SANDMAUNG (2019) responsiveness is the most effective service quality dimension that influences students' satisfaction, empathy and facility are the second and third effective dimensions, respectively. Tangibles, reliability, and delivery did not meet the students' expectations. According to LEONNARD (2018), tangibles and reliability are essential

dimensions that affect student satisfaction. The study of JIEWANTO et al. (2012) revealed that the SERVQUAL model has a positive direct influence on students' satisfaction, university image, and positive word of mouth.

Table 1 summarizes details about some important previous studies from the last 10 years related to service quality in higher education institutions, starting with the most recent ones.

Table 1: Details of Some Previous Studies on Service Quality in Higher Education

	Location	Methodology	Main Findings
ABOUBAKR and BAYOUMY (2022)	Higher education institutions in Arab countries (Egypt and Saudi Arabia)	528 medical students were asked using the SERVQUAL tool. The information was gathered via self-administered questionnaires.	The mean reliability score was the largest of all the quality metrics (3.79).
THAPA (2022)	Nepal's public higher education institutions	A questionnaire was utilized based on questions from CRONING et al. (1992)'s modification of Parasuraman et al.'s (1985) SERVQUAL. Five dimensions make up the SERVPERF scale: tangibility, reliability, responsiveness, assurance, and empathy.	When it comes to tangibility, students rate the level of service as being significantly higher than when it comes to the reliability, responsiveness, assurance, and empathy dimensions.
KONONIUK and GUDANOWSKA (2022)	Vocational counselling in Poland	Bibliometric analysis, analysis and logical construction, and literature reviews were employed. A modified SERVQUAL model was used to diagnose the educational offerings.	The gaps that have been found show that there are considerable negative differences between the respondents' expectations and how well the finished courses were evaluated.
MAGASI et al. (2022)	Tanzanian's higher education institutions	A stratified random sampling technique was used. A questionnaire survey was utilized to gather data from a sample of 326 students as part of cross-sectional research design.	According to the results of the logit model, tangibles, reliability, responsiveness, empathy, assurance, and compliance were significant predictors of students' satisfaction with higher education.
ALMEKHLAFI and ABDUL-GHANI (2022)	Dhamar University, Yemen	With a questionnaire that had 29 questions and 290 replies, the study employed the global SERVQUAL gap gauge to assess service quality from the perspective of academics and teaching staff.	According to the five dimensions of quality, there are statistically significant disparities between the perceived quality dimensions' averages and the expected quality averages (tangibility, reliability, response, safety, sympathy). There were no statistically significant variations due to demographic factors in the expected quality dimensions of the measurements (gender, specialization).
BORISHADE et al. (2021)	Higher education institution in Nigeria	The study's findings came from a standardized questionnaire given to 265 students at a private university, the structural equation model is used.	The results showed a significant correlation between student loyalty and quality of service. Also, student satisfaction acts as a mediator in this relationship.

	Location	Methodology	Main Findings
SARSALE and CADAY (2020)	Philippine public state university	The efficacy of student services was assessed using the SERVQUAL methodology. Using a validated modified service quality evaluation survey questionnaire, 175 students at one of the satellite campuses of a Philippine higher education institution provided the information.	The results showed that across all indicators, service units, and dimensions, the quality of student services typically fell short of students' expectations, with responsiveness showing the biggest negative gap and tangibles receiving the lowest negative gap.
QOMARIAH et al. (2020)	Faculty of Economics and Business, IAIN Jember University, Indonesia	The total number of 3,055 FEBI IAIN Jember students that participated in the study comprised the population. 354 students made up the research sample. Tests of data validity and reliability are used to assess the accuracy and dependability of the measurement tools.	Student loyalty is significantly impacted by service quality. Loyalty among students is significantly influenced by the institution's reputation. Student loyalty is significantly influenced by student satisfaction.
KARAMI and ELAHINIA (2019)	Higher education institutions in North Cyprus	As indicators of service quality, various factors like reliability, tangibility, assurance, responsiveness, and empathy have been considered. A self-administrated survey was conducted at Eastern Mediterranean University with a sample of 324 Iranian students.	The results showed a strong correlation between student satisfaction and service quality indicators. The findings also showed a strong correlation between student satisfaction, loyalty, and word-of-mouth.
FAZLI-SALEHI et al. (2019)	Ten public universities in Tehran, Iran	A model for evaluating universities' perceived quality was developed. Stratified random sampling was applied in the initial phase. Convenient sampling within the degree categories was used in the second stage. 390 completed questionnaires were analyzed. In addition, the qualitative method was used through interviews.	Factors that contribute to perceived quality include the quality of lecturers, prestige, link to the outside world, extracurricular activities, research potential, responsiveness, facilities, design, ambiance, and diversity. Students who regard their university as having a higher quality will work more to build the brand.
GORGODZE et al. (2019)	Five higher education institutions, Georgia	About 800 students from five of Georgia's best colleges participated in a mixed-methods study. Ten in-depth interviews with university administrators were performed as part of the qualitative study.	There is a discrepancy between what students claim to be their primary expectation and what administrators believe students should expect.
MUNSHI et al. (2019)	King Abdulaziz University, Jeddah, Saudi Arabia	The tool used to measure student satisfaction contained five SERVQUAL dimensions: tangibility, reliability, responsiveness, assurance, and empathy. The secondary data of 508 students were selected randomly for the analysis from the university's website.	Students are generally happy with the services offered by the university. Empathy and tangibility had the greatest effects on students' satisfaction, whereas responsiveness had the least significant effects.
LEONNARD (2018)	Jakarta location of the London School of Public Relations, Indonesia	319 students were asked using the SERVQUAL model. Structural equation modelling (SEM) was used to evaluate the data.	The main elements impacting student satisfaction in private institutions include high aptitude and knowledge, non-discriminatory treatment offered by staff and professors, and acceptable academic services provided by the university.
KRSMANOVIC et al. (2014)	Belgrade University's Faculty of Organizational Sciences in Serbia	The study employs a SERVQUAL-based questionnaire with two subscales of items—one for students' expectations and one for their perception of service quality.	With reliability having the lowest service quality and tangibility having the highest, there are no variations in the demographic groups' service quality scores.

	Location	Methodology	Main Findings
IBRAHIM et al. (2013)	Higher education institutions in Scotland	200 international postgraduate and undergraduate students from Taiwan and China were given SERVQUAL model-based structured surveys. Numerous complex statistical methods were applied to the analysis of 129 valid and completed surveys.	Between what students believe they will receive from higher education institutions and what they actually get, there is a negative perception gap.
GOVENDER et al. (2012)	Higher education institutions, South Africa	Twenty items covering the five factors of service quality were used in a survey of the 215 international students using the SERVQUAL model as the measurement tool.	There are differences in how international students view and anticipate the five components of service quality.

Source: Author's own compilation

The studies summarized in the last paragraphs and in Table 1 provide descriptions of how previous studies used the SERVQUAL model in the higher education context, and the necessity of evaluating service quality to reach satisfaction resulting in the loyalty of students by using the SERVQUAL model for higher education institutions.

The findings of previous studies illustrated that there are differences and gaps between the expectations and perceptions of students regarding the service quality of universities, these gaps tend to be negative, which means the expectations exceed the perceptions of students. In marketing science, when the perceptions are lower than the expectations, then customers give indicators of their low level of satisfaction regarding the service quality (ABILI et al., 2012). However, this negative trend that results from applying the SERVQUAL model leads to deeper thinking about the expectation side: why do students put high expectations before their actual experience? This question could be asked for different sectors, too. According to BABAKUS and BOLLER (1992), consumers tend to prioritize their expectations over their perceptions when making evaluations. From my point of view, and based on the results of previous studies, customers establish high expectations for the service or product they want to buy, which is difficult to be met by their perceptions, this refers to the reality that we as customers need to get as most benefits from the products or services, it is the nature of human beings. Therefore, when customers have high perceptions but their expectations are higher, and the negative gap is close to zero, in my perspective, doesn't give a strong indicator to the dissatisfaction of customers. The small negative gap (closed to zero) may be within the zone of tolerance. The zone of tolerance is relative to the service performance range related to the inertia feeling, such that customers are indifferent to small increases or decreases in service quality within the zone (BERRY and PARASURAMAN, 1991).

2.3. Corporate Reputation

2.3.1. Concepts and Theories

Reputation is the general view, judgment, and assessment that others hold about an individual, organization, or entity, which is based on their previous conduct, actions, and experiences (FOMBRUN and SHANLEY, 2000). It is commonly believed to be a valuable intangible asset that can enhance the success and competitive advantage of an entity (BARNEY, 1991). RINDOVA and FOMBRUN (1999) examined reputation as the assessment of a company by its stakeholders in terms of their impact, esteem, and understanding. DEEPHOUSE (2000) agreed with RINDOVA and FOMBRUN (1999) regarding their definition, the sum of the overall evaluations, both positive and negative, that stakeholders make about a company over time. SINGH and MISRA (2021) defined reputation as being built on a collection of characteristics attributed to a company that is derived from its previous behavior and capacity to provide better corporate results over time. Also, HEATH (2001) defined reputation as an evaluation of an organization's attitudes, actions, finances, social, and cultural practices with diverse individuals in general. In comparison to other variables connected to a brand, such as satisfaction, reputation is more of an overall evaluation done over time (SELNES, 1993). According to LOUREIRO et al. (2017), reputation is more of an extrinsic cue that grows over time through the flow of information among users. ROBERTS (2009) differentiated between image, identity, and reputation. The corporate image refers to how external parties perceive a company, while the corporate identity reflects how internal stakeholders see the organization. The corporate reputation encompasses the perspectives of both internal and external stakeholders.

In a context of a fiercely competitive environment and the influence of the stakeholder perspective, the current businesses are forced to suitably administrate their reputation status (TELCI and KANTUR, 2014) because institutions with a high reputation will have a competitive advantage over those that do not (FOMBRUN and SHANLEY, 2000). A good reputation is regarded to be more commercially useful than a bad reputation, it has achieved considerable attention in the disciplines of strategy, corporate social responsibility, management, and marketing (DOWLING, 2016).

Two schools of thought on reputation are mentioned by RINDOVA et al. (2005), the first is made up of bystanders' "expectations or assessments" about an organization's ability to deliver high-quality goods. This viewpoint is built on previous acts that teach stakeholders about the true characteristics of the firms. The second viewpoint defines reputation as a "global

perception" of a company and how it is viewed by a stakeholder or several stakeholders. There is substantial proof that reputation is critical in the establishment of long-term competitive advantage (GOTSI and WILSON, 2001; GARDBERG and FOMBRUN, 2002; ROBERTS and DOWLING, 2002). Reputation plays an important part in obtaining organizational success because it is regarded as the most significant intangible asset of a firm (KAY, 1993). HALL (1993) encourages managers to pay greater and ongoing attention to it.

On the other hand, FOMBRUN and GARDBERG (2000) used the Reputation Quotient (RQ) to perform two quantitative studies on business reputation. It informs us that individuals evaluate businesses based on six important factors, which are corporate appeal, products and services, financial performance, vision and leadership, workplace environment, and social responsibility.

Two quantitative studies were commissioned by the Reputation Institute, a research group founded with sponsorship from PricewaterhouseCoopers and Shandwick International. The Institute's aim is to strengthen our knowledge of company reputation as an intangible asset. Harris Interactive obtained the data. The authors propose that firms can be successfully rated on a graded group of characteristics that include the financial, social, organizational, and emotional characteristics of organizations (FOMBRUN and GARDBERG, 2000).

Although the institutional reputation idea is easy and instinctive in its popular use, when it is operated and studied in managerial analysis and research it becomes highly complicated as appeared from its several definitions and examinations by previous studies (LANGE et al., 2011). The researchers in the past decades in the management field, tried to examine what the reputation of the institutions means. Particularly, they determined three specialized concepts about reputation: familiarity with the company constitutes reputation of "being known", which indicates the general visibility or awareness of the institution, and that people have a perception in their mind about it; perspectives on what to anticipate from the company in the future ("being known for something"), which indicates the ability to anticipate the outcomes of the institution; and favorable perceptions of the institution ("generalized favorability"), i.e. opinions and maybe judgments on the institution as fine, charming, and suitable (LANGE et al., 2011).

Regarding the *being known concept*, if the people's awareness of the company is spreading widely, the reputation will be stronger, and it is known as "prominence" as examined by RINDOVA et al. (2005). This dimension is described as the ability of a company to develop the awareness of customers for it (SHAMSIE, 2003). On the other hand, it is not generally understood that organizational reputation implies familiarity with or expertise of the company. The opinions of researchers were raised to criticize the being known concept, BOYD et al.

(2009) differentiate between prominence and reputation. Also, TURBAN (2001) rather than considering familiarity as a component of corporate reputation, approaches it as an antecedent.

The second concept, *being known for something*, as LANGE et al. (2011) presented, is the outcome of assessments made by the group of perceivers regarding the possibility that the firm would satisfy their individual wants or not. Several, competing, and maybe contradicting requirements may live within any given group of perceivers. So, it is conceivable for a company to have more than one significant reputation in the being known for something dimension within a specified group of perceivers.

In terms of the third concept, *generalized favorability* is positive impressions and assessments among stakeholders that are likely to result from the desirable qualities of well-liked organizations. Such organization features work as alerts, allowing stakeholders to judge a company's quality and magnificence depending on broad perceptions of the company rather than specific company qualities or results (WEI et al., 2017). Hence, generalized favorability is sometimes described as "a general impression of the institution" with assessment (LANGE et al., 2011). Thus, the generalized favorability factor answers a number of things, among others, "what generalized judgments are made regarding the company by the collection of perceivers?" and "how strongly and consistently are those positions supported when they exist within that social group?" (LANGE et al., 2011).

According to the information stated in the last paragraphs, it is observed that the corporate reputation factors of being known and generalized favorability are both dependent on generalized and worldwide perceptions of the company instead of on perceptions of specific corporate traits or results.

In addition to the three concepts presented, there are three additional theories related to reputation according to WALKER (2010). The first theory is the *institutional theory*, which is used to shed light on how corporations create their reputations by gaining legitimacy and cultural support in their institutional surroundings (DEEPHOUSE and CARTER, 2005). Scholars that use institutional theory to study reputation argue that reputation is formed through information exchanges and social influence among multiple parties engaging in an organizational setting (RINDOVA and FOMBRUN, 1999).

The second theory is the *signaling theory*. It is used to describe how organizations' strategic decisions and actions produce signals, which are then used by various stakeholders to form impressions of the firms (BASEDO et al., 2006). Given the prominence of marketing

performance that highlights corporate social responsibility nowadays, this theory is particularly useful in explaining how corporate social performance affects reputation (WALKER, 2010).

The third and last theory is the *resource-based theory*, which recognizes reputation as a valuable and scarce resource that leads to long-term economic advantage. The idea sees reputation as a unique resource not just because it is difficult to mimic (DEEPHOUSE, 2000; ROBERTS and DOWLING, 2002), but also because it decreases stakeholder uncertainty by conveying positive traits like product and service quality (RINDOVA et al., 2005). According to this theory, an organization can establish and maintain its reputation by making strategic investments in activities that enhance its image, such as social responsibility initiatives, programs for engaging with stakeholders, and proactive communication efforts. By undertaking such activities, the organization can create a positive perception of itself in the minds of its stakeholders, which in turn can lead to greater trust, loyalty, and support (BARNEY, 1991).

To conclude, resource-based theory provides a useful framework for strategic decision-making and management and highlights the importance of reputation as a valuable and strategic resource for organizations.

2.3.2. Reputation in Higher Education Institutions

ALESSANDRI et al. (2006) have noted that the research on corporate reputation mainly focuses on the business context. Nevertheless, it is crucial to recognize that the academic environment operates differently from the corporate world. As a result, factors like identity, organizational setting, quality, and pressure from institutional environments are essential when examining the reputation of higher education institutions (VERČIČ et al., 2016).

According to SONTAITE and KRISTENSEN (2009), corporate reputation within the context of higher education can be described as the way in which both internal and external stakeholders perceive and evaluate a higher education institution based on its past behavior, communication, and ability to meet expectations in comparison to other institutions. This perception and evaluation occur over a specific period and can be seen as a personal and collective recognition and attitude toward the institution. The reputation of a university is a reflection of its history and credible acts on its target populations (NGUYEN and LEBLANC, 2001). According to KAZOLEAS et al. (2001), the reputation of a university is a crucial element in the decision-making process of students and other stakeholders, and it can substantially affect the success of the institution. Studying reputation provides both managerial and theoretical prospects. Universities are becoming more competitive for students, funds, and funded research from a

management standpoint (IVY, 2001). According to KAZOLEAS et al. (2001), universities, like firms, rely on their reputation to survive and excel in the crowd.

KEALY and ROCKEL (1987) and LAURA (2023) stated that there are several approaches to assessing higher education institutions' reputations, the ranking of higher education institutions created by institutions such as QS World University Rankings and Times Higher Education are essential methods of university evaluation. The rankings have a strong methodology for the evaluation process, considering the proportions of international students and professors, faculty-to-student ratio, citations per faculty, employer reputation, and academic reputation. Moreover, accreditation is an essential factor in shaping the reputation of a university in higher education. It involves an evaluation process carried out by an independent organization to confirm that a university meets specific standards of academic quality and institutional effectiveness. By providing external validation of the university's academic programs and institutional practices, accreditation can enhance the institution's reputation (COUNCIL FOR HIGHER EDUCATION ACCREDITATION, 2022). Besides rankings and accreditation, the reputation of higher education institutions is also impacted by the viewpoints and attitudes of various stakeholders like students, alumni, employers, and society at large. By employing strategic communication and branding efforts, such as public relations campaigns, marketing initiatives, and social media engagement, universities can shape their reputation actively (HEMSLEY-BROWN and OPLATKA, 2006).

Although the use of the reputation idea in higher education branding research has been founded, its investigation in a multivariate environment is pretty recent. The three perspectives proposed by FINCH et al. (2015) are useful for delving into the conceptual understanding of university reputation. The first meaning ties reputation to a subject's knowledge, the second refers to reputation as a strategic weapon, and the third sees reputation as a generalized favorability. Nevertheless, there are limitations and issues related to reputation at higher education institutions (SONTAITE and KRISTENSEN, 2009). ROBERTS (2009) indicated that there is already a predetermined reputation or expectation attributed to all higher education institutions, as well as the sector's expected behaviors and ethics. In general, reputations are evaluative, and stakeholders evaluate what they know about a company to some standard to decide whether or not the company matches their expectations for how a company should behave (COOMBS, 2007). For even the most part, colleges are seen as excellent, fit for function, and socially active, and this establishes the reputation standard, threshold, or norms against which all are subsequently measured (ROBERTS, 2009). Hence, collective associations influence and constrain reputations to some extent.

The main reason for having a good reputation in the educational industry is not dissimilar to building a positive reputation in some other areas. However, ROBERTS (2009) agrees that a positive reputation of higher education institutions may be more important than in other sectors, for the reasons listed:

- Education is considered as having a life-changing influence, trust is essential;
- Because education is an intangible service, recommendations and trust are critical in minimizing risk perceptions for both future employers and students. Unlike tangible products that can be physically inspected and tested, it is difficult to evaluate the quality of education beforehand, these are the search attributes that mainly separate tangible goods from services. Therefore, both future employers and students rely heavily on recommendations and trust to minimize the risk associated with choosing an educational institution or program;
- Students, parents, and taxpayers all pay a high price for education. These stakeholders believe that investing in reputed suppliers would result in higher profits. Investing in a good education is an investment in their future. They want to ensure that they receive the best education possible to increase their chances of success in their careers and personal lives. They may be willing to pay higher tuition fees or go into debt to attend a prestigious institution that is well-regarded by employers and society at large.

2.3.3. University Reputation Measurements, Including Academic Competence

In the USA, the Carnegie Commission on Higher Education created a categorization system for all US-based schools and universities in 1970, in an attempt to define and categorize all of the many types of higher education accessible (ALESSANDRI et al., 2006). As a result, universities and colleges began to examine "peer organizations," and schools throughout the country were highly aware of a need to distinguish themselves from the competition in order to attract students and donors (MELEWAR et al., 2005). Because of this marketing approach, the educational market has begun to operate similarly to other commercial markets.

All of these initiatives are meant to strengthen the reputation of higher education institutions as places where students may go not merely to learn, but also to live well. The criteria used to evaluate higher education institutions are changing as a result of rising competition in higher education. However, while the criteria for measuring a higher education institution's reputation may change, the building blocks of a higher education institution's reputation – notably its visual identity – stay consistent (ALESSANDRI et al., 2006). And, both institutional reputation and academic performance can be used to assess the university's academic reputation

(WIBOWO, 2014). The necessity of university reputation, especially the perception of students about academic competence is confirmed by JAMES-MACEACHERN and YUN (2017).

ARPAN et al. (2003) used a cognitive psychological approach to investigate university reputation among two sets of reviewers. In the study, various groups rated ten major US institutions using different criteria. Three criteria were discovered to strongly predict university reputation among a sample of current university students, these factors are academic factors, athletic factors, and the extent of news coverage of the university. Also, the study created two potential scales for evaluating universities: a two-factor scale for current university students and a single-factor scale for adult, non-student members of a university community.

ALESSANDRI et al. (2006) suggest a comprehensive approach towards the reputation and visual identity of universities. They contend that a university's visual elements, such as its website, logo, and promotional materials, should be aligned with its reputation and brand image. To construct a university reputation scale, the authors suggest utilizing a combination of in-depth interviews, literature review, and confirmatory factor analysis. The study emphasizes that a strong and consistent visual identity can play a significant role in enhancing a university's reputation and in attracting faculty, students, and funding. Three factors were confirmed in the study, quality of academic performance, quality of external performance, and emotional engagement.

TELCI and KANTUR (2014) mentioned that in the last two decades, colleges and higher educational institutions have recognized the value of reputation as a strategic intangible asset. Despite the fact that there is research in the literature attempting to construct measures of university or academic institution reputation, they are still in their early phases. This study employed both qualitative and quantitative approaches in an attempt to construct a scale that assesses university reputation. Initially, a set of items were produced by carrying out in-depth interviews with various stakeholders. Following this, by incorporating insights from the appropriate literature and conducting preliminary testing, the university reputation scale was established and authenticated via confirmatory factor analysis. The study findings illustrate that university reputation is a multidimensional construct with three dimensions: academic competence, responsible management, and social attractiveness.

After highlighting the most important studies that focused on designing suitable measure of the corporate reputation, we can conclude that academic competence is considered a dimension of the corporate reputation variable. Moreover, according to ASTIN and SOLMON (1981), academic competence is the most important element of the reputations of universities for higher

education stakeholders to consider. TELCI and KANTUR (2014) defined the academic competence as the education quality and general competence of the university.

From my point of view based on TELCI and KANTUR (2014), 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 academic competence based on 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).

2.4. Customer Commitment

2.4.1. Concepts and Theories

Customer commitment refers to the level of emotional connection that a customer has with a particular brand, product, or service, leading to an elevated sense of loyalty and a readiness to maintain a business relationship with the brand (KUMAR and PANSARI, 2016). MORGAN and HUNT (1994) defined customer commitment as the degree of emotional and psychological involvement that a customer has towards a particular brand, product, or service, leading to repeated purchases, advocacy through positive word-of-mouth, and a reduced inclination towards competitive offerings. Also, customer commitment refers to the intention of a customer to establish a long-term relationship with a brand (MOORMAN et al., 1992).

One of the most prominent conceptual frameworks for comprehending workplace behavior is the Social Exchange Theory (SET), which has been influential for many years and has historical origins dating back to at least the 1920s. While there have been varying perspectives on social exchange, theorists generally concur that social exchange is characterized by a sequence of interactions that generate obligations (MAUSS, 2000). Its foundation is one of the earliest theories of social behavior, according to which any interaction between people is viewed as an exchange of resources on mutual benefit (HOMANS, 1958). According to HOMANS (1958), people participate in social interactions with the anticipation of receiving some type of reward or benefit in return, such as material possessions, emotional support, or social status. Persons prefer to interact and engage with individuals who give them the same value they give; this indicates the crucial role that reciprocity plays. The theory is considered the most common and contributional in the field of sociology and other related areas. It delivers a conceptual

framework to understand the behavior of society as a chain of mutual exchanges formed through the incentives of individuals.

A crucial advancement has been made by BLAU (1964) to the Social Exchange Theory through distinguishing economic and social exchanges. The author stated that the basic and most vital distinction between the social and economic exchanges is that the social one doesn't include determined tasks and commitments. Besides, he mentioned that emotions, confidence, and attitudes are essential traits of the Social Exchange Theory while they do not exist in economic exchange. CROPANZANO and MITCHELL (2005) stated that BLAU (1964) considered the two types of exchanges as dealings instead of relations.

The work of MILLS and CLARK (1979), although their language is different, is related to the Social Exchange Theory. They proposed that the term "exchange relationship" is more fitting than "economic exchange" and that "communal relationship" is more fitting than "social exchange." Exchange relationships involve the exchange of economic or quasi-economic goods and require repayment within a defined timeframe. These relationships are primarily driven by personal self-interest. Communal relationships are characterized by being indefinite and less constrained by time limits, and they are centered on the exchange of socioemotional benefits, prioritizing the requirements and welfare of the other party.

FOA and FOA (1980) developed a theory that is based on the social exchange theory which is called Resource Theory. It concerns the distribution of the available resources between persons which affects the interaction and engagement within communities. Its framework proposes that each person has a variety of resources such as private properties and savings, an individual effort such as intellectual properties, information, and feelings, which is considered a necessity for their interaction within the community where they identify the social exchange focus that the persons have for the engagement within the community. The theory also proposes that the main goal of the individuals is to raise the resources available to them and reduce their loss when they interact with the community. In the opinion of FOA and FOA (1980), there are six main categories of resources that can be pinpointed between people, which are material resources, social status, information, personal energy, love and affection, and time.

On the other hand, a three-component conceptualization of organizational commitment theory is a theoretical framework that aims to clarify the degree to which workers are dedicated and loyal to their employers. It was formulated by MEYER and ALLEN (1991), and it outlines three central constituents of organizational commitment as shown in Figure 8.

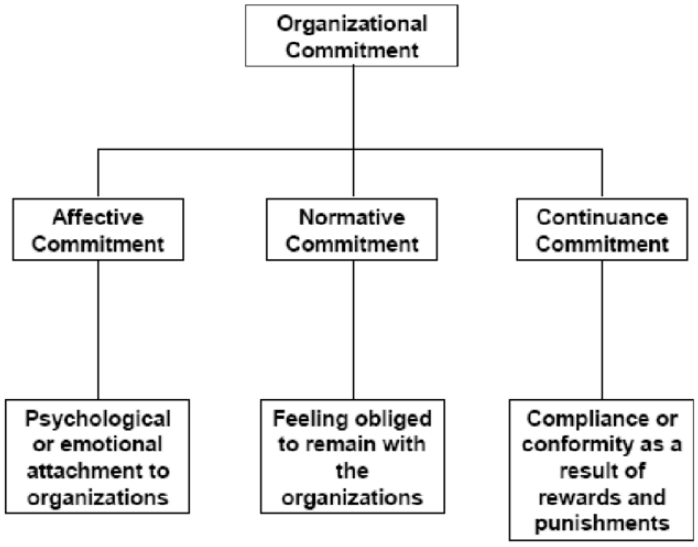

Figure 8: Three-Component Model of Organizational Commitment

Source: Meyer and Allen (1991)

The three components of the organizational theory are as follows (MEYER and ALLEN, 1991):

Affective commitment pertains to an employee's emotional connection with their organization, which stems from sentiments of devotion, gratification, and association with the organization. Employees who display high levels of affective commitment possess a profound aspiration to stay with the organization and are more prone to exhibiting positive work-related behaviors, including job performance and behaviors that promote the organization's interests.

Continuance commitment is a facet of organizational commitment that stems from an employee's evaluation of the disadvantages that come with leaving their job or organization. This type of commitment manifests when workers perceive themselves to have limited alternative employment options, compelling them to remain in their current position, despite their lack of emotional connection or job satisfaction. Continuance commitment is typically influenced by factors such as financial incentives, job tenure, and the difficulties associated with finding alternative work opportunities.

Normative commitment pertains to an employee's feeling of duty or accountability to stay loyal to the organization. It is rooted in an employee's personal convictions regarding the ethical and moral obligation to remain with the organization, regardless of job dissatisfaction or availability of alternative opportunities.

Looking at the social exchange theory and the three components of organizational commitment theory (affective, continuance, and normative), it is observable that social exchange theory and affective and normative commitment are well connected to each other in which feelings, beliefs, and trust are the primary features of them. On the other hand, economic exchange theory and

continuance commitment agree that the self-personal interest is the priority and depends on mutual financial benefits within a specific time limit.

2.4.2. Students' Commitment

Focusing on higher education sector, recent changes in higher education have made it more crucial than ever to do research on the interactions between students and academics and staff (SNIJDERS et al., 2020). The new marketing challenges have needed a greater understanding of the aspects that lead to positive impressions of the institution's services and positive brand referrals (BOWDEN and WOOD, 2011).

Most colleges and universities understand the importance of encouraging commitment. Students who feel strongly connected to their university get better scores and are more likely to graduate than students who feel less strongly connected to their university (WOOSLEY and MILLER, 2009). Colleges and universities have a vested interest in producing a committed student body; moreover, commitment is an important aspect of the student experience. Students should study at an institution where they wish to spend the next three or four years of their lives (COWNIE, 2017).

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. And for students and their institutions to develop strong relationships, there should be a mutually beneficial arrangement in place (DAGGER et al., 2011). It grows over time as they become used to positive answers from staff and faculty, guiding to a growing sense of security in their relationships with faculty and staff (SNIJDERS et al., 2020). Affective commitment, which encapsulates students' desire to remain linked to their place of study, is a key idea in higher education, and it has a future direction that isn't always present in other relational concepts like loyalty (COWNIE, 2017). Indeed, in the context of higher education, BOWDEN and WOOD (2011) found affective commitment to be a key driver of loyalty. In other words, universities keep students who are deeply attached to them. Moreover, several studies conducted in higher education context confirmed that affective commitment of students is predicted by service quality. GRUEN et al. (2000) stated that affective commitment is seen to be positively and directly impacted by overall service quality. A considerable impact of service quality on commitment was found by FULLERTON (2005), confirming the relationship's positive nature.

The students' affective commitment is based on the student-faculty relationship quality approach, its definition is varied in the literature and relied 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 where the development of strong relationships between students and their academies must be mutually beneficial to both squads (BOWDEN, 2013).

High relationship quality between students and faculty is not just important for universities, it is also necessary for enhancing students' loyalty, this is due to the fact that affective type of commitment is founded on feelings of identity, belonging, liking, engagement, and trust (PRITCHARD et al., 1999). Moreover, EVANSCHITZKY et al. (2006) indicated, commitment is important in formulating the attitudinal loyalty of customers since commitment represents the self-evaluation of customers regarding the consumption process and the active decision to interact with a brand in the long term. Treating students as partners to university, according to DESHIELDS et al. (2015), is also essential in instilling a sense of mutual relationship-based commitment. As a result, the quality of the relational interchange is crucial in the growth of student retention (HELGESEN and NESSET, 2005). ROBERTS et al. (2003) adopted the three-component test of affective commitment after check the results of exploratory and confirmatory factor analysis, the results confirmed the three items scale to be used to measure the affective commitment, it can be used in higher education context.

The concept of students' affective commitment is in line with the principles of the Social Exchange Theory (HOMANS, 1958), in terms that 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 based on the three-component organizational commitment theory formulated by MEYER and ALLEN (1991), especially the affective commitment concept, which indicated the emotional bonds that exist between two parties (customer and provider). In the current study, the role of students' affective commitment in enhancing the students' 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. In addition, measuring which factors of service quality predict the student's affective commitment is a main objective.

2.5. Customer Loyalty

2.5.1. Concepts and Theories

In earlier times, the loyalty concept was utilized as a means to increase power and authority. As we are in the era of the 21st century, we witness marketers acting as generals, fighting to

protect or acquire market share with the support of a loyal customer base. The significance of customer loyalty as a valuable asset in competitive markets has been widely acknowledged (SRIVASTAVA et al., 1998).

Gaining a customer's loyalty requires first ensuring their satisfaction. The satisfaction of consumers is viewed as a collection of organized evaluations of certain service attributes whether positive or negative, with each appraisal incorporating the individual's perception of and expectation for a given level of quality (OLIVER, 1999). When it comes to marketing, loyalty is defined as a customer's willingness to purchase the same service or good again (OLIVER, 1999). In contrast, ZEITHAML et al. (1996) defined customer loyalty as a combination of a customer's actions and opinions toward a company, which demonstrate a willingness to make repeat purchases and recommend the company to others. Similarly, KUMAR and SHAH (2004) concluded that the customer is loyal when he/she has a favorable perspective toward a brand and intends to both make future purchases and encourage others to do the same. Also, MORGAN and HUNT (1994) defined customer loyalty as the extent to which consumers demonstrate actions that indicate an ongoing connection with a specific service provider, such as making repeat purchases, sharing positive recommendations with others, and being willing to pay a higher price for their products or services.

According to DAY (1976), brand loyalty is characterized by repetitive purchases driven by a full internal tendency. In this context, purchases that are not motivated by a similarly strong attitude but rather by situational factors are classified as "spurious loyalty". Therefore, DAY (1976) suggested loyalty indexes that utilize a combination of attitudinal and behavioral measures. This implies that the individual's inclination towards making repeated purchases and their evaluation of the target cannot be considered independently from the concept of loyalty.

According to the *behavioral loyalty concept*, 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 OLIVER (1999), a number of variables, including the commodity's accessibility, cost, simplicity, and how easy it is to buy, have an impact on behavioral loyalty. For instance, a client might continue to buy a specific brand of milk just because it is the one that is consistently offered at their neighborhood grocery shop. Even though behavioral loyalty might not be founded on a strong emotional bond with the brand, it is nevertheless crucial for businesses to retain it because it can bring in a consistent flow of repeat customers. Businesses can encourage behavioral loyalty by making sure their goods and

services are always accessible and practical, by providing competitive price, and by creating a satisfying client experience.

OLIVER (1999) and ZEITHAML et al. (1996) stated that the following elements are often included in the behavioral loyalty model:

- Repeated purchases: Consumers who display behavioral loyalty will make recurrent purchases from a specific business or brand.
- Convenience: This is a common foundation for behavioral loyalty. Consumers will continue to buy from a business if it is convenient for them to do so, for example if the company's goods or services are simple to get to, conveniently accessible, or have a steady supply.
- Pricing: Pricing can have an impact on consumer behavior. If a company's goods or services are reasonably priced, customers may continue to use it.
- Availability of the product: Consumers that show behavioral loyalty could stick with a business just because its goods or services are dependable and constantly available.
- Customer experience: Lastly, behavioral loyalty is influenced by the whole customer experience. If customers are pleased with a company's goods, services, or customer support, they are more inclined to do business with them in the future.

The idea of behavioral loyalty has been studied for a while in a number of disciplines, including marketing and psychology. It is challenging to identify a single individual or source as the originator of this thought. On the other hand, the behavioral loyalty theory has received criticism for not accurately representing a customer's preference or positive sentiment towards a brand or product. REICHHELD and SASSER (1990) and DAY (1976) argued that this type of loyalty can be attributed to inertia or habit rather than genuine loyalty. Therefore, relying solely on behavioral measures to gauge customer loyalty may not reflect their true attitudes towards the brand.

The second theory is the *attitudinal loyalty concept*, which speaks to the emotional bond a client has with a specific brand or business that motivates them to want to keep doing business with it (DAY, 1969). 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.

According to DAY (1976), when a consumer develops an emotional or positive relationship with a certain brand or product, this is referred to as having an attitudinal loyalty and it is a more accurate indicator of consumer loyalty than behavioral loyalty, which is based purely on repeat purchases. The framework of the attitudinal loyalty theory covers various phases, consumers can become loyal at any phase (OLIVER, 1997):

- Cognitive loyalty is the term used to describe a customer's opinions and assumptions towards a company or a product. Consumers are more likely to exhibit attitudinal loyalty to a brand if they have positive opinions about it, such as its quality, reliability, or value.
- Affective loyalty is the emotional bond that consumers have with a company. Consumers are more likely to have attitudinal loyalty to a brand if they have favorable feelings toward it, such as pride or satisfaction after using it.
- Conative loyalty is the attitude and actions of a consumer toward a brand. Consumers are more likely to exhibit attitudinal loyalty to a brand if they have a strong desire to keep using it and actively look for opportunities to buy it.
- Active loyalty is related to the act of loyalty which is motivated by an added desire to overcome barriers that might prevent the act from taking place.

2.5.2. International Students' Loyalty

Loyalty is critical for a company's long-term success. High customer loyalty, which means student loyalty in the case of 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 of students 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.

Academics and practitioners in the marketing field are equally interested in the concept of loyalty (KUMAR and ADVANI, 2005). After COPELAND's (1923) essay, acknowledging that brand loyalty was a behavioral level construct, the world of marketing became interested in the concept of brand loyalty (KABIRAJ and SHANMUGAN, 2011). At the time, factors

including purchase probability, percentage of purchases, and purchase sequence were used when determining brand loyalty (KUMAR and ADVANI, 2005).

For a variety of reasons, student loyalty is a top priority for many higher education institutions:

- Tuition fees are the primary source of revenue for most privately operated universities. Retaining students entails establishing a stable and predictable financial foundation for future educational endeavors. Furthermore, long-term relations with students may deliver some kind of strategic competitive benefit; as we know from relationship marketing theory, acquiring new students is usually more expensive than keeping current ones, and cost-reduction consequences are generated over the life cycle of the relationship (REICHHELD, 1996).
- According to services marketing theory on customer participation, a student who is loyal to his or her academic institution can positively impact the quality of teaching via vital participation and committed behavior. If students are extremely engaged, for example, the lecturer's own enthusiasm in the course grows, leading to a classroom culture that promotes learning. Furthermore, motivated students can contribute to research activities by tackling novel topics when writing a thesis or actively assisting in the data collection for a research project (RUST et al., 1996).
- Absolutely, the benefits of student loyalty to the university are not limited to the time the student spends at the university; in fact, these benefits are greatest after the student graduates. And, the students could be loyal to the academic staff or to the university itself; in both cases, the university is benefited because it is the major brand. As a result, student loyalty should be viewed as a multiphase notion that extends from enrollment to retirement and beyond (HENNIG-THURAU et al., 2001).

Many concepts are considered a part of loyalty. After graduating, a loyal student continues to support his or her academic institution by spreading the word to other potential, existing, or previous students or even by working together in some way (HENNIG-THURAU et al., 2001). In this sense, student's loyalty can be assessed by the following factors: the intention to continue taking part in education, conferences, etc. at the higher education institution in the future; the intention to recommend the higher education institution; the intention to recommend study programs at the higher education institution (KRISTENSEN et al., 1999).

Furthermore, with the fierce competition that exists now between private colleges and state universities for students, repurchase intention is a very significant goal for institutions of higher education (LEONNARD and COMM, 2018). Numerous researchers have confirmed that loyal customers return to buy products or services, which is an important finding of loyalty-

repurchase research (CURTIS et al., 2011). PARASURAMAN et al. (1996) also suggested that service quality can be used to predict the behavioral intention of customers. They contended that customers who perceive the service quality to be high are more inclined to display loyalty behaviors, such as promoting the service to others, and being willing to pay more for it. Furthermore, local and international students may have opinions about their college or university and their specific study program, as MACMILLAN et al. (2005) noted, and loyalty should be positively connected with a positive reputation impression. According to the study's findings, a student's loyalty is related to how positively they see the institution's reputation. Furthermore, OROZCO and ARROYO (2017) stated that the affective commitment of students is a strong predictor of their attitudinal loyalty to the university. The same result concluded by LEE and SEONG (2020), committed students have high loyalty to the university. ANNAMDEVULA and BELLAMKONDA (2016) applied their study in the higher education sector in India seeking to develop a conceptual framework that integrates three variables (service quality, satisfaction, loyalty), they based their examination on the attitudinal concept of loyalty. The findings revealed a significant impact of service quality on students' loyalty. HELGESEN and NESSET (2007) followed the attitudinal component of loyalty and aimed to predict it using a proposed model, the results indicated the strong effect of service quality, satisfaction, and reputation on the loyalty of students.

In the current study, student loyalty is in line with the attitudinal component of the concept, that is, the students' behavioral intentions that highlighted the loyalty of customers come from their fully internal conviction toward the brand, and from instilled emotional bonds to the brand. Several researchers adopted the same component, see, e.g., ZEITHAML et al. (1996), HELGESEN and NESSET (2007), and ANNAMDEVULA and BELLAMKONDA (2016).

2.6. The Education System in Hungary

Regarding the education system in Hungary, between the ages of 6 and 16, education is compulsory. Primary school is from 6–14 years (1–8 grades) and includes 'lower' stage from 6–10 years (1–4 grades) and 'higher' stage from 10–14 years (5–8 grades). The high school is from 14–18 years (9–12 grades). There are also different choices, pupils can enter a 8-year high school after grade 4: from 10–18 years (5–12 grades), or a 6-year high school after grade 6: from 12–18 years (7–12 grades), and pupils have the choice to not enter a high school at 14 years old but a vocational secondary school, which has two types, i.e., szakképző iskola (similar to vocational training school), and technikum (similar to technical school), which replaced szakiskola (similar to vocational school) and szakgimnázium (similar to vocational high school)

from the academic year 2020/2021 (FŐVÁROSI PEDAGÓGIAI SZAKSZOLGÁLAT, 2020). Students can enter higher education after successful matriculation examination.

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 (Figure 9).

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

Figure 9: Classification of Higher Education Institutions in Hungary

Source: Derényi (2022)

In 2019, 31% of younger adults have completed a tertiary degree in Hungary. 71% of Hungarian students who were first-time entrants to higher education were enrolled in bachelor's programs, compared to 12% in short-cycle tertiary programs and 17% in master's programs (OECD, 2019). According to TEMPUS PUBLIC FOUNDATION (2021), higher education institutions in Hungary are home to 280,000 students. The majority of them (200,000 students) pursued full-time education, with the remainder enrolling in correspondence programs on a part-time basis. There are 22,500 teaching staff members and 1700 staff members who work primarily

on research, and there are 33,000 members of the administrative personnel in Hungarian higher education institutions.

According to WANG and WANG (2022), the internationalization and reform of higher education in Hungary were significantly influenced by the Bologna process. This is due to the increased importance of student exchange and mobility as a result of the demands and guidelines of the Bologna process (the Bologna Declaration was signed in 1999). Additionally, internationalization measures based on the mobility of foreign students are given significant attention in Hungarian education policy (PUSZTAI et al., 2016). Because student mobility is a key component of higher education institutions' competitiveness, Hungary's higher education institutions have been inspired to take part in the internationalization process (WANG and WANG, 2022). As a result, Hungary has advanced significantly in the globalization of higher education during the past few decades. Since the 1990s, higher education institutions have been anxious to establish relationships with other institutions abroad through student mobility (KASZA, 2010). Additionally, the government of Hungary launched scholarship programs to urge the support of student mobility (WANG and WANG, 2022).

To conclude, as a result of many political and economic shifts, in recent years, the number of overseas students studying in Hungary's higher education institutions has risen considerably. The internationalization of Hungarian higher education institutions began in the early 2000s, the numbers of international students nearly quadrupled between 2001 and 2021: as represented in Figure 10, there were 3,310 international students in 1990, 11,783 in 2001, 14,491 in 2005, 26,682 in 2016 (KOVÁTS, 2018), 37,071 in 2020 (HUNGARIAN CENTRAL STATISTICAL OFFICE, 2020), and 40,292 in 2021/2022 (OFFICE OF EDUCATION, 2021).

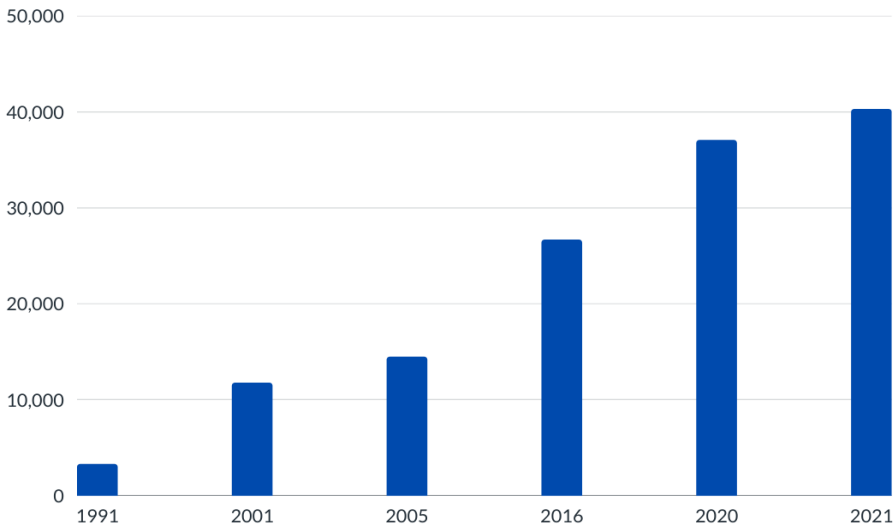

Figure 10: Number of International Students in Hungary (1991–2021)

Source: Hungarian Central Statistical Office (2020)

2.7. Hypotheses Development

To fulfill the study objectives, the literature of service quality, perceived academic competence, affective commitment, and students' loyalty within students studying in higher education institutions as well as the most important characteristics of the Hungarian higher education sector were reviewed in the previous sections. In this section, hypotheses are proposed based on the theory and the results of related previous studies.

2.7.1. Expectations and Perceptions in the SERVQUAL Model

In recent decades, internationalization has been widely regarded as the most essential topic in higher education. In order to comprehend and meet the demands of international students, it is necessary to consider their expectations, perceptions, and loyalty (KÉRI, 2019).

The service quality section (2.2) and Table 1 present an overview of how the SERVQUAL model has been utilized in past studies concerning higher education. These studies highlight the importance of assessing service quality in order to achieve student satisfaction and emphasize the usefulness of the SERVQUAL model for higher education institutions. Previous studies have demonstrated that there are variations and discrepancies between what students expect from universities in terms of service quality and what they actually perceive. These discrepancies usually have a negative direction, indicating that the students' expectations are higher than their perceptions. Therefore, the first main hypothesis and the five sub-hypotheses have been proposed as the following:

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.

2.7.2. Perceived Service Quality and Perceived Academic Competence

The resource-based view theory suggested that the most important reputation comes from the intangible asset that elevates the performance of businesses, and based on that, the corporate reputation is affected by the perception of stakeholders regarding the quality of the service or product. The theory emphasizes the necessary role of quality in formulating the corporate reputation (BARNEY, 1991). In line with that, VERČIČ et al. (2016) mentioned that among other the factors, quality is essential when examining the reputation of higher education institutions. Similarly, according to SELNES (1993), an institution's reputation is largely determined by the quality of its service. Customers who obtain high-quality products will be

pleased, and their positive experiences will be shared with others, enhancing the reputation of the company. A good reputation, therefore, is a good indicator of a products or service's quality. Also, MMUTLE and SHONHE (2017) stated that service quality significantly predicts the reputation of the institutions.

According to KAZOLEAS et al. (2001), in the context of higher education, universities rely on their reputations just like businesses do in order to thrive and stand out from the competition. One of the main factors influencing students' perceptions is academic reputation, which includes quality of the students, post-graduate employment opportunities, course variety, student/faculty ratio, reputation for research, male/female ratio, honor programs, and advanced placements, alumni, and faculty's reputation (KEALY and ROCKEL, 1987).

Based on what has been mentioned, it is possible to say that perceived service quality predicts perceived academic competence. Therefore, the second main hypothesis and sub-hypotheses are formulated as follows:

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.

2.7.3. Perceived Service Quality and International Students' Affective Commitment

Relationship marketing, according to which companies spend on building long-term relationships with individual customers, is one method that has gotten a lot of attention (ROBERTS et al., 2003). The purpose of enhancing the engagement of students, retention, and achievement is supported hard by universities to sustain their experience (COWNIE, 2017).

According to SNIJDERS et al. (2020), the importance of student-staff relations has been stressed in studies that have looked into the bonds between students and their universities. A few studies highlighted the relationship between service quality and affective commitment. The study conducted by GRUEN et al. (2000) indicated that overall service quality is considered to have a direct and positive impact on affective commitment. Deep research was done by HE et al. (2012), who debate on exploring the impact of service quality on affective commitment, and their results showed the significant effect of service quality on affective commitment. Also, QURESHI et al. (2021) asserted the role of service quality in predicting the affective commitment of students. SUNARSIH (2018) in their study, concluded that the students' commitment is significantly predicted by the service quality. Furthermore, FULLERTON (2005) confirmed the positive relationship between service quality and commitment with a significant impact of service quality on commitment.

It is noticeable that service quality is a vital factor for affective commitment, this pushes toward proposing the third main hypothesis and sub-hypotheses:

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.

2.7.4. Perceived Service Quality and International Students' Loyalty

The loyalty of students significantly supports the sustainability of universities. Efficient managers seek to develop the service quality of their universities and to sustain the local and international students' loyalty in order to compete within globalization (ISMANOVA, 2019). According to DU and TANG (2014), modern businesses' most valuable intangible asset is customer loyalty. High loyalty is not only the key to winning in business, but it is also the most important guarantee of the company's long-term viability. Improving service quality has traditionally been considered one of the most effective strategies to increase customer loyalty in the service economy (ZUO et al., 2019).

ZEITHAML et al. (1996) provide a conceptual model of how service quality affects specific behaviors that indicate whether customers stick with or leave a business. The findings of a research study that analyzed the connections between customers' intentions and a particular model indicate a significant impact of service quality on their behavioral loyalty. The relationship between service quality and customer loyalty is well tied. Several studies discussed in Table 1 and section 2.2 examined the positive direct impact of service quality on student's loyalty (QOMARIAH et al., 2020; KARAMI and ELAHINIA, 2019; BORISHADE et al., 2021). Thus, the usual trend of the relationship between service quality and loyalty is positive, it is an expected direction. Logically, customers who perceive high service quality have high probability to be loyal in the near future.

Based on that, the fourth main hypotheses and sub-hypotheses have been developed as follows:

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 to higher education institutions in Hungary.

2.7.5. Perceived Academic Competence and International Students' Loyalty

A company's reputation can lead to either a good or a bad market position in comparison to its competitors (HEMSLEY-BROWN and OPLATKA, 2006). The reputation that is forming during the experience has long been acknowledged as a central element of marketing research,

not only for its position as a foundation for tactical marketing but also for its role in establishing long-term brand equity (KELLER, 1993). The fundamentals of the resource-based theory are consistent with academic competence. This idea states that a company's reputation is dependent on how its stakeholders view the quality and distinctiveness of its resources, including its employees, procedures, goods, and brands (DEEPHOUSE, 2000). HELGESEN and NESSET (2007) described that the perception of students about academic competence is seen to have favorable effects on student loyalty. And as MACMILLAN et al. (2005) mentioned, local and international students might own perceptions about their college and their particular study program in addition to their university, and loyalty should be favorably correlated with a positive reputation perception. The study findings asserted that a student's loyalty is correlated with how well they perceive the reputation of the institution.

On the other hand, perceived academic competence can play a mediation role according to various studies. As mentioned in section 2.7.2, the resource-based theory emphasizes the necessary role of quality in formulating the corporate reputation (BARNEY, 1991). Likewise, SELNES (1993) asserts that a company's reputation is mostly based on the quality of its services. Additionally, the study of ÖZKAN et al. (2020) employed the reputation as a mediator in the relationship between service quality and customer loyalty, and the findings indicated that reputation has a mediation effect. According to the resource-based theory and previous studies that confirmed there is a link between the perceived service quality and corporate reputation, and the link between reputation and students' loyalty, consequently, the fifth and sixth hypotheses with the sub-hypotheses are proposed:

H5: Perceived academic competence has a positive direct impact on international students' 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.

2.7.6. Affective Commitment and International Students' Loyalty

Student loyalty is increasingly being regarded as an important criterion of higher education institutions' success (ROJAS-MÉNDEZ et al., 2009). Most research in the higher education context found that commitment has a strong and significant effect on student loyalty. For example, BOWDEN and WOOD (2011) found affective commitment to be a key determinant of loyalty, in other words, universities keep students who are emotionally invested in them.

EVANSCHITZKY et al. (2006) described the role of emotional bonds in the loyalty, and according to the study's findings, emotional connections with clients are a more reliable source of loyalty. As a result of ISMANOVA's (2019) study, the most important aspect in loyalty is commitment. The goal of the study by OROZCO and ARROYO (2017) was to see how affective commitment to the university, participation in service co-creation, and customer engagement affected graduate students' loyalty. The results of the survey revealed that loyalty to the university is influenced by affective commitment.

The study of LEE and SEONG (2020) tested the effect of SERVQUAL factors on a group of variables, including commitment. It also highlighted the importance of commitment in order to increase the loyalty level of undergraduate students. FULLERTON (2005) found that affective commitment is the essential partial mediator of the relationship between service quality and loyalty. LAI (2015) confirmed the significant role of affective commitment between the service quality and customer loyalty.

Based on the previous studies that linked service quality with affective commitment and the mediating role of affective commitment that was approved in the previous studies, it is possible to say that the affective commitment is a significant factor in the relationship between the service quality and loyalty. Thus, the following hypotheses can be set up:

H7: International students' affective commitment has a positive direct impact on their loyalty to 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.

2.7.7. The Role of Demographic Variables

One of the main objectives of this study is to measure the perception differences based on demographic characteristics (gender, age, level of study, year of study, student status, university, and field of study). Many studies highlighted the significant role of demographic characteristics in the context of higher education. The study of MIN and KHOON (2014) aimed to better understand how demographic characteristics influence the assessment of service quality in the higher education sector. The study had four demographic characteristics (age, gender, nationality, and current level of study) and it was discovered that gender and nationality significantly affect the weights of associations. ILIAS and CHUAH (2008) tested the differences in demographic factors toward the service quality and student satisfaction. The

study outcomes revealed that demographic variables (gender, age) have no significant effect on the satisfaction of students and the service quality perceived by them.

BADMUS et al. (2021) measured the impact of demographic factors on staff commitment in university libraries in South-West Nigeria. The findings showed that demographic factors, including age, gender, marital status, job title, level of education, and years of employment, have a significant impact on staff commitment in university libraries. Recently, at the Southeast European University (SEEU) in North Macedonia, ALIJA et al. (2022) pinpointed the demographic characteristics that have an impact on the performance of academic staff perceived by students. They found age, teaching experience, academic title, gender, and marital status for each academic staff actually demonstrate variances in the values placed on student evaluations. VIANDEN and BARLOW (2014) highlighted the importance of gender in predicting the loyalty of students. TING et al. (2020) showed that gender has no effect in the relationship between student's loyalty and their complaint intention.

Based on that, the following hypotheses are proposed:

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.

2.8. Chapter Summary

In the literature review, various variables have been highlighted to discuss the conceptual framework and the objectives of the study. This chapter has provided a wide discussion about the theory of service quality and its development during the years. Not limited to service quality, other variables of the study are also essential and therefore have been discussed, i.e., perceived academic competence and affective commitment. Finally, students' loyalty has also been introduced in this chapter.

I highlighted several theories to rely on in order to form the hypotheses of the study and propose its model. The first main theory used is the SERVQUAL model proposed by PARASURAMAN et al. (1988). Its purpose is to differentiate between what customers expect and what they perceive in the case of a service. The second theory followed in the current study is the resource-based view, 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. Also, the three-component organizational commitment theory is in line with the current study where the affective commitment is one of the factors it proposed to measure the affective attachment of a customer to the institution. The fourth theory used is the notion of attitudinal loyalty, which indicates that the truly loyal person has emotional bonds with the brands.

Figure 11 represents the proposed model of the study.

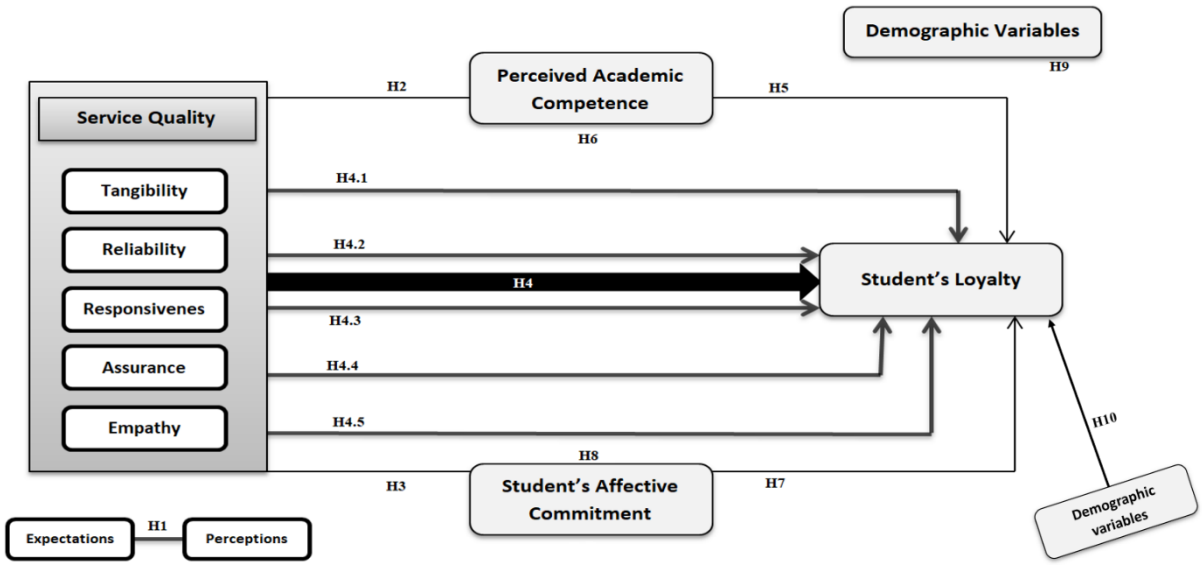

Figure 11: The Proposed Study Model

Source: Author's own compilation.

Table 2 summarizes the study's main research objectives, research questions, and hypotheses.

Table 2: Summary of the Study's Research Objectives, Research Questions, and Hypotheses

Research Objectives	Research Questions	Hypotheses
To analyze the gap between the expectations and perceptions of international students towards the quality of higher education services in Hungary.	What are the differences between the expectations and perceptions of international students related to service quality in higher education institutions in Hungary?	**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.
To measure the impact of service quality factors (tangibility, reliability, responsiveness, assurance, and empathy) on perceived academic competence and students' affective commitment.	Is there an impact of perceived service quality (tangibility, reliability, responsiveness, assurance, and empathy) on perceived academic competence and students' affective commitment?	**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.
To measure and discover which variables (service quality factors, perceived academic competence, and students' affective commitment) predict international students' loyalty.	Is there an impact of perceived service quality (tangibility, reliability, responsiveness, assurance, and empathy) on international students' loyalty? Is there an impact of perceived academic competence and students' affective commitment on international students' loyalty?	**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.
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.	Does perceived academic competence play a significant role in mediating the relationship between perceived service quality and international students' loyalty? Does students' affective commitment play a significant role in mediating the relationship between perceived service quality and international students' loyalty?	**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.
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.	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?	**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.

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.	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?	**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.

Source: Author's own construction

3. MATERIALS AND METHODS

The current chapter aims at clarifying the methodology designed to fulfill the objectives of the study. It is divided into several parts beginning with research philosophy and approach, research methods, sampling design, research constructs and variables, instruments and procedures, pilot study, and statistical analytical methods.

3.1. Research Philosophy and Approach

The concept of research philosophy reflects our overall and basic beliefs about how we understand the world. It can also be defined as a set of convictions and presumptions concerning the generation of knowledge (SAUNDERS et al., 2019). On the other hand, research paradigms refer to sets of convictions and methodologies that guide investigations in a particular field by offering various perspectives, frameworks, and methods for conducting research (WEAVER and OLSON, 2006).

Epistemological perspectives known as paradigms play a significant role in shaping and directing the approach, tactics, and techniques used in research. Choosing the appropriate research paradigm is a crucial process, as it establishes the viewpoint or framework that generates the theories, principles, and assumptions aimed at comprehending the subject under scrutiny. There are five main epistemological categories according to SAUNDERS et al. (2019): positivism, interpretivism, pragmatism, critical realism, and postmodernism.

When it comes to social science, positivism is a research philosophy that is very organized and systematic. It examines human behavior in a manner that is similar to how physical and natural sciences study observable and measurable factors to make predictions based on cause-and-effect relationships (SAUNDERS et al., 2019). Scientists and researchers who adopt this philosophy attempt to establish the causes and effects of phenomena, as well as their justifications. Their methodology concentrates on examining actions, experimenting with theories and hypotheses. As stated by SEKARAN (2013), positivism highlights the use of deductive reasoning in forming theories that can be verified through predetermined and objective measures, all while maintaining an external viewpoint. In contrast, interpretivism gives importance to the unpredictable nature of reality, where each individual experience represents a unique reality. It aims to explain the phenomenon under investigation by focusing on the variations in social actors' roles and their individual experiences, as stated by SAUNDERS et al. (2015). Qualitative research methods are primarily utilized in interpretive studies to explore and depict social phenomena. On the other hand, pragmatism is a practical and dynamic philosophy that stresses practical problem-solving over theoretical discussions.

Pragmatists believed that taking action and conducting experiments were crucial to producing knowledge and resolving issues. They maintained that concepts and theories should be verified in practical situations, and that the actual outcomes of such tests should be utilized to enhance our comprehension of the world (SAUNDERS et al., 2015). By contrasts, critical realism philosophy aims to provide an explanation of the observed events and experiences by uncovering the fundamental structures of reality that influence them. Critical realists consider reality to be the foremost philosophical concern, and emphasize the importance of a layered and structured ontology. They view reality as an external and autonomous entity that cannot be directly accessed through our observations or knowledge of it (SAUNDERS et al., 2015). Postmodernism places importance on language and power dynamics, aiming to challenge conventional modes of thinking and provide a platform for underrepresented perspectives. Postmodernists take their critique of positivism and objectivism beyond that of interpretivists. They assign greater significance to the role of language and reject the modern objectivist, realist view of the world. Instead, they highlight the essential nature of flux, movement, fluidity, and change. They view any concept of order as temporary and without a solid foundation, and suggest that order can only be constructed through our use of language, which involves categorization and classification (SAUNDERS et al., 2015).

There are three main classifications for research approaches, which are inductive, deductive, and abductive. YIN (2004) states that the deductive research approach is based on testing theories and links among separated phenomena, or testing concepts based on the application of discrete phenomena. Therefore, if the study begins with theory, often developed from the reading of the academic literature, and a research strategy designed to test the theory, then we use a deductive approach. On the other hand, the approach of inductive research entails examining the accumulated data to formulate a comprehensive theory that clarifies the research questions. Hence, when the study begins with the gathering of data to examine a phenomenon and formulate a theory, it employs an inductive approach (SAUNDERS et al., 2015). In contrast, an abductive approach differs from deduction, which involves moving from theory to data, and induction, which involves moving from data to theory, because it involves moving back and forth between the two. This essentially combines deduction and induction (SUDDABY, 2006). To investigate a particular phenomenon, one should gather data, recognize recurring themes and describe patterns, and create a new theory or adjust an existing one. This theory can then be tested by gathering further data, thus utilizing an abductive approach (SAUNDERS et al., 2015).

In the current dissertation, one of the objectives is to measure the effect of the SERVQUAL dimensions on the perceived academic competence, affective commitment, and student loyalty, therefore the positivism philosophy and deductive approach were adopted, where the existing theory to develop hypotheses were employed.

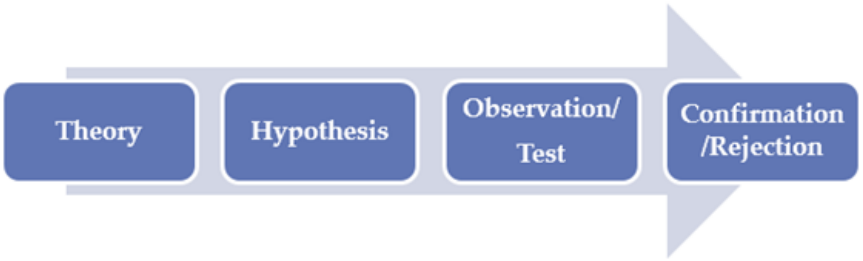

Figure 12: Deductive Approach

Source: Sekaran (2013)

3.2. Research Methods

Three essential types of research in the social science area are quantitative research, qualitative research, and mixed qualitative-quantitative method. The suitable approach to choosing the appropriate method in the study is that fulfill the goals and answers the study's questions. Beginning with quantitative research, it is considered an objective method including collecting data that are numeric and using statistical analysis (COLLIS and HOSSEY, 2003). In this method, tools such as questionnaires, experiments, and using software to analyze specific data are the common characteristics. Also, this approach relies on analyzing phenomena and hypotheses that are proposed based on theories (STOCKEMER, 2019). Qualitative research, in contrast, is used to comprehend people's attitudes, interactions, behaviors, and beliefs. It produces data that is not numerical. It concerns getting data via open-ended and conversational communication, using methods such as observations, interviews, and document analysis (STOCKEMER, 2019).

The current 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. Subsequently, a self-administered questionnaire based on existing literature has been designed to collect data as a quantitative approach. Figure 13 explains the methodology of the present study.

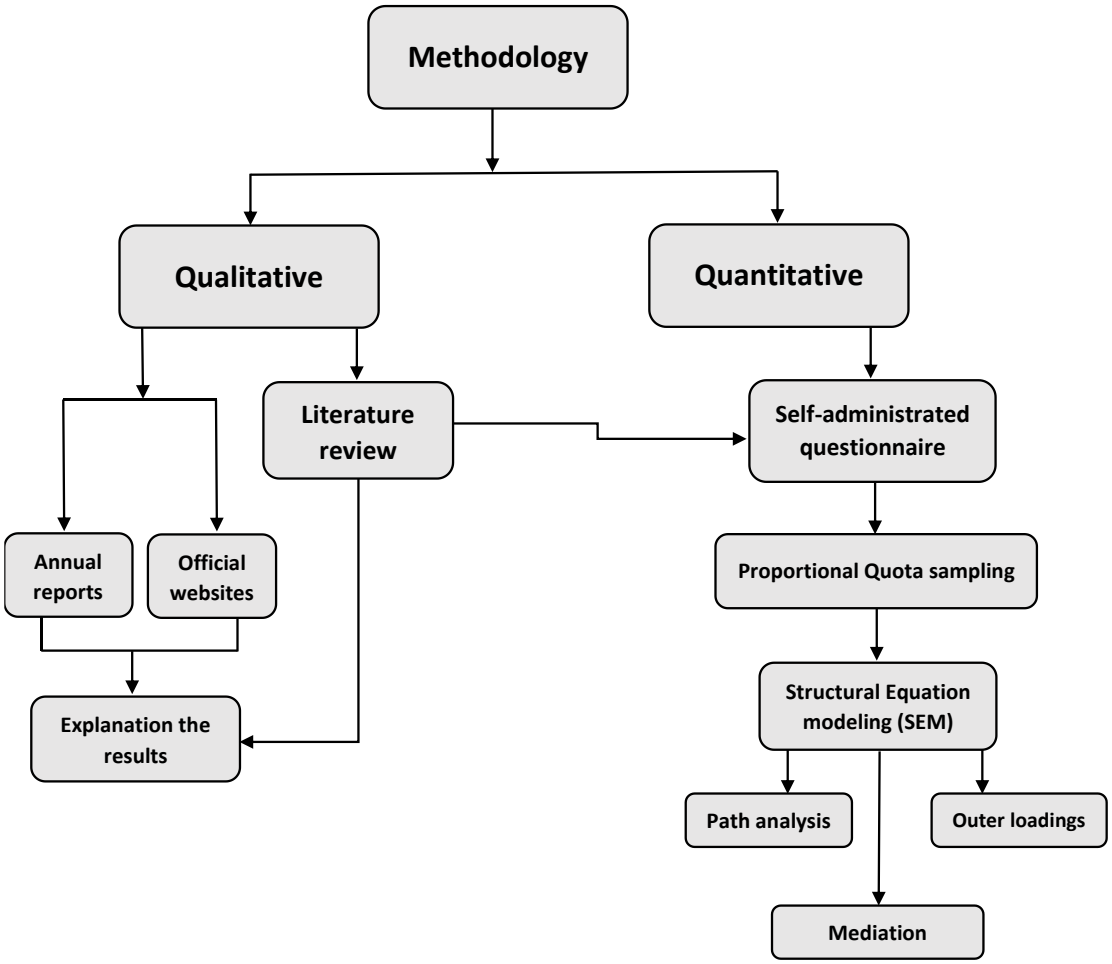

Figure 13: Study Methodology

Source: Author's own construction

3.3. Sampling Design

3.3.1. The Study Population

The study population is the sum of all units from which the sample is drawn. It is also defined as the members or cases that the researcher is examining (SAUNDERS et al., 2007). According to STOCKEMER (2019), the sampling frame consists of all units from which the sample will be drawn. Ideally, the sample frame should be identical to the population or at least closely resemble it. A sample is a subset of the population the researcher actually describes to collect the data. The gathered data on the sample are used to gain information on the entire population (BICKMAN and ROG, 2009).

The current study is applied to the Hungarian higher education context, and international students studying in Hungarian higher education institutions are the population of the study. Based on information from TEMPUS PUBLIC FOUNDATION (2021), there are 64 higher education institutions in Hungary that have been officially recognized by the State. Table 3 shows the number of international students in higher education institutions in Hungary.

Table 3: Number of International Students in Hungarian Universities

University	Number of international students
University of Debrecen	6,126
University of Pécs	4,170
University of Szeged	4,087
Eötvös Loránd University	3,606
Semmelweis University	3,200
Budapest University of Technology and Economics	2,533
Corvinus University of Budapest	1,877
Budapest Metropolitan University	1,144
Szent István University	1,138
Other universities	9,190
Total	**37,071**

Source: Hungarian Central Statistical Office (2020)

Five Hungarian universities have been selected to provide the study sample. The biggest five higher education institutions have been identified based on the number of 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, and Budapest University of Technology and Economics). I used the QS World University Rankings because it is the most widely used system for assessing universities along with Times Higher Education rankings (PAVEL, 2015). This system is thorough in its approach and takes into consideration various criteria to evaluate performance, including academic reputation, employer reputation, faculty-to-student ratio, citations per faculty, as well as the proportions of international students and faculty (POLYAKOV et al., 2020). Also, it matches in ranking with the ranking of the five Hungarian universities that have the most international students.

The population of the current research is the international students studying in Hungarian universities in Tertiary level vocational training, BA/BSC programs, MA/MSc programs, One-tier training programs (5 years long, it is considered bachelor and master program together), Postgraduate specialization programs, and PhD or (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 in the five chosen universities was 20,522 that represents 54.6% of the total number.

Figure 14 illustrates the number of international students of each university according to the latest available official data (2021).

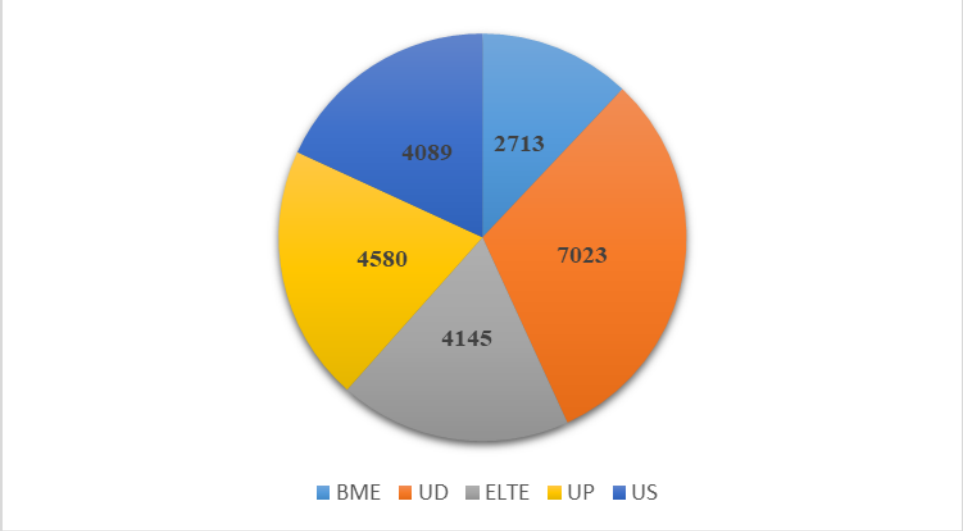

Figure 14: Number of International Students in Top Five Hungarian Universities (2021)

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: Office of Education (2021)

3.3.2. Sampling Method

In the current research, the non-probability sampling method is used. This is a method of sampling that doesn't adhere to any mathematical rules, meaning that members of the population don't have an equal chance of being chosen. Instead, the selection process is based on the principle of availability, without any specific formulas or guidelines being followed (SEKARAN, 2013). One non-probability sampling method is quota sampling.

Quota sampling means that the researcher selects people non-randomly according to some fixed quota. It aims to ensure that the sample accurately reflects the population by selecting sample elements in a way that maintains the same ratio of individuals with a particular characteristic as the overall population (MALHOTRA et al., 2002). Although quota sampling is not without its drawbacks such as limited ability to generalize to the entire population and the possibility of biases resulting from non-random participant selection, it remains a valuable approach to acquiring a representative sample when other sampling methods are not viable (BRYMAN, 2016).

Quota sampling can be categorized into two types: proportional and non-proportional. Proportional quota sampling aims at producing a sample that is proportional to the population being examined in terms of the strata (groups) being studied, such as the number of male and female students (BRYMAN, 2016). While regarding non-proportional quota sampling, the

researcher does not seek identical population percentages (BRYMAN, 2016). BRYMAN (2016) also indicated that quota sampling is especially valuable in cases where it is difficult to reach the population of interest or when a comprehensive roster of the population is not obtainable, and when it is difficult or impractical to obtain a random sample of the population.

The number of higher education institutions in Hungary is 64, and all of them have international students. However, the number of 53 higher education institutions have a small number of international students lower than 1000 (HUNGARIAN CENTRAL STATISTICAL OFFICE, 2020). Therefore, it is difficult to access all international students in various universities and getting a random sample of the study population is a task that is extremely difficult to accomplish. That led to going toward the proportional quota sampling technique, applied in five universities with the highest number of international students.

According to BRYMAN (2016), some guidelines have been determined to perform quota sampling as follows:

- *Determine the subgroups:* In the current study, the subgroups have been determined as follows: university, gender, and level of study. They have been chosen based on the data available on the study population.
- *Decide proportions:* The population of the study has been distributed according to the subgroups. Table 4 shows the population distribution attributed to university, gender, and level of study.

Table 4: Population Distribution Attributed to University, Gender, and Level of Study

Universities Variables		**UD**	**UP**	**US**	**ELTE**	**BME**	**Total**
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	-
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

Universities Variables	UD	UP	US	ELTE	BME	Total
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)

- *Selecting the sample size:* ROSCOE (1975) proposed a set of population sizes and their corresponding sample sizes to obtain meaningful results as shown in Table 5.

Table 5: Population Range and Sample Size

Population Range	Approximate Sample Size
500,001-Infinity	384
100,001-500,000	384
50,001-100,000	383
10,001-50,000	**381**
5,001-10,000	370
3,001-5,000	357
2,001-3,000	341
1,001-2,000	322
up to 1,000	278

Source: Roscoe (1975)

The target population of the study is 20,522 students, for the population ranged above 10,000 up to 50,000, the sample size is 381 (ROSCOE, 1975). The range is used as a minimum sample size required for the study because there is no specific way to calculate the sample size of non-probability sampling.

The total number of students to be surveyed by university is decided based on the percentage of international students in each university, relative to the total number of students in the five selected universities. Table 6 shows the distribution of the planned sample size according to university and gender, and Table 7 according to the 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 6: Distribution of the Planned Sample According to University and Gender

University	Number of international students	Gender	
		Male	Female
UD	114 (30%)	63	51
UP	77 (20.31%)	38	39
US	76 (19.91%)	37	39

University	Number of international students	Gender	
		Male	Female
ELTE	67 (17.57%)	28	39
BME	47 (12.34%)	32	15
Total	381 (100%)	198	183

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 7: Distribution of the Planned Sample According to Level of Study

Level of study	Number of international students
BA/BSC programs	178 (46.59%)
MA/MSc programs	56 (14.71%)
One-tier programs	119 (31.27%)
PhD (DLA) programs	28 (7.42%)
Total	381

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

- *Survey according to quotas:* Conduct the survey on the participants until the predetermined quota is met.

3.4. Research Constructs and Variables

The variables 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.

3.5. Instruments and Procedures

The data were gathered through a self-administered questionnaire which covers four areas: the service quality represented by the students' expectations of the university before beginning their studies (they had to think back) and their perceptions (actual experience), in addition to their

loyalty, perceived 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).

In order to measure service quality, 35 items were used to cover the expectations and perceptions of international students, most items were set and designed based on RASLI et al. (2012), and one item from IBRAHIM et al. (2013), both studies developed a questionnaire based on PARASURAMAN et al.'s (1988) SERVQUAL five dimensions model. The five dimensions of SERVQUAL include tangibility (TY; 5 items), reliability (RY; 8 items), responsiveness (RS; 8 items), assurance (AE; 7 items), and empathy (EY; 7 items). The items of service quality are measured using a 7-point Likert scale, where score 1 means very low expectation and very week perception, and 7 indicates very high expectation and very strong perception. Figure 15 gives an explanation of the 7-point Likert scale.

value	Meaning	
	Expected	Perceived
1	Very low expectation	Very weak perception
2	Low expectation	Weak perception
3	Below the average expectation	Below the average perception
4	Average expectation	Average perception
5	Above the average expectation	Above the average perception
6	High expectation	Strong perception
7	Very high expectation	Very strong perception

Figure 15: 7-point Likert Scale of the SERVQUAL Factors

Source: Based on Likert (1932)

Perceived academic competence (AC) consists of 7 items adapted from the university reputation scale used by ALESSANDRI et al. (2006), ARPAN et al. (2003), and TELCI and KANTUR (2014). On the other hand, the 3-component affective commitment scale of MEYER and ALLEN (1991), SNIJDERS et al. (2020) and ROBERTS et al. (2003) is used in the current study to measure the students' affective commitment (SA) variable, so it has 3 items.

To measure the international students' loyalty (SL), a seven-item measure was used based on the attitudinal component of the concept, that is, the students' behavioral intentions used by ZEITHAML et al. (1996), HELGESEN and NESSET (2007), and ANNAMDEVULA and BELLAMKONDA (2016). A 5-point Likert scale to rate the respondents' level of agreement or disagreement (1 means strongly disagree and 5 means strongly agree) have been used to measure the perceived academic competence, students' affective commitment, and students' loyalty. Appendix 1 represents the questionnaire of the study.

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.

The hypotheses were analyzed using descriptive and analytical statistics employing structural equation modeling (SEM). Structural equation modeling, which is widely used in behavioral science, is a general statistical modeling technique. It can be seen as a combination of factor analysis and regression or path analysis (HOX and BECHGER, 1999). It is conducted to describe and validate the structural relationships between constructs (ŞIMŞEK and DEMIRBAĞ, 2017).

There are multiple ways to approach SEM. One commonly used method is Covariance-based SEM (CB-SEM) that utilizes software like AMOS and MPlus. Another approach is Partial Least Squares (PLS), which utilizes PLS-Graph and SmartPLS and concentrates on the examination of variance. It can also be used with the "r" statistical software package's PLS module. Generalized Structured Component Analysis (GSCA), a component-based SEM, is the third method; it is carried out using VisualGSCA or a web-based tool called GeSCA (WONG, 2013).

There are two types of sub-models in Structural Equation Modeling (SEM), the inner model and the outer model. The outer model describes the relationships between the latent variables and their observable indicators, whereas the inner model describes the relationships between the independent and dependent latent variables (see Figure 16). Furthermore, a variable can be either exogenous or endogenous in SEM. There are no path arrows heading toward an exogenous variable and they all point away from it. The impacts of other variables are represented by an endogenous variable, which has at least one path leading to it (WONG, 2013).

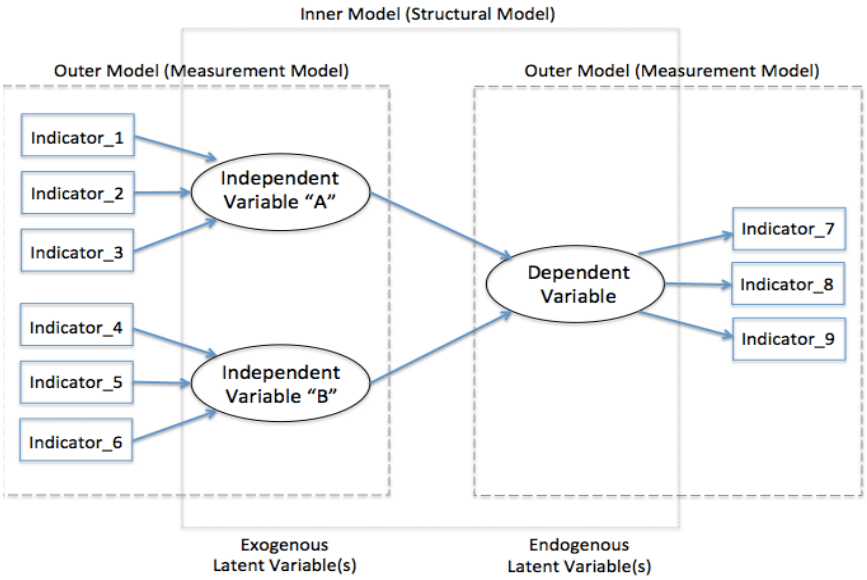

Figure 16: Inner vs. Outer Model in a SEM Diagram

Source: Wong (2013)

In the current study, the Partial Least Squares (PLS) is adopted that doesn't assume the normality of data (VINZI et al., 2010). It is a useful strategy, when the data normality is not confirmed and the prediction of the dependent variable is not clear (WONG, 2013). Moreover, another important reason why Smart-PLS is usually used is when the theory has no strong bases. The calculations of the PLS technique are significantly beneficial in delivering exact illustrations of the direction and size of the correlation among variables. PLS also prevents biases that frequently occur in regression analysis when estimating parameters (CALANTONE et al., 1998). HAIR et al. (2016) indicated that PLS path modeling has the ability to estimate models that are highly intricate, containing numerous variables that are both latent and observable.

3.6. Pilot Study

A pilot study is an early step in the research process, and it's usually a smaller study that helps plan and modify the essential study. It is an initial investigation that is performed on a small scale to assess the reliability and validity of a research project. Typically, it is conducted prior to a more comprehensive study to detect any potential issues or constraints in the study's design or techniques (ARNOLD et al., 2009). Various techniques can be employed to conduct pilot studies, such as surveys, interviews, experiments, and observational studies.

In the pilot study of the current research, 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.

3.6.1. Validity and Reliability Analysis

Validity is defined as the extent to which a concept is accurately measured in quantitative analysis (HEALE and TWYCROSS, 2015). Reliability is the extent to which a study tool consistently has the same results if it is used in the same situation in repeated circumstances, it relates to the consistency of a measure (HEALE and TWYCROSS, 2015). Validity and reliability are considered as the most significant standards with which to evaluate the credibility of research results and findings (COLLIS and HUSSEY, 1997). When a psychological test is used to measure some attributes or behaviors, reliability is a crucial concern (ROSENTHAL and ROSNOW, 1991). Thus, before evaluating the significance of the associations in the model structure, it is necessary for measurement models to possess an acceptable level of validity and reliability (FORNELL and LARCKER, 1981). According to HAIR et al. (2010), understanding the quality measures employed can be enhanced by the outcomes of the test's construct validity.

The Smart-PLS software version 4.0 was utilized for data analysis in this preliminary investigation. To ensure the reliability and validity of the scale, the following measurements have been used:

Internal Consistency

Cronbach's Alpha and composite reliability are widely used to assess internal consistency in which they evaluate the reliability of observed item variables. These measures determine the extent to which the variables are interrelated. PLS-SEM arranges the values based on the reliability of each indicator. On a scale of 0 to 1, a higher value indicates a higher level of reliability. In initial exploratory research, a composite reliability/Cronbach's Alpha value ranging from 0.60 to 0.70 is considered acceptable. However, in advanced stages of research, the value should be higher than 0.70 (HAIR et al., 2014).

Table 8 shows the values of Cronbach's Alpha and composite reliability. Based on the results, we can conclude that all values of the two tests are higher than 0.70, thus, values have high reliability.

Table 8: Cronbach's Alpha and Composite Reliability Values (N=30)

Constructs	Cronbach's Alpha	Composite reliability
TY	0.886	0.914
RY	0.895	0.917
RS	0.910	0.915
AE	0.846	0.854
EY	0.888	0.914
AC	0.849	0.897
SA	0.886	0.929
SL	0.912	0.931

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)

Convergent Validity

Convergent validity refers to evaluating how well different measurements of the same construct are in line with each other by assessing their level of correlation. In order to confirm convergent validity, two factors need to be taken into account: composite reliability (CR) (see Table 8) and average variance extracted (AVE). These factors are measured on a scale of 0 to 1. To achieve acceptable convergent validity, the AVE score should be greater than 0.50 (HAIR et al., 2014). The findings indicate that all values exceed 0.5, ranging from 0.551 to 0.813 which are acceptable ratios.

Table 9: Average Variance Extracted (AVE) values (N=30)

Constructs	Average variance extracted (AVE)
TY	0.681
RY	0.652
RS	0.611
AE	0.551
EY	0.688
AC	0.646
SA	0.813
SL	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)

Discriminant Validity

Discriminant validity assesses the extent to which a construct is distinct from other constructs based on empirical evidence. It also gauges the degree of dissimilarity between overlapping constructs. To assess discriminant validity, one can use the correlation ratio known as Heterotrait-Monotrait (HTMT) ratio. This ratio, developed by HENSELER et al. (2015), quantifies the degree of similarity between latent variables or constructs. When the HTMT ratio is less than 0.90, it indicates that discriminant validity has been achieved. The findings of Table 10 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.

Table 10: Heterotrait-Monotrait Ratio Matrix (N=30)

Constructs	AC	AE	EY	RS	RY	SA	SL	TY
AC								
AE	0.387							

Constructs	AC	AE	EY	RS	RY	SA	SL	TY
EY	0.268	0.720						
RS	0.151	0.905	0.809					
RY	0.315	0.886	0.944	0.947				
SA	0.541	0.276	0.425	0.213	0.316			
SL	0.783	0.364	0.296	0.223	0.346	0.807		
TY	0.295	0.914	0.650	0.660	0.743	0.292	0.384	

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)

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.

3.7. Statistical Analytical Methods

Throughout the study, many statistical analyses were employed using Smart-PLS version 4.0 and SPSS version 25 in order to reach the final results of the study model as well as to fulfill the study objectives. The statistical methods that have been used are discussed in the following paragraphs.

3.7.1. Descriptive Analysis

Frequencies and percentages were calculated to describe the demographic data. Besides, minimum, maximum, means, and standard deviation were also used to give details about the nature of the responses related to the study variables.

3.7.2. Reliability and Validity

Indicator reliability of research constructs, convergent and discriminant validity of model constructs were calculated, besides, multicollinearity assessment of constructs was performed to reveal the reliability and validity of the study constructs.

3.7.2.1. Evaluation of Outer Model

The evaluation of the outer model is the first stage in the PLS-SEM study. Assessing how well the item (question) loads on the hypothetically described construct is the goal of this step. Each latent construct connected to the observed indicator is subject to a one-way predictive relationship analysis in the outer model (HAIR et al., 2011).

Every item's outer loading is calculated in order to test it with its associated variable. Within each related variable, each item must have sufficient loading. Any loading above the 0.70 criterion is sufficient, whereas any loading below the 0.4 threshold is insufficient. Any value between 0.4 and 0.7 is questionable, and depending on the circumstances of each study, it can be eliminated or preserved (HAIR et al., 2016; HULLAND, 1999).

3.7.2.2. Internal Consistency Analysis

The most popular method for determining internal consistency is Cronbach's Alpha and composite reliability, which gauges trustworthiness based on how the variables in the observed items interact. The values in PLS-SEM are arranged in accordance with the dependability of each particular indicator. A greater score corresponds to a better level of reliability, and the values range from 0 to 1, and score higher than 0.7 is acceptable (HAIR et al., 2014).

3.7.2.3. Convergent and Discriminant Validity Analysis

According to HAIR et al. (2014), convergent validity represents to what extent different indicators of the same construct are connected with each other. Various tests are necessary to identify convergent validity such as composite reliability (CR), the average variance extracted (AVE), and factor loading. The AVE threshold is 0.50, all values must be higher than 0.05 to be acceptable (HAIR et al., 2014). With regard to the discriminant validity, according to HAIR et al. (2014), it indicates to what extent the constructs are different from each other experimentally. Also, it gauges how much the overlapping constructs differ from one another. Cross-loading of the indicator and the Fornell & Larcker criterion can be used to evaluate the discriminant validity. If the cut-off value for factor loading is greater than 0.70, the factor loading indications on the assigned construct must be higher than all loading of other constructs when examining the cross-loading (HAIR et al., 2014).

3.7.2.4. Multicollinearity Assessment

When two or more independent variables exhibit strong intercorrelations, this is referred to as multicollinearity (GUJARATI and PORTER, 2010). It is common practice to assess the formative collinearity of indicators using the variance inflation factor (VIF). A critical collinearity issue among the formatively measured constructs is indicated by a VIF value of 5

or higher. Multicollinearity issues, however, can also manifest at lower VIF values of 3. The VIF number should ideally be below or near 3 (MASON and PERREAULT, 1991).

3.7.3. Normality Analysis

Most statistical methods are based on the normality assumption. One of the greatest examples to illustrate the significance of examining the normality assumption is parametric statistical analysis (BEE WAH and MOHD RAZALI, 2011). The tests of normality are skewness and kurtosis tests and Kolmogorov–Smirnov test. To demonstrate a normal distribution, skewness and kurtosis values between -2 and +2 and -7 to +7, respectively are regarded acceptable, and for Kolmogorov–Smirnov test, a variable is not normally distributed if $p \leq 0.05$ (HAIR et al., 2010).

3.7.4. Relationships and Effectiveness of the Structural Model

Because this research is based on a statistical analysis of the structural model, it is critical to evaluate the model's relationships, effects, and power. When using the PLS-SEM technique, HAIR et al. (2014) provided a systematic strategy to test the model. In structural equation modeling, there are two categories of measurement scales: formative and reflective. If the observed indicators are seen as the causes of the latent variable and cannot be interchanged with each other, then the methodology used is considered formative in nature. Therefore, it is unnecessary to provide information on the reliability of indicators, internal consistency reliability, or discriminant validity. The reason for this is that in the case of a latent variable that comprises uncorrelated measures, the outer loadings, composite reliability, and square root of average variance extracted (AVE) do not have any significance (HAIR et al., 2014). Alternatively, if the indicators are strongly related and can be used interchangeably, they are considered reflective and require assessment of their reliability and validity. It is important to evaluate and report the outer loadings, composite reliability, and AVE (HAIR et al., 2014). In the current study, the reflective-based methodology is employed because the methodology assumes that the indicators represent the construct, and the relationships between the construct and its indicators are consistent with theory. The following assessments are used:

- The predictive power values are critical for model power and can be backed up by the predictive relevance value.
- An effect size evaluation is used to test the effect of each latent variable on overall predictive power.
- Examining the importance of structural paths in bootstrapping.

Smart-PLS utilizes bootstrapping, a resampling approach, to evaluate the distribution of a statistic by repeatedly sampling from the original data set with replacement, creating numerous simulated data sets. This technique determines the significance of path coefficients and computes confidence intervals for model parameters. Smart-PLS also enables users to specify the number of bootstrap samples to be generated, typically between 1,000 and 5,000. Higher numbers of bootstrap samples result in more precise estimates of standard errors and confidence intervals (HAIR et al., 2014). In the current study, the number of bootstrapping used is 5000.

3.7.5. Evaluating the Differences Between Expectations and Perceptions

To compare the means of two related groups of samples, the paired-samples t-test is employed. It is a parametric test used when data is in the form of matched pairs. It compares the means of two matched groups of individuals or cases, or it compares the means of one group, studied at two different points in time (XU et al., 2017). It assumes normal distribution of variables. The purpose of using the t-test in the current study is to measure the differences between the expectations and perceptions side of service quality of higher education institutions developed by international students in Hungary and to measure if the differences between the two sides are significant or not.

3.7.6. Assessing Predictive Power of the Research Model

Predictive power, often known as R square (R^2), is the variance explanation of the endogenous variables. Predictive relevance, on the other hand, is the endogenous variable's variance relevance, also known as Q square (Q^2). According to HAIR et al. (2014), the following are some general guidelines for evaluating values:

1. R square is strong when its value is more than 0.75, it is average when its value is between 0.5 and 0.75, and adequate between 0.2 and 0.5. It is employed in the current study to evaluate the effectiveness of the path model in predicting the dependent variables (perceived academic competence, affective commitment, and students' loyalty).
2. Q square is considered high when it is more than 0.35, moderate between 0.15 and 0.35, and small between 0.02 and 0.15. In the present study, Q-square is employed to evaluate the model's predictive ability more precisely.

The two tests measure the predictive power and predictive relevance of the endogenous latent constructs, which are perceived academic competence, students' affective commitment, and their loyalty.

3.7.7. Assessing Constructs' Effect Size

Within a structural model, the f^2 effect size is the degree of effect of a latent variable. Simply said, the predictive power of the entire model is calculated first, then a latent variable is removed, and the predictive power is recalculated. The difference between the two tests is the impact of the latent variable's effect size on the model's predictive power (HAIR et al., 2014). To assess the degrees of effect size, COHEN (1988) established the following rule of thumb: the f^2 value is low if it has a rough value of 0.02, it is medium if it has a rough value of 0.15, and if it has an approximate value of 0.35, the f^2 value is high. The purpose of this test is to measure the change in R-square when a latent variable is removed from the model, it indicates the effect size of the constructs.

3.7.8. Path Coefficients of Proposed Relationships

The study's hypotheses were tested by estimating the path coefficient values of the various relations within the model. The significance of the path coefficient is determined by t statistics, and the level of significance or probability estimated value is determined by p-values. Moreover, the path coefficient is computed to illustrate the relationship's extent level. The rules of thumb for judging the values, according to HAIR et al. (2016), are:

- As for p-value, the most generally employed threshold in psychological studies is 0.05 (5%). Nevertheless, some researchers employ the level of 0.01 (1%) or 0.1 (10%). 5% is used in the current study.
- Regarding t statistics, the values exceeding 1.96 are effective with a two-tailed test (this is used in this study) or any value above 1.65 is significant with a one-tailed test.

3.7.9. Mediating Effect Assessment

There are three significant degrees in the mediation: full mediation, partial mediation, or no mediation. Besides, there are three types of effects: indirect impact, which is the relationship through the mediator; direct effect, which is from the independent to the dependent variables; and total effect, which is the sum of the previous values (Figure 17). The decision is made using the following rule (BARON and KENNY, 1986):

- If the direct effect is significant and the indirect influence is not significant, then there is no mediating effect.
- If both the direct effect and the indirect effect are significant, there is a partial mediating influence.

- If the indirect influence is significant but the direct effect is not, there is a full mediating impact.

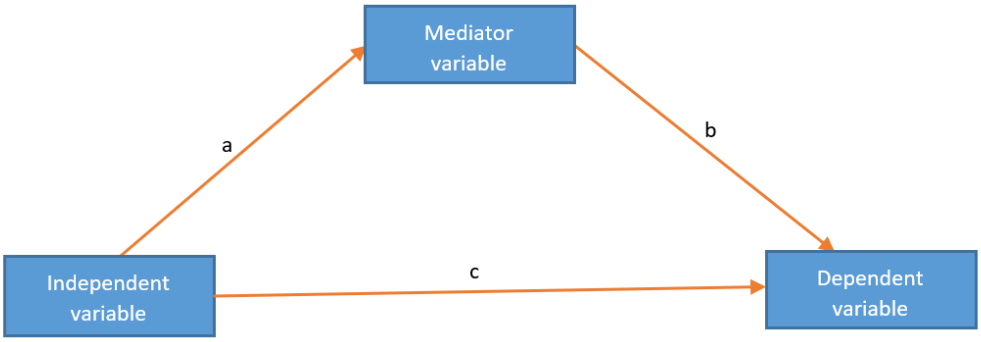

Figure 17: Mediation Effects

Source: based on Baron and Kenny (1986)

Note: a, b, and c represent the relationship between the independent, mediator, and dependent variables.

3.7.10. Measuring the Differences Among Demographic Groups

The one-way ANOVA is one of the most frequently used statistical methods in research. It is a method that expands the use of the two-samples t-test to three or more samples (VAN HECKE, 2012). In this study, the one-way ANOVA and independent samples t-test were used to measure if there is a significant difference attributed to the demographic variables of the study (gender, age, level of study, year of study, student status – i.e., scholarship or self-financed, university, and field of study). Then, a 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 (LEE and LEE, 2018).

4. RESEARCH FINDINGS AND THEIR EVALUATIONS

4.1. Data Screening

The first and most important step in data analysis is data screening. It's the process of removing outliers, or weird, unusual responses, from the data. To ensure that all of the cases utilized in the final analysis are valid, the study goes through a series of processes that involve manual and statistical tests.

The total number of cases collected via the online questionnaire is 535, with a total final of 479 valid cases (89.53 percent of the collected). The online data collection tool is configured to accept only completed questionnaires; therefore, the attempts of non-completed ones cannot be reported. 25 respondents were omitted because of the missing data (identifiable nationality). The number of valid collected cases is therefore 510 (95.33%), these cases were tested for outliers via three statistical tests: biased answers in which the respondent chooses the same answer for all the questions were statistically identified by the standard deviation value of answers from a given respondent; univariate outliers (the strange answers at the variable level) were identified by the Z score value and the critical value is above +3 or less than -3; and multivariate outliers (the strange answers at the level of regression model) were identified by the Mahalanobis D^2 value and the critical value is below 0.001. As seen in Table 11, 24 respondents were omitted because of the biased answers test, 4 respondents were omitted because of the univariate test, and 3 respondents were omitted because of the multivariate test. The final valid dataset that is free of outliers and can proceed it to the next step, i.e., analysis of reliability and validity has 479 respondents (89.53%).

Table 11: Data Screening Analysis

Process	Number of Surveys	Percentage (%)
Collected Cases (Online)	535	
Non-Eligible Cases	25	4.67%
Valid Collected Cases	510	95.33%
Biased Answers	24	4.49%
Cases excluded by univariate Analysis (Z score)	4	0.75%
Cases excluded by multivariate Analysis (Mahalanobis D^2)	3	0.56%
Final Valid Dataset	479	89.53%

Source: Based on author's calculations (2022)

4.2. Respondents' Profile

The distribution of respondents' features in various taxonomies for each feature is the respondents' profile. There are eight demographic variables that apply to this study: gender, age, nationality, study level, year of study, students' status, university, and field of study.

4.2.1. Gender

The final sample consists of 261 male respondents (54.5%) and 218 female respondents (45.5%). The observed distribution fulfilled the planned distribution for both males and females. Details are shown in Table 12.

Table 12: Sample Distribution by Gender

Categories	Final sample		Planned sample
	Frequency	Percentage (%)	
Male	261	54.5	198
Female	218	45.5	183
Total	479	100.0	381

Source: Based on author's calculations (2022)

4.2.2. Age

With 165 cases (34.4%), the age range of 18–22 years has the highest rate, followed by the age group of 23–27 years with 131 cases (27.3%). There are 103 instances (21.5%) among those aged 28 to 32, and 80 cases among those aged 33 and up (16.7%). The specifics are shown in Table 13.

Table 13: Sample Distribution by Age

Categories	Frequency	Percentage (%)
18–22 years	165	34.4
23–27 years	131	27.3
28–32 years	103	21.5
33 years & above	80	16.7
Total	479	100.0

Source: Based on author's calculations (2022)

4.2.3. Nationality

Higher education institutions in Hungary are widely known as an educational destination for international students. Students from about 79 nationalities around the world have participated

in filling out the questionnaire. The highest participation is from the Arab world from Jordan with 49 respondents (10.2%), followed by Palestine with 19 participants. In other regions, Nigeria has the largest number by 29 participants, then Pakistan with 26 respondents. More details can be found in Table 14. Some nationalities that are not mentioned in the table have low participation (less than 5 respondents), such as France, the USA, Ireland, Canada, and Japan.

Table 14: Sample Distribution by Nationality

Categories	Frequency	Percentage (%)
Jordan	49	10.2
Nigeria	29	6.1
Pakistan	26	5.4
India	24	5.0
Palestine	19	4.0
Iran	17	3.5
Indonesia	14	2.9
Syria	14	2.9
Germany	13	2.7
Norway	13	2.7
Egypt	11	2.3
Iraq	11	2.3
Kenya	11	2.3
Azerbaijan	10	2.1
Mongolia	10	2.1
Turkey	10	2.1
Vietnam	10	2.1
China	9	1.9
Morocco	8	1.7
Tunisia	8	1.7
Laos	7	1.5
Other nationalities	113	23.3
Total	479	100.0

Source: Based on author's calculations (2022)

4.2.4. Level of Study

The current study has six main categories of educational level as a demographic component. Bachelor level has 157 cases (32.7%), followed by the PhD level which has 149 cases (31.3%), and master's degree with 123 respondents (25.7%), and one-tier programs have 49 respondents (10.2%). Details are shown in Table 15.

Table 15: Sample Distribution by Level of Study

Categories	Final sample		Planned sample
	Frequency	Percentage (%)	
Bachelor	157	32.7	178
Master	123	25.7	56
One-tier	49	10.2	119
PhD	150	31.3	28
Total	479	100.0	381

Source: Based on author's calculations (2022)

4.2.5. Year of Study

First-year students represent the highest proportion with 152 cases (31.7%), followed by second-year students, this group has 146 cases (30.5%), then third, fourth, fifth, and sixth-year students. More information is shown in Table 16.

Table 16: Sample Distribution by Year of Study

Categories	Frequency	Percentage (%)
First Year	152	31.7
Second Year	146	30.5
Third Year	90	18.8
Fourth Year	66	13.8
Fifth Year	18	3.8
Sixth Year	7	1.5
Total	479	100.0

Source: Based on author's calculations (2022)

4.2.6. Student Status

The majority of the respondents are scholarship students with 335 cases (69.9%), and the remaining 144 cases (30.1%) are self-financed students.

4.2.7. University

Five universities have been chosen for this study. The University of Debrecen has the highest sample with 148 students that represents 30.9%, the University of Pécs has also a high number with 135 respondents (28.2%), while the University of Szeged, Eötvös Loránd University, and Budapest University of Technology and Economics have lower than 100 cases for each one (79, 67, and 50, respectively). Details are in Table 17.

Table 17: Sample Distribution by University

Categories	Final sample		Planned sample
	Frequency	Percentage (%)	
UD	148	30.9	114
UP	135	28.2	77
US	79	16.5	76
ELTE	67	14.0	67
BME	50	10.4	47
Total	479	100.0	381

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: Based on author's calculations (2022)

4.2.8. Study Field

The most (153) students in the sample are from the medical and health field, 84 students are studying in engineering, manufacturing, and construction field, and other fields characterize the rest of the students. Details are in Table 18.

Table 18: Sample Distribution by Study Field

Categories	Frequency	Percentage (%)
Medical & Health	153	31.9
Engineering, Manufacturing, & Construction	84	17.5
Science, Mathematics, & Computer	76	15.9
Humanities, Social Science, & Education	72	15.0
Economics & Business	68	14.2
Agriculture, Environment, & Veterinary	26	5.4
Total	479	100.0

Source: Based on author's calculations (2022)

4.3. Descriptive Statistics

Descriptive statistics discussed include mean, percentage, standard deviation, and maximum and minimum values. 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 (perceived academic competence, affective commitment, and students' loyalty) 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 that was formed during students' study about the academic competence is high, while the other mediating variable, i.e., student's 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). Table 19 shows the results.

In addition, one of the study's objectives is to measure the expectations of international students in order to analyze 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 differences between the international students' expectations and perceptions toward the service quality of higher education institutions in Hungary.

Table 19: Descriptive Statistics of Research Constructs (N=479)

Construct	Minimum	Maximum	Mean	Std. Deviation
PTY	1.20	7.00	5.002	1.252
ETY	1.20	7.00	5.432	1.089
PRY	1.63	7.00	4.886	1.225

Construct	Minimum	Maximum	Mean	Std. Deviation
ERY	1.25	7.00	5.492	1.085
PRS	1.13	7.00	4.826	1.306
ERS	1.50	7.00	5.469	1.120
PAE	1.43	7.00	5.204	1.278
EAE	1.71	7.00	5.615	1.077
PEY	1.00	7.00	4.771	1.289
EEY	1.29	7.00	5.368	1.103
AC	1.43	5.00	3.780	0.696
SA	1.00	5.00	3.386	1.035
SL	1.00	5.00	3.686	0.918

Notes: PTY: Perceived Tangibility, ETY: Expected Tangibility, PRY: Perceived Reliability, ERY: Expected Reliability, PRS: Perceived Responsiveness, ERS: Expected Responsiveness, PAE: Perceived Assurance, EAE: Expected Assurance, PEY: Perceived Empathy, EEY: Expected Empathy, AC: Perceived Academic Competence, SA: Students' Affective Commitment, SL: Students' Loyalty
Source: Based on author's calculations (2022)

4.4. Reliability, Validity, and Normality Assessment of the Measurement Model

Before moving on to structural testing, it's critical to assess the validity and reliability of the sample dataset. 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.

4.4.1. Indicator Reliability of Research Variables

As shown in Appendix 2, 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. Besides, Figure 18 shows the items and their associated variables after eliminating of weak items, along with their loading scores.

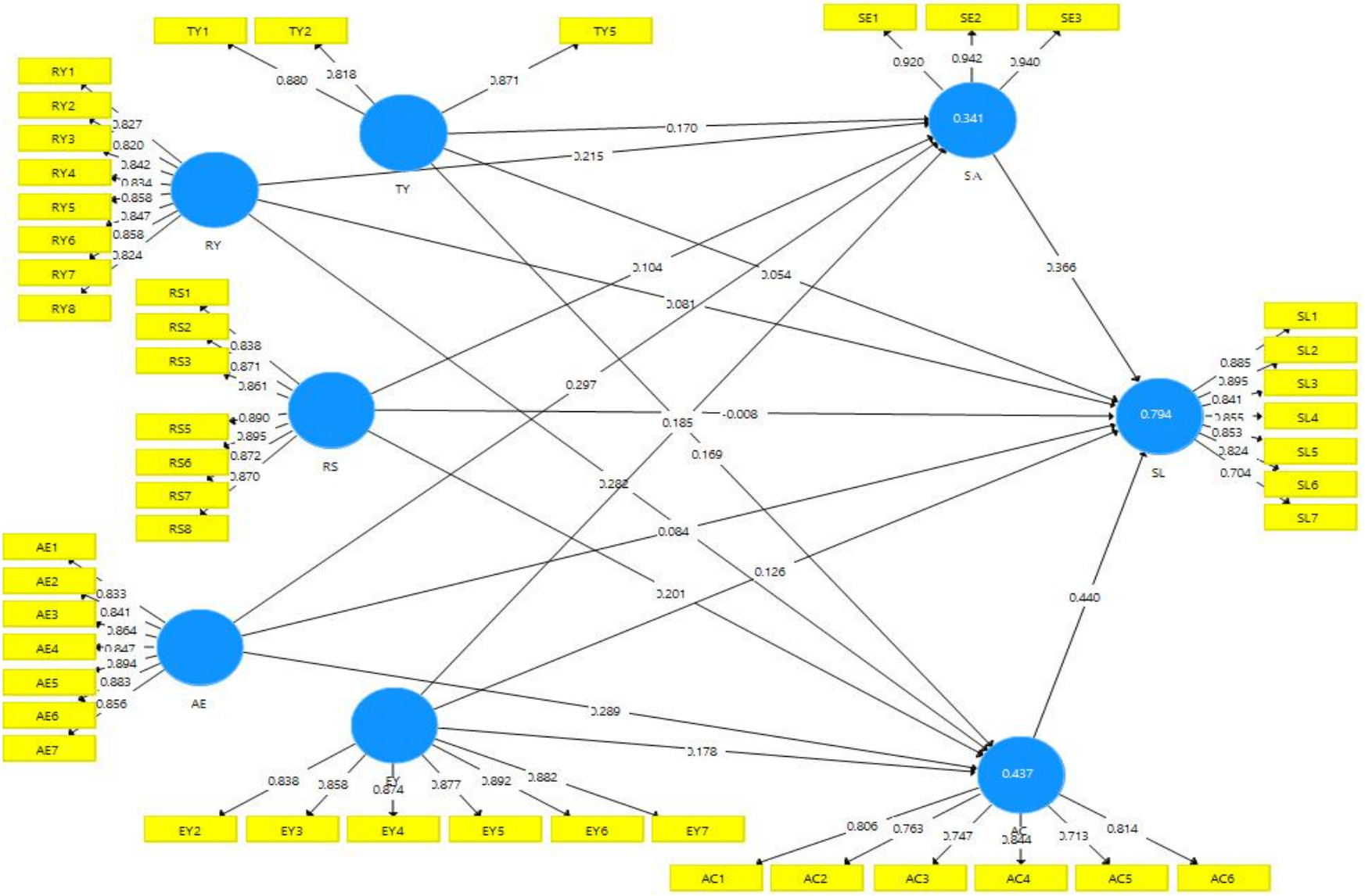

Figure 18: Structural Model Outer Loading Estimates

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

4.4.2. Internal Consistency of Research Constructs

Every construct's item must be consistent and represent the same idea, which means internal consistency. Table 20 displays the results of reliability tests of all of the study's major constructs, all of which 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 range 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.

Table 20: Internal Consistency Assessments of Research Constructs (N=479)

Items	Cronbach's Alpha	Composite Reliability
TY	0.821	0.892
RY	0.940	0.950
RS	0.947	0.957
AE	0.941	0.952
EY	0.936	0.949
AC	0.873	0.904
SA	0.927	0.953
SL	0.929	0.943

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)

According to the results in Table 21, all the values of the constructs representing expected and perceived constructs of service quality reflect the high consistency, ranged from 0.887 to 0.964.

Table 21: Internal Consistency Assessments of Expectations and Perceptions Sides (N=479)

Items	ETY	PTY	ERY	PRY	ERS	PRS	EAE	PAE	EEY	PEY
Cronbach's Alpha	0.904	0.887	0.954	0.939	0.939	0.950	0.952	0.932	0.944	0.930

Notes: PTY: Perceived Tangibility, ETY: Expected Tangibility, PRY: Perceived Reliability, ERY: Expected Reliability, PRS: Perceived Responsiveness, ERS: Expected Responsiveness, PAE: Perceived Assurance, EAE: Expected Assurance, PEY: Perceived Empathy, EEY: Expected Empathy, AC: Perceived Academic Competence, SA: Students' Affective Commitment, SL: Students' Loyalty
Source: Based on author's calculations (2022)

4.4.3. Convergent Validity of Research Constructs

Convergent validity means the degree of similarity between variables in the same construct. It is tested by the AVE values, which are summarized in Table 22 for all of the main constructs. 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.

Table 22: Convergent Validity Assessment of Model Constructs (N=479)

Items	Average Variance Extracted (AVE)
TY	0.734
RY	0.704
RS	0.759
AE	0.739
EY	0.758
AC	0.612
SA	0.872
SL	0.704

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)

4.4.4. Discriminant Validity of Research Variables

Discriminant validity measures the extent of non-relatedness of 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 shown in Table 23. The 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 and LARCKER, 1981). For example, RS has a value of 0.871, which is greater than all of the other associated column and row scores. The rest of the constructs in the study had a sufficient enough level of discriminant validity.

Table 23: Fornell & Larcker Criterion Matrix (N=479)

	AC	AE	EY	RS	RY	SA	SL	TY
AC	0.782							
AE	0.482	0.860						
EY	0.340	0.237	0.870					
RS	0.317	0.178	0.089	0.871				
RY	0.469	0.324	0.240	0.170	0.839			
SA	0.661	0.453	0.324	0.210	0.390	0.934		
SL	0.814	0.524	0.435	0.248	0.491	0.778	0.839	
TY	0.246	0.142	0.045	0.001	0.097	0.241	0.275	0.856

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)

Cross-loading scale is 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). As seen in Appendix 3, 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.

4.4.5. Multicollinearity Assessment of Research Constructs

The VIF value represents the level of tolerance between each exogenous variable (table rows) and the endogenous variables (table columns) in Table 24. As shown in the table, all values are lower than 3, the highest value is 2.252; therefore, the proposed conceptual framework has no collinearity issues and can proceed to the next assessments.

Table 24: Multicollinearity Assessment of Research Constructs (N=479)

Items	AC	SA	SL
AC			2.252
AE	1.187	1.187	1.380
EY	1.095	1.095	1.169
RS	1.050	1.050	1.122
RY	1.172	1.172	1.324
SA			1.924
SL	2.252		

Items	AC	SA	SL
TY	1.025	1.303	1.090

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)

4.4.6. Normality Analysis

To determine whether the data follow the normal distribution or not, skewness and kurtosis, and Kolmogorov–Smirnov test have been used. Tables 25 and 26 illustrate the results of the three tests. According to skewness and kurtosis tests, data is normally distributed.

Table 25: Skewness and Kurtosis Tests of Normality (N=479)

Items	TY	RY	RS	AE	EY	AC	SA	SL
Skewness	-1.006	0.074	-0.033	-0.039	-0.352	-0.382	-0.368	-0.727
Kurtosis	2.790	0.136	0.456	0.365	0.435	-0.010	-0.465	0.064

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)

According to the results of Kolmogorov–Smirnov test, all values are significant except for reliability, which indicates that data is not normally distributed. Based on the results, there is uncertainty about the normality of the data. However, Smart-PLS software is beneficial in this case.

Table 26: Kolmogorov–Smirnov Test of Normality (N=479)

	TY	RY	RS	AE	EY	AC	SA	SL
Test statistics	0.124	0.036	0.054	0.055	0.045	0.068	0.103	0.099
p-value	0.000	0.169	0.002	0.002	0.021	0.000	0.000	0.000

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)

4.5. Relationships and Effectiveness of the Structural Model

4.5.1. Evaluating the Differences Between Expectations and Perceptions

Table 27 shows the main gaps of the five factors of the SERVQUAL model. The most and least negative quality gaps were in the responsiveness (RS) and assurance (AE) dimensions, respectively.

Table 27: 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
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

Variable	Mean (perceived)	Mean (expected)	Gap score	p-value
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)

The findings show that all expectations are greater than perceptions. Regarding the dimensions, all five of them ranging from -0.430 for tangibility (TY) to -0.596 for empathy (EY) have negative disparities between the international students' expectations and perceptions. This result pushes toward ***supporting hypothesis H1 with its sub-hypotheses***.

4.5.2. Assessing Predictive Power of the Research Model

Table 28 shows the predictive power and predictive relevance of the endogenous latent constructs, perceived academic competence (AC), students' affective commitment (SA), and students' loyalty (SL).

Table 28: Predictive Power and Predictive Relevance of the Proposed Model (N=479)

Constructs	R square	Q square
AC	0.437 (moderate)	0.261 (moderate)
SA	0.341 (moderate)	0.292 (moderate)
SL	0.794 (strong)	0.554 (high)

Notes: AC: Perceived Academic Competence, SA: Students' Affective Commitment, SL: Students' Loyalty
Source: Based on author's calculations (2022)

Predictive results of the dependent construct, students' loyalty (SL), revealed that it has an explanatory power of 0.794 which is strong and a significant predictive relevance of 0.554. Thus, the various factors of service quality (TY, RY, RS, AE, and EY), perceived academic competence (AC),

and students' affective commitment (SA) explain 79.4% of the variance within international students' loyalty (SL).

Predictive results of the mediating construct perceived academic competence (AC), revealed that it has an explanatory power of 0.437, which is satisfactory, and a moderate predictive relevance of 0.261. Thus, the various factors of service quality (TY, RY, RS, AE, and EY) can explain 43.7% of the variance within perceived academic competence (AC).

Furthermore, predictive results of the mediating construct students' affective commitment (SA), revealed that it has an explanatory power of 0.341, which is satisfactory, and a moderate predictive relevance of 0.292. Therefore, 34.1% of the variance is explained by the service quality factors (TY, RY, RS, AE, and EY).

Based on the results of R square and Q square illustrated in Table 28, it is noticeable that the service quality factors (TY, RY, RS, AE, and EY) are significant in explaining the variance of perceived academic competence (AC), students' affective commitment (SA), and students' loyalty (SL). Besides, perceived academic competence (AC) and students' affective commitment (SA) explain a significant part of the variance in international students' loyalty (SL).

4.5.3. Assessing Constructs' Effect Size

Table 29 shows the results of the effect size assessment of the research constructs. The highest effect is for the construct perceived academic competence (AC) on the students' loyalty (SL) with an f^2 value of 0.417. This indicates a substantial relationship between these two variables. The effect for the majority of the other constructs is at different levels varied between small and medium.

Table 29: Effect Size Assessment of the Constructs (N=479)

Items	AC		SA		SL	
TY	0.050	small	0.043	small	0.013	small
RY	0.121	medium	0.060	small	0.024	small
RS	0.068	small	0.016	small	0.000	small
AE	0.125	medium	0.113	medium	0.025	small
EY	0.051	small	0.047	small	0.066	medium
AC					0.417	high
SA					0.337	high

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)

4.5.4. Path Coefficients of Proposed Relationships

The path coefficient analysis is shown in Table 30, 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.

There are five relationships of perceived academic competence (AC) examined. In terms of the tangibility (TY) → perceived academic competence (AC) relationship, the analysis outcomes indicate that perceived academic competence increases by 0.169 when tangibility raises by 1 unit. Regarding the reliability (RY) → perceived academic competence AC relationship, it also indicates a positive significant impact of reliability on perceived academic competence, and results show that in case reliability increases by 1 unit, perceived academic competence raises by 0.282. In addition, regarding the relationship of responsiveness (RS) → perceived academic competence (AC), responsiveness has a strong positive effect on perceived academic competence; when responsiveness increases by 1, perceived academic competence also increases by 0.201. Related to the relationship of assurance (AE) → perceived academic competence (AC), results demonstrated a significant influence. Therefore, assurance has a positive effect on perceived academic competence; when assurance increases by 1 unit, perceived academic competence increases by 0.289. With respect to the relationship of empathy (EY) → perceived academic competence (AC), outcomes revealed a positive significant effect, when empathy raises by 1 unit, perceived academic competence increases by 0.178.

To sum up, it is obvious that all service quality factors (tangibility, reliability, responsiveness, assurance, and empathy) have a significant positive effect on perceived academic competence (AC), the effect size is varied among factors, with the highest effect size of assurance (AE) with 0.125. ***The results confirm hypothesis H2 with its five sub-hypotheses, they are all supported.***

In terms of the relationships of students' affective commitment (SA), again, there are five relationships. Regarding the relationship of tangibility (TY) → students' affective commitment (SA), the analysis outcomes showed a significant influence, and students' affective commitment increases by 0.170 in case of tangibility becomes higher by 1 unit. With respect to the reliability (RY) → students' affective commitment (SA) relationship, reliability has a significant positive impact on students' affective commitment, and the path coefficient is 0.215. Regarding the relationship of responsiveness (RS) → students' affective commitment SA, outcomes revealed a significant influence of responsiveness on students' affective commitment with a path coefficient of 0.104. The results of the assurance (AE) → students' affective commitment (SA) relationship indicate a significant effect of assurance on students' affective commitment; if assurance increases by 1 unit, affective commitment also increases by 0.297. Besides, the results demonstrate a positive influence

for the empathy (EY) → students' affective commitment (SA) relationship; when empathy increases by 1 unit, students' affective commitment raises by 0.185.

To summarize, it is clear that all service quality factors (tangibility, reliability, responsiveness, assurance, and empathy) have a significant impact on students' affective commitment (SA); the effect size is nearly the same for all components, with assurance (AE) having the greatest influence (0.113). ***The findings support hypothesis H3 and its five sub-hypotheses.***

For the relationships of students' loyalty (SL) prediction, seven relationships exist. Regarding the tangibility (TY) → students' loyalty (SL) relationship, the findings found a positive association with a path coefficient 0.054. Moreover, the analysis results show that the reliability (RY) → students' loyalty (SL) relationship is significant, students' loyalty (SL) raises by 0.081 when reliability (RY) increases by 1 unit. On the other hand, regarding the responsiveness (RS) → students' loyalty (SL) relationship, outcomes indicate non-significant influences, it means that responsiveness has no effect on students' loyalty. For the relationship of assurance (AE) → students' loyalty (SL), according to the results, it is clear that the assurance has a positive effect on students' loyalty, with a path coefficient of 0.084. Also, as for the empathy (EY) → students' loyalty (SL) relationship, empathy affects students' loyalty positively, with a path coefficient of 0.126. With regard to the relationship of perceived academic competence (AC) → students' loyalty (SL), the examination leads to asserting the positive direct influence of perceived academic competence on international students' loyalty; when perceived academic competence raises by 1 unit, students' loyalty increases by 0.440. Furthermore, regarding the relationship students' affective commitment (SA) → students' loyalty (SL), students' affective commitment has a positive direct impact on students' loyalty; if affective commitment increases by 1 unit, loyalty also increases by 0.366.

In conclusion, it is clear that four of the service quality factors (tangibility, reliability, assurance, and empathy) have a significant impact on students' loyalty, while responsiveness has no impact on it. On the other hand, perceived academic competence (AC) and students' affective commitment (SA) play a crucial role and effect on international students' loyalty (SL). ***The results support hypothesis H4 partially, four of the five sub-hypotheses are not rejected.*** Additionally, ***findings assert hypotheses H5 and H6, so they are supported***. Table 30 illustrates the path coefficient analysis of the study constructs.

Table 30: 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

Relationship	Hypothesis	Path coefficient	t statistics	p-value	f^2
RS -> AC	H2.3	0.201	5.758	<0.001	0.068
AE -> AC	H2.4	0.289	7.988	<0.001	0.125
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)

4.5.5. 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 31 and 32 display the mediating role of perceived academic competence (AC) and students' affective commitment (SA).

Firstly, regarding the mediator variable perceived academic competence (AC), as for the relationships of assurance (AE), reliability (RY), empathy (EY), and tangibility (TY) → perceived academic competence (AC) → students' loyalty (SL), it has partial mediation effects because both the direct and the indirect effects are significant. In terms of responsiveness (RS) → perceived academic competence (AC) → students' loyalty (SL) mediation effect, the results reveal that perceived

academic competence has a full mediation impact on the relationship between responsiveness and students' loyalty.

Secondly, with regard to the mediator variable students' affective commitment (SA), regarding the relationships of assurance (AE), reliability (RY), empathy (EY), and tangibility (TY) → students' affective commitment (SA) → students' loyalty (SL), students' affective commitment has partial mediation influences because both the indirect and the direct effects are significant. In contrast, students' affective commitment has a full mediation impact on the relationship of responsiveness with students' loyalty (responsiveness (RS) → students' affective commitment (SA) → students' loyalty (SL)), because the direct effect is non-significant and the indirect effect is significant.

Table 31: 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
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 32: 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)

4.5.6. 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 33) revealed the significant impact of some demographic variables, most of variables' effects are partially supported except those of gender and level of study that are rejected.

Table 33: Findings on the Differences of the 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

	Variable values	TY	RY	RS	AE	EY	AC	SA	SL
	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
	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)

4.5.6.1. Differences Based on Gender

Based on the results described in Table 33, the differences between the male and female students are not significant, the means of the responses of the two categories are extremely close, and the t values range from -1.618 to 1.554 which are lower than the threshold 1.96. As a result, ***hypothesis 9.1 has been rejected.***

4.5.6.2. Differences Based on Age

With regard to age, five variables have significant differences, which are empathy (EY), assurance (AE), perceived academic competence (AC), student affective commitment (SA), and international students' loyalty (SL), their F values are significant ($p \leq 0.05$). The respondents aged 33 years and above and 28–32 years have the lowest negative scores, which gives a significant indicator that when students are older, they have higher satisfaction level toward the service quality factors, and they have higher loyalty, higher affective commitment, and higher perception of academic competence

compared with students from other age groups. Table 34 shows the post-hoc test results regarding age.

Table 34: Post-Hoc Test Results Regarding Age (N=479)

	Age	28–32 years	33 years and above
RY	28–32 years		**-0.453***
AE	18–22 years		**-0.611****
	23–27 years		**-0.530***
EY	18–22 years	**-0.481***	**-0.594****
	23–27 years	**-0.499***	**-0.612****
AC	18–22 years		**-0.247****
	23–27 years		**-0.266****
SA	18–22 years	**-0.280***	**-0.507*****
	23–27 years		**-0.479*****
SL	18–22 years		**-0.461*****
	23–27 years		**-0.488*****
	28–32 years		**-0.293***

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

According to the results of Table 34, regarding tangibility, there are no differences between groups, as for the other variables, students aged 18–22 years and 23–27 years show negative significant differences from students aged 33 years and above. Also, they show negative significant differences from students aged 28–32 years for empathy and affective commitment. Students aged 28–32 years show a negative significant difference from students aged 33 years and above just for the students' loyalty variable, which indicates that the differences between them are limited. We can notice that most of the groups negatively significantly differ from international students aged 33 years and above, which indicates that this category of age has some different points of view regarding their responses. Based on the results, it can be said that ***hypothesis 9.2 is supported.***

4.5.6.3. Differences Based on Level of Study

In terms of the level of study, and according to the results of Table 33, the PhD students have the lowest negative gaps among student groups based on levels of study, and they have higher perception of academic competence, higher affective commitment, and higher loyalty level. This means that

their relationship with the faculty staff and supervisor is strong, this may refer to the nature of the PhD studies in which the student is being more actively involved in the faculty's work. Also, PhD students are more loyal to their university than other students at different educational levels. The results are significant for students' affective commitment and students' loyalty with F values of 5.564 and 5.027, respectively. This result matches the result of the age differences, because 82.5% of PhD students in the sample are aged 28 and above. Table 35 shows the post-hoc test results regarding level of study.

Table 35: Post-Hoc Test Results Regarding Level of Study (N=479)

	Level of study	Bachelor	Master	PhD
AE	One-tier training			**-0.708****
EY	Bachelor			**-0.361***
SA	Bachelor			**-0.325****
	Master			**-0.255***
	One-tier training		**-0.382***	**-0.637*****
SL	Bachelor			**-0.251***
	Master			**-0.225***
	One-tier training	**-0.293***	**-0.320***	**-0.545*****

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

Based on the results of Table 35, it is noticeable that the PhD students show positive significant differences from students at other levels of study attributed to four variables (assurance, empathy, affective commitment, and students' loyalty). This result enhances the previous results that age and level of study have almost similar outcomes in which higher age and a higher level of study indicate fewer negative gaps, more affectively committed students, higher perception of academic competence, and more loyal students. According to the results, it is possible to conclude that ***hypothesis 9.3 is supported.***

4.5.6.4. Differences Based on Year of Study

With regard to the year of study, it can be observed that the differences between the respondents are significant for reliability (RY), assurance (AE), perceived academic competence (AC), and students' loyalty (SL), while they are not significant for other variables. The results of the post-hoc tests related to the year of study are presented in Table 36.

Table 36: Post-Hoc Test Results Regarding Year of Study (N=479)

	Year of study	Fifth year	Fourth year	Third year	Second year	First year
TY	Sixth year		**-0.848***	**-0.912***	**-0.936***	
RY	Second year					
	Third year				**-0.454***	**-0.516***
	Fourth year					**-0.459***
	Sixth year				**-1.210***	**-1.272***
AE	Third year				**-0.458***	**-0.727*****
	Sixth year	**-1.666***	**-1.529***		**-1.653****	**-1.921****
AC	Third year				**-0.261****	**-0.342*****
	Fourth year					**-0.215***
	Sixth year	**-0.750***	**-0.574***		**-0.709****	**-0.790****
SA	Sixth year	**-1.089***	**-0.970***	**-0.867***	**-0.982***	**-1.012***
SL	Third year				**-0.299***	**-0.398*****
	Sixth year	**-0.909***	**-0.777***		**-0.905****	**-1.004****

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

** 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)

Based on the post-hoc tests, the second, third, and fourth year show positive significant differences from students who study in the sixth year in terms of tangibility (TY). As for reliability (RY), the analysis indicated that the first-year students show positive significant differences from the third-, fourth-, and sixth-year students, and the second-year show positive significant differences from the third- and sixth-year students. Regarding assurance (AE), first year students show positive significant differences from third- and sixth-year students, and second year students have positive considerable disparities from third- and sixth-year students, while students from the fourth and fifth years have positive significant disparities from the sixth-year students. Moreover, the groups of first year students show positive significant differences from those of third-, fourth-, and sixth-year students, and second year students show positive significant differences from those of third- and sixth-year students, in addition to fourth- and fifth-year students from those of sixth-year students in terms of perceived academic competence (AC). Regarding affective commitment (SA), the sixth-year students show negative significant differences from all other study year groups. With regard to loyalty (SL), the sixth-year students' group shows negative significant differences from other groups except the

third-year students' group. As a result, there are significant differences in the constructs examined based on study year, thus, ***hypothesis 9.4 is supported.***

4.5.6.5. Differences Based on Student Status

It is also observable that the differences between scholarship students and self-financed respondents are significant for all variables except reliability (RY) and responsiveness (RS), they have significant t values ($p<0.05$). It is noticeable that the self-financed students' attitudes are more negative than scholarship students. Also, self-financed students have lower level of loyalty than the scholarship students, the same direction for their affective commitment (SA) and perceived academic competence (AC) was also revealed. Consequently, ***hypothesis 9.5 is supported.***

4.5.6.6. Differences Based on University

Table 33 also shows the differences in the respondents' responses toward the service quality and three additional factors attributed to the university. Six factors are significant, which are tangibility (TY), responsiveness (RS), assurance (AE), perceived academic competence (AC), students' affective commitment (SA), and students' loyalty (SL). Regarding the five factors of service quality, students studying at the University of Debrecen have the highest negative gaps for four factors. Regarding the other constructs, the mean scores of the University of Szeged students are the highest compared with the other four universities' students, the result gives an indicator that international students at the University of Szeged are more satisfied than students studying at other universities. Table 37 displays the outcomes of the post-hoc tests related to the university.

Table 37: Post-Hoc Test Results Regarding University (N=479)

	University	BME	ELTE	US	UP
TY	UD	**-0.388*****	**-0.567*****	**-0.297***	
	UP		**-0.479*****		
RS	UD			**-0.453***	
	UP		**-0.514***	**-0.532***	
AE	UD		**-0.526***	**-0.738*****	
AC	UD	**-0.229***	**-0.282****	**-0.305****	**-0.191***
SA	UD	**-0.542*****	**-0.625*****	**-0.773*****	**-0.368****
	UP			**-0.404****	
SL	UD	**-0.414****	**-0.399****	**-0.488*****	**-0.227***
	UP			**-0.260***	

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 ≤ 0.05, ** Significant at p ≤ 0.01, *** Significant at p ≤ 0.001*

Source: Based on author's calculations (2022)

Concerning the university, beginning with tangibility (TY), the University of Debrecen shows negative significant differences from all other universities, except the University of Pécs which shows a negative significant difference from Eötvös Loránd University (ELTE). However, regarding responsiveness (RS), the University of Szeged shows positive differences from the University of Debrecen and the University of Pécs, and Eötvös Loránd University shows positive significant differences from the University of Pécs. And in terms of assurance (AE), the University of Debrecen shows negative significant differences from Eötvös Loránd University and the University of Szeged. With regard to perceived academic competence (AC), affective commitment (SA), and international students' loyalty (SL), the University of Debrecen shows negative significant differences from all other groups. Accordingly, ***hypothesis 9.6 is supported.***

4.5.6.7. Field of Study Differences

The Table 33 illustrates the differences in the respondents' evaluations of the service quality factors attributed to the field of study. Findings assert significant differences for five variables which are tangibility (TY), responsiveness (RS), perceived academic competence (AC), students' affective commitment (SA), and their loyalty (SL).

The results of the post-hoc analyses related to the field of study are shown in Table 38.

Table 38: Post-Hoc Test Results Regarding Field of Study (N=479)

	University	Medical & Health	Science, Mathematics, & Computer	Engineering, Manufactur-ing, & Construction	Humanities, Social science, & Education	Agriculture, Environment, & Veterinary	Economics & Business
TY	Engineering, Manufacturing, & Construction					**-0.462***	**-0.350***
	Medical & Health					**-0.508***	**-0.396****
RS	Economics & Business				**-0.784****		
	Medical & Health				**-0.489***		
	Agriculture, Environment, & Veterinary	**-0.653***	**-0.724***	**-0.754***	**-1.143*****		
AE	Medical & Health				**-0.522***		

	University	Medical & Health	Science, Mathematics, & Computer	Engineering, Manufactur-ing, & Construction	Humanities, Social science, & Education	Agriculture, Environment, & Veterinary	Economics & Business
EY	Medical & Health						**-0.466***
AC	Humanities, Social science, & Education						**-0.238***
	Engineering, Manufacturing, & Construction				**-0.417*****		
	Medical & Health				**-0.382*****		
SA	Engineering, Manufacturing, & Construction				**-0.498****		**-0.381****
	Medical & Health		**-0.349***		**-0.512*****		**-0.395****
	Science, Mathematics, & Computer			**-0.335***			
SL	Engineering, Manufacturing, & Construction						**-0.305***
	Medical & Health		**-0.294***		**-0.552*****		**-0.388****
	Engineering, Manufacturing, & Construction				**-0.468*****		
	Agriculture, Environment, & Veterinary	**-0.617*****		**-0.534****			

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

** 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)

Regarding tangibility (TY), the economics and business field shows positive significant differences from engineering, manufacturing, and construction fields and the medical and health field, while the agriculture, environment, and veterinary field shows positive significant differences from engineering, manufacturing, and construction and medical and health fields. For responsiveness (RS), basically, humanities, social science, and education fields show positive significant differences from economics and business, medical and health, and agriculture, environment, and veterinary fields. For assurance (AE), the medical and health field shows negative significant differences from the humanities, social science, and education field. With regard to empathy (EY), economics and business field shows positive significant differences from medical and health field. As for perceived academic competence, the economics and business field show positive significant differences from humanities, social science, and education fields, also, the humanities, social science, and education show positive significant differences from medical and health engineering, manufacturing, and construction fields. Regarding affective commitment, the economics and business field and agriculture, environment, and veterinary field have positive significant difference from medical and

health engineering, manufacturing, and construction fields. In terms of student loyalty, the most significant result is the positive significant differences that the economics and business field have from medical and health engineering, manufacturing, and construction fields. Consequently, ***hypothesis 9.7 is supported.***

In conclusion, six sub-hypotheses have been kept, while one sub-hypothesis has been rejected. As a result, ***H9 hypothesis is partially supported***.

4.5.7. 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 coefficient using Smart-PLS software. The results indicate that neither demographic variable has significant effect on international students' loyalty except student status (scholarship and self-financed students), which predicts international students' loyalty. Figure 19 illustrates the path coefficients and p-values when student status enters the model.

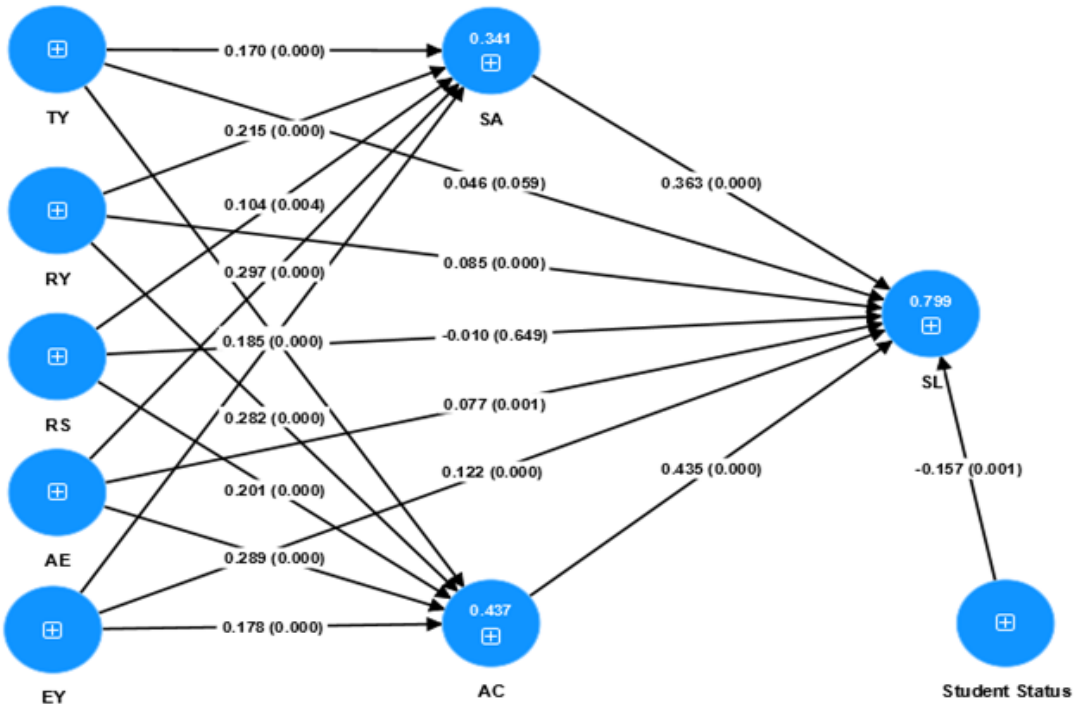

Figure 19: Student Status Effect on International Student's Loyalty

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 using Smart-PLS (2022)

Based on the results of Figure 19, student status has a significant impact on international students' loyalty (path coefficient = -0.157, p = 0.001). Looking at Table 33, the loyalty of international students differs among the two groups, scholarship students have a higher loyalty level (3.826) than

self-financed students (3.362), and the difference is significant at $p \leq 0.001$. The result can be attributed to the fact that student loyalty decreases by 0.157 when a scholarship student is replaced by a self-financed student. Also, the results indicate that the effect of student status on international students' loyalty eliminates the tangibility effect on the loyalty (path coefficient = 0.046, p = 0.059). The tangibility path coefficient decreased from 0.054 to 0.046 and the p-value became insignificant. The results of the gender and age indicated that they don't have a significant effect on the dependent variable with p-values above 0.05. According to the results, **sub hypotheses 10.5 is supported while other sub hypotheses (10.1, 10.2, 10.3, 10.4, 10.6, 10.7) are rejected. Accordingly, hypothesis 10 is rejected.**

4.6. Hypotheses Discussions

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

4.6.1. Findings of Hypothesis 1

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, as seen in Table 27. 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.*

4.6.2. Findings of Hypothesis 2

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. As shown in Table 30, 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*.

4.6.3. Findings of Hypothesis 3

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*.

4.6.4. Findings of Hypothesis 4

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*.

4.6.5. Findings of Hypothesis 5

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*.

4.6.6. Findings of Hypothesis 6

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*.

4.6.7. Findings of Hypothesis 7

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*.

4.6.8. Findings of Hypothesis 8

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.*

4.6.9. Findings of Hypothesis 9

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 (see Table 33), 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.*

4.6.10. Findings of Hypothesis 10

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.

Based on the results of Figure 19 and what is mentioned in section 4.5.7., 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.*

5. CONCLUSIONS AND RECOMMENDATIONS

5.1. 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 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 had high expectations before they enrolled 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. This result matches with results of ALMEKHLAFI and ABDUL-GHANI (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, perceived tangibility, reliability, responsiveness, assurance, and empathy that represent the 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, which is a sensitive factor since it contributes to the sustainability of higher education institutions, in this study, 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, 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. That indicates when the consumer has to pay for the product/service themselves, they are more price sensitive, at the same time, more critical; when the financial burden is shared by somebody else (in this case, tuition is fully financed by the state), they are not so sensitive and not so critical. 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.

5.2. Recommendations

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 their service quality by adapting this model.

5.3. Limitations 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 population of international students only, and the target population was international students 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 different European countries and make a comparative study, it would be a valuable contribution to the topic.
- This study is a cross-sectional study, which pinpoints the relationship between variables at a specific point in time. For future research, longitudinal studies could be applied, e.g., to better assess the differences between expectations and perceptions of service quality dimensions.
- 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.

6. MAIN CONCLUSIONS AND NOVEL RESULTS OF THE DISSERTATION

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 (tangibility, reliability, responsiveness, empathy, and assurance) which are the independent variables in the current study have a significant prediction on the mediators which are perceived academic competence ($R^2 = 0.437$) and affective commitment ($R^2 = 0.341$). Besides, variables 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) which indicates that student loyalty decreases by 0.157 when a scholarship student is replaced by a self-financed student.

SUMMARY

The study's objectives included to examine how perceptions and expectations of service quality dimensions (tangibility, reliability, responsiveness, assurance, and empathy) differ in international students studying in Hungarian higher education institutions as well as the dimensions' effects on international students' loyalty, perceived academic competence, and affective commitment. In addition, the study aimed to assess how perceived academic competence and students' affective commitment mediate the relationship between service quality perceived by international students and their loyalty as well as to identify the effect of the demographic variables on the study constructs.

International students of the five largest and best Hungarian universities made up the target population of the study sample, and non-probability sampling method, namely, quota sampling technique was employed. A self-administered questionnaire that addressed four topics (service quality factors, perceived academic competence, affective commitment, and international students' loyalty) was used to collect the data. A pilot study has been conducted to ensure the reliability and validity of the study instrument.

The findings highlighted the gap between the expectations and perceptions of international students toward the service quality factors of universities in Hungary, the gap is negative for all dimensions, i.e., perceptions fall short of expectations. Also, the study dealt with the relationships between constructs; among seven constructs that supposedly affect international students' loyalty in higher education institutions in Hungary, just one construct (responsiveness) doesn't predict international students' loyalty. The results revealed that perceived service quality has an influence on and plays a necessary function in perceived academic competence and students' affective commitment, in addition to the crucial role of the mediators (perceived academic competence and students' affective commitment) in their effect on students' loyalty. The analysis also found significant differences among some demographic groups regarding the study's constructs. The results also revealed that student status (i.e., scholarship and self-financed students) predicts the loyalty of international students.

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LIST OF PUBLICATIONS

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Registry number: DEENK/90/2023.PL
Subject: PhD Publication List

Candidate: Omar Salem
Doctoral School: Károly Ihrig Doctoral School of Management and Business
MTMT ID: 10069977

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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4. **Salem, O.**: Education And Internet Users Indicators And Their Impact On The Unemployment Rate In European Union Countries.
Network Intelligence Studies. 8 (15), 27-33, 2020. EISSN: 2344-1712.

5. **Salem, O.**: Social Media Marketing In Higher Education Institutions.
SEA - Practical Application of Science. 8 (23), 191-196, 2020. EISSN: 2360-2554.

The Candidate's publication data submitted to the iDEa Tudóstér have been validated by DEENK on the basis of the Journal Citation Report (Impact Factor) database.

DEBRECENI EGYETEM Egyetemi és Nemzeti Könyvtár

30 March, 2023

APPENDICES

Appendix 1. The Questionnaire Items

Item No.	Item
	TY: Tangibility
1.	TY1: The university has advanced, modern teaching, and IT facilities.
2.	TY2: The university has physical facilities visually appealing.
3.	TY3: The support staff are well dressed.
4.	TY4: The academic staff are well dressed.
5.	TY5: Materials related to provided services (the content of the lectures, magazines, publications, etc.) are visually appealing, understandable, and accessible.
	RY: Reliability
6.	RY1: The university staff promise to do something, and do so.
7.	RY2: The university staff show sincere intention in solving your problems.
8.	RY3: The support staff do their job at time promised.
9.	RY4: The support staff perform service right first time.
10.	RY5: The support staff perform their duties with limited mistakes and maintain error free records.
11.	RY6: The academic staff do their job at time promised.
12.	RY7: The academic staff perform service right first time.
13.	RY8: The academic staff perform their tasks with limited mistakes and maintain error free records.
	RS: Responsiveness
14.	RS1: The support staff tell exactly when services will be done.
15.	RS2: The support staff give prompt service to you without delay.
16.	RS3: The support staff willing to help.
17.	RS4: The support staff respond to the student's requests all the time.
18.	RS5: The academic staff always inform when services are done.
19.	RS6: The academic staff give prompt service to you without delay.
20.	RS7: The academic staff are readily helping.
21.	RS8: The academic staff respond to the student's requests all the time.
	AE: Assurance
22.	AE1: I feel safe in a learning environment.
23.	AE2: The support staff behavior instills confidence in you.
24.	AE3: The support staff consistently are polite with you.
25.	AE4: The support staff have the knowledge and skills to answer your questions.
26.	AE5: The academic staff behavior instills confidence in you.
27.	AE6: The academic staff consistently are polite with you.
28.	AE7: The academic staff have the skills and knowledge to answer your questions.
	EY: Empathy
29.	EY1: The university's operating hours are convenient for you.
30.	EY2: The support staff give you individual attention.
31.	EY3: The support staff have your best interests at heart.

32.	EY4: The support staff understand your specific needs.
33.	EY5: The academic staff give you individual attention.
34.	EY6: The academic staff have your best interests at heart.
35.	EY7: The academic staff understand your specific needs.
AC: Academic competence	
36.	AC1: The university offers high quality education.
37.	AC2: The university attracts highly motivated, intelligent students.
38.	AC3: The university has nationally known academic programs/ departments/schools.
39.	AC4: The university is a highly preferred university.
40.	AC5: The university is a well-known university.
41.	AC6: The university looks like a university with strong prospects for future growth.
42.	AC7: The university has successful alumni.
SA: Student's affective commitment	
43.	SA1: I feel emotionally attached to my faculty/staff.
44.	SA2: I continue to interact with my faculty/staff because I like being associated with them.
45.	SA3: I continue to interact with my faculty/staff because I genuinely enjoy my relationship with them.
SL: Student's loyalty	
46.	SL1: I feel proud to study in this university.
47.	SL2: I will recommend this university to my friends and relatives.
48.	SL3: I will choose the university to further my studies.
49.	SL4: If I were faced with the same choice again, I would still choose the same university.
50.	SL5: I will provide positive answers if someone asks about the university.
51.	SL6: I'm very interested in keeping in touch with "the faculty".
52.	SL7: I will continue my study at the university until my graduation to become an alumni of the university.

Source: Based on Parasuraman et al. (1988), Rasli et al. (2012), Ibrahim et al. (2013), Alessandri et al. (2006), Telci and Kantur (2014), Arpan et al. (2003), Meyer and Allen (1991), Roberts et al. (2003), Snijders et al. (2020), Annamdevula and Bellamkonda (2016), Helgesen and Nesset (2007), and Zeithaml et al. (1996)

Appendix 2. Outer Loadings of Research Items (N=479)

Item	All loadings (before elimination of weak items)	Proper loadings (after elimination of weak items)
AC1	0.803	0.806
AC2	0.757	0.763
AC3	0.743	0.747
AC4	0.830	0.844
AC5	0.696	0.713
AC6	0.818	0.823
AC7	0.686	
AE1	0.833	0.833
AE2	0.841	0.841
AE3	0.864	0.864
AE4	0.847	0.847
AE5	0.894	0.894
AE6	0.883	0.883
AE7	0.856	0.856
EY1	0.638	
EY2	0.837	0.838
EY3	0.854	0.858
EY4	0.874	0.874
EY5	0.872	0.877
EY6	0.884	0.892
EY7	0.875	0.882
RS1	0.839	0.838
RS2	0.868	0.871
RS3	0.861	0.861
RS4	0.510	
RS5	0.885	0.890
RS6	0.890	0.895
RS7	0.867	0.872
RS8	0.862	0.870
RY1	0.826	0.827

RY2	0.819	0.820
RY3	0.841	0.842
RY4	0.834	0.834
RY5	0.858	0.858
RY6	0.847	0.847
RY7	0.858	0.858
RY8	0.824	0.824
SA1	0.920	0.920
SA2	0.942	0.942
SA3	0.940	0.940
SL1	0.885	0.885
SL2	0.895	0.895
SL3	0.840	0.841
SL4	0.855	0.855
SL5	0.853	0.853
SL6	0.825	0.824
SL7	0.704	0.704
TY1	0.864	0.880
TY2	0.800	0.818
TY3	0.565	
TY4	0.533	
TY5	0.848	0.871

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)

Appendix 3. Cross-Loading Assessment of Research Variables (N=479)

	AC	AE	EY	RS	RY	SA	SL	TY
AC1	**0.806**	0.427	0.347	0.247	0.418	0.570	0.753	0.264
AC2	**0.763**	0.369	0.192	0.266	0.355	0.465	0.601	0.128
AC3	**0.747**	0.317	0.217	0.227	0.319	0.435	0.542	0.132
AC4	**0.844**	0.424	0.278	0.276	0.390	0.577	0.683	0.239
AC5	**0.713**	0.314	0.215	0.229	0.305	0.443	0.508	0.182
AC6	**0.814**	0.389	0.314	0.242	0.393	0.581	0.684	0.182
AE1	0.404	**0.833**	0.195	0.147	0.260	0.383	0.460	0.135
AE2	0.426	**0.841**	0.200	0.191	0.306	0.381	0.445	0.122
AE3	0.373	**0.864**	0.180	0.086	0.246	0.369	0.402	0.081
AE4	0.388	**0.847**	0.212	0.112	0.262	0.394	0.428	0.070
AE5	0.439	**0.894**	0.228	0.182	0.317	0.415	0.482	0.160
AE6	0.466	**0.883**	0.216	0.185	0.295	0.413	0.497	0.155
AE7	0.395	**0.856**	0.194	0.159	0.254	0.364	0.428	0.120
EY2	0.242	0.193	**0.838**	0.076	0.191	0.238	0.295	-0.028
EY3	0.272	0.185	**0.858**	0.056	0.227	0.269	0.354	0.077
EY4	0.275	0.198	**0.874**	0.066	0.201	0.295	0.374	0.044
EY5	0.314	0.208	**0.877**	0.086	0.228	0.301	0.396	-0.002
EY6	0.325	0.219	**0.892**	0.078	0.208	0.285	0.409	0.069
EY7	0.332	0.231	**0.882**	0.102	0.198	0.296	0.424	0.062
RS1	0.271	0.136	0.054	**0.838**	0.166	0.176	0.211	0.012
RS2	0.272	0.166	0.080	**0.871**	0.146	0.204	0.234	-0.013
RS3	0.242	0.144	0.063	**0.861**	0.125	0.154	0.166	-0.007
RS5	0.259	0.089	0.056	**0.890**	0.116	0.171	0.223	0.026
RS6	0.272	0.176	0.063	**0.895**	0.154	0.195	0.215	-0.015
RS7	0.288	0.189	0.098	**0.872**	0.135	0.180	0.208	-0.027

	AC	AE	EY	RS	RY	SA	SL	TY
RS8	0.316	0.178	0.120	**0.870**	0.187	0.195	0.245	0.026
RY1	0.438	0.280	0.215	0.158	**0.827**	0.348	0.434	0.028
RY2	0.416	0.262	0.214	0.164	**0.820**	0.339	0.424	0.085
RY3	0.392	0.220	0.175	0.115	**0.842**	0.310	0.420	0.085
RY4	0.376	0.240	0.185	0.110	**0.834**	0.333	0.396	0.112
RY5	0.410	0.297	0.213	0.135	**0.858**	0.335	0.427	0.079
RY6	0.389	0.306	0.211	0.179	**0.847**	0.353	0.422	0.086
RY7	0.381	0.305	0.205	0.143	**0.858**	0.320	0.408	0.107
RY8	0.327	0.255	0.188	0.133	**0.824**	0.265	0.350	0.074
SA1	0.603	0.412	0.330	0.169	0.377	**0.920**	0.730	0.272
SA2	0.614	0.439	0.295	0.202	0.379	**0.942**	0.721	0.165
SA3	0.636	0.419	0.283	0.219	0.336	**0.940**	0.730	0.238
SL1	0.739	0.434	0.383	0.214	0.452	0.660	**0.885**	0.219
SL2	0.776	0.452	0.376	0.224	0.450	0.647	**0.895**	0.276
SL3	0.671	0.459	0.412	0.222	0.402	0.675	**0.841**	0.274
SL4	0.706	0.438	0.379	0.215	0.424	0.664	**0.855**	0.269
SL5	0.705	0.472	0.370	0.216	0.401	0.611	**0.853**	0.243
SL6	0.634	0.433	0.313	0.178	0.377	0.749	**0.824**	0.182
SL7	0.521	0.387	0.318	0.188	0.374	0.557	**0.704**	0.136
TY1	0.195	0.092	0.067	-0.027	0.078	0.186	0.213	**0.880**
TY2	0.209	0.112	-0.005	0.011	0.067	0.152	0.195	**0.818**
TY5	0.224	0.152	0.048	0.015	0.099	0.263	0.283	**0.871**

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)

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