Impact of Service Quality on Students' Satisfaction in Public Universities of Pakistan

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Abstract

The study examines the complex interplay between service quality, student happiness, university sustainability strategies, and motivation, particularly emphasizing the elements that regulate and mediate these connections in Pakistan's public institutions. Primary data were acquired online using Google Form surveys from senior students enrolled at level 6th of the Pakistani Qualification Framework, with a population of 1.96 million and a sample size of 515 individuals. The sample employed descriptive and quantitative analysis to explain all hypotheses using partial least squares (PLS). This study has added to the literature on higher education service quality by investigating relationships between service quality, university sustainability, motivation, and student happiness. It sheds light on the complex factors that shape the educational experience in Pakistan's public institutions. It also serves as a basis for future research and practical initiatives in higher education management and policy. Comparative research of public and private sector university students is required to address the increasing difficulties that affect students in Pakistan's higher education industry.

Keywords: Academic and nonacademic aspects, access, reputation, service quality, satisfaction

1 Introduction

It has undoubtedly drawn attention to academic institutions seeking to improve educational services, policies, and procedures. Competition in higher education, both nationally and internationally, is a good indication. The higher education provider must, therefore, be able to deliver the greatest service and turn out well-prepared graduates. Education is the most important

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factor in national education. To harness each university's resources and expertise, education must be handled by national education standards.

Quality refers to many aspects of various individuals; therefore, the notion of quality is difficult to define. However, quality may be categorized in terms of diverse views. According to Ntabathia (2013), "The totality of features and characteristics of a product or service that fulfill consumer wants." is quality. A commonly accepted definition of quality is the capacity to meet or exceed expectancy. The above-mentioned definitions are developed from the perspective of the good and the consumer. Assessing service quality is another way to examine this. These metrics are classified as disconfirmation techniques, effectiveness measures, and importance-performance assessments. According to Onditi and Wechuli (2017) the concept of service quality can be presented from the perspective about the consumers of a service rate the service based upon the personal experiences.

The term "quality" can describe the standards of any product, service, or organization. Over the last several decades, philosophers Wood and Wood have used their thoughts to define the term quality and achieve quality management concepts (Wood & Wood 2005). The contributions of ideologies have taught engineers and managers how to focus on their performance. W. Edwards Deming defined quality as a known degree of stability and consistency at a low cost (Tsutsui & Muramatsu 2007). Crosby's thoughts are always defined by four absolutes: Conformance to specifications is the definition of quality. Standards have zero faults, and the quality system is preventive. According to Wood, quality is suitability for design, conformity, availability, safety, and usage in the field. Ghobadian et al., 1994). An acceptable level of quality in a company entails recognizing who stakeholders are, understanding their demands, and constantly meeting those needs.

According to Brady and Cronin (2001), transformational quality in education, as articulated by Harvey and Green (1993), is associated with the technical aspect of service quality. Holdford and Patkar (2003) described service quality as evaluating the services provided to students throughout their educational experience. Higher education service quality includes functional and transformational dimensions (Teeroovengadum et al., 2019). According to Mazzarol (1998) education is treated as a service, and service marketing is used; therefore, education is classified as a service industry firm. Regardless of who pays the students' dues, a customer is the ultimate consumer of a product. According to Puriwat and Tripopsakul (2021) student satisfaction is described as a temporary attitude arising from the assessment of student's services and facilities in educational point of view.

In Pakistan, universities have expanded from 99 to 143 in the previous eight years, with enrollment rising from 1.76 million in 2017-18 to 0.06 million in 2020-21 and 1.96 million in 2021-2022. According to the HEC (HEC), Pakistan now has 243 public and private sector universities in all disciplines, with 143 being public and the remaining 100 being private. Furthermore, despite the HEC's established protocol, all new institutions have been formed for political purposes and have not received a single penny in recurring money (Karim et al., 2021). The rapid expansion of universities also increases the rivalry among students, faculty, and resources. In other words, the sustainability of universities in Pakistan depends on the number of students and financial stability, as institutions should provide students with a high-quality education at an affordable cost (Asad et al., 2021). Increasing student happiness is a strategic goal of public colleges and universities in Pakistan, which are similarly struggling to meet students' expectations. Furthermore, these problems encourage university administration to improve service quality to increase student happiness. Numerous protests have occurred in Pakistan due to a lack of infrastructure at public universities, such as Khan et al. (2020).

According to (Omar et al., 2021), universities should provide students with superior education

services. The level of services public universities provide indicates the quality of education administration. In theory, several types of research have established linkages between excellent services and student happiness (Paposa & Paposa, 2023). Their results emphasized the importance of university infrastructure, personnel mentality and conduct, teacher expertise, cafeteria quality, classroom quality, admission desk, safety security, and sociability in determining student happiness. It is commonly noticed that students pay more outstanding tuition to colleges, and as a result, they have access to good quality services in terms of satisfaction (Khoo et al., 2017).

Universities' future performance and viability depend on student satisfaction, a primary concern for institutions. Koni et al., (2013). Other aspects that impact student happiness include service quality, lecture quality, and the facilities for learning. In addition, the criteria of service quality and academic staff's teaching competence significantly impact student satisfaction. (Sigala et al., 2021) discovered that the quality of a lecturer became the leading cause of student satisfaction. Osman and Saputra (2019) verified in another article that has the most significant influence on student satisfaction. A study by (Ali et al., 2016) became related after it was shown by modeling the structural equation that the perceived quality affects student satisfaction with institutional satisfaction status affects student devotion.

Moreover, engaging students in extracurricular activities that can increase their overall capacities is critical in addition to university infrastructure. Additionally, people can serve as change agents, particularly for campus sustainability. These sustainable activities can help develop a positive image of the institution in the observance of students and other stakeholders. In addition, students perceive the university's sustainable practices and how this type of conduct involves them in its sustainability initiative (Manzoor et al., 2021). Earlier research has also found that university sustainability has an optimistic influence on student satisfaction (Shurair, 2017). The universities are becoming more interested in environmentally friendly practices (Vázquez et al., 2016). According to the researcher, there is always little study relating university sustainability performance to student loyalty (Ozdemir et al., 2020). Past research has mainly ignored the importance of university sustainability activities in determining student happiness (Latif et al., 2021a). University sustainability concepts are closely integrated with university policies and activities; the mediating element of university sustainability practices motivates the current study to investigate further. As a result, the study discovered a knowledge gap that must be filled.

Service quality and satisfaction surveys had a significant impact on student loyalty. In addition to loyalty, motivation is also an aspect of service quality and student satisfaction. Students' motivation is very important in the learning procedure because better services provided by educational institutions motivate students in teaching and the learning procedure, which is why it can improve the quality of educational results (Karimi et al., 2017). Student motivation is a multifaceted construct that shapes students' engagement and performance in educational settings. Motivation has two factors: intrinsic motivation, which includes the need to learn and acquire knowledge, and extrinsic motivation, which results from outside influences, are the two components of motivation (Ryan & Deci, 2000). Higher education institutions' teaching and faculty methods, academic service, administrative support with services, the university facilities, and the environment of the campus all have an impact on student motivation (Annamdevula & Bellamkonda, 2016; Naibaho et al., 2021; Rabbi et al., 2015; Siswoyo et al., 2012)

Researchers have widely discussed the connections between Service Quality and customer satisfaction in different contexts. However, counseling against university sustainability practices is a less studied area in the sense of service quality effectiveness, regardless of the growing importance of these roles in higher education (Alsheyadi & Albalushi, 2020). This research addresses this need, mainly when sustainability ideas are being adopted into most university policies and procedures (Nejati & Nejati, 2013). Additionally, significant comments and ideas to enhance the entire approach of service quality evaluation in Pakistan, hence increasing student

happiness. As a result, the study discovered a knowledge gap that must be filled.

1.1 Research Problem

Due to the Higher Education Commission of Pakistan's educational policies, significant changes have been observed in higher education. Many new universities in Pakistan have been established dramatically in recent decades (Hoodbhoy, 2021). As a result, universities are facing intense competitive pressures. Student support services are frequently considered secondary to educational facilities in terms of increasing student happiness, mainly when sustainability concepts are firmly linked to the university policy and practice. According to (Latif et al., 2021b) the past researchers mainly ignored the importance of university sustainability activities in influencing student commitment. All of these are significant issues for higher education institutes nowadays. Pakistan appears to be doing quite well, yet it needs tools of different quality in higher education. It trails significantly other industrialized nations regarding the value of education provided to its students. Service quality is an overlooked component of public universities in Pakistan, as government oversight bodies and university management focus solely on improving "educational quality" (Althaus et al., 2021). Therefore, there is a need to assess gaps in student satisfaction and university management performance in terms of the overall quality of service provided by the institutions and to identify strengths that need to be maintained and weaknesses that need to be improved. This research will contribute to the academic theory by developing an inclusive model that includes the different areas of student perceptions of service quality, university sustainability practices, and student satisfaction, as reported by (Mukaram et al., 2021). An integrated approach is needed to bridge the gap between these two areas.

Numerous studies on service quality in education have been conducted over the last ten years (Chuah, 2011). However, there has not been much effort put into figuring out how student perceptions of service quality affect the university's sustainability efforts or how those efforts affect student satisfaction (Bantanur et al., 2015b). Modern universities have developed strategies to increase the quality of their services to upsurge competition between universities. There is also a lack of research on quality support services and student satisfaction from the perspective of public tertiary institutions in Pakistan, which hampers the need for research (Yasmin, 2022). As a result, the present study attempts to express a deficiency in the research. This research aims to investigate the link of service quality with student happiness using the principles of the" Higher Education Performance (Abdullah, 2006) "model, with university sustainability practices serving as mediating roles under the moderated effects of motivation. This study proposes to address the following research questions:

   i.   To assess the significant relationship between service quality and student satisfaction.
   ii. To examine the relationship between university sustainability practices mediating service quality and student satisfaction from a higher education perspective.
   iii. To examine the moderating effects of motivation for service quality on student satisfaction when university sustainability practices mediate the relationship in the higher education setup.

2 Theory

Several theoretical approaches have been employed to elucidate the connection between disconfirmation and satisfaction in customer experiences. These theories can generally be categorized into three groups: Expectancy Disconfirmation, Equity, and Attribution. Additionally, numerous theories exist within the realm of satisfaction and service paradigms. The assimilation contrast theory applies to the present study to assess the relationship between students` perceptions of service quality and satisfaction. As the foundation of this idea, the pragmatic paradigm implies that students have high expectations for their academic performance before beginning their studies. Students may either be satisfied or dissatisfied.

2.1 Theoretical Background

Service Quality

The concepts of perception and expectations can be linked to Service quality. Bhat (2005) defines service quality as a "measure of how good it is and matches the customer's expectations". Customers' views of service quality are determined by comparing their expectations for the service they receive with their perceptions of the company's initiatives (Grönroos, 2001).

In the last few decades, service quality has remained one of the most important research topics (Gallifa & Batallé, 2010). According to Ueltschy et al. (2007), service quality is an evaluation focused on customer perceptions of certain service aspects. Moreover, in each perception of a service quality dimension, several factors are considered, including the quality of the product and not only the price but also the situational and personal factors (Kouthouris & Alexandris, 2005).

University Sustainability practices

A sustainable university places a high value on sustainability in both its research and teaching. Sustainable universities are concerned with balancing the present requirements without negotiating future generations' needs. A university can help sustainable practices in many ways, including teaching the students the value of sustainability in present-day business operations and conducting sensitive research on pressing sustainable concerns while lessening the campus' total environmental influence. Sustainability focuses on the awareness that appropriate efforts must be taken immediately to safeguard the environment and satisfy current and future needs as we live in a world with limited resources. A progressive university is one where methods are regularly reviewed and restructured to ensure students receive the utmost possible education while minimizing environmental damage. Chaudhary and Dey (2021) also disclose that the university sustainability practices mediate the relationship between service quality and student satisfaction.

In the increasingly sustainability-focused world, employers place value on alumni who can establish sustainability skills. Students at universities have several options to obtain experience working on sustainability-related projects. In the curriculum at sustainable universities, sustainable practices are frequently incorporated. Graduates will be able to create sustainable solutions. Moreover, Latif et al. (2021b) and Vazquez et al. (2015) call attention to the fact that sustainability practices are necessary to impact student loyalty.

Student Satisfaction

No universally recognized definition of service quality might be specified. Researchers describe service quality as a gap between perception and expectation, or what the customer expects to get; thus, satisfaction is the fulfillment of someone's expectations, wants, or wishes (Brady & Cronin, 2001). Researchers have agreed that client pleasure is a transactional metric, but service quality is a mindset acquired during a long-term appraisal of performance (Bateson & Hoffman, 1999). Students' satisfaction level with previous educational experiences, achievement, evaluation, service, and facilitation (Douglas et al., 2015). Furthermore, student satisfaction, as measured by faculty and the university, meets their expectations (Appuhamilage & Torii, 2019). Furthermore, satisfaction levels change depending on the type and number of university students who attend (Appuhamilage & Torii, 2019). Specific essential criteria, including facility quality, degree programmed quality, and reputation, seem to impact student happiness at institutions (Weerasinghe & Fernando, 2018). According to (Appuhamilage and Torii, 2019), pleased students provide institutions with a competitive edge regarding university image, performance, and sustainability. This is critical for universities to improve student happiness because more committed students contribute to the university's advancement and achievement by recommending the programme of study to other students for admission. However, they also provide and improve

the university's financial support.

Motivation

Motivation is the person's strength, direction, and perseverance to achieve one's goals (Mulyana, 2021). The quality of students' learning experiences depends on their motivation (Pintrich & De Groot, 1990). Motivation is the direction towards learning about anything. That is why it influences how likely a student is to surrender or move forward and how considerate their reflections are on their learnings. Intrinsic motivation raises solid and flexible critical thinking skills. On the other hand, motivation and especially the extrinsic motivation, led to low interest and academic persistence. Highly motivated students learn more and are more successful than less motivated students (Mustamin et al., 2019).

The Service Quality and Student Satisfaction

The higher education is the primary sector that has the capacity to improve the service quality. In terms of implementation, service quality is determined by client perception (Appuhamilage & Torii, 2019). Similarly, other service industries have embraced a customer-driven strategy, but students in higher education have decided to gauge service quality (Teeroovengadum et al., 2019). Student financial support and co-curricular programmers are educational quality indicators that influence students' perspectives (Akareem & Hossain, 2016). Best academic members, cutting-edge physical infrastructure, and participatory teaching and learning techniques (Saha et al., 2019). Student happiness is directly related to service quality (Teeroovengadum et al., 2019). From this standpoint, service quality is a precursor to customer satisfaction (de Sousa Saldanha et al., 2021).

Higher Education Service Quality

There is considerable discussion over the appropriate number of service quality dimensions, and the description of the service quality dimensions is indeed a great difficulty. Demographic, cultural diversity, and personal characteristics all lead to variations in service quality dimensions (Hanaysha & Abdullah, 2015). Among the main elements contributing to such volatility is quantifying service quality. Academics have created many models for the operationalization of service quality. Prominent theoretical models many studies follow are the Importance Performance Analysis Model of the Service Quality Gaps, SERVAQUAL, SERVPREF, and HEdPREF. Martilla and James (1977) proposed the IPA model to quantify service quality and consumer satisfaction. According to this perception, customer happiness can be examined by these two factors: the relevance of the goods to the client and the service provider's performance. Another service quality gap in the model defines how consumers judge service quality. It explains five shortcomings in service quality. These should be closed in order to provide excellent service and, as a result, satisfied customers (Zeithaml et al., 1988). Many experts believe comparing perceptions and expectations is the model's fundamental shortcoming. Despite criticism, this approach is still frequently employed by academics over 40 years after conception (Mauri et al., 2013)

In 1988, another scale called SERVAQUAL to quantify the disparities as mentioned above (Armstrong et al., 1997). To assess consumers' opinions and expectations of service quality, a 22-item instrument was created. These were eventually classified into five dimensions. The perceived service quality was expressed as the extent and direction of the gap of the consumers' perceptions and expectations, which means the service quality is equal to perception minus expectation. The SERVAQUAL approach is challenged since insights and prospects were assessed concurrently and after the service distribution. After invalidating Parasuraman's SERVAQUAL model, (Cronin & Taylor, 1992) suggested a new model named 'SERVPERF that also favors performance-based measures of service quality (Bolton & Drew, 1991). This paradigm is linked up with service excellence and consumer attitudes. They offered the accurate and exact data from the four

businesses, namely banking, pest control, clothes dry cleaning, and fast food, to demonstrate SERVPERF's dominance over SERVAQUAL. Overall, the SERVPERF scale is measured as a superior scale since it can accurately assess the quality of service that a genuine customer perceives.

SERVQUAL and SERVFERF were reviewed critically by (Chanaka et al., 2016; Brochado, 2009). One of the major issues that higher education institutions confront is determining and implementing the most effective tool for monitoring the quality of higher education services (Dado et al., 2011). Regarding the service quality parameters in higher education, there is a massive disparity between nation, institution, and culture (Sultan & Tarafder, 2007). Because there is no universal consensus on how to manage quality in higher education effectively, institutions have used several quality management approaches (Martens & Prosser, 1998). Students' service experiences are complex and distinct from those of consumers in other service organizations. As a result, it is agreed that industry-specific service metrics will be employed.

Due to the global advancement of the educational market, (Abdullah, 2006) proposed a more comprehensive achievement measuring scale - HEdPERF (Higón et al., 2017) - to assess the service quality in higher education, as the general scale accessible previously may not be suitable. Given this, higher education institutes might utilize the HEdPERF scale to understand better students' perspectives on conducting efforts to enhance service delivery. According to Abdullah (2006), students' opinions of higher education service quality are divided into six categories: nonacademic elements, academic aspects, reputation, access, program problems, and comprehension. 41 statements evaluate these six aspects. Hedperf is a tool that provides more accurate estimates, more criteria, constructs validity, and more explained variance, according to Abdullah (2006). The six-factor framework of the HEdPERF scale is superior, and it is a newer and more thorough performance-based measurement scale that aims to capture the fundamental factors that determine service quality in higher education (Zafiropoulos & Vrana, 2008). (Sultan & Tarafder, 2007). All university students' total service environment elements are included in HEdPERF (Brochado, 2009). The performance scale of the higher education sector has been used to assess the student perception of service quality in different contexts (Abdullah, 2006; Barani & Kumar, 2013).

The choice to focus on four specific dimensions, like academic aspects, non-academic aspects, access, and reputation for quality, is grounded in theoretical and practical considerations. In previous research, these dimensions have been identified as critical factors influencing student satisfaction, providing a foundation for their inclusion in this study (Salmi, 2018). Academic aspects: Academic aspects encompass factors such as the quality of teaching, curriculum, assessment methods, and faculty expertise. Extensive research suggests that academic quality is a primary determinant of student satisfaction and directly influences the perceived value and outcomes of education (Marzo-Navarro & Pilar Rivera-Torres 2005); (Voss & Kostka, 2019). Non-academic aspects: Non-academic aspects refer to various support services and resources that universities provide, including career guidance, counseling, extracurricular activities, and campus facilities. These dimensions have been found to significantly contribute to student satisfaction by enhancing the overall student experience and promoting personal growth and well-being (Chen et al., 2017; Rittenbach et al., 2019).

Access: Access refers to the availability and ease of access to educational resources, including library facilities, technology infrastructure, and online learning platforms. Access to these resources plays a crucial role in shaping student satisfaction, as it directly impacts students' ability to engage in their studies effectively and access relevant materials (Altbach & Rumbley 2019). Reputation: The reputation of quality represents the perception and reputation of the university in terms of its academic distinction, research output, and overall standing within the higher education sector. A university's reputation influences students' initial perceptions, choice of institution, and

expectations, influencing their satisfaction with the educational experience (Dill & Soo, 2005).

While various other dimensions could potentially influence student satisfaction, selecting these four dimensions is justified based on their established significance in the literature and their alignment with the research objectives. Additionally, considering a manageable number of dimensions allows for much focused and detailed analysis within the scope and the resources of the study. Chanaka Ushantha and Samantha Kumara (2016) research revealed that contentment with the service quality in the higher education sector is influenced by the four HEdPERF dimensions, like academic aspects, non-academic aspects, reputation, and accessibility. As a result, this study modified the HEdPERF scale to assess the service quality of higher education in a Sri Lankan setting. Consequently, the present study proposes that contentment results from higher education institutes' perceptions of quality. As a result, the study used Chanaka Ushantha and Samantha Kumara's (2016) performance-based model HEdPERF, which has four aspects: academic aspects, non-academic aspects, reputation, and access. t-value> 1.96 and a p-value <0.05.

Academic Aspects and Student Satisfaction

This dimension assessed faculty members' performance in lecturing, test preparation and grading, topic expertise, presentation, and desire to assist students. Students' academic experience and perceptions of teachers' performance are commonly tied to how satisfied they are in an academic setting. In their 2013 study, (Harvey et al., 2017) looked at three measures of student happiness: level of satisfaction, tendency to recommend their institution, and satisfaction with the academic experience. According to their study's findings, male students' happiness with HEIs is strongly affected by the status and skill of the staff. The ability of the instructors to increase the student's interest in the subject and inspire them to succeed is specifically referred to as general teaching skills. A teacher's general abilities include carefully listening to kids outside class and fostering good communication (Chakrabarty et al., 2016). The studies mentioned above prompt the following hypotheses from the authors:

H1: Academic aspects of the service quality significantly impact the students' satisfaction.

2.2 Non-academic aspects and Student Satisfaction

These are largely non-academic services such as a library, finance, admissions, dorms, cafeteria, and other services that do not include direct student instruction. Staff assigned to these activities are assessed based on their performance and desire to assist students. Student satisfaction is linked to infrastructure, student support programs, interactions with nonacademic staff, and their academic experience (Wong & Chapman, 2023). Along with academic staff competency, nonacademic staff competency influences students' satisfaction levels (Suwarni et al., 2020). The studies mentioned above prompt the researchers to propose the following hypotheses.

H2: Non-academic aspects of the service quality significantly impact students' satisfaction.

2.3 Access and the Student's Satisfaction

The institution's accessibility regarding distances and communication channels is critical in access. Students like colleges near their homes and have employees who respond quickly. Staff and facilities Accessibility is a crucial factor that affects student satisfaction Auh and Menguc's (2005) study. According to Douglas et al. (2015), access is indeed the right to use both tangible, like buildings, hostels, labs, and libraries, and intangible, like services, instructor guidance, etc., resources. The beneficial impact of transport and mess facilities on student satisfaction was established by (Insch & Sun, 2013). Sawyerr and Yusof (2013) achieved similar outcomes. The studies inspired the researcher to propose the following hypothesis.

H3: Access aspects of the service quality significantly affect student satisfaction.

2.4 Reputation and the Student's Satisfaction

The meaning of a university's reputation in the eyes of the public and employers is essential since it affects the employability of its graduates. It has commonly been noted that an institution's reputation is crucial in making decisions (Merchant et al., 2015). Other studies have looked at the relationship of brand image with student satisfaction and found that reputation is a significant element in student satisfaction. The above studies prompt the researcher to propose the following hypothesis:

H4: Reputation aspects of the service quality significantly impact students' satisfaction.

2.5 Service quality and University Sustainability practices

Higher education regulatory bodies are signatories to the United Nations' declaration on the tenets of responsible management. Education has integrated sustainable development goals into curricula through experiential learning activities, including student involvement in local communities and sustainable subjects in enormous open online courses and association with sustainable companies (Kandampully & Suhartanto, 2000). Despite these endeavors, there is a scarcity of research studies investigating the students' perspectives on their engagement in sustainability within the university context (Nejati & Nejati, 2013).

The development of a sustainable university and academic reporting on sustainability are still in their infancy (Lozano et a., 2013), and people and organizations misunderstand the concept of sustainability; according to (Anderson & Sullivan, 1993), significant work remains to be done at universities for genuinely and completely implemented sustainable development. As a result, all organization members must adopt sustainability practices at various levels within the academic context. Similarly, the organization's partnership with its many stakeholders may be a foundation for its sustainable transformation (Holm et al., 2016). Only then will a collaborative force for attaining the sustainability objective be successfully organized. University stakeholders provide constructive input on the university's adherence to sustainability doctrines in various initiatives, including cutting-edge instructional programs, environmental preservation, and attitudes toward employees and society (Dabija et al., 2017). In the literature, sustainability practices and service quality in higher education have been independently assessed, and a method that combines these ideas is required (Ozdemir et al., 2020).

University Sustainable Practices and Student Satisfaction

Currently, there are fewer studies to address sustainability challenges from the students' viewpoints (Perrault & Clark, 2017). There might be several reasons for this, but the fundamental worry is that education sector providers must give students high-quality, specialized, sustainable development programs, requiring them to act ethically and responsibly. According to a student satisfaction survey, students felt it necessary to be aware of sustainable development. (Kasemsap, 2013). Suhartanto et al. (2019) highlighted how universities successfully fostered their objective of sustainable development through curriculum integration. According to Nejati and Nejati (2013), most prior research has failed to consider students' opinions of the university's contribution to sustainability.

University Sustainability as Mediating Role

Sustainability practices have been shown to have a major influence on customer happiness, service quality, trust, and loyalty by DOAN (2021), Chomvilailuk and Butcher (2014) investigated the straight effect of sustainability practices on customer loyalty and demonstrated that the satisfaction has a mediating role in comprehending the influence of sustainability practices on consumer loyalty. According to Bantanur et al. (2015a), a higher educational institution acts like an industry

where the students are trained and sent back to society, where the seeds of sustainability can be dispersed into neighborhoods, communities, and urban and rural settlements. Furthermore, (Abubakar et al., 2021) emphasize the need to consider the influence of satisfied and loyal customers. The researcher tries to fill these gaps by suggesting the following hypothesis:

H5: *There is a mediating role of university sustainability in academic and student satisfaction.*

H6: *There is a mediating role of the university sustainability between the Non-academic aspect and student satisfaction.*

H7: *There is a mediating role of the university sustainability between Access and student satisfaction.*

H8: *There is a mediating role of the university sustainability between Reputation and student satisfaction.*

2.6 Motivation as Moderator

As a moderator for the present study, motivation is represented as an internal situation that activates and directs an individual's behavior (Halif et al., 2020). Herzberg developed a two-factor framework that integrates hygiene and motivational theories. Achievement and recognition are critical motivational variables; they also emphasize good academic attitudes that satisfy the drive for self-actualization. Additionally, hygienic variables include interactions with classmates and lecturers; without these interactions, learners may not feel satisfied, which could result in subpar academic achievement. In this setting, increasing learning and teaching and raising the standard of higher education depends on students' motivation with engagement behaviors, according to (Fredrickset al., 2004). Motivation has two sides to him. That is, (a) intrinsic motivation—that is, the primary motivation for learning is the intrinsic motivation that: (b) extrinsic motivation: this means that the motivation for learning comes from external factors and the achievement of external outcomes (Ryan & Deci, 2000). According to situational and environmental conditions, it is anticipated the students to have different types of motivation, which will differ (Vallerand, 1997), making motivation a key area for intervention. The following hypotheses are proposed:

H9: Motivation moderating effects exist between the service quality dimensions and student satisfaction when university sustainability practices mediate the relationship in the higher education context.

2.7 Underpinning theory

Customer satisfaction has been considered a relative perception that is always assessed by marketing standards and the consumer behavior literature (Yüksel & Yüksel, 2008). The assimilation contract theory predicts disparities in customer satisfaction between product performance and customer satisfaction (Anderson & Sullivan, 1993). The idea is combined. 1) Assimilation (cognitive dissonance) asserts that a person has cognitive knowledge about his or her beliefs, experiences, environment, and attitude and uses this information about the judgments of a product. The theory explains that when there are a lot of cognitive dissonances, customers often try to lessen it by altering the cognitive element. 2) Oppose the idea, maintains that consumers experience greater happiness by slightly underestimating product qualities in advertising (Anderson, 1973)

Assimilative contract theory believes that customers can be accepted, reject, or be neutral about the performance of the product (Anderson, 1973). Based on this theory, universities must understand student expectations in order to provide superior services. (Chee et al., 2016) shows how the assimilation contrast theory should be relatable to this situation and how university services influence the impression of student happiness. Assimilation-contrast theory can help us understand how students evaluate the quality of customer services they receive from universities

and how satisfied they are with them. The theory proposed by (Anderson, 1973) says that students are the university's clients and gain points in their perception where they accept or reject the caliber of the services the institution offers. These ranges are also known as these zones regarding the student perspective. By pointing out that the disconfirmation process is utilized to look into the gap between what the students can expect from a university and what they actually receive, (Bearden et al., 1989) highlighted the significance of the procedure

According to the literature review with the proposed hypothesis, a conceptual framework for this study has been devised, depicted in Figure 1.
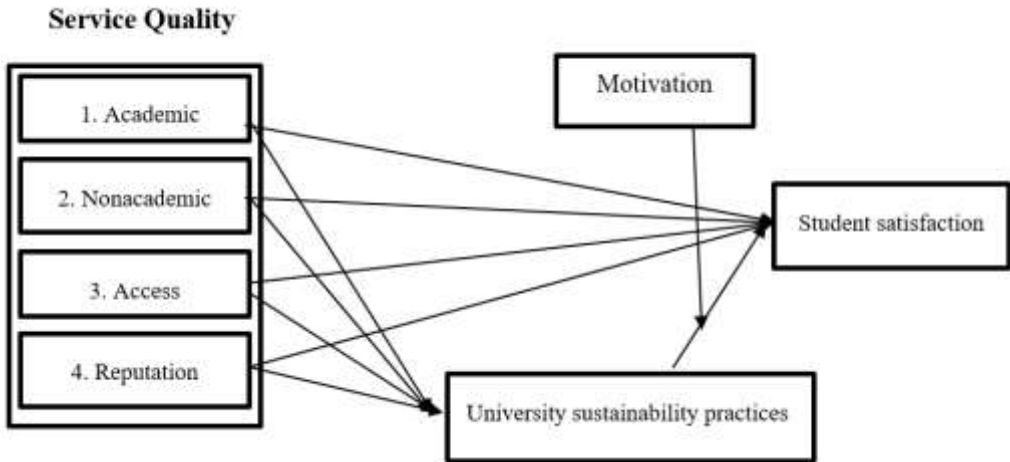
2.8 Research Framework

Figure 1: Theoretical Framework

AA: Academic aspects, NAA: Non-academic aspect, ACC: Access, Repu: Reputation   USP: University Sustainability practices, SS: Students' Satisfaction, MOT: Motivation

3 Research Methodology

The study adopts a cross-sectional design, employing the quantitative method to collect the primary data from enrolled students in public sector Higher education Institutes at qualification level 6th as per the Pakistani Qualification Register.

3.1 Measure

Data were collected from senior students enrolled at Pakistan qualifications level 6th enrolled student at the undergraduate level, the population of 1.96 million at public sector universities of Pakistan. A multi-stage sampling technique was employed to create a representative sample, combining stratified and simple random sampling methods. Stratified sampling divided the population into groups (strata) based on shared characteristics, with the sample size in each stratum determined proportionately. Questionnaires were circulated via WhatsApp groups to the students. Comery & Lee (1992) defined that the sample size of the required population is Fifty (50) or hundred (100). Then, this sample size is considered less effective; when it becomes two hundred (200), it is considered reasonable. When the size is three hundred (300), it is assured that it is a good sample. Similarly, when the sample size is chosen, five hundred (500) becomes very good, and last is the most effective sample size. Researchers received 546 responses, and to be on the

safer side, out of 515, they were useable. Researchers are optimistic about the potential transfer of this methodology to developing countries, as Nudurupati et al. (2021) suggested. This study has four variables: Service quality, students' satisfaction, the university sustainability practices, and motivation to calculate the variables which are adapted from the past studies shown in Table 1 below. For each item, respondents define the level of agreement with a statement in five points, using a 5-point Likert scale, a form of psychometric response scale.

Sr. #	Construct	Author	No. of items
1.	Academic aspects	Abdullah (2006)	9
2.	Nonacademic aspects	Abdullah (2006)	10
3.	Access	Abdullah (2006)	7
4.	Reputation	Abdullah (2006)	11
5.	University Sustainability practices	Alam et al. (2021)	4
6.	Motivation	Damaris et al. (2019)	4
7.	Student satisfaction	Alam et al. (2021)	5

Data analysis was conducted utilizing various techniques via SPSS-18 and SmartPLS4 software for testing the outer & inner model. The outer model, also known as the measuring model is designed to evaluate the link of indicators with the construct variables. The test of indicators determined the model's validity and reliability using the convergent validity, discriminant validity, and reliability criteria. The inner model is also known as the structural model, which is a hypothesis test that uses the bootstrap method with a two-tailed significance value to examine the association and influence of latent variables. The study explored the influence of the independent construct on the dependent variable, considering the presence of moderators through SEM. This approach aimed to examine the proposed associations and determine the impact of each construct, both directly and indirectly, as well as through moderators.

To assess the structural model with the value of R-squares, Q^2 predictive relevance, effect Size/f^2, and Goodness of Fit (GoF) have been mentioned.

4 Results

4.1 Respondent's demographics

Table 2: Respondent's demographics

Gender	Frequency	Percent
female	251	48.73
male	264	51.27
Study Year		
2	106	20.6
3	125	24.3
4	239	46.4
5	52	10.1
Age Group		
18-21	262	50.9
22-25	248	48.2
26-28	5	1.0
Province		
Baluchistan	34	8.7
ICT	41	10.5
KPK	82	21.1
Punjab	164	42.2
Sindh	68	17.5
Total	515	100.0

4.2 Outer Model

The outcome of the convergent validity demonstrates that all loading factor values are according to the criteria, which are more significant than 0.70. That is why all indications have been valid with loading factor, path coefficient, and R squared. The PLS results for the AVE reveal that all the model's indicators are valid since all AVE values are more significant than 0.5. To guarantee no difficulties with the structural model's measurement, the unidimensional models are tested using composite reliability indicators and alpha Cronbach. The variable constructs are considered dependable with the Composite Reliability, and Cronbach's Alpha values are more significant than 0.70. as shown in Figure 2.
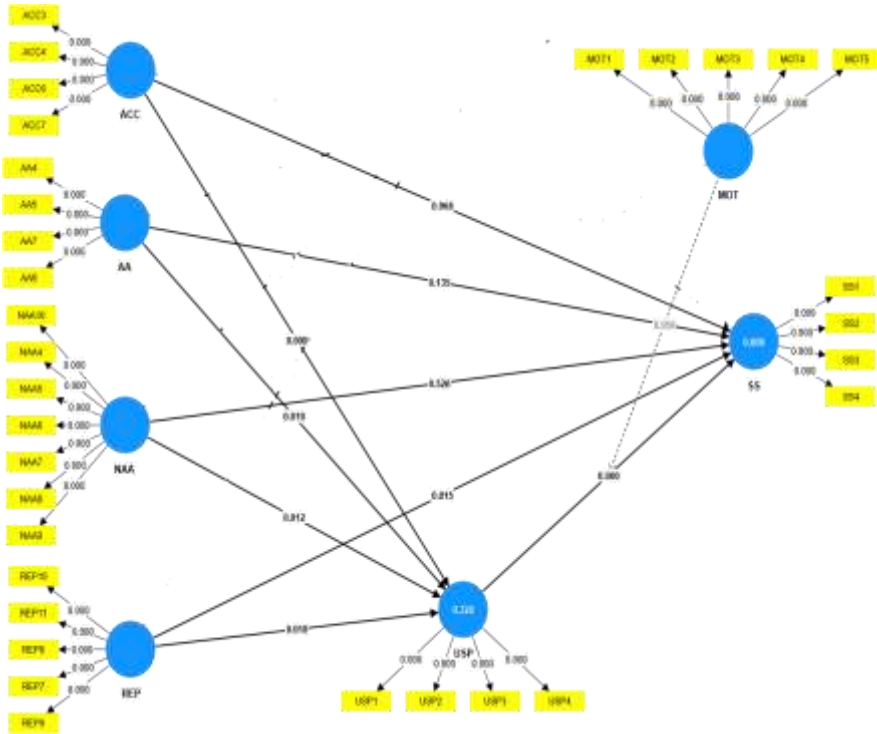

Figure 2: Values of Composite Reliability and Cronbach's Alpha

The PLS findings for AVE are greater than the criterion value 0.5 in the model and are all valid. To guarantee no problems with the structural model's measurement, the unidimensional models are tested using composite reliability indicators and alpha Cronbach. A construct can be reliable when the Composite Reliability and Cronbach's Alpha values are >0.70. All indicators have Composite Reliability and Cronbach's Alpha values greater than 0.7. Thus, it is possible to conclude that the research model is reliable in measuring constructs.

Table 3. Value of AVE, Composite Reliability and Cronbach's Alpha

Construct	AVE	Composite Reliability	Cronbach's Alpha
Academic aspects	0.574	0.921	0.899
Nonacademic aspects	0.518	0.883	0.845
Access	0.68	0.923	0.921
Reputation	0.542	0.855	0.789
University Sustainability practices	0.659	0.885	0.827

Motivation	0.654	0.904	0.867
Student satisfaction	0.602	0.858	0.778

The Fornell-Larcke with (HTMT) values indicate discriminant validity. Table 3 demonstrates that the square root of the AVE is greater than the correlation with constructs, and the HTMT of all variables is <0.90. That is why it has the discriminant validity. Shown in Table 4.

Table 4: Discriminant Validity (Heterotrait - Monotrait Ratio (HTMT)

Construct	AA	ACC	MOT	NAA	REP	SS	USP	MOT x USP
AA	-	-	-	-	-	-	-	-
ACC	0.622	-	-	-	-	-	-	-
MOT	0.513	0.557	-	-	-	-	-	-
NAA	0.651	0.685	0.471	-	-	-	-	-
REP	0.644	0.784	0.516	0.69	-	-	-	-
SS	0.576	0.672	0.986	0.545	0.638	-	-	-
USP	0.503	0.659	0.816	0.511	0.55	0.95	-	-
MOT x USP	0.495	0.529	0.509	0.465	0.53	0.417	0.533	0.876

*Note: *Square root of the average variance from each multi-item construct is shown along the main diagonal; AA: Academic Aspects; NAN: Nonacademic aspects.; ACC: Access; REP: Reputation USP: University Sustainability practices; MOT: Motivation; SS: Student Satisfaction*

Table 5: (Fornell-Larcker Criterion)

Construct	AA	ACC	MOT	NAA	REP	SS	USP
AA	**0.725**						
ACC	0.438	**0.734**					
MOT	0.4	0.439	**0.809**				
NAA	0.502	0.528	0.406	**0.72**			
REP	0.479	0.588	0.429	0.565	**0.736**		
SS	0.423	0.502	0.81	0.442	0.503	**0.776**	
USP	0.384	0.511	0.693	0.432	0.449	0.764	**0.812**

Fornell- Larcker criteria HTMT should have a value of less than 0.85 or 0.9.
*Note. *The average variance from the multiple-item constructs is the square root along the major diagonal: AA: Academic Aspects; ACC: Access.; MOT: Motivation; NAA: Nonacademic aspects': University Sustainability practices; SS: Student satisfaction*

4.3 Inner Model

The structural model or inner model is used to assess the impact of the relationship between variables. The t-statistics were considered to analyze the mediating effect and the t-test output with PLS Bootstrap. The Results of the t-test with Bootstrap are shown in Figure 3.
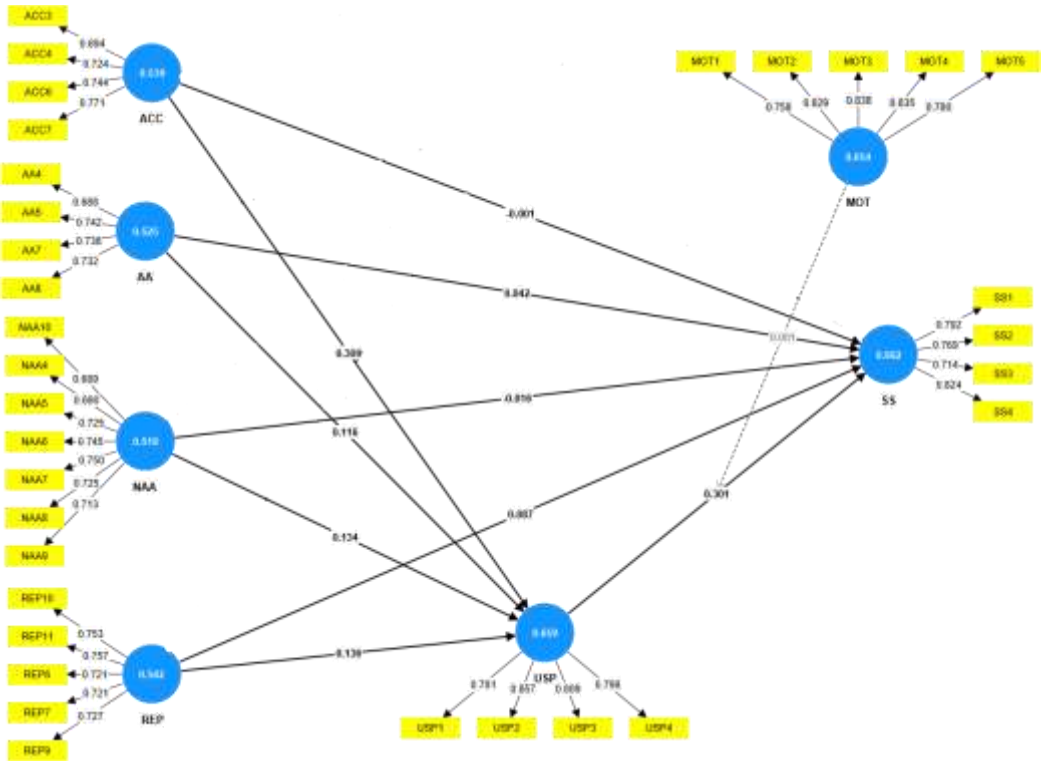
Figure 3: Results of the t-test with Bootstrap

It was found that eight hypotheses had t-values> 1.96 and a p-value <0.05. were accepted, whereas only one hypothesis was rejected, i.e., Nonacademic Aspects -> Student Satisfaction, whose t and p values are not under the threshold level of acceptance as detailed below.

Table 5: The Direct, indirect, and total Effects * in the Structural Model

Effect	T value	P value	Results
H1: Academic Aspects -> Student Satisfaction	2.477	0.013	**Supported**
H2: Access -> Student Satisfaction	4.158	0.00	**Supported**
H3: Nonacademic Aspects -> Student Satisfaction	1.829	0.067	**Not Supported**
H4: Reputation -> Student Satisfaction	4.046	0.00	**Supported**

Mediation analysis in PLS-SEM

Table 6: Structural Estimates (Hypothesis Testing)

Hypotheses	Path	T value	P value	Decision
H5: There is a mediating role of university sustainability between the Academic aspect and students' satisfaction	AA -> USP -> SS	2.321	0.02	**Supported**
H6: There is a mediating role of university sustainability between Reputation and student satisfaction	REP -> USP -> SS	2.305	0.021	**Supported**
H7: There is a mediating role of university sustainability between the Non-academic	NAA -> USP -> SS	2.344	0.019	**Supported**

aspect and student satisfaction.

H8: There is a mediating role of university sustainability between Access and student satisfaction.	ACC -> USP -> SS	3.878	0	**Supported**

Moderation analysis in PLS-SEM

The purpose of moderation analysis is to examine whether the impact of the primary independent variable, Motivation (MOT), on the dependent variable, Student Satisfaction (SS), varies depending on different levels or conditions of the other independent variable, university sustainability practices. These interaction terms are commonly employed in regression analysis to assess whether the effect of MOT on SS is modified or contingent upon the levels of university sustainability practices.

Table 7: Structural Estimates (Hypothesis Testing)

Hypothesis or Pat	T value	p-value	Decision/Result
H9: MOT x USP -> SS	0.063	0.95	**Not Supported**

MOT: Motivation; SS: Student Satisfaction; USP: University sustainability practices

Hypothesis H9 in the above table, the path coefficient is 0, indicating a very small or no relationship between MOT and SS when USP mediates the relationship. The standard error is 0.024, suggesting the precision of the estimate. The T statistic of 0.063 with p-value, which is 0.95, is not significant. The p-value is much greater than the criterion significance level of 0.05. This implies that the moderating effect of motivation is not significant when USP mediates the relationship between the service quality dimensions and student satisfaction.

Hypothesis H9 "Rejected" decision means that there is no statistical support for the hypothesis of a moderating effect of motivation in the higher education context of Pakistan.

4.4 Evaluation of Coefficient of Determination (R2)

The model's explanatory power may be measured using R2 (Sarstedt et al., 2014). The coefficient of determination (R2) determines the model's quality and accuracy. The amount of variation induced by one or more independent (exogenous) factors in the dependent (endogenous) variables (Hair et al., 2014). Three categories of R2 are recognized as weak (0.19), moderate (0.33), and significant (0.67). The values for the coefficient of determination (R2) are represented in Table 8:

Table 8: Results of R2 Values

Endogenous constructs	R-square	R-square adjusted
SS	0.80	0.797
USP	0.322	0.316

Note: R2: coefficient of determination; SS: Student Satisfaction, USP: University sustainability practices

4.5 Evaluation of Model Fit

Model fit in PLS-path modeling is evaluated by the three model fit parameters. The first is SRMR, the second is NFI, and the third is (bootstrapped)-based statistical interference. The residual disparities between the sample's correlated data and the predicted correlated model are called the SRMR (Rasoolimanesh et al., 2023). The intended SRMR value range is less than 0.08. A perfect model fit would have near-zero values. A value of less than or equal to 0.05 is recommended for a well-fit model, although a value of 0.08 is also acceptable. The SRMR value for large data sets would be very low. The NFI is a fit metric that calculates the chi-square values of the present study's proposed model by comparing them to meaningful benchmarks (Bentler & Bonett, 1980). The values of the normed fit index usually represent 0.9, which is an acceptable fit.

Table 9: Model Fit Evaluation

	Saturated Model	**Estimated Model**
SRMR	0.055	0.083
d_ULS	2.247	5.158
d_G	0.71	0.845
Chi-square	2042.904	2270.391
NFI	0.779	0.754

SRMR calculated by PLS 4 is 0.055 for structured models and 0.083 for estimated models, a much lower value than 0.08. It determines that the model in issue is fitting. NFI has a threshold value range of 0 to 1 as an additional metric to evaluate model fit. An NFI score close to one indicates a better match. In this study, the NFI is 0.779, indicating that the model is fit.

5 Discussion

Results identified that most of the hypotheses are supported, indicating significant relationships between the variables examined in the analysis. However, one hypothesis regarding nonacademic aspects and student satisfaction is not supported, suggesting that nonacademic aspects may not significantly impact student satisfaction in the context of public sector universities of Pakistan. While going through the findings, higher education institutes must now provide quality service to students to increase student satisfaction. The findings are similar to the investigations conducted by (Appuhamilage & Torii, 2019; Moghimi & Abramishvili, 2022). The analysis provides evidence supporting the mediating role of university sustainability practices between various factors (academic, reputation, non-academic, and access) and student satisfaction. This highlights the importance of university sustainability initiatives undertaken by higher education institutions in Pakistan to enhance overall student satisfaction. Findings are relevant to the results of (Abad-Segura & González-Zamar, 2021). As for as concern variable motivation as moderator, the analysis suggests an insignificant relationship between motivation and the university sustainability practices in influencing student satisfaction. This finding may have implications for understanding the factors contributing to student satisfaction within the context of higher education institutions in Pakistan and underscores the need for further investigation into other potential determinants.

5.1 Conclusion

The objective and aim of the present study was to examine the service quality of higher educational institutes to achieve student satisfaction by a moderated mediation impact. The findings highlighted significant relationships among most variables, except for nonacademic aspects, suggesting their limited effect on student satisfaction. The study emphasized the critical role of ensuring high-quality service provision in enhancing student satisfaction. Furthermore, the analysis underscored the mediating role of university sustainability practices in influencing various factors, such as academic quality, reputation, and access, on student satisfaction. This emphasizes the importance of sustainability initiatives undertaken by public sector universities in Pakistan in fostering overall student satisfaction. HEIs have to improve the overall service quality for long-term revenue generation. It needs to be more focused on competing with international education standards. To develop the infrastructure with other allied facilities and to have efficient quality cells along with the job placement cells, to arrange industrial sudden visits and study trips for the enhancement of practical skills of the students.

The assimilation-contrast hypothesis, confirmed in this study, emphasizes the importance of the pragmatic paradigm as an underlying framework. It implies that pupils have grandiose expectations for their academic achievements before beginning their education. However, when students progress through their academic journey, they may find that their expectations are realized, resulting in pleasure, or that they deviate from their initial predictions, resulting in

disappointment. This explains how the dynamic interaction of preconceived beliefs and actual events shapes students' judgments of their academic success.

The assimilation-contrast theory, validated in this research, suggests that students initially harbor lofty anticipations regarding their academic achievements before commencing their studies. However, upon experiencing their academic journey, students might either find their expectations met, leading to satisfaction, or divergent from their initial projections, resulting in dissatisfaction. This elucidates the complex interplay between preconceived notions and actual experiences in shaping students' perceptions of the student's academic performance. The present study also revealed that motivation did not significantly moderate the relationship between university sustainability practices and student satisfaction. This suggests the need for further exploration into other potential determinants of student satisfaction within higher education institutions. Although data was collected from all provinces of Pakistan, due to logistical, budgetary, and time constraints, the study is confined to Pakistan's public sector universities/HEIs. Future researchers can explore the perception of other stakeholders of the system.

To boost student satisfaction, HEIs should prioritize improving service quality across all facets of the student experience.

- Universities should continue engaging in sustainability initiatives to encourage environmental responsibility while improving student satisfaction.

- HEIs should take a proactive approach to meeting students' changing needs and expectations, soliciting feedback, and making required changes to improve satisfaction.

- Collaboration across university departments helps comprehensively address student happiness and sustainability concerns.

Other relevant variables that were not included in the study may have influenced the relationships under investigation. Further research could explore service quality from the viewpoints of other key stakeholders, such as faculty, administrators, or alumni, to gain a more comprehensive understanding of the subject. By implementing these recommendations and continuing to explore new avenues for improvement, public sector universities in Pakistan may better meet the needs of their students and enhance overall satisfaction levels, contributing to the advancement of higher education in the country.

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