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SERVICE QUALITY MEASUREMENT FOR HIGHER EDUCATION INSTITUTIONS: AN EMPIRICAL STUDY ON STUDENTS SATISFACTION AND INSTITUTIONAL IMAGE

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Abstract

The main objective of this empirical study is to develop the service quality (SQ) measurement model for higher education institutions (HEIs) using academic service quality, administrative service quality, and facilities service quality as the dimensions and then empirically test the service quality level provided by HEIs through students' perceptions. The secondary aim is to explore service quality improvement and excellence opportunities and take corrective action when necessary. A quantitative research methodology consisting of 37 items was used and a structure equating model of service quality was developed using AMOS based on 419 samples received from the top five government sector universities in Pakistan. The result reveals that all hypotheses are statistically significant and the finding shows that the theoretical model is valid. The current study's findings support the prior research results that service quality directly impacts students' satisfaction and trust level and then ultimately will lead to building a strong institutional image. The research findings will identify priorities for service quality improvement initiatives in public sector institutions and provide suggestions to top management for planning and implementing adequate service quality in HEIs.

Introduction

Higher education institutions (HEIs) contribute significantly to socio-cultural and political development and play an essential role in the national economy under competitive business conditions that are continuously changing daily (Abbas & Sagsan, 2020; Amzat et al., 2023). As a result, HEIs evolved as institutions with transparency, accountable responsibility, quality assurance, and competitive services having specific key performance indicators (Brachem & Braun, 2018; de Jager & Gbadamosi, 2013). As the HEIs become more business-oriented and market-led, ultimately, every institution is interested in seeking customers' perception about the service quality level, wanting their loyalty after providing them satisfying service quality; as service quality is defined by customers individually, not by the institutions themselves (Al-Refaei et al., 2024; Latif et al., 2019; Liu et al., 2022). One of the factors of organizational success is customer satisfaction with service quality (SQ) (Abbas, 2020c; Campos et al., 2017; Nguyen et al., 2024). Among all stakeholders of the HEIs, students are

the main focus, and ultimately their satisfaction, loyalty, and fullness should be established (Al-Otaibi et al., 2020; Guilbault, 2018). Several researchers have argued that students should not be treated as customers or clients and that educational institutions should not be treated like businesses (Guilbault, 2018; Tholen et al., 2016). As students are the main customers and major stakeholders, every HEIs should provide what they want in terms of better service quality; but it may conflict with the delivery of high-quality education in some cases (Premand et al., 2016; Valencia-Arias et al., 2023; Yilmaz et al., 2018).

The ongoing debate on service quality in higher education has gained much recognition from researchers, academicians, and the university administration. This is due to the marketization and globalization of higher education which exerts a lot of competitive pressure on the market forces. Around 2 million higher educational institutions were present in the world till 2000, and now, this figure exceeds 5.5 million UNESCO report (UNESCO, 2022). This increased number of higher education institutions put competitive pressure on international and local universities. Other challenges the universities face are funding reductions, increased tuition fees, allied charges, public opinion, and perception about the university and student attrition. For this, service quality in higher education gains an important role and becomes a very vital factor in building people's opinions and influencing students' decision to choose a university (Cronin & Taylor, 1992; Hazilah Abd Manaf et al., 2013; Yilmaz et al., 2018; Zhu & Sharp, 2022). Previous literature shows that service quality in higher education was antecedent to students' satisfaction and loyalty. University students who are satisfied with the services of their institutes become more loyal and create positive word of mouth, which ultimately puts the outstanding reputation of the university in society, caused to generate more educational funds, and attracts more students to their institutes(Al-Otaibi et al., 2020; Kitapci et al., 2014; Ramírez-Hurtado et al., 2021; Yilmaz et al., 2018). As a result, the importance of service quality in higher education is constantly highlighted and studied to put more theoretical insight into this area.

The importance of the service industry in developing countries' economies cannot be underestimated because they face competitive pressure in a competitive services environment. Educational institutions increasingly recognize that they are a part of the service industry, and, as a result, focusing on student satisfaction is the main aim of every institution (Al-Otaibi et al., 2020; Wider et al., 2024). Students, parents, teaching staff (lecturers and professors), non-teaching staff, the government and its supporting agencies, auditors, and assessors are all stakeholders in higher education institutions (Chong & Ahmed, 2015; Oliso, 2023; Sukhragchaa et al., 2022). Each of these stakeholders has a particular view toward quality based on their interests and concerns with higher education institutions (HEIs). According to the reviewed literature, customer satisfaction will be achieved by providing competitive service quality(Nguyen et al., 2024). Customer satisfaction leads to continuously achieving Total Quality Management (TQM), ultimately leading satisfied customers to trust their institution more, resulting in a robust institutional image in the marketplace. All TQM theories and philosophies are centred on customer satisfaction, and customer pleasure may be increased by providing them with desired service quality (Abdullah, 2006a; Amzat et al., 2023; El Alfy & Abukari, 2020).

All educational institutions, specifically HEIs, are accountable for educating youngsters (Brachem & Braun, 2018) and converting them into skilful leaders, which is more beneficial for the betterment of society (Hassan Khawar Mahmood et al., 2014; Valencia-Arias et al., 2023). As the number of applicants and admissions rate substantially increase, public HEIs show inadequacy to accommodate all students, making room for private HEIs (Abbas, 2020c). As a result, many HEIs established in recent decades (Jain et al., 2013). Therefore, due to higher education's universality, many students seeking advanced studies and research moved to these foreign-established HEIs (Tholen et al., 2016). As a result

of these trends, students have more choices to select suitable HEIs which have a higher quality of education and competitive service quality; resulting, HEIs face tough competition in the highly dynamic market, and they try their best to provide the best facilities to their students and retain existing students as well as attract new students (Al-Refaei et al., 2024; Sahney, 2011).

This developmental growth in new HEIs carries a high level of treatment in education quality as well (Chanaka Ushantha & Samantha Kumara, 2016). Mahapatra & Khan (2007), for example, found that many students in different private universities are dissatisfied with the infrastructure, services, and facilities accessible to them. Several newly established HEIs compromise the education quality and related services; like effective student training & development, proper availability of tools and teaching equipment, and academic and non-academic facilities (Daud et al., 2011; Truong et al., 2016; Zhu & Sharp, 2022). As a result of this problem, students cannot perform and execute well in the workplace. Most companies and employers are considered institutions are failing to convey that students have essential training, capabilities, information required, and needed skills (Jupiter et al., 2017; Kang, 2006).

Every researcher sees quality from their point of view and perceptions (Liu et al., 2022). Quality defines as "100% compliance to the requirements of the customer". Quality is a strategy or method for producing goods and services cost-effectively and efficiently that meets the customer's basic needs (Premand et al., 2016). It is a real-world comparison of customers' expectations and the services delivered. Service quality defines how well the supplied service meets the customer's expectations and wants (Teeroovengadum et al., 2016; Tsiligiris et al., 2022). The ability of higher education institutions to create an enduring stream of individuals with high intelligence, a sense of responsibility, commitment, and dedication to advanced-level learning, leads to the transmission process, headway, and progression of their information and knowledge (Ali et al., 2016; Oliso, 2023). Experts say. According to the government, an exact quality system produces prepared researchers, trained technologists, architects, educated engineers, scientists, doctors, and other professionals who are needed by our business environment and society. According to the industrialist viewpoint, a high-quality educational institution develops graduates with limitless, wide-ranging, adaptable personalities and flexible brains, willing to learn new skills and adapt to new systems and methods (Gupta & Kaushik, 2018; Latif et al., 2019; Valencia-Arias et al., 2023). The primary objective of this research is to develop and empirically test the service quality in higher education institutions (HEIs) by building a model in which we assess the quality of higher education services perceived by university students in their institutes. The secondary purpose is to explore opportunities for service quality improvement and excellence and to take corrective action when necessary. When there is an increase in customer expectations and wishes, true service quality is achieved(Wider et al., 2024). So eventually, this research work has the institutional image as the outcome of the perceived service quality, which is mediated by the satisfaction and trust level of the students. The empirical findings of this research paper are to determine the factors influencing service quality and how perceived service quality leads to the overall institutional image in the mind of students and the marketplace.

This research will assist public and private sector institutions in allocating their resources and devoting their intentions to the SQ dimensions that will help increase student satisfaction and build their trust in their institutions, resulting in a strong brand image in students' minds and other stakeholders. The research findings can be used to identify priorities for quality improvement initiatives in public sector institutions and provide suggestions to top management for planning and implementing effective control. The study gives essential criteria for future research and will be valuable for comparing and correlating service quality inside the country and across society. Higher education policymakers can use the data, conclusions, and recommendations to improve their institutions' image by strengthening their service quality.

Literature Review

Quality is everyone's judgment and there is no easy response to the question 'what is quality?'. Quality is a subjective matter, and everyone is explained by their own experiences or judgements. Most researchers agreed on quality as a relative, subjective, and contestable concept. Although, many definitions of quality exist depending on the context in which it is used and quality is an ongoing approach where the customer is the main determinant. Education quality is a multi-sided and ever-changing phenomenon impacted by educational developmental changes, socioeconomic factors, societal growth, and economic shifts. Universally acceptable service quality (SQ) structure identification is one of the barriers to achieving SQ (Chong & Ahmed, 2015; Ramírez-Hurtado et al., 2021). SQ and student satisfaction have two different concepts but have significant associations among them (Amzat et al., 2023; Galeeva, 2016; Premand et al., 2016). Institutions offering better services and experiences to their students have satisfied and loyal students. Students' satisfaction and better service quality experience will lead students to discover more, and learn new things, according to (El Alfy & Abukari, 2020). HEIs students are proactively self-motivated and participate more in curricular and extra-curricular activities if they are satisfied with education quality and provide better service (Brachem & Braun, 2018). However, students' pleasure and satisfaction with campus life are shaped by their repeated experiences with HEI's service quality (Al-Otaibi et al., 2020; Sahney, 2011). Students learning styles, class size, and support services have all been identified as possible influencers on their entire experience within the institution (Yilmaz et al., 2018).

Service quality has been debatable (Chanaka Ushantha & Samantha Kumara, 2016). Quality is defined as "Units of goodness and excellence packed into an item or a product or services" (Jupiter et al., 2017). Service quality is analyzed and measured by how well the services are conveyed to the ultimate user and how well it matches customer desires and expectations (Parasuraman et al., 1985; Tsiligiris et al., 2022). In the services segment, the deliverance and transmission of services indicating "customer satisfaction" has been the result of steady and enduring progress from "quality is "product excellence" to quality is value. It means adding values to gain a competitive edge to satisfy their customer, to quality is "conformance to specifications of the customer," to most freshly and recently, quality is fulfilling and beyond customers' needs, desires and expectations" (Al-Otaibi et al., 2020; Teeroovengadum et al., 2016; Valencia-Arias et al., 2023). Analyzing, meeting and surpassing customer requirements and expectations are instrumental and beneficial for the organization in numerous ways. Professionals, experts, and researchers observed that revenue margin can be expanded by giving better service quality and the best experience to their customers (Ali et al., 2016; Tsiligiris et al., 2022), increasing the profitability of the organization (Abbas, 2020b) and must be a chance to gain a competitive edge in the business market (Martínez-Jurado & Moyano-Fuentes, 2014; Ramírez-Hurtado et al., 2021).

Providing better service quality in HEIs is a challenging and continuous process; every business tries to achieve sustainable performance and results to satisfy the customers (Ahmad et al., 2021; Hassan & Pasha, 2022; Mok & Jiang, 2018). HEIs must focus on the interest of all stakeholders, like; governments, the business environment, employers, supporting agencies, and other stakeholders. In this regard, HEIs must use a stakeholder theory to learn more and comprehend the expectations of different stakeholders associated with their institutes (Latif et al., 2019) since recognizing and meeting stakeholders' demands may have a significant beneficial impact on institutional success, according to (Gupta & Kaushik, 2018; Wider et al., 2024). Academic staff, administrative staff, students, parents, employers, government, fund sources, supporting agencies, and various local and regional communities are all collectively included in the internal and external stakeholders of HEIs (Al-Refaei et al., 2024; Steppacher et al., 2021). As a result, by defining important quality components, there is a need to explore the level of

service quality from the student's perspective (Campos et al., 2017; Zhu & Sharp, 2022).

Service quality in higher education is seen as a competitive edge among HEIs in terms of offering exceptional learning experiences to their students (Hamzah et al., 2017). These learning experiences might arise from various sources, including classroom teaching and training, social activities, mentorship, extra-curricular engagements, assistance, support, or leadership. Institutions have begun to incorporate total quality management practices and related concepts to provide different learning experiences to students (Joseph et al., 2005). A customer-focused approach to service quality can result in a one-of-a-kind experience. This customer-focused approach is crucial while providing service quality as service quality is subjective, but product quality can be assessed objectively (Truong et al., 2016). HEIs must think like businesses constantly innovating, diversifying, and re-engineering their structures to give the best services to their university students. If institutions want to shine in their students' minds, they should focus not only on profits and boosting student enrollment but also on understanding customer satisfaction, loyalty, and service perceptions, much as businesses are (Hill et al., 2003; Liu et al., 2022). Service quality assessment and evaluation should always be a continual process rather than a one-time exercise at the end of the semester; if institutions want to get the most out of it, they should make it a continual process with a specialized service quality evaluation and assessment department (Amzat et al., 2023; Jain et al., 2013; O'Neill & Palmer, 2004).

Past literature has different service quality measurement scales developed and tested for higher education contexts. The use of SERVQUAL in higher education institutional settings is widespread (Ana et al., 2023; Fuchs & Fangpong, 2021; Gupta & Kaushik, 2018; Law, 2013; Silva et al., 2017). The main reason behind using SERVQUAL is that it was tested and authenticated in different services sector industries such as; hospitality and tourism, banking, universities, healthcare, and the telecom sector (Bayraktaroglu & Atrek, 2010; Hamzah et al., 2017; Kitapci et al., 2014; Yilmaz et al., 2018). SERVQUAL measurement scale is widely approved, reliable, and validated by different researchers, explaining its widespread use (Fuchs & Fangpong, 2021; Parasuraman, Zeithaml, Valerie Berry, 1988; Wider et al., 2024). SERVQUAL measurement scale comprises five diverse characteristics that quantify service quality: reliability, assurance, tangibles, empathy, and responsiveness (Parasuraman et al., 1985). Although this scale has a broad scope and wide applicability, many researchers still criticize its generic applicability. As the SERVQUAL measurement scale and related adapted scales have some generalizability issues, many researchers suggested using the SERVQUAL scale as a "skeleton," and researchers may utilize it with related modifications concerning different contexts (Tsiligiris et al., 2022; Wider et al., 2024). Cronin & Taylor (1992) developed the SERVPERF measurement scale using the five exact SERVQUAL dimensions mentioned earlier. SERVPERF measurement scale assesses mainly service perceptions, whereas SERVQUAL uses expectation confirmation theory to assess overall expectations and perceptions of service quality concerning their customers (Ana et al., 2023; Bayraktaroglu & Atrek, 2010; Liu et al., 2022). In higher education, SERVQUAL and eventually SERVPERF have been used to measure the service quality of the institutions (Fuchs & Fangpong, 2021; Galeeva, 2016; Ladhari, 2009; Trivellas & Dargenidou, 2009).

Later on, several service quality measurement scales were developed and tested in response to the requirement for measuring service quality models in HEIs, such as HEdPERF, constructed by (Abdullah, 2006b), and HiEdQUAL, constructed by (Annamdevula, 2012). When compared and evaluated to SERVPERF, (Abdullah, 2006b) identified the HEdPERF with greater authenticity, conformity, and consistency values. (Brochado, 2009) conducted the research in the context of HEIs using five service quality measurement scales. SERVQUAL, weighted SERVQUAL, SERVPERF, weighted SERVPERF, and HEdPERF are different measurement scales used (Mbise & Tuninga, 2016). All five scales

mentioned have excellent measurement capabilities concerning measuring service quality. Maximum validity and reliability score are assigned to SERVPERF, which have five different measurement scales of service quality, including; reliability, assurance, tangibles, empathy, and responsiveness, and HEdPERF, having different measurement scales for service quality, including; academic aspects, non-academic aspects, reputation, access, and program issues (Abdullah, 2006b; Zhu & Sharp, 2022). After comparing the two different measurement scales, researchers found that the HEdPERF measurement scale for SQ is more appropriate, relevant, and valid than the SERVPERF measurement scale. (Annamdevula, 2012) created and tested the HiEdQUAL measurement scale in the higher education context for measuring service quality, based on HEdPERF. When we measured the quality of service specified in the context of higher education, it is largely dependent on the student's satisfaction and human behaviours, so researchers suggested that no measurement scales are generalizable and slight changes and variations are expected in the measurement scales with different services or different contexts (Mahapatra & Khan, 2007; Nguyen et al., 2024).

Five measurement scales of SQ are used in HiEdQUAL, having administrative components, academic components, support services, campus infrastructure, and academic facilities as different constructs (Steppacher et al., 2021). The following research studies have context-specific constructs in their higher education SQ measurement. Three different SQ measurements are used Academic service quality, administrative service quality, and facilities service quality, according to (Sultan & Wong, 2012). The researchers revealed that student marketing communication significantly enhances service quality perceptions in higher education. Mahapatra & Khan (2007) used seven categories to assess the HEI service quality in the Malaysian context: administrative service quality, tangibles, academic programs, academic staff, teaching delivery, assurance, and empathy of academic staff.

The HEDQUAL measurement scale was developed and tested on MBA students to check service quality and education quality (Chanaka Ushantha & Samantha Kumara, 2016). The measurement scale consists of five categories: Academic service quality, administrative service quality, library service quality, supportive services quality, and career opportunities excellence. When we talk about the higher education sector, it has a variety of services compared to the manufacturing industry, so it is very challenging to generalize the service quality measurement scale as every higher education sector prioritizes the services on its own. Geographical context and different sampling frames further lead to the non-applicability of different measurement scales discussed above. So, researchers suggested that few changes in any measurement scale based on expert opinion and group interviews may assist the applicability of any chosen scale and dimensions. With the number of service quality measurement scales highlighted above, we adapt the SQ scale developed by Sultan & Wong (2012), having three SQ components: academic service quality, administrative service quality, and facilities service quality. These three components are also used in HiEdQUAL and HEDQUAL scales (Annamdevula, 2012). The adapted scale has three SQ dimensions representing various services students encounter in higher education. Each dimension of service quality represents the specific functional area within the context of higher education that students perceive daily. Most of the above-discussed service quality measurement scales are usually developed generically; that is, for manufacturing and services, so that's why it is need to develop and utilized that measurement scale which focused only service quality in the context of higher education and covers most functional area encountered by the students and perceived the service quality level of that institution.

The promotional campaign of programs and courses, as well as student attraction, retention, enrollment, and scholarship programs, are all influenced by a university's image and reputation in a dynamic worldwide market. Previous literature does not have enough evidence to explain the image-building process in the student's mind in HEIs. As a result, the current

research suggests that investigating students' perceptions requires a unique framework and technique (Gupta & Kaushik, 2018; Hazilah Abd Manaf et al., 2013; Oliso, 2023). Therefore, to fill this gap, the current research fills the gap by investigating the results of perceived service quality measurement, with the institutional image as the outcome.

Literature has many research studies show that the critical determinant of service quality is satisfaction (de Jager & Gbadamosi, 2013; Hazilah Abd Manaf et al., 2013; Ramírez-Hurtado et al., 2021). The ultimate satisfaction of students results from the long-term deliverance of better service quality. One research study conducted in HEIs found that service quality influences the student's satisfaction level by influencing realized worth of the customers (Abbas, 2020a; Latif et al., 2021). Meanwhile, another study investigates the connection between service quality and satisfaction, concluding that service quality has a significant and direct impact on the satisfaction of customers (Hassan Khawar Mahmood et al., 2014; Nguyen et al., 2024). If service components perform well, this means that students feel satisfied. Thus following hypotheses were derived:

H1: Service quality perception affects students' satisfaction level in HEIs.

Customer-oriented marketing has traditionally placed more importance on service quality and trust (Hamzah et al., 2017; Sukhragchaa et al., 2022). The process by which a person assesses a brand's trustworthiness depends on their interactions with it. Customers' good sentiments toward a brand allow them to consider that the brand can produce and deliver satisfaction, which increases their understanding, trust, and belief that in the future, they must deliver the same level of satisfaction with them (Mok & Jiang, 2018).

Every university tries its best to gain more student enrollment each year. Current and former students must gain satisfaction and trust as it dramatically enhances their marketability. Furthermore, numerous studies show that establishing student trust in their institution may be a long-term approach to reducing marketing expenses (Ahmad et al., 2021; Sultan & Wong, 2012). Their level of trust determines the relationship strength between students and their institutions. As a result, institutional integrity, credibility, and consistent service delivery strengthen students' beliefs, attitudes, and confidence, influencing their trust. Thus, the following hypothesis is derived:

H2: Service quality perception affects students' level of trust in HEIs.

The image development process of any HEIs is intuitive as all previous service quality encounters and experiences faced by the students are stored in their memory and then translated into connotation using memorized concepts (Truong et al., 2016; Yilmaz et al., 2018). So every business could have many images representing people's experiences, past encounters, and sentiments (Thanki et al., 2016).

Students' satisfaction concerning provided service quality level is an assessment of a specific service encounter. Customer experience and related satisfaction have a favourable and considerable impact on a business image in the context of Mauritian hotel visitors (Joseph et al., 2005; Nguyen et al., 2024). It is because image evaluations and assessments are thought to be influenced by the level of satisfaction gained from each service interaction. Satisfaction among students has a transformational effect on the institution's image. Thus, the following hypothesis is derived:

H3: Student satisfaction affects the university's image in higher education institutions.

The corporate image is the perception and impression customers, and other stakeholders have of a business. According to many researchers, image is not what the organization thinks it is but rather the feelings, thoughts, and beliefs about the organization that exists in the competitive market and are based on experience, perceptions, and observation of relevant stakeholders (Ali et al., 2016). This shows that a company's image is not pre-built; instead, it is developed through time with a lot of effort and expenditure. Thus:

H4: Trust level of the students affects the university's image in higher education institutions.

The framework of this study (Figure 1) explains the overall process of service quality measurement in higher education institutions.

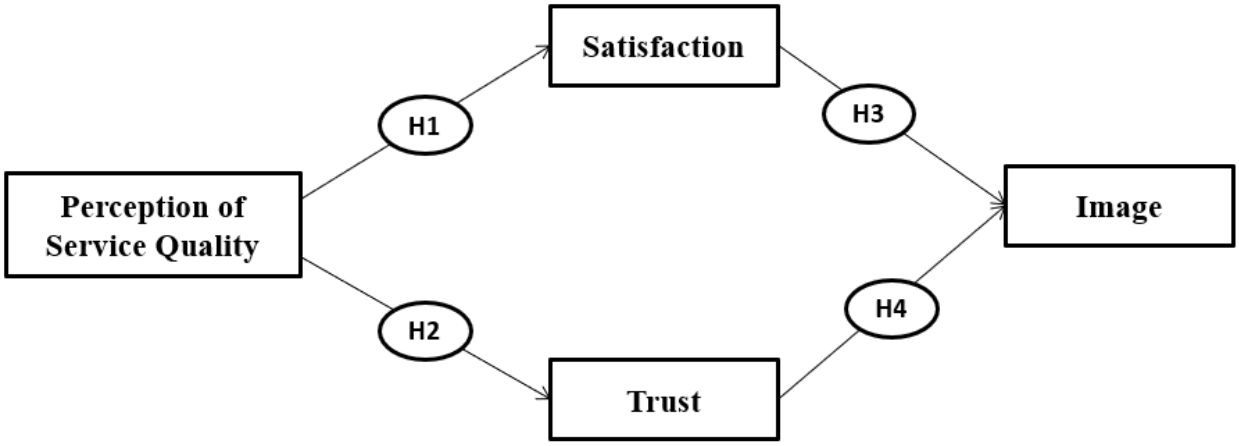


Figure 1 – Research Framework

Research Methodology

This study uses quantitative data collecting and processing to answer the research questions and hypothesis. The quantitative data were gathered to create a more thorough and insightful picture of the degree of consistency, conformity, and the difference in student perceptions of service quality. The target population is the top five government sector universities students located in Lahore, Pakistan, and these universities are the University of Punjab (PU), the government college university (GCU), the university of education (UOE), information technology university (ITU) and university of health sciences (UHS). Education level, university experience, and respondent profile provide the factual background of the sample population. With the number of service quality measurement scales highlighted above in the literature review section, we adapt the SQ scale developed by Sultan and Yin Wong (2013), having three SQ components: academic service quality, administrative service quality, and facilities service quality. These three components are also used in HiEdQUAL and HEDQUAL scales. The adapted scale has three SQ dimensions representing various services students encounter in higher education. Each service quality dimension represents the specific functional area that students perceive daily.

The questionnaire used to conduct this study and get primary data through the survey consists of close-ended questions. 37 items are used for this questionnaire to get the primary data from the five government sector universities. Against each item, the 5 –point Likert scale was used to quantify the answer to each question. This numeric scale is as (1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree). Four variables were used in this questionnaire: Perceived Service Quality, Satisfaction, Trust, and Image.

The total number of questions used in this research study is 37. Questions 1 to 25 are related to the service quality perception of students against their HEIs. Service quality has 3 sub-dimensions: Facilities service quality (FSQ) has seven items. These questions are related to the facilities provided by the university to their students—nine items related to the academic service quality (ASQ), academic environment, and related services. Nine items related to the administrative service quality (DSQ) tell us about the administrative services to their students in HEIs. These service quality items are related to the student's perception of the experience in the HEIs.4 items are related to student satisfaction,

which observes and measures the satisfaction of the students against the service quality of their university. Three items of trust were used. Five items related to image were used to measure the overall institutional image in students' minds after encounters with institutional service quality.

From the university, as mentioned above, students and samples were randomly selected; due to random selection, everyone in the population has an equal chance of being selected. The legitimacy of data is examined and ensured for a productive output that must be useful for future studies interested in expanding the research on higher education institutions, as well as putting confidence in our conclusions and results. For data entry and data transformation, the SPSS program is utilized. CFA (confirmatory factor analysis) is used with SEM (Structural Equation Modeling), with the AMOS software, for data analysis against service quality dimensions and items. The SPSS program was used to obtain regression and correlations.

This research adapts the SQ scale (Sultan & Wong, 2012), which has three SQ components: academic service quality, administrative service quality, and facilities service quality. So, the selected service quality items, along with the relevant sub-dimensions, are given in Table 1.

Table 1 – Service Quality Sub-Dimensions and Items

Service Quality Sub-Dimensions		Items
Facilities Service Quality	FSQ1	• University has the ideal location. (Q.1)
	FSQ2	• The university has a good infrastructure. (Q.2)
	FSQ3	• Classroom facilities are adequate. (Q.3)
	FSQ4	• Library facilities are adequate. (Q.4)
	FSQ5	• Equipment used in the university is up-to-date. (Q.5)
	FSQ6	• University has outstanding scenic beauty. (Q.6)
	FSQ7	• My general assessment of the service quality of this university concerning supporting facilities is good. (Q.7)
Academic Service Quality	ASQ1	• The faculty has an excellent academic background. (Q.8)
	ASQ2	• The lecturers are skilled in teaching and knowledge. (Q.9)
	ASQ3	• Academic problems are solved sincerely by the lecturers. (Q.10)
	ASQ4	• Classroom learning is very practical. (Q.11)
	ASQ5	• Lecturers give feedback about my progress. (Q.12)
	ASQ6	• Lecturers give adequate time to everyone for consultation. (Q.13)
	ASQ7	• The teaching staff meets my expectations. (Q.14)
	ASQ8	• My academic performance is evaluated correctly. (Q.15)
	ASQ9	• My general assessment of the service quality of this university concerning academic staff is good. (Q.16)

Administrative Service Quality	DSQ1 DSQ2 DSQ3 DSQ4 DSQ5 DSQ6 DSQ7 DSQ8 DSQ9	• The admission section is very cooperative with this university. (Q.17) • The clerical and administrative staff is polite and well-mannered. (Q.18) • The clerical and administrative staff keeps accurate records. (Q.19) • The clerical and administrative staff meet my requirements. (Q.20) • The clerical and administrative staff is ready to deliver quality service. (Q.21) • The administrative staff is skilled. (Q.22) • Career counselling services of the university are very useful. (Q.23) • University has an overall friendly environment. (Q.24) • My general assessment of the service quality of this university concerning administrative staff is good. (Q.25)

Table-2 shows the adapted scale of the remaining three variables which are Satisfaction, Trust, and Image (Sultan & Wong, 2012). Satisfaction has 4 items; Trust has 3 items and Image has 5 items respectively.

Table 2 – Variables and Items

Variables		Items
Satisfaction	SAT1 SAT2 SAT3 SAT4	• University fulfils my needs and expectations. (Q.26) • It has been a good decision to select this university. (Q.27) • I am satisfied with the quality relative to the price. (Q.28) • I am satisfied with my university. (Q.29)
Trust	TRU1 TRU2 TRU3	• This university staff is trustworthy. (Q.30) • This university provides reliable quality services. (Q.31) • I am confident that I will get a good job after graduation. (Q.32)
Image	IMA1 IMA2 IMA3 IMA4 IMA5	• The staff of this university pays close attention to me. (Q.33) • The university allows me to be what I want to be. (Q.34) • The university maintains ethical standards. (Q.35) • The university is serious about education. (Q.36) • Overall, the image of this university is good. (Q.37)

Data Analysis and Results

Checking and validating the results requires a quick assessment of the sample composition. There were 419 possible responses in all, with 289 responses from males, which is 69% of the total sample and 130 responses from females, which accounts for 31% of the total sample size (descriptive data of gender of respondents shown in figure 3). According to the statistics, 263 students enrolled in undergraduate (UG) programs, which is 63% of the total sample, and 156 students enrolled in post-graduate (PG) programs, which is 37% of the total sample (descriptive data of student's enrollments in programs shown in figure 4).

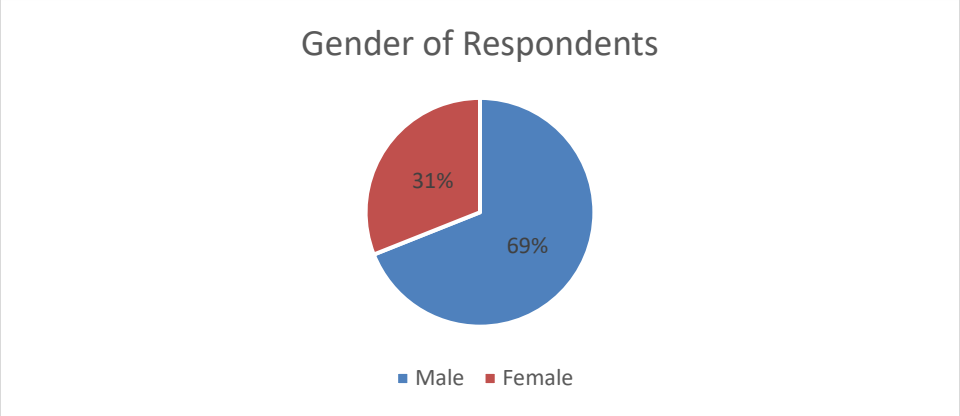


Figure 3 – Descriptive Data of Gender of Respondents

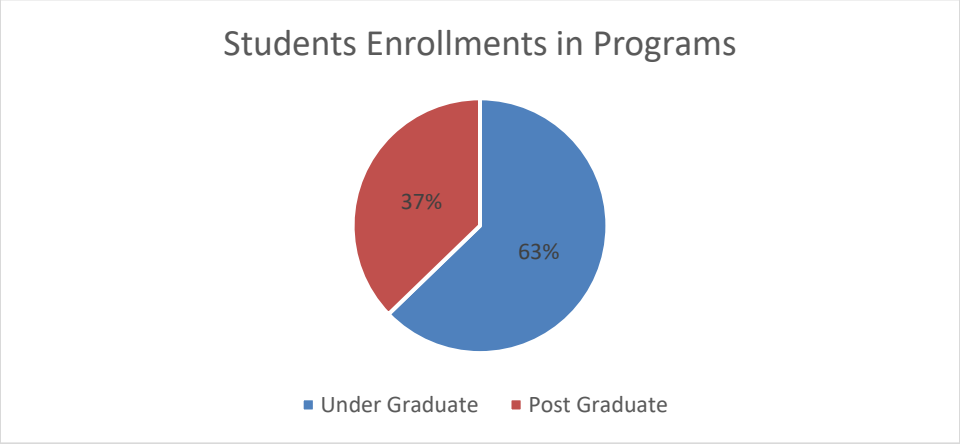


Figure 4 - Descriptive Data of Students' Enrollments in Programs

As per collected sample statistics, 115 samples were collected from the University of Punjab students. Which accumulates 27%. At the same time, 96 responses were received from government college university students, which is 23% of the total sample. Moreover, 82 samples were received from university of education students, which is 20%. In contrast, 77 responses were received from university of health sciences students, which is 18%. Lastly, 49 responses were collected from information technology university students, which is accumulated to 12% of the total sample collected (descriptive data of collected sample distribution from universities shown in figure 5).

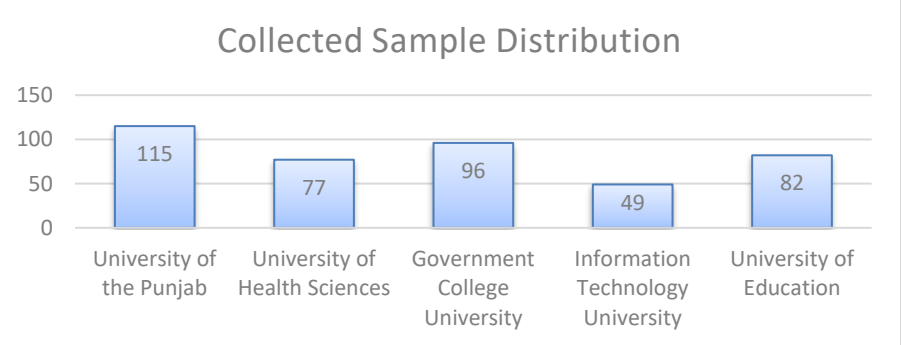


Figure 5 - Descriptive Data of Collected Sample from Universities

The experience of enrolled students shows that 55 students have university experience in less than 1 year, which means they are in their first years of university life, and it accumulates 13% of the total sample collected. 86 students have university experience between 1 to 2 years, which is 21%; 146 respondents have university experience between 2 to 3 years, which is 35% of the total sample collected and 132 students have university experience of more than 3 years, which accumulates 31% (descriptive data of students experience in university shown in figure 6).

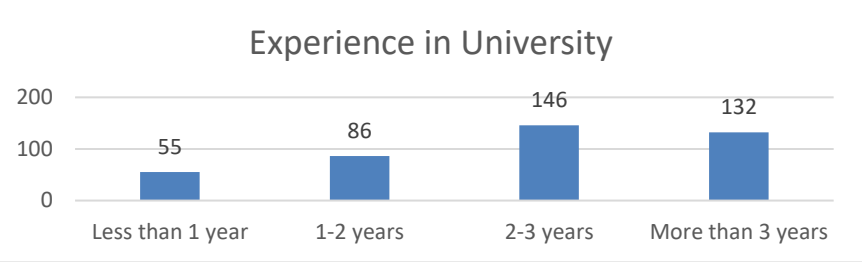


Figure 6 - Descriptive Data of Student's Experience in University

We apply an exploratory factor analysis (EFA) for the validation of constructs and delete items which show insignificant loadings (MacCallum, 1986). We deleted 15 items of different variables, 13 items deleted from service quality (4 items deleted from administrative service quality (DSQ), 2 items deleted from facilities service quality (FSQ), and 7 items deleted from academic service quality (ASQ)) and 2 items deleted from the image. None of the items was deleted from the remaining two variables; that is, satisfaction and trust.

For our measurement model, now we carried out the confirmatory factor analysis (CFA) by using AMOS. Figure-7 shows the re-specified measurement model after CFA. Table 3 shows the values of different measures after applying the CFE. The value of CMIN/DF is 2.646, GFI is .901, CFI is .909, SRMR is 0.054 and RMSEA is .063. Description and interpretation of the values are given in the following Table-8:

Figure 7 - Re-Specified Measurement Model (After CFA)

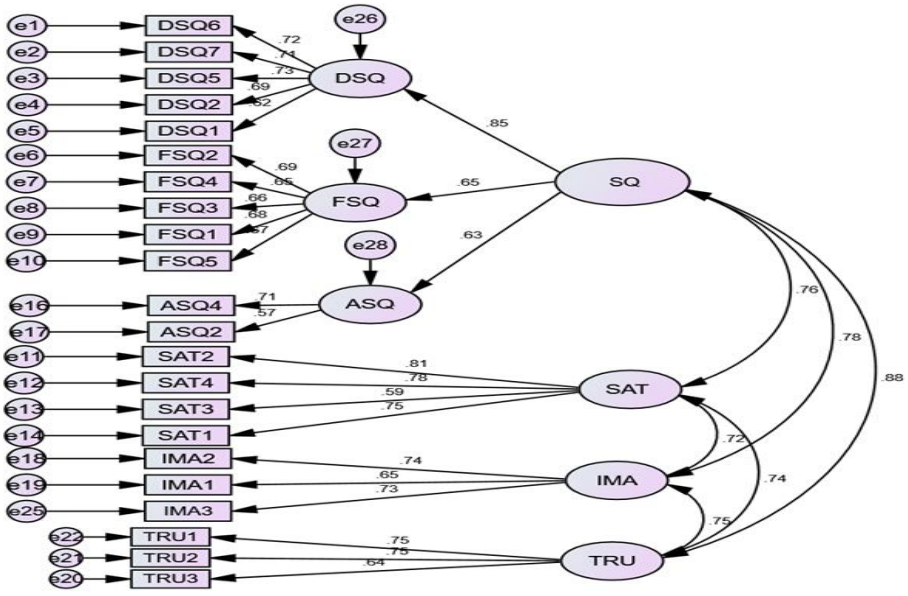


Table 3 - Re-Specified Measurement Model Analysis (After CFA)

Measure	Estimate	Threshold	Interpretation
CMIN/DF	2.646	Between 1 and 3	Excellent
GFI	0.901	Between 0.9 and 1	Excellent
CFI	0.909	>0.95	Acceptable
SRMR	0.054	<0.08	Excellent
RMSEA	0.063	<0.06	Acceptable

The following table-4 explains the standardized regression weights of variables after CFA and their respective factor loading and Cronbach's alpha (α value). Factor loadings of 0.80 and above are preferred but items having factor loadings between 0.40 and 0.70 can also be retained if items contribute to construct reliability and validity (Hair et al., 2014). So, we retained the items like ASQ2=.568 and SAT3-=.593.

Table 4 - Standardized Regression Weights of Variables after CFA

Construct	Items	Factor Loadings	α
Service Quality	DSQ1	.620	.838
	DSQ2	.686	
	DSQ5	.732	
	DSQ6	.724	
	DSQ7	.708	
	FSQ1	.679	
	FSQ2	.693	
	FSQ3	.663	
	FSQ4	.647	
	FSQ5	.671	
	ASQ2	.568	
	ASQ4	.711	
Satisfaction	SAT1	.751	.822
	SAT2	.807	
	SAT3	.593	
	SAT4	.776	
Trust	TRU1	.645	.748
	TRU2	.738	
	TRU3	.725	
Image	IMA1	.747	.730
	IMA2	.752	
	IMA3	.637	

The correlation among variables shows in table-5 below after applying CFA and deleting values. All the factor correlations were significant with a P 0.01 value. The correlation between service quality and student satisfaction is 0.858 with a P 0.01 value, and ** indicates a significant association between service quality and satisfaction. The correlations between service quality and trust are

0.891 and P 0.01, respectively, indicating a strong association between service quality and trust. The correlation between service quality and the image is 0.964, with a P-value of 0.01, indicating a significant association between service quality and institutional image.

The correlation between satisfaction and trust is 0.822, with a P-value of 0.01, indicating that they have a significant association. The correlation between satisfaction and image is 0.837, with a P-value of 0.01 and a ** indicating that the relationship is significant. Finally, the correlation between trust and image is 0.867, with P 0.01 and ** indicating a significant link.

Table 5 – Correlations after applying CFA

	Service Quality	Satisfaction	Trust	Image
Service Quality	1	.858**	.891**	.964**
Satisfaction	.858**	1	.822**	.837**
Trust	.891**	.822**	1	.867**
Image	.964**	.837**	.867**	1

**. Correlation is significant at the 0.01 level (2-tailed).

We empirically test the hypotheses (H1 to H4) by using structural equation modelling (SEM) in AMOS. Table-6 shows the values of the SEM model as a satisfactory model fit (CMIN/DF = 2.457, GFI = 0.9, CFI = 0.911, SRMR = 0.053 and RMSEA = 0.054). Figure-8 shows the structural model and table-7 shows the estimates along with significant values. Results show that SQ (Service Quality) and SAT (Satisfaction) have a significantly positive relationship between them having β=.858 (p***) which leads to acceptance of H1. The values show that SQ (Service Quality) and TRU (Trust) have a significantly positive relationship between them having β=.891 (p***), so H2 is accepted. The values show that SAT (Satisfaction) and IMA (Image) has a significantly positive relationship between them having β=.386 (p***), so H3 is accepted. The values show that TRU (Trust) and IMA (Image) have a significantly positive relationship between them having β=.560 (p***), so H4 is accepted.

Table 6 – SEM Model Fit Indices

Measure	Estimate	Threshold	Interpretation
CMIN/DF	2.457	Between 1 and 3	Excellent
GFI	0.9	Between 0.9 and 1	Excellent
CFI	0.911	>0.95	Acceptable
SRMR	0.053	<0.08	Excellent
RMSEA	0.054	<0.06	Excellent

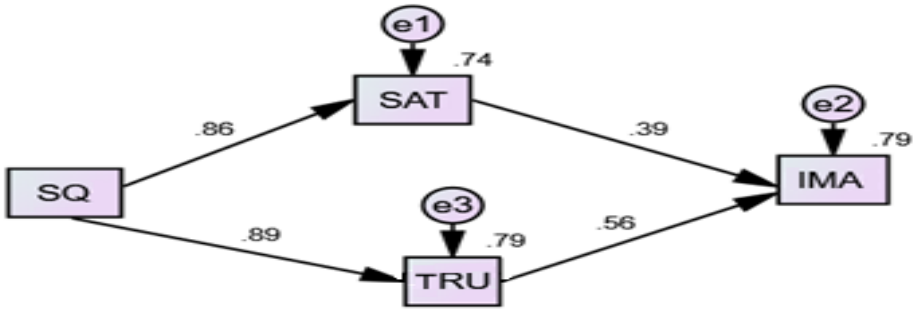


Figure 8 – Structural Model

Table 7 - Hypotheses Testing Results

	β VALUE	S.E.	T VALUE.	P
SQ → SAT	.858	.034	34.221	***
SQ → TRU	.891	.027	40.088	***
TRU → IMA	.560	.035	16.270	***
SAT → IMA	.386	.031	11.222	***

Hence, the result reveals that all hypotheses are statistically significant, and the finding shows that the theoretical model is valid.

Discussion

This study applied a theoretical framework of service quality for understanding the process of student satisfaction, trust, and institutional image in the context of higher education. The present study's results show the significant positive impact of service quality on students' satisfaction (H1) and trust (H2). The quantitative result of this study suggests three determinants of higher education service quality as: academic service quality, facilities service quality and administrative service quality. These three determinants are the main attributes of all the HEIs with which students and different stakeholders interact during university experiences. For instance, academic service quality includes the classroom learning environment, knowledge delivered by the faculty members, interactive sessions, lecture quality, after-class consultation for students, theoretical and practical aspects of the course, teachers' course knowledge and project or research activities supervised by the experts. Second, the facilities' service quality includes the different facilities for students which support their educational activities; like a library, laboratory, computer labs, research room, career counselling, internet facility, transport facilities, grounds and sports activities, hostel facilities etc. Third, administrative service quality includes an effective and efficient response to student issues or queries by all the supporting departments; like the admission department, registration department or student affairs department. These three determinants and their functions help the university management to focus their efforts and apply needful resources to enhance such services for students. The direct significant impact of service quality on satisfaction means that the more the students feel and perceive the service quality of their institutes as having good facilities and infrastructure provided, skilled faculty and support staff, and a sound learning environment, the more satisfied and trusted students were. As we discuss the results of service quality, consistent with the previous research studies, there was the same significant direct impact of service quality on students' satisfaction and trust level (Hazilah Abd Manaf et al., 2013; Latif et al., 2021; Sultan & Wong, 2012). According to the results, if students are satisfied with the institutional service quality and feel trusted, they assume that the same level of service quality and facilities universities will

provide in future as well (Carvalho & de Oliveira Mota, 2010; Joseph et al., 2005). It is very important for higher educational intuitions about predictors of service quality as it is the main contributor to students' trust and satisfaction. The higher education sector is a pure services side that demands one-on-one connection and interaction with its students or stakeholders. SQ classifications can assist the university in focusing its efforts and resources on students and other stakeholders.

Furthermore, results also reveal the significant direct impact of student satisfaction on the institutional image (H3) and, students' trust (H4) has a positive direct impact on the institutional image. Institutional image is the permanent reputation after the constant experiences with that institute. Every experience creates feelings, affections and beliefs about that institute. Positive experiences and satisfying encounters with service quality provided by the HEIs will lead the satisfied and trusted customers and ultimately positive institutional image build in their minds. In otherwise cases, if a student's or any stake holders' experience is not good with that institute, it leads towards dissatisfaction and mistrust, which leads to building a negative reputational image in the minds of customers. Students having a positive institutional image creates positive word of mouth for that institutes which is beneficial for institutions to positively grow their market. A significant relationship shows that service quality has an important factor for the institute as it adds credibility and value to students' life. These university experiences will satisfy and build the trust of the students. And ultimately it will be associated with building a strong institutional image. Infect, when institutions are capable to provide better service quality and able to gain students' trust through their satisfying experience, these all are simultaneously contributing to building a positive institutional image in students' minds. The current study's findings support the prior research results that service quality directly impacts students' satisfaction and trust level and then ultimately will lead to building a strong institutional image (Ali et al., 2016; de Jager & Gbadamosi, 2013; Hazilah Abd Manaf et al., 2013; Latif et al., 2021; Sultan & Wong, 2012).

The service quality observed by the students can have a statistically significant impact on aspects of the post-experience and during-experience encounters. The image of the university was found to be influenced by trust and satisfaction. The research model gives us theoretical and practical perspectives on how service quality might be implemented in higher education. The study emphasizes the importance of service quality in higher education institutions to measure the actual perceptions of the students. The findings of our studies support the prior research results that service quality directly impacts students' satisfaction and trust levels (de Jager & Gbadamosi, 2013; Hazilah Abd Manaf et al., 2013; Latif et al., 2021; Sultan & Wong, 2012). Also, SQ played a vital role in building an institutional image in the mind of customers and related stakeholders. As the previous literature does not have enough evidence to explain the image-building process through student's perceptions, current findings add significant results to elaborate on the image-building of the institutions in the mind of students, and service quality dimensions explain the importance of SQ in building the strong positive image of the institution in the mind of customers and other stakeholders.

Managerial Implications

The main contribution of the current research study is the confirmation of the proposed service quality theoretical framework and significantly testing the proposed relationships between service quality, students' satisfaction, trust, and the image of higher education institutions. It also conforms to the importance of service quality in the higher education sector which indirectly helps to build the strong brand image of the institute in the competitive market. HEI's top management must focus on delivering competitive service quality to maximize the trust level of the students and make them trusted and loyal. It also improves the institutional image in the marketplace, and this will help to attract more students' intake. This research study assesses the higher education

service quality that affects current student satisfaction, and it is measured through students' perceptions using an adapted scale. The present study has several important implications. Researchers may use this trustworthy, statistically valid, and reliable scale, and it can be used as the analytical or diagnostic tool for analyzing the higher education service quality through students' perceptions.

The proposed SQ scale can provide the key elements and paths for researchers and academicians who feel that service quality is a vital component of higher education institutions. Deficiencies in delivering better service quality may lead to poor word of mouth from students. Institutions failed to deliver better service quality may lose student satisfaction and trust, and ultimately it will lead to a poor institutional image, which will decrease the student intake, lack of ability to generate funds or institutional resources, and eventually make it impossible for the institution to achieve its objectives, mission, and visions. The suggested framework in this study enables academicians to gauge the higher education service quality by using different services quality components, such as academic SQ, administrative SQ, and facilities SQ. Future researchers use different sub-dimensions of service quality as per their institutional requirements. For example, the institutional head or department director may only use the academic service quality dimensions to gauge the level of teaching and quality of delivering the lectures by the faculty members. Additionally, future researchers should use this model and SQ dimensions in other areas to explore the comprehensive understanding of higher education service quality at the global level. Current studies' findings for all those institutes that have a "customer-oriented focus" because providing better service quality built long-term connections between current and former students. All SQ components collectively lead institutions towards building a positive reputation and strong brand image in the competitive market.

Limitations and Future Recommendations

This part highlights a few research limitations. First, cross-sectional data were used in this research. Future researchers may focus on longitudinal studies and gathering data at different points in time, and it is helpful to measure the service quality perceptions at different times. We should compare the same student's perceptions at different points in time to measure whether service quality perceptions change over time or not. Furthermore, future researchers should collect the data minimum at two points, when semesters start and at the end of the same semesters, to check the perceptions variations about service quality over the complete study cycle in a one-semester experience. Secondly, the collected sample is geographically limited as we focus on five government sector university students in Punjab. Future researchers should also use this framework or service quality dimensions in private universities in Pakistan and other developing countries. So, we have clear comparative pictures of the service quality of private and public sector universities. Also, private-sector universities in Pakistan and generally all over the world tend to receive higher fees than public-sector universities. So, the level of services may also be attached to the fee and other contextual factors.

Conclusion

The current study's findings support the prior research results that service quality significantly impacts students' satisfaction and trust level and then ultimately will lead to building a strong institutional image. By fully utilizing their potential, higher education institutions aid in transforming and developing youngsters into valuable human capital. The higher education service quality must be upheld to guarantee the quality of human resources. The findings showed that conceptualizing and assessing service quality in higher education is challenging and complicated because it is a dynamic process. It is vital to comprehend how students view various components of service quality in the higher education context. This study develops the research framework for analyzing the higher education service quality through students' perceptions using three components: academic SQ, facilities SQ, and administrative SQ. The

research model has been tested in AMOS using structural equation modelling. The result shows that higher education service quality significantly impacts the student's satisfaction level and trust, and ultimately satisfaction and trust lead institutions to build a positive image. Furthermore, the results reveal that the theoretical model is valid. The findings show that the HEIs have satisfied students if they provide better service quality and unique SQ experiences to their students. Current studies' findings for all those institutes that have a "customer-oriented focus" because providing better service quality built long-term connections between current and former students.

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