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Educational Quality vs. Stress Impact: Assessing Student Well-Being in Moroccan Higher Education

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Abstract: Amidst significant reforms in Moroccan higher education designed to enhance educational quality and align with the evolving demands of the job market, this study examined the primary factors influencing students' quality of life. Using a quantitative methodology, we surveyed students from various Moroccan higher education institutions to assess key elements including the quality of higher education services, academic stress, and financial stress. Structural equation modeling, conducted through SMART-PLS on data from 426 student responses, revealed that higher education quality positively impacts students' well-being, while academic and financial stress significantly undermine their quality of life, emphasizing the need to address these stressors. These results offer valuable insights for policymakers and education leaders, emphasizing the need to prioritize service quality improvement and stress reduction strategies to foster better educational outcomes and an enhanced student experience.

Keywords: higher education quality; student quality of life; educational reforms; academic and financial stress; Moroccan higher education

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1. Introduction

Higher education service quality is the alignment of student expectations with service delivery and outcomes, encompassing teaching quality, administrative support, and the overall experience (Sharabi 2013). It combines functional quality, which emphasizes service reliability with transformative quality, focusing on educational outcomes and personal growth (Teeroovengadum et al. 2019). Across institutional, program, and course levels, it integrates curriculum relevance, infrastructure, and the practical application of knowledge to address diverse stakeholder needs (Surman and Tóth 2019).

The significance of higher education quality extends beyond individual outcomes to national development, particularly in countries like Morocco, where educational reforms aim to adapt to the demands of a globalized labor market and sustainable development goals (Fahim et al. 2021). Despite ongoing efforts to enhance quality, challenges persist, especially in aligning the student expectations with the labor market requirements (Goumairi et al. 2020). The concept of "quality" in higher education is inherently complex and multidimensional, incorporating factors such as teaching effectiveness, institutional governance, and student satisfaction, all of which are essential for ensuring that higher education remains relevant and impactful (Latif et al. 2019).

The quality of life of students is increasingly being seen as a crucial factor in achieving their educational success, making it a key focus in discussions about improving academic outcomes (Gumbatova et al. 2022; Pedro et al. 2016). The basic conceptualization of

this construct goes beyond simple academic achievement to encompass the overall well-being of students. Academic stress is among the major factors, proven by research, to influence student quality of life by causing anxiety and depression; thus it creates a negative effect on performance both academically and socially (Dafaalla et al. 2016). Institutional support regarding access to counseling services, financial aid, and extracurricular activities significantly lessens these stressors for a more balanced student life (Huenergarde 2018; Putrikita and Sari 2020). Furthermore, habits of lifestyles regarding physical activity, sleep patterns, and nutrition have been proven to directly relate to the students' perceived quality of life (Achak et al. 2023); however, no previous literature has discussed it in the context of Moroccan higher education. For example, while some research has looked at the individual effects of academic stress on student outcomes (Omair et al. 2021) or the habits of life on student well-being (Achak et al. 2023), none have looked comprehensively at a holistic approach to the experience of students in Morocco. Most previous research has, on the one hand, rather conventionally focused on either academic results or on institutional quality in isolation and, on the other hand, has not successfully explained how these aspects add up to student quality of life. Such a divided approach disregards the multi-interactional nature of factors that shape their experiences, especially in an economically and culturally unique country like Morocco (Laachir 2013).

For several major reasons, Morocco was the focus of the present study: the higher education sector has been undergoing serious reforms in the quality of education provided with its strategic plan called "Vision 2030" (Ministry of Higher Education, Scientific Research and Innovation 2023). Reforms that target enhancing the service quality at universities make Morocco an ideal environment in which to study the drivers of student quality of life. Furthermore, Morocco's linguistic diversity introduces a set of challenges and opportunities that is rarely encountered in higher education service quality assessments. It is worthwhile noting that the commitment of Morocco to increasing access to higher education as well as improving student outcomes through better education attainment closely corresponds to the intent of this research in its quest to provide guidelines on policy decisions and educational strategies.

This research aims to fill an existing gap in the literature and investigated the determinants of student quality of life in Moroccan higher education institutions. It investigated the following higher education service quality attributes: teacher quality, administrative services, knowledge services, student activities, continuous improvement, and leadership quality (Latif et al. 2019). Teacher quality (TQ), such as the efficiency of instructional strategies and the qualifications of educators, helps improve learning experiences and develops the students' positive attitude to their education (Goumairi et al. 2020). Administrative services (AS) help minimize obstacles for an effective education setting, which will reduce stress among students and enhance their well-being. Knowledge services (KS), such as library, academic, and digital tools, are needed to assist the academic success of students (Essaoudi and Lotfi 2021). Most importantly, student activities (Ac) involve experiential learning that goes beyond the classroom through extracurricular programs and cultural events that offer community and social experience, among other things that increase the quality of life for the students (Buckley and Lee 2021). The role of continuous improvement (CI) is further pronounced since institutions that continuously appraise and enhance their programs are better positioned to meet the needs of students and adjust to changes in the educational standards (Bennani et al. 2021). Finally, leadership quality (LQ) in educational institutions is indispensable because effective leadership creates a supportive and transparent environment where confidence is inspired and academic success is promoted (Essaoudi and Lotfi 2021).

The main research question around which the study is organized was: "What are the major determinants of higher education service quality (HEQ) and how these factors as well as stressors like academic stress and financial stress interact to influence the student quality of life (SQL) in Moroccan higher education institutions?" The answer to this question would not only contribute to the current ongoing discourse on educational quality in

Morocco, but with empirical evidence that may help the makers, educators, and leaders of institutions understand how to improve the student experience. More so, indeed, such research findings would eventually serve the broader educational purposes of the country, contributing to the development of a more equitable, efficient, and student-centered higher education system.

2. Literature Review

2.1. Conceptual Framework

Student quality of life refers to the overall well-being and satisfaction of students across various domains that influence their daily lives and long-term development. It encompasses academic, personal, social, and community-related dimensions, reflecting the balance between the demands of education and the fulfillment of individual needs (Sugara 2018).

Despite the significant focus of various works on analyzing the quality-determinant factors of services in higher education, the task of increasing the quality of life among students, who are clients of these institutions, is complex and multifaceted (Mihanović et al. 2016). This is due to the fact that it is hard to identify and measure the critical factors that can impact the general quality of education and well-being. In this respect, the current study significantly closes a gap present in the literature regarding the key determinants affecting student quality of life in higher education institutions, particularly in Morocco, where such studies are relatively limited. The various constructs in the conceptual model proposed herein are well-grounded in the literature, as shown in Figure 1. This study takes into consideration the institutional and student-centered constructs that are used to assess the determinants of service quality in higher education (Vranješ et al. 2014). Moreover, the variables of our model include stress and the quality of services to understand their impact on student quality of life (Yang and Fan 2017). Therefore, the final aim of this research was to measure, in some depth, how these factors relate to one another to contribute to the quality of students' lives within Moroccan higher learning institutions, thus contributing importantly to the research domain on higher education in Morocco.

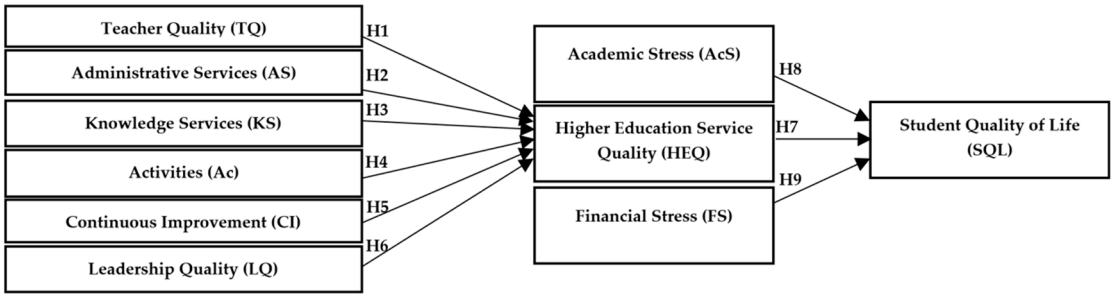


Figure 1. Conceptual model.

2.2. Hypotheses

Quality teaching is stated as the mission of higher education. This is because high effectiveness in the provision of educational services fundamentally depends on the competence and zeal of teachers (Latif et al. 2019). Prepared and continually developed, teachers serve as key factors for improved student learning outcomes, which enhance the perceived service quality within the institution. A strong argument in support of service quality is that teachers who are well-prepared and continuously developed contribute significantly to it (Darling-Hammond 1999). Malcolm Tight's (2013) exploration of metaphors for students in higher education highlights diverse perspectives on their roles within educational institutions, ranging from the client, who passively receives services, to the co-producer, actively engaged in the educational process (Tight 2013). These metaphors critique the transactional and policy-driven approaches to education, emphasizing the importance of fostering active student participation and deeper learning (Bailey 2000; McCulloch 2009).

In the same regard, teacher quality plays a pivotal role in shaping these dynamics. This is reflected not only in academic delivery, but also in service quality dimensions such as teaching methods, behavior, and student engagement, all of which directly influence the effectiveness of academic services (Lazibat et al. 2014). Moreover, influences exerted from the teachers themselves, arising due to teacher characteristics within relational dynamics with the students in the form of trustworthiness and responsiveness, shape the quality services perceived by the students (Van Maele and Van Houtte 2011). These interpersonal facets—strongly associated with teacher behaviors and competencies—highlight the fact that good teaching is not only content presentation, but also establishing a supporting and responsive learning environment (Pedro et al. 2018). Thus, it can be surmised that: H1: There is a positive relationship between teacher quality and higher education service quality.

While administrative services (including reliability, responsiveness, assurance, empathy, and tangibility) do not directly affect the students' learning outcomes, they do significantly contribute to service quality when these services meet or exceed expectations (Rizos et al. 2022). This is where these services either meet or exceed the expectations, and this contributes significantly to improving the service quality. Reliable and responsive administrative processes in a paperless way are the keys to a smoother academic journey and higher student-level satisfaction (Mustafa et al. 2022). These are designed to provide a seamless experience and help create an academic community where both the supportive nature of study groups as well as non-academic needs can be addressed. The organization of student support, proper record-keeping, and provision of housing facilities help students feel supported, which positively influences their perception of overall service quality at the university (Yidana et al. 2023). Thus, administrative service quality is directly related to the overall service quality in higher education. The practical role of these services not only fulfills essential requirements, but also creates a stimulating environment that supports the academic experience and enhances student satisfaction and loyalty. Therefore, the following hypothesis is expected: H2: Administrative services have a positive effect on higher education service quality.

The application of knowledge management (KM) practices including sharing, generating, and using knowledge is critical to improve the service quality in higher education institutions (Umaroh et al. 2023). However, these practices extend past the simple transmission of knowledge to a transformative kind of learning experience, which improve educational quality. Embedding knowledge in the curriculum and lifelong learning dramatically enhance student achievement (Ashwin 2014). It is equally important to provide an organizational environment that encourages the transfer of knowledge and innovation, which are the keys to a successful level of service. Providing the right tools and information to those responsible for education strengthens their ability to deliver better service on campus (Vacalares and Manigo 2022). These insights illustrate the importance of KM to improve the service provision in higher education. Institutional knowledge management and utilization help organizations to respond dynamically to changing student expectations, while further securing their competitive edge. It leads to the following proposed hypothesis: H3: Knowledge services positively influence higher education service quality.

Extracurricular activities like physical activities, seminars, workshops, job fairs, and research conferences are the major tools in offering support and width to the academic environment (Latif et al. 2019). The level of services offered in these kinds of activities directly impacts the students' overall satisfaction, hence improving the perceived institutional service quality (Chang and Shon 2015). Other advantages associated with these activities include improved academic performance and skills development in key areas like leadership, teamwork, and time management (Kerrigan and Manktelow 2021; Nguri 2024). Furthermore, extracurricular activities are integrated within the educational framework that help in the holistic development of students by practically implementing the theoretically gained knowledge and further developing social skills, emotional intelligence, and responsibility (Mishra and Aithal 2023). Therefore, based on the above discussion,

the proposed hypothesis is: H4: Extracurricular activities are positively related to higher education service quality.

Continuous improvement is a process in which higher educational institutions are able to respond to the constantly evolving needs of both students and society through constant evaluation and change (Latif et al. 2019). Thus, quality improvement embedding processes nurture a culture of excellence whereby the regular refinement of teaching, curricula, and administrative services leads to increased student satisfaction coupled with enhanced service quality (McGettrick et al. 1997). Implementing quality management systems like Six Sigma and the PDSA (Plan, Do, Study, Act) cycle enables the systematic evaluation and updating of processes, allowing institutions to rectify inefficiencies and proactively address student demands (Sharabi 2013). These frameworks are crucial for identifying weaknesses, implementing changes, and ensuring sustained quality improvement. By integrating continuous improvement into governance structures, institutions can align their goals with international standards through data-driven decision-making and responsive governance (Amirullah et al. 2019; O'Neill and Palmer 2004). In light of this, the following hypothesis can be proposed: H5: Continuous improvement positively influences higher education service quality.

Leadership qualities can be described as the various abilities that inspire, guide, and influence others to work toward the realization of institutional goals, ensuring that there is high service standard realization (Trivellas and Dargenidou 2009). Research consistently indicates that certain leadership roles—such as innovators and monitors in teaching and facilitators at the administrative level—have a direct influence on various dimensions of service quality (Geraki 2014; Trivellas and Dargenidou 2009). Leaders who are committed to quality and unceasing improvement can substantially improve organizational performance; this involves aligning all members to the institutional goals through appropriate quality management practices (Rifa'i et al. 2018). Moreover, leaders with a clear vision, who create a supportive atmosphere and possess effective communication, are highly successful in increasing service quality (Wijaya et al. 2019). This is indicated by a study conducted in private higher education, South Africa, wherein the leadership practices described 85% of the variance in service quality related to the institutions studied (Schalkwyk et al. 2011). Based on these findings, it is fair to hypothesize the following. H6: Leadership quality positively influences higher education service quality.

Empirical findings suggest that high service quality in higher education, delivered through effective educational services, contributes to better grades and enhanced well-being (Yang and Fan 2017). Academic life-expenditure satisfaction, involving academic classroom experiences, faculty support, and extra-curricular activities, is also paramount in influencing student university life quality (Pedro et al. 2018). Moreover, the perceived service quality regarding empathy, reliability, and assurance are vital to increasing student satisfaction, which is then closely linked to their quality of life (Rusnipa et al. 2021). A responsive administration and supportive academic atmosphere may further enhance the students' well-being and academic satisfaction accordingly. In addition, satisfaction with educational services and administrative and campus facilities has been found to strongly affect the students' quality of life (Yu and Kim 2008). The presence of high service quality in all of these aspects facilitates the satisfaction of needs and induces positive emotional experiences that enhance life satisfaction and well-being among students. From the above, the following is hypothesized. H7: Higher education service quality is positively related to students' quality of life.

Academic stress as manifested by excessive workload, high expectations, great competition, and examination anxiety has commonly been attributed to negative impacts on the students' quality of life, and such relations have been repeatedly proven by various studies (Bedewy and Gabriel 2015; Kausar 2010). Research has reflected that high levels of academic stress are strongly associated with declines in physical health, mental well-being, and overall life satisfaction. Academic pressure puts them under continuous exposure that may lead to insomnia, burnout, anxiety, and a serious deterioration in physical and psy-

chological health (Ribeiro et al. 2017). Further evidence shows that too heavy a workload and competitive spirit breed anxiety, depression, and burnout, thus relating directly to a reduction in the quality of life (Nuriyyatiningrum et al. 2023). The demanding nature of the education that the students receive, especially in medical and dental schools, is associated with low scores regarding quality of life, which could be through their physical, psychological, and social perspectives (Li et al. 2023). These findings point to academic stress as one of the strong predictors of poor outcomes, where the students' quality of life records a massive slump. Based on the provided evidence, the following hypothesis is proposed. H8: Students' quality of life is negatively related to academic stress.

As measured by the inability to meet demands and psychological tension evoked by financial problems, financial stress may significantly impact their quality of life (Heckman et al. 2014). Student loans, academic costs, and the need to work during their studies impact mental health, academic performance, and life satisfaction (Baker and Montalto 2019; Joo et al. 2008). Moreover, high levels of financial stress are strongly associated with increased anxiety and depression as well as health problems that further lower the quality of life (Heckman et al. 2014). Thus, this financial strain situation may generate a low academic performance, lighter course loads, and school dropouts. Economic instability and high rates of unemployment further promote these challenges, increasing insecurity and reducing well-being (Qudsia 2012). For example, international students may face worse financial conditions and have limited work opportunities, making them more vulnerable, which sharply decreases their quality of life (Larbi et al. 2022). There is therefore a basis to suppose that, given the results of research, H9: Financial stress negatively impacts student quality of life.

3. Methods

3.1. Measurement

All of the constructs in this study were measured using items carefully adapted from established scales in prior research. The measurement scale for higher education service quality was drawn from Latif et al. (2019). The scale for student quality of life was based on the work of Roberts and Clifton (1992). For academic stress, the measurement items were adapted from Bedewy and Gabriel (2015), while the scale for financial stress was derived from Northern et al. (2010). Each construct was operationalized through multiple items for complete coverage of the concepts investigated. The measured constructs included teacher quality, administrative services, knowledge services, activities, continuous improvement, quality of leadership, academic stress, financial stress, and overall quality of life of the students. Because of the linguistic context of higher education in Morocco, administration of the questionnaire had to be executed in French, being the leading language of instruction and communication in such institutions. Items were translated using a rigorous back-translation method. First, the items were translated from English into French, and then back-translated into English by independent translators. This procedure was designed to ensure that the measurement items reflected linguistic accuracy as well as the accuracy of meaning across cultural boundaries to minimize misinterpretation and bias associated with the measurement items (Brislin 1986).

Every item in the questionnaire was measured on a five-point Likert scale, ranging from "1: Strongly Disagree" to "5: Strongly Agree". Thus, this scale provided the respondents with the ability to express to what degree they agreed with statements pertaining to each construct. Additionally, the demographic variables included age, gender, and education level to fully capture the understanding of a sample composed of students from different academic levels within Moroccan universities. Such a structured approach to measurement allowed for the details of analysis of the interrelationships between the various constructs and how these affected the overall quality of life of students within higher education institutions in Morocco.

We used the PLS-SEM approach to analyze our research hypotheses because of its suitability for the analysis of direct and indirect effects in complex casual models. We employed SmartPLS-4 software in conducting the statistical analysis, which enabled us to conduct confirmatory factor analysis and test various relationships between different constructs. In this respect, the approach of structural equation modeling was adopted to accurately examine the hypothesized causal relationships between various factors influencing higher education service quality and the quality of life among students at Moroccan universities.

3.2. Sample and Data Collection

In setting up the sample, since we were dealing with a large population (Anugraheni et al. 2023), Slovin's formula was used to appropriately determine the sample size, and with over 1 million students enrolled in universities around Morocco, a sample size of approximately 400 respondents was sufficient to represent the population within a 5% margin of error at a 95% confidence. The voluntary selection method was used, with a self-administrated online questionnaire (a data collection tool where respondents independently complete the survey without the presence of an interviewer) distributed on WhatsApp, Messenger, email, and Facebook, which yielded a total of 479 responses. In this approach, the option to participate in the study or not depends exclusively on the discretion of the participant. Before the full data collection, a pilot test was conducted to ensure that the questionnaire's content and format were appropriate for the study's objectives. The pilot test data were excluded from the final analysis. The main data collection took place over a four-month period from April to July 2024. Out of the 479 responses received, 426 were deemed valid (88.9% of the total), while 53 responses were excluded due to incomplete or inconsistent data. The analysis was conducted using only the valid responses to ensure the reliability, validity, and appropriateness of the data for hypothesis testing.

As presented in Table 1, descriptive statistics revealed that the sample consisted of 204 female respondents (47.89%) and 222 male respondents (52.11%). Regarding the level of education, 94 respondents (22.06%) had completed BAC + 1, 40 respondents (9.39%) had completed BAC + 2, 146 respondents (34.27%) held a BAC + 3 degree, 60 respondents (14.08%) had completed BAC + 4, 50 respondents (11.74%) had completed BAC + 5, and 36 respondents (8.45%) were PhD students.

Table 1. Profile and characteristics of the respondents (n = 426).

Attributes	Characteristic	Frequency	Percentage (%)
Gender	Female	204	47.89%
Gender	Male	222	52.11%
Level of studies	BAC + 1	94	22.06%
	BAC + 2	40	9.39%
	BAC + 3	146	34.27%
	BAC + 4	60	14.08%
	BAC + 5	50	11.74%
	PhD student	36	8.45%

According to Table 2, the highest number of responses came from Sidi Mohamed Ben Abdellah University (125 responses, 29.34%), followed by Hassan II University (85 responses, 19.95%) and Moulay Ismail University (74 responses, 17.37%). The remaining universities contributed smaller proportions, with Abdelmalek Essaâdi University accounting for 11.74% and Cadi Ayyad University contributing 7.75%. Mohammed V University of Rabat, Ibn Tofail University, and Mohamed Premier University had even smaller shares, with the latter contributing the lowest proportion at 2.11%.

Table 2. Universities of the students who participated in the survey.

University	Responses	Percentage (%)
Sidi Mohamed Ben Abdellah University	125	29.34%
Hassan II University	85	19.95%
Moulay Ismail University	74	17.37%
Cadi Ayyad University	33	7.75%
Abdelmalek Essaâdi University	50	11.74%
Mohammed V University of Rabat	40	9.39%
Ibn Tofail University	10	2.35%
Mohamed Premier University	9	2.11%
Total	426	100%

4. Results

4.1. Assessment of Measurement Model

As illustrated in Table 3, the composite reliability (CR) and Cronbach's alpha (CA) for all constructs exceeded the recommended threshold of 0.7, thereby confirming the reliability of the constructs (Vacalares and Manigo 2022). For instance, constructs such as administrative services (CR = 0.895, CA = 0.877) and higher education service quality (CR = 0.921, CA = 0.897) demonstrated high reliability. While most indicators met the required loading threshold of 0.7, a few indicators, such as AS4 in the administrative services construct (0.663), fell slightly short. Nevertheless, these minor deviations were considered acceptable, given that the average variance extracted (AVE) values for all constructs surpassed the 0.5 threshold, thereby establishing convergent validity. For example, the activities construct achieved an AVE of 0.698, and student quality of life recorded an AVE of 0.603.

Table 3. Convergent validity (n = 426).

Constructs	Loadings	CA	CR	AVE	Constructs	Loadings	CA	CR	AVE
Administrative services		0.877	0.895	0.634	Financial stress		0.891	0.914	0.605
AS1	0.703				FS1	0.753			
AS2	0.864				FS2	0.807			
AS3	0.890				FS3	0.800			
AS4	0.663				FS4	0.822			
AS5	0.836				FS5	0.751			
Activities		0.892	0.920	0.698	FS6	0.755			
Ac1	0.840				FS7	0.750			
Ac2	0.824				Higher education service quality		0.897	0.921	0.660
Ac3	0.821				HEQ1	0.805			
Ac4	0.833				HEQ2	0.795			
Ac5	0.859				HEQ3	0.804			
Academic stress		0.893	0.914	0.572	HEQ4	0.802			
AcS1	0.798				HEQ5	0.882			
AcS2	0.783				HEQ6	0.783			
AcS3	0.732				Knowledge services		0.830	0.881	0.596
AcS4	0.751				KS1	0.754			
AcS5	0.736				KS2	0.762			
AcS6	0.769				KS3	0.779			
AcS7	0.739				KS4	0.773			
AcS8	0.737				KS5	0.790			
Continuous improvement		0.840	0.892	0.674	Leadership quality		0.777	0.856	0.599
CI1	0.824				LQ1	0.718			
CI2	0.824				LQ2	0.840			
CI3	0.777				LQ3	0.820			
CI4	0.856				LQ4	0.709			
Student quality of life		0.918	0.932	0.603	Teacher quality		0.869	0.905	0.658
SQL1	0.762				TQ1	0.738			
SQL2	0.832				TQ2	0.845			
SQL3	0.811				TQ3	0.912			
SQL4	0.805				TQ4	0.841			
SQL5	0.812				TQ5	0.700			
SQL6	0.751								
SQL7	0.756								
SQL8	0.708								
SQL9	0.744								

CR: composite reliability, CA: Cronbach's alphas, AVE: average variance extracted.

To ensure discriminant validity, the heterotrait–monotrait (HTMT) ratio in the Table 4 criterion was applied. All values were well below the 0.9 threshold, indicating that each construct was distinct from the others. For instance, constructs such as academic stress and financial stress were validated as distinct and non-overlapping within the theoretical model. These findings confirm that the constructs are reliable, valid, and suitable for predicting the factors influencing student quality of life in the context of higher education.

Table 4. Heterotrait–monotrait ratio (HTMT).

	AS	Ac	AcS	CI	FS	HEQ	KS	LQ	SQL	TQ
Administrative services										
Activities	0.151									
Academic stress	0.204	0.310								
Continuous improvement	0.233	0.429	0.533							
Financial stress	0.173	0.219	0.623	0.364						
Higher education service quality	0.221	0.475	0.715	0.847	0.460					
Knowledge services	0.154	0.390	0.425	0.632	0.283	0.676				
Leadership quality	0.218	0.446	0.467	0.837	0.315	0.807	0.598			
Student quality of life	0.231	0.371	0.822	0.613	0.580	0.854	0.445	0.578		
Teacher quality	0.336	0.423	0.496	0.728	0.385	0.791	0.550	0.682	0.542	

This thorough assessment of the measurement model confirms the robustness of the constructs and their reliability in predicting the outcomes within the proposed theoretical framework.

4.2. Analysis of Structural Model

The results of the structural equation modeling (SEM) direct effects are presented in Table 5, contextualized within the Moroccan higher education system. As hypothesized, higher education service quality had a substantial positive impact on student quality of life ($\beta = 0.504$; $p < 0.01$), supporting H6. The result indicates that the quality of services provided by higher education institutions in Morocco is a vital factor in improving the overall quality of life of students. Additionally, both academic stress and financial stress showed significant negative effects on student quality of life with $\beta = -0.370$ and $\beta = -0.120$, respectively, at $p < 0.01$ for both, hence supporting H3 and H5. These findings underline that the higher the level of academic and financial stress, the poorer quality of life the students will have. In particular, in the Moroccan education system, students often face serious financial and academic pressures.

Table 5. Direct effects.

Hypotheses	Relationships	Findings	Results
H6	Higher education service quality → SQL	Positive and significant ($\beta = 0.504$; $p < 0.01$)	Supported
H3	Academic stress → SQL	Negative and statistically significant ($\beta = -0.370$; $p < 0.01$)	Supported
H5	Financial stress → SQL	Negative and statistically significant ($\beta = -0.120$; $p < 0.01$)	Supported
H9	Teacher quality → HEQ	Positive and significant ($\beta = 0.316$; $p < 0.01$)	Supported
H7	Knowledge services → HEQ	Positive and significant ($\beta = 0.148$; $p < 0.01$)	Supported
H8	Leadership quality → HEQ	Positive and significant ($\beta = 0.196$; $p < 0.01$)	Supported
H4	Continuous improvement → HEQ	Positive and significant ($\beta = 0.302$; $p < 0.01$)	Supported
H2	Activities → HEQ	Positive and significant ($\beta = 0.068$; $p < 0.05$)	Supported
H1	Administrative services → HEQ	Non-significant effect ($\beta = -0.008$; $p > 0.05$)	Not supported

On the other hand, teacher quality had a positive and significant effect on higher education service quality, with β = 0.316; $p < 0.01$, hence supporting H9. This reflects that teaching quality is a major determinant of the perceived service quality of higher education in Morocco. Similarly, knowledge services (KS) (β = 0.148; $p < 0.01$), leadership quality (LQ) (β = 0.196; $p < 0.01$), and continuous improvement (CI) (β = 0.302; $p < 0.01$) all showed positive and significant effects on higher education service quality, supporting H7, H8, and H4, respectively. These results suggest that various aspects of institutional quality including the management of knowledge, leadership effectiveness, and a commitment to continuous improvement are vital for enhancing the perceived quality of higher education services in Morocco.

Student activities (Ac) also exhibited a positive and significant impact on higher education service quality (β = 0.068; $p < 0.05$), supporting H2, indicating that student engagement in activities contributes positively to their perception of service quality. However, administrative services (AS) have a non-significant effect on higher education service quality (β = −0.008; $p > 0.05$), failing to support H1. This suggests that, within the Moroccan context, the quality of administrative services does not directly contribute to the perceived quality of higher education services.

As presented in Figure 2, R-square values revealed that the model explained 70% of the variance in HEQ and 74.8% in SQL, while the respective adjusted R-square values were 69.6% and 74.7%. Thus, these two high R-square values indicated that the proposed model was highly adequate in its prediction of the results related to higher education quality and the quality of the students' lives in the Moroccan context.

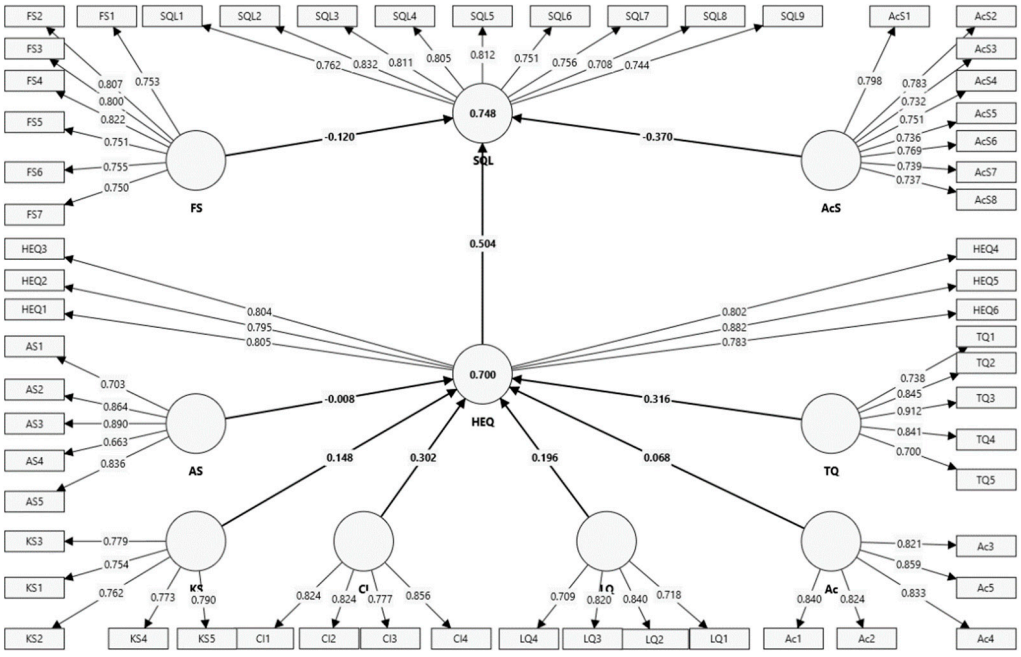


Figure 2. Measurement and structural model.

5. Discussion and Conclusions

Despite the great efforts being made to enhance the quality of higher educational services, understanding what contributes to the students' quality of life in diverse educational settings is not an easy task (Chakor and Amrani 2020). It becomes even more complex when considering Morocco, a country whose higher education system is at different stages of reform and development (Aamili 2020). In addition, the lack of comprehensive studies in the Moroccan context complicates the identification of these factors (Fahim et al. 2021). In response to this gap, this study sought to explain the drivers that significantly impact student quality of life and perceived quality of higher education services in Moroccan institutions (Achak et al. 2023). In developing the conceptual framework for this study,

several well-recognized constructs were combined, based on earlier works concerning higher education quality, as shown in Figure 1.

5.1. Theoretical Implications

This research carried a number of important theoretical implications, especially within the Moroccan higher education system, which is currently undergoing significant reforms and development. Its findings contribute to the broader literature on higher education quality and student quality of life by providing insights into specific factors influencing these outcomes in Morocco.

First, this study confirms that higher education service quality plays an important role in enhancing the quality of life among students and registers a strong positive relation with the construct under reference. Furthermore, this finding agrees with the available literature on the importance of the construct of service quality in academic settings toward affecting student well-being and satisfaction (Chakor and Amrani 2020). Higher education service quality positively influences the students' quality of life. Therefore, policymakers and administrators in Morocco need to focus on further advancing the quality of services currently provided by higher education institutions, alongside the ongoing educational system reform process in the country (Aamili 2020). Additionally, the sizeable negative impacts of academic and financial stress on student quality of life suggest that dealing with such stressors holds the key for further enhancement in the performance of students. These findings will add to the growing literature on the challenges faced by students in the Moroccan context, who are usually battling with financial and academic stressors (Fahim et al. 2021). The study calls for the provision of specific interventions that could provide relief from these stressors and may include financial aid, counseling, and academic support services.

The significant and positive effects of teacher quality, knowledge services, and leadership quality on higher education service quality confirm their relevance to determining the perceived quality provided by the services of higher education. This is in line with earlier works that found teaching quality, effective leadership, and the availability of knowledge resources to be significant drivers of service quality in educational establishments (Ghaicha 2018; Goumairi et al. 2020; Safsouf et al. 2020). In the Moroccan context, the results therefore suggest that enhancing each of the above aspects of education should significantly contribute to raising the quality of the service provided to students.

Meanwhile, the non-significant effect of administrative services on higher education service quality comes to contradict the conventional assumptions regarding the role of administrative quality in education. This result could be explained by a misalignment between student perceptions and what actually happens in administrative services. In other words, this suggests that students may have expectations that are not fully met by these services, making them less important in the students' perceptions of the quality of their education. This interpretation aligns with emerging literature that questions the universal applicability of certain quality dimensions in different educational contexts, particularly where there is a disconnect between the expectations and actual service delivery (Essaoudi and Lotfi 2021).

5.2. Practical Implications

The findings suggest a number of practical implications that could be of importance to policymakers, educators, and administrators involved in higher education in Morocco. Given the significant impact of higher education service quality on the student quality of life, a clear avenue for improvement lies in enhancing the quality of services provided by educational institutions. This is especially important in the Moroccan context, where higher education institutions have major reforms at present and challenges in linking educational outcomes with the needs of a fast-changing job market (Aamili 2020).

Institutions should focus their investments on aspects that are likely to improve higher education service quality; these include teaching quality, leadership, and the availability

of knowledge resources. These have had a positive and significant effect, which in turn enhances the perceptions of the quality of life as held by students. Higher education institutions can afford higher student expectations on certain aspects of the institution by working on such areas to foster improved overall satisfaction. This research, therefore, calls for the dire need to construct an action plan against stressors such as academic stress and financial stress, which seriously affect the student quality of life. Support systems could be a good solution to help students cope with these stressors, such as financial aid, counseling services, and academic support initiatives, which are designed to alleviate pressure and enhance the overall educational experience (Essaoudi and Lotfi 2021).

The insignificance of the effect of administrative services in higher education service quality supports the notion that there exists a discrepancy between the students' perceived and the actual performance of those services. Therefore, it becomes the responsibility of the institutions to continually assess the administrative services with the aim of meeting the expectations of the students. This may relate to how the services offered by them are being communicated as well as encouraging active participation by the students in the feedback process to help align the services more in correspondence with their needs (Ghaicha 2018).

5.3. Limitations and Future Research

Several limitations may have influenced the interpretation and generalization of the results. First, one of the limitations of this paper was the geographical scope of the setting in which the research was conducted. The study was exclusively conducted in higher education institutions within Morocco, which may have limited the applicability of its findings to other cultural or regional settings. Consequently, the dynamics of the educational systems and cultural contexts may differ in many ways concerning which factors affect higher education service quality and student quality of life. Therefore, future studies need to investigate other geographic areas for a broader understanding of the subject. This limitation aligns with findings from studies on cross-cultural performance, which often highlight the influence of local cultural and systemic factors in education (Asnawi and Setyaningsih 2020; Shcheglova 2018).

Other limitations include the fact that this was a cross-sectional study, since the data were captured at one point in time. This kind of design does not allow for any examination of how perceptions of higher education service quality and student quality of life might evolve over time as the students' progress through their educational careers or as reforms to institutions are implemented. Longitudinal studies may provide clearer insights into these changes and present a sharper view of how sustained improvement in service quality has affected student outcomes over the years. For example, Campos et al. (2018) conducted a longitudinal examination among students regarding their expectations of service quality over time, which showed that senior students became more demanding; thus, ongoing assessment is particularly valuable (Campos et al. 2018).

The reliance on self-reporting data might also relate potential biases such as social desirability biases or inaccuracies of recall. That is, students may answer what they perceive to be expected of them rather than their actual experiences. Such may be the case, hence leading to biased results in the process. This limitation could be addressed in future studies by adding objective measures, such as academic performance data or usage metrics of institutional services, to supplement the self-reported data.

Despite the model applied in this study explaining a very substantial proportion of variance in higher education service quality and student quality of life, the R-squared values showed that other pertinent influences were not captured onto the outcomes. In simple words, future research may explore further variables, such as technology integration in education or socio-economic-related problems, which might also take critical leading roles in shaping the students' perceptions and experiences.

Last but not least, some of the results were unexpected, such as the non-significant relationship between administrative services and higher education service quality. This could point to an in-depth analysis of how the perceptions of students about administrative

services are formed and if they are, according to the real quality of service provided. Qualitative methodologies, such as focus groups or interviews, would allow for further research into the underlying reasons behind such perceptions.

While this study represents an advance in the understanding of higher education service quality and student quality of life in Moroccan higher education, it simultaneously opens several avenues for future research. In fact, the recognition of limitations and new variables that might be researched can lead to further results found herein and an even more complete insight into what drives student satisfaction and quality in education across different contexts.

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