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Learning at a distance in non-western context: How distant students perceive quality of higher education in Vietnam

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Abstract

Higher education is evolving rapidly as globalization, technological advancements, and increasing demand for flexible learning reshape traditional paradigms. In Vietnam, distance higher education plays a key role in expanding access to higher education, yet concerns about its quality persist. Addressing these issues, this study examines Vietnamese students' perceptions of distance higher

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education quality using the OLQUAL framework, which evaluates system quality, administrative support, educational design, transformative impact, and social engagement. Through a survey of 383 respondents and analysis via Structural Equation Modeling (SEM), the study confirms that perceived quality significantly influences student satisfaction and loyalty, with satisfaction acting as a mediating factor. The study highlights the need for policies that enhance DHE quality and credibility, offering tailored strategies to address the unique challenges of non-Western educational contexts.

Keywords
Distance higher education, higher education, perceived quality, satisfaction, loyalty

Introduction

Higher education (HE) is undergoing profound transformations in recent decades, driven by globalization, the massification of education, and advancements in technology (Hafeez et al., 2022; Uppal et al., 2018). These changes have led to a significant rise in the number of students seeking university education, placing unprecedented pressure on long-established public education systems (Mok and Neubauer, 2016). In response, alternative models, such as private universities and distance institutions, have emerged to meet the growing demand (Stella and Gnanam, 2004). These shifts highlight an urgent need for policies that can support the equitable and effective integration of these models into national education systems, ensuring they align with broader societal and developmental goals.

DHE has gained prominence due to its scalable, flexible learning solutions, increasingly enabled by AI-driven platforms (e.g., adaptive learning systems, automated administrative tools) and advanced technologies. This is increasingly facilitated by AI-driven platforms (e.g., adaptive learning systems, automated administrative tools) and advanced technologies. The proliferation of DHE allows students who cannot participate in traditional, on-site education to access learning opportunities (Al-Samarraie et al., 2018; Ozkan and Koseler, 2009). However, as these models expand, the question of quality has become critical: Do distance programs meet the standards of conventional, on-site education?

In many countries, including Vietnam, DHE has become a key part of the national higher education landscape. Over the past three decades, the Vietnamese government has implemented numerous policies to expand access to higher education through distance learning initiatives (MOET, 2003, 2020, 2023). However, despite these efforts, traditional views often regard these programs as lower quality compared to face-to-face education, mostly because universities themselves often lack adequate infrastructure, management systems, or faculty who are specialized or trained in distance teaching and learning (Nguyen, 2021; Nguyen and Le, 2018; Pham and Ho, 2020).

Since the 2000s, research has demonstrated that DHE can match the effectiveness of traditional classroom-based instruction while offering additional benefits (Jung and Latchem, 2012; Stella and Gnanam, 2004; Uppal et al., 2018; Zawacki-Richter et al., 2009). Quality in education is a multifaceted concept that varies depending on the stakeholder. As Esfijani (2018) points out, different groups—students, faculty, employers—each have their own expectations of quality. For policymakers, addressing these diverse expectations requires a careful consideration of how quality is perceived and evaluated across multiple dimensions, including accessibility, technology integration, and support systems. This highlights the importance of creating policy frameworks that define and measure quality from a student-centered perspective. Given that students are increasingly

viewed as customers, their perceptions of educational service quality must be considered in policy-making to ensure programs are aligned with the evolving expectations for employment readiness and lifelong learning (Abdullah, 2006; Schijns, 2021; Sumi and Kabir, 2021). To guide these efforts, policymakers should adopt frameworks that measure quality in ways that reflect the service-oriented nature of DHE, such as the SERVQUAL model, which assesses service quality based on client satisfaction, as a tool for setting standards and benchmarks in DHE policy.

Building on the critical question of quality, student satisfaction has also emerged as a pivotal outcome in online and education programs (Zawacki-Richter and Jung, 2023). Defined as the degree to which the educational experience meets or exceeds students' expectations, satisfaction plays a key role in shaping student loyalty, the likelihood of students recommending their institution to others (Sahin and Shelley, 2008). From a policy perspective, enhancing student satisfaction is critical not only for retaining learners but also for boosting the competitiveness of institutions in an increasingly globalized and dynamic DHE landscape (Daud et al., 2020).

Despite the growing body of research on distance learning, significant gaps remain, particularly in understanding how students perceive quality in non-Western contexts, where technological infrastructure, cultural expectations, and institutional support may differ (Bozkurt and Zawacki-Richter, 2021; Latchem and Jung, 2009). While many studies have focused on distance learning in Western countries, relatively few have examined quality perceptions in developing countries' contexts like Vietnam's DHE programs. Furthermore, widely used models like SERVQUAL may not fully capture the unique characteristics of distance learning in this context (Martin and Bolliger, 2022). The literature suggests that most quality frameworks have not been comprehensively tested or adapted to Vietnam's DHE environment (Qayyum and Zawacki-Richter, 2019). This gap highlights an urgent need for policy-driven adaptations of quality assessment models that reflect the experiences of Vietnamese students and other similar populations, ensuring that quality assurance frameworks are responsive to local needs and realities.

This study aims to provide a comprehensive understanding of how students perceive quality in DHE in Vietnam, incorporating dimensions specific to the unique characteristics of distance learning. This study contributes to the development of DHE policies by providing empirical insights into how Vietnamese students perceive the quality of DHE, and how these perceptions can inform national education policy aimed at improving DHE quality. Through this integrated approach, the study aims to inform policymakers and institutional leaders in enhancing the quality, effectiveness, and accessibility of DHE programs in Vietnam and similar non-Western contexts.

Literature review

Distance higher education in Vietnam

Since the 1990s, Vietnam has experienced significant transformations in its HE sector, driven by socio-economic changes and the increasing demand for accessible education. In response to these pressures, the government implemented several reforms, including the establishment of two open universities. These institutions were designed to serve two key goals: (1) to promote "socialization" in HE by mobilizing societal resources to share the financial burden of education (Le et al., 2022), and (2) to expand DHE as a means of increasing accessibility to education for a broader population (Nguyen and Le, 2018). While these reforms have increased enrollment in DHE programs (MOET, 2015), further policy measures are needed to ensure that these initiatives meet quality standards and address systemic challenges such as public perception.

Although distance higher education (DHE) has experienced growth and technological advancements globally, Vietnam continues to face significant challenges. A prevalent perception among some stakeholders is that distance programs offer lower quality compared to their conventional counterparts (Nguyen et al., 2022). This perception contributed to a decline in student enrollment starting in 2015, even as distance learning gained widespread acceptance in many developed and developing countries. To address these concerns, the Vietnamese government has introduced a series of initiatives aimed at improving the quality of DHE (MOET, 2003, 2020, 2023). However, the impact of these measures remains uncertain. Strengthening policies that promote rigorous quality assurance and effective implementation mechanisms is essential to address these challenges and improve stakeholder confidence in DHE.

Understanding student perceptions of DHE quality in Vietnam contexts is critical for shaping effective policies that can eliminate the stigma surrounding distance education. Vietnam is a representative case in this regard, as its challenges with DHE quality and public perception resonate with those faced by other non-Western countries. Similar to Vietnam, many non-Western nations are grappling with socio-economic disparities, limited access to traditional educational infrastructures, and perceptions that may undermine the credibility of non-conventional learning formats. For example, countries such as Philippines, Indonesia and Pakistan have also implemented DHE programs to expand access to education, yet they face similar struggles in terms of perceived quality and stakeholder skepticism (Belawati and Zuhairi, 2007; Zuhairi et al., 2020). These commonalities make Vietnam an important case study for understanding how DHE can be more effectively implemented in non-Western settings. By addressing these perceptions through evidence-based policy-making, DHE programs in Vietnam and other similar contexts can better deliver on their promises of flexibility, accessibility, and quality. This, in turn, can emphasize DHE's role as a vital mechanism for expanding equitable access to education while providing a replicable model for other developing nations facing similar challenges.

Quality in distance higher education

Quality in DHE emerges as a complex, multidimensional concept without a single, universally accepted definition or fixed number of dimensions (Al-Samarraie et al., 2018; Ehlers, 2004; Esfijani, 2018). Although no universally agreed-upon definition exists, a common understanding emerges: quality in DHE is a multidimensional construct reflecting the degree to which online programs and courses meet the needs and expectations of diverse stakeholders, principally students, and achieve desired learning outcomes.

Early definitions of quality, such as those proposed by Juran (1981) and Crosby (1979), primarily centered on "*fitness for use*" or "*conformance to requirements*." However, the literature suggests a more nuanced perspective, particularly given the service-oriented nature of DHE and the inherent complexities of online learning environments. Yang and Liu (2007) assert that quality encompasses more than the absence of deficiencies; it involves meeting both explicitly stated and implicit learner needs. This perspective highlights the importance of understanding student expectations, learning objectives, technological competencies, and the varied contexts in which learners engage with online education.

From a learner-centric viewpoint, Ehlers (2004) contends that the learner's perspective should form the foundation for quality development. Institutions are encouraged to prioritize students' preferences, learning styles, and the broader impact of distance/online education on their personal and professional development. Collectively, the scholars in the field advocate for a holistic view of quality in DHE, which includes not only traditional components such as course content,

instructional design, and student support, but also technology-dependent aspects, including system reliability, platform usability, and the efficacy of online communication and collaborative tools (Cheng, 2020; Hafeez et al., 2022; Holland, 2019; Schijns, 2021).

Frameworks for measuring education quality

The extant literature of quality in education in general and in DHE presents various frameworks and models that capture the multidimensional aspects of quality in DHE. Ehlers (2004) identified 30 indicators grouped into seven dimensions: Tutor Support, Cooperation, Technology, Costs, Information Transparency, Course Structure, and Didactics. This framework, derived from a learner-focused study, stresses the significance of course content, interactive opportunities, and a learner-centered approach. The Higher Education PERFormance-only (HEdPERF) model, developed by Abdullah (2006) from SERVQUAL model, underlines the distinctive requirements of HE, underscoring the need for a purpose-built instrument that transcends generic service quality measures. Similarly, the ELQ model proposed by Uppal et al. (2018) extends the SERVQUAL model specifically for e-learning environments, featuring three key dimensions: Service (including responsiveness, reliability, tangibility, assurance, and empathy), Information (focusing on the quality of learning content), and System (addressing website functionality and usability).

Additional studies and reviews, such as Esfijani (2018), have outlined diverse frameworks for evaluating quality in online education. Examples include Shelton (2010) quality model, which incorporates faculty performance, support provision, academic outcomes, and retention rates, and frameworks by Khan (2001) and Frydenberg (2002), which include eight and nine dimensions, respectively.

While the literature underscores the importance of multidimensional quality assessment, there is no consensus on the precise number of dimensions, which reflects the complexity of distance learning environments and the evolving standards for quality in education. Previous research suggests that the choice of framework and the dimensional scope should be informed by the evaluation's specific goals, the type of online program, and the characteristics of the target student population (Ossiannilsson et al., 2015). Rather than striving for exhaustive lists of dimensions, evaluations should focus on those most relevant to the learner experience and to achieving desired educational outcomes.

The OLQUAL scale

The OLQUAL framework is a comprehensive tool designed to assess the quality of online learning from a student-centered perspective. A study by Khan et al. (2023) discusses OLQUAL's capacity to measure students' perceived quality in online education, and its relationship to satisfaction, trust, and loyalty in online learning environments. The framework's dimensions address the unique requirements of online education by encompassing technical, administrative, educational, transformative, and social aspects of learning.

Khan et al. (2023) argue that OLQUAL, by adapting elements from multiple frameworks, provides a more comprehensive and nuanced assessment of online learning quality, particularly by emphasizing transformative and social quality dimensions. While it primarily focuses on online education, OLQUAL's adaptability and comprehensive approach make a strong case for its use in measuring perceived quality in DHE. OLQUAL recognizes that quality in education extends beyond traditional measures of teaching and learning, encompassing the overall learner experience, technological aspects, and the impact of education on personal growth and development. These

principles hold true for DHE as well. The five dimensions of OLQUAL provide a holistic framework to assess various aspects of the distance learning experience. As highlighted in the Stella and Gnanam (2004) study, the focus on learner support and outcomes is a key principle in assessing the quality of DHE programs. OLQUAL, with its focus on transformative quality and the impact of learning on personal and professional development, directly addresses this need for outcome-oriented evaluation.

Theoretical framework

Building on this understanding of perceived quality, Perceived Quality in this study refers to students' evaluation of the overall effectiveness of various aspects of the DHE program, including the reliability of the online system, the quality of administrative support, the design of the course, the social connection, and the transformative aspect of the program. Prior research indicates that high perceived quality leads to increased satisfaction as students feel their expectations are met or exceeded (Eom and Ashill, 2016; Jung, 2012; Lee, 2010). In the context of this study, distant students who view the program as high quality are likely to feel more satisfied due to positive experiences with learning resources and support systems.

H1: Perceived quality of the distance higher education program positively affects student satisfaction.

Student Loyalty is defined as the likelihood of students to continue their association with the institution, either by re-enrolling in additional courses or recommending the program to others (Helgesen and Nesset, 2007). Research shows that students who perceive their educational experience as high quality tend to develop loyalty behaviors (Tan et al., 2016). This relationship is essential for DHE providers in a competitive educational environment, where fostering loyalty contributes to sustained enrollment and a positive institutional reputation.

H2: Perceived quality of the distance higher education program positively affects student loyalty.

Student Satisfaction is a measure of how well the educational experience aligns with or exceeds students' expectations (Martin and Bolliger, 2022). Satisfaction is known to directly influence loyalty; satisfied students are more likely to remain committed to their institution and recommend it to others (Khan et al., 2023). This connection underscores the importance of meeting student expectations to foster a sense of loyalty within the institution.

H3: Student satisfaction positively affects student loyalty.

Research suggests that perceived quality positively influences student satisfaction, which in turn fosters loyalty by enhancing students' emotional and rational attachment to their institution (Sahin and Shelley, 2008). In the context of DHE, satisfaction acts as a critical factor, translating perceptions of quality into behaviors such as re-enrollment and recommendations (Waheed et al., 2016). In this study, satisfaction acts as a mediator, where the quality of the DHE program increases satisfaction, which in turn enhances loyalty.

H4: Student satisfaction mediates the relationship between perceived quality and student loyalty.

The quality of DHE is influenced by a range of factors, including technological infrastructure, administrative support, educational structure, and social and transformation aspects. The OLQUAL model provides a comprehensive framework for measuring these dimensions, making it an ideal choice for evaluating the quality of DHE programs.

Method

This study adopted a cross-sectional design using a self-report questionnaire, which was developed by adapting survey items from prior research to establish the preliminary measurement scales. As shown in Figure 1, a formative approach was used to measure Perceived Quality (PQ). This construct is made up of five key indicators: Systems Quality (SQ), Administrative Quality (AQ), Educational Quality (EQ), Transformative Quality (TQ), and Social Quality (OQ), which together form a second-order model. Data for the study were collected through a questionnaire to explore the relationships between the constructs in the model. The framework examines how PQ affects Satisfaction (SA), how Satisfaction influences Loyalty (LO), and the direct effects of PQ on both Satisfaction and Loyalty (see Figure 1).

Survey instruments

To collect respondents' opinions over DHE, a series of measurement items was presented (see Table 1), with responses captured on a five-point Likert scale ranging from 1 (strongly disagree) to 5

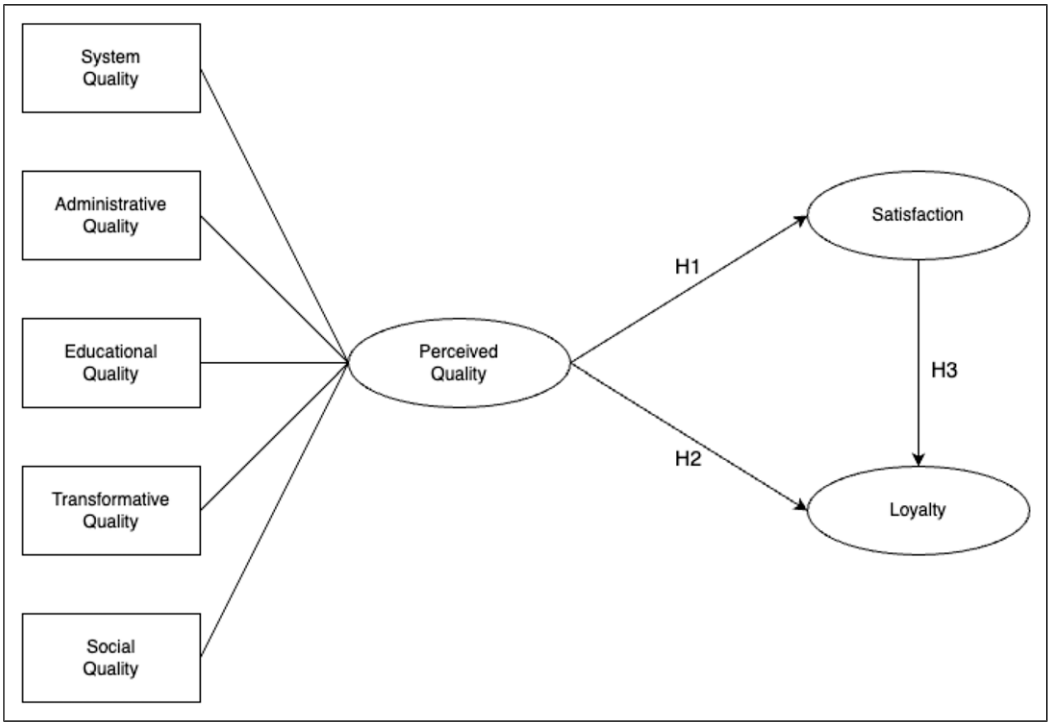

Figure 1. The conceptual research model.

Table 1. Measurement instruments.

Code	Measurement instruments	Mean	Standard deviation (SD)
Perceived quality (PQ) 1: system quality (SQ) (Khan et al., 2023) (Cronbach's α = 0.926)			
SQ1	The interface design is well-structured	4.07	0.84
SQ2	The online systems help me to learn efficiently	4.00	0.92
SQ3	The online systems are attractive	3.89	0.93
Perceived quality (PQ) 2: administrative quality (AQ) (Khan et al., 2023) (Cronbach's α = 0.958)			
AQ1	The online administrative processes are easy to follow	3.92	0.99
AQ2	The response time for administrative procedures is acceptable	3.86	0.98
AQ3	I feel that staff are willing to help me with my problems	3.96	1.01
AQ4	Staff are able to solve my problems	4.01	0.94
AQ5	It is easy to get help when I encounter technical issues	4.00	0.95
Perceived quality (PQ) 3: education quality (EQ) (Khan et al., 2023) (Cronbach's α = 0.970)			
EQ1	Lecturers/tutors understand my needs	3.88	0.91
EQ2	I find the course content engaging	3.85	0.94
EQ3	I am able to get support with academic issues when I need help	3.92	0.94
EQ4	The assessments and exams have enhanced my learning	4.01	0.84
EQ5	Learning objectives are clearly defined	4.02	0.85
EQ6	Online library resources are available and adequate	3.84	0.99
EQ7	I am given useful feedback regarding my learning progress	3.89	0.90
Perceived quality (PQ) 4: transformative quality (TQ) (Khan et al., 2023) (Cronbach's α = 0.931)			
TQ1	Distance learning has helped me with my personal development and growth	4.10	0.88
TQ2	Distance learning has helped me develop critical thinking and problem-solving skills	3.95	0.92
TQ3	I am gaining skills that will help me in my career	4.03	0.89
Perceived quality (PQ) 5: social quality (OQ) (Khan et al., 2023) (Cronbach's α = 0.947)			
OQ1	There are opportunities for me to interact socially with other students	3.95	0.89
OQ2	I feel a sense of belonging to the university/college	3.75	0.98
OQ3	I have developed good connections with my teachers	3.70	0.98
OQ4	I am enjoying my learning experience	3.85	0.94
Satisfaction (SA) (Khan et al., 2023) (Cronbach's α = 0.950)			
SA1	Overall, the university fulfills my needs	4.10	0.79
SA2	Overall, I am satisfied with the online delivery	4.05	0.86
SA3	Overall, I am satisfied with the service that I have received	4.05	0.89
Loyalty (LO) (Waheed et al., 2016) (Cronbach's α = 0.901)			
LO1	I actively participate in distance learning activities	3.96	0.86
LO2	I recommend my friends to use the distance learning environment	3.96	0.90

(strongly agree). The measurement scales for PQ, conceptualized as a formative second-order construct, were derived from Khan et al. (2023) and comprised 22 items, and the scales for SA as well. The construct of LO was measured using two items sourced from Waheed et al. (2016). Additionally, the questionnaire included questions about respondents' demographic information, such as age, gender, education level, academic performance, organization type, and distance learning mode, to provide a comprehensive understanding of the sample characteristics.

Participants and data collection

Before conducting a large survey, it is important to do a pilot study to find any problems with the questionnaire (Polit and Beck, 2015). In this study, the pilot questionnaire was given to 50 students at the university level or higher to collect their feedback and check if the questions were reliable and valid. Subsequently, the survey was distributed online, from July 2024 to August 2024. The

convenience sampling method was employed due to the unknown population size for this study, enabling accessibility and efficiency in data collection (San Martín and Herrero, 2012). The sample size for this study was determined using G*Power software through a post-hoc power analysis to evaluate the adequacy of the sample collected. The analysis was based on a sample size of 383, with an effect size (f2) of 0.15, a significance level (α) of 0.01, and the number of predictors specified for the model. The results indicated a statistical power (1−β) of 0.99, demonstrating a very high likelihood of detecting true effects. This level of power ensures the study's robustness and minimizes the risks of both Type I and Type II errors, supporting the validity and reliability of the findings.

The sample consists of 42.3% male and 56.4% female respondents, with 5 participants opting not to disclose their gender. Furthermore, the age distribution ranges from 18 to over 41 years, with the largest proportion (45.7%) falling within the 31–40-year age group. Regarding educational attainment, 76.5% of respondents reported holding a bachelor's degree, highlighting a predominant level of higher education within the sample. Table 2 provides a detailed summary of the demographic characteristics of the respondents.

Table 2. Demographic characteristics.

Variables	Sample (n = 383)	Percentage (%)
Gender		
Male	162	42.3
Female	216	56.4
Unwilling to reveal	5	1.3
Age		
18–24 years	29	7.6
25–30 years	78	20.4
31–40 years	175	45.7
41 years and above	101	26.4
Education		
Bachelor's	293	76.5
Master's	82	21.4
Doctor	8	2.1
Academic performance		
Pass	78	20.4
Credit	237	61.9
Distinction	61	15.9
High distinction	7	1.8
Organization type		
Private institution	18	4.7
Public institution	66	17.2
Other public unit	148	38.6
Private enterprise	130	33.9
NGO/other	21	5.5
Distance learning mode		
Synchronous	40	10.4
Asynchronous	163	42.6
Blended	180	47.0

Data analysis

The data analysis began with cleaning and screening the collected responses to identify and remove any invalid, incomplete, or outlier responses. Descriptive analysis was then performed to examine the demographic characteristics of the respondents. To evaluate the measurement model's suitability and test the proposed hypotheses, inferential analysis was conducted using Structural Equation Modeling (SEM). Covariance-Based Structural Equation Modeling (CB-SEM) was chosen as the primary method for data analysis and was performed using AMOS 24 software.

Result

Measurement model analysis

First-order evaluation. The first-order measurement model was evaluated to ensure the appropriateness of the measurement items and the structure of the model. The results in Table 3 demonstrated strong internal consistency across all constructs, with composite reliability (CR) values ranging from 0.927 to 0.971, exceeding the recommended threshold of 0.7 (Fornell and Larcker, 1981). Convergent validity was assessed using standardized factor loadings and Average Variance Extracted (AVE) values. All factor loadings met or exceeded the minimum acceptable value of 0.6, ensuring sufficient contribution of each item to its construct (Hair, 2010). The AVE values for all constructs ranged from 0.810 to 0.827, surpassing the cut-off value of 0.5 (Fornell and Larcker, 1981), indicating that each construct explained a significant portion of the variance in its measurement items. These findings confirm the internal consistency and convergent validity of the measurement items.

The discriminant validity of the constructs was tested using the Fornell-Larcker criterion, which compares the square root of the average variance extracted (AVE) for each construct with its correlations with other constructs. The results showed that each construct's AVE square root was higher than its correlation with any other construct (see Table 4). These results confirm that the constructs are valid and do not overlap with one another.

Second-order evaluation. The second-order model, incorporating the constructs of perceived quality, satisfaction, and loyalty, demonstrates a strong fit with the data. The Comparative Fit Index (CFI) of 0.968 exceeds the accepted threshold of 0.95, indicating a well-fitting model (Baumgartner and Homburg, 1996). The Standardized Root Mean Square Residual (SRMR) of 0.029 is below the threshold of 0.08, reflecting a small discrepancy between the observed and predicted values (Hu and Bentler, 1999). The Root Mean Square Error of Approximation (RMSEA) of 0.062 falls within the acceptable range of 0.06 to 0.08, reflecting a reasonable approximation error, though above the ideal level. Additionally, the Chi-Square/Degrees of Freedom Ratio (Cmin/d*f*) of 2.457 is below the benchmark of 3, signifying an appropriate balance between model complexity and data fit (Baumgartner and Homburg, 1996). These indicators affirm that the model provides an adequate representation of the relationships between perceived quality, satisfaction, and loyalty, with minor refinements required to optimize its fit further.

Structural model analysis

Direct and indirect effects. The results presented in Table 5 indicate that PQ significantly influences both SA and LO among students. Specifically, PQ demonstrates a strong positive effect on SA ($\beta = 0.861$; $p < .001$) and a positive effect on LO ($\beta = 0.365$; $p < .001$). Furthermore, SA exerts a

Table 3. First-order model.

Measurement instruments	Factor loadings	Composite reliability (CR)	Average variance extracted (AVE)
Perceived quality (PQ) 1: system quality (SQ)		0.927	0.810
SQ1	0.772		
SQ2	0.710		
SQ3	0.796		
Perceived quality (PQ) 2: administrative quality (AQ)		0.95	0.821
AQ1	0.754		
AQ2	0.829		
AQ3	0.918		
AQ4	0.885		
AQ5	0.827		
Perceived quality (PQ) 3: education quality (EQ)		0.971	0.827
EQ1	0.807		
EQ2	0.738		
EQ3	0.738		
EQ4	0.852		
EQ5	0.786		
EQ6	0.789		
EQ7	0.731		
Perceived quality (PQ) 4: transformative quality (TQ)		0.931	0.819
TQ1	0.856		
TQ2	0.746		
TQ3	0.711		
Perceived quality (PQ) 5: social quality (OQ)		0.947	0.819
OQ1	0.797		
OQ2	0.871		
OQ3	0.888		
OQ4	0.679		

Table 4. Discriminant validity.

Construct	AVE	SQ	AQ	EQ	TQ	OQ	SA	LO
SQ	0.810	0.900						
AQ	0.821	0.869***	0.906					
EQ	0.827	0.899***	0.873***	0.909				
TQ	0.819	0.866***	0.776***	0.872***	0.905			
OQ	0.818	0.856***	0.797***	0.865***	0.887***	0.905		
SA	0.867	0.809***	0.765***	0.840***	0.790***	0.798***	0.931	
LO	0.822	0.796***	0.721***	0.814***	0.819***	0.823***	0.890***	0.906

***$p < .001$.

significant positive impact on LO (β = 0.573; $p < .001$). These findings provide robust support for hypothesis H1, H2, and H3.

This study also investigates the mediating role of SA in the association between PQ and LO. The mediation hypothesis was analyzed using 5000 bootstrapped samples, as recommended by Hair et al. (2017). The findings in Table 6 demonstrate a significant indirect effect of PQ on LO via SA (β = 0.493; SE = 0.102; $p < .001$). This result confirms hypothesis H4, emphasizing the role of SA as a mediator in the connection between PQ and LO.

Total effects. The results in Table 6 indicate a significant total effect of PQ on LO, with a standardized coefficient of β = 0.859 (SE = 0.130, $p < .001$). This finding highlights the significant influence of PQ on LO.

Discussion

In the context of Vietnam, where DHE is still perceived as inferior to traditional in-person education, the study's results provide empirical evidence for policymakers to design quality assurance policies that directly impact how students perceive and engage with DHE programs. The study emphasizes that student satisfaction—driven by system quality, administrative support, and transformative learning opportunities—should be prioritized in policy discussions to enhance the credibility of DHE in non-Western contexts. Furthermore, the study's conceptual framework offers a basis for understanding the role of quality in fostering long-term student loyalty, a key component in ensuring the sustainability of DHE programs. While previous studies have explored student perceptions of distance education, most have been conducted in Western or high-income contexts. In contrast, this study makes a significant contribution by focusing on Vietnam—a non-Western, developing context where DHE still grapples with infrastructural gaps, cultural skepticism, and limited institutional readiness.

This study reinforces the theoretical understanding of quality in DHE by integrating student-centric quality dimensions into the broader discourse. The results underscore the importance of transformative and social aspects of quality, which have often been underrepresented in traditional frameworks like SERVQUAL (Abdullah, 2006; Uppal et al., 2018). It also reinforces the argument that quality assessment in DHE must adopt a holistic perspective, encompassing both tangible and

Table 5. Results of direct and indirect effects.

Path (hypotheses)	Standardized β	SE	*p*-value	Result
H1: PQ → SA	0.861	0.038	<.001	Accepted
H2: PQ → LO	0.365	0.130	<.001	Accepted
H3: SA → LO	0.573	0.128	<.001	Accepted
H4: PQ → SA → LO	0.493	0.102	<.001	Accepted

Table 6. Total effects.

Path	Standardized β	SE	*p*-value	Result
PQ → LO	0.859	0.130	<.001	Accepted

intangible aspects of the student experience. The significant relationship between perceived quality and satisfaction is consistent with findings from previous studies in Western contexts, which have shown that satisfaction reflects students' evaluations of how well their expectations are met (Zawacki-Richter and Jung, 2023). The mediating role of satisfaction in the relationship between perceived quality and loyalty supports established theories of service quality and customer behavior, which posit that satisfaction serves as a bridge between perceptions of quality and long-term loyalty behaviors (Helgesen and Nesset, 2007). This is particularly relevant for DHE providers in Vietnam, where loyalty translates into sustained enrollment and positive word-of-mouth recommendations—critical factors for institutional success in an increasingly competitive landscape. From a policy perspective, these findings call for the adoption of holistic quality assessment frameworks that account for both tangible (e.g., system functionality) and intangible (e.g., community-building) aspects of learning. It highlights factors that influence how students perceive quality, satisfaction, and loyalty, bridging an important gap in the predominantly Western-centric literature (Bozkurt and Zawacki-Richter, 2021). These insights emphasize the necessity of contextualizing quality frameworks to better address the unique characteristics of diverse educational environments.

The findings have significant practical implications for policymakers and educational institutions aiming to enhance the quality and appeal of DHE programs, particularly in Vietnam and similar non-Western contexts. As discussed earlier, DHE in Vietnam grapples with infrastructure limitations, cultural biases favoring traditional education, and a lack of student engagement (Nguyen, 2021; Nguyen et al., 2022). The strong link between perceived quality, satisfaction, and loyalty highlights the importance of addressing these challenges through targeted investments. Policymakers should prioritize investments in technological infrastructure, including ethical AI tools (e.g., transparent algorithms for feedback, inclusive design principles). Furthermore, policies that mandate faculty training in online pedagogies and establish standards for administrative responsiveness can enhance institutional trust and improve the perception of DHE quality among stakeholders. The transformative and social dimensions of DHE quality emerge as particularly critical in Vietnam, where personal development and social interaction are deeply valued in education. Policies should encourage institutions to implement initiatives such as virtual networking opportunities, collaborative group projects, and skill-building workshops that reinforce the transformative potential of DHE. Additionally, strategies that enhance social connectedness—such as fostering online communities or mentorship programs—can help build a sense of belonging, thereby improving retention and satisfaction. These efforts are vital for shifting public perceptions of DHE, positioning it as a credible and effective educational alternative in Vietnam and other non-Western contexts.

Despite its contributions, this study has several limitations that should be acknowledged. The cross-sectional design limits the ability to establish causal relationships between the constructs. Future research could adopt longitudinal approaches to explore how quality perceptions and their impacts evolve over time. Additionally, the reliance on self-reported data introduces the possibility of social desirability bias. Notably, the survey used in this study relied solely on structured, close-ended items, which may have limited the ability to elicit students' perspectives in a less restricted sense. Open-ended questions or qualitative methods could have uncovered deeper, more individualized insights into student experiences and perceptions. This study is also context-specific, focusing on Vietnamese DHE programs. While this focus provides valuable insights into a non-Western setting, future studies could test the OLQUAL framework in other cultural and institutional contexts to assess its generalizability. Moreover, examining additional factors, such as the role of technology adoption or digital literacy, could further enrich the understanding of quality dynamics in DHE.

Conclusion

In conclusion, this study provides compelling evidence of the critical role that perceived quality plays in shaping student satisfaction and loyalty in DHE. These findings highlight the need for policy reforms that address quality gaps in non-Western countries like Vietnam. By enhancing technological infrastructure, ensuring faculty preparedness, and establishing robust quality assurance frameworks, policymakers can significantly improve the quality and public perception of DHE. Moreover, the study's focus on transformative learning outcomes provides valuable insights into how DHE can contribute to broader educational goals, such as personal development and workforce readiness, further justifying the need for targeted policy initiatives. In Vietnam, where DHE has traditionally been perceived as inferior to face-to-face programs, these insights demonstrate how improving quality perceptions can yield outcomes such as increased satisfaction and loyalty. As DHE continues to expand, robust policies will be vital for ensuring its sustainability and credibility in diverse contexts.

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