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Digital Academic Service Quality and Student Satisfaction: A Critical Literature Review

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Abstract

Digital academic services support course registration, academic records, information access, and institutional assistance, yet previous studies employ diverse service quality constructs and satisfaction measures. This study critically synthesizes literature on academic information systems, higher education service quality, electronic services, and Customer Satisfaction Index (CSI) applications. Using a critical narrative literature review, publications from 2010 to 2025 were purposively considered and compared through qualitative thematic analysis, with particular emphasis on recent empirical research. The synthesis identifies five interrelated evaluation domains: system accessibility and reliability, academic information quality, institutional responsiveness, perceived privacy and security, and service convenience. It also clarifies the distinct purposes of importance weighted CSI, service gap analysis, importance performance analysis, and structural models. Whereas CSI summarizes attribute level satisfaction, other approaches examine perceived discrepancies, improvement priorities, or relationships among theoretical constructs. The review proposes an integrated framework linking student experiences, academic administrative processes, and measurement decisions. Practical implications include evaluating individual service attributes, examining operational evidence, and prioritizing improvements according to institutional needs. No primary student data were collected, no institutional CSI score was estimated, and no pooled quantitative analysis was performed. The proposed framework requires further instrument development, content assessment, and empirical validation before institutional implementation.

Keywords: *Digital Academic Services; Student Satisfaction; Service Quality; Customer Satisfaction Index; Literature Review*

1. Introduction

Private universities use digital academic platforms to administer registration, grades, timetables, enrolment records, and student requests. Their technical availability, however, should not be confused with satisfactory service outcomes. An accessible interface may still deliver inaccurate academic information or slow administrative resolutions. Information-systems success research distinguishes system quality, information quality, and service quality, while evidence from Indonesian private universities emphasizes that digital and conventional services jointly shape satisfaction [1, 2]. The institutional problem is therefore not simply whether an academic platform works, but whether students can complete reliable and comprehensible academic transactions with adequate support.

Research on educational information systems has developed from general system-success frameworks to investigations of specific student experiences. Multidimensional studies of e-learning illustrate the relevance of technology and support, whereas the electronic-service literature associates service evaluation with fulfilment, customer assistance, and privacy [3, 4]. A higher education perspective further shows that student assessments involve organizational encounters as well as technical features [5]. Yet the tasks involved in submitting course-registration plans, obtaining grade records, or correcting student data are not interchangeable with online instruction or commercial shopping. Their measures require careful adaptation rather than unqualified transfer.

Recent Indonesian research highlights why academic information systems merit more targeted evaluation. Evidence from UTP Surakarta examines system quality together with administrative services, and a structural model of SIAKAD satisfaction at Universitas Patompo points to information quality as an important predictor in that particular sample [6, 7]. Other studies assess student perceptions through SERVQUAL, PIECES, web-service diagnostics, or descriptive satisfaction indices; these approaches answer related but different questions [8, 9]. Consequently, an overall satisfaction score, an attribute gap, and an estimated path coefficient should not be treated as the same type of evidence.

The Customer Satisfaction Index (CSI) offers a possible practical bridge from individual attribute ratings to an aggregate diagnostic score. However, the expression "CSI" covers several satisfaction measurement traditions; an importance-weighted arithmetic index is conceptually distinct from latent-variable satisfaction barometers or multicriteria preference-disaggregation methods [10]. Furthermore, aggregate indices alone can conceal service weaknesses, and converting importance–performance gaps into improvement priorities raises additional validity questions [11]. The state-of-the-art challenge is therefore to combine the conceptual coverage of digital academic service quality with transparent distinctions among measurement approaches.

This paper critically synthesizes evidence from information systems, service management, higher education, and empirical applications of CSI. Its objectives are to identify recurrent academic digital-service quality domains, compare empirical and diagnostic approaches to student satisfaction, and construct a literature-derived measurement and managerial interpretation framework for private higher education. The contribution is a context-sensitive conceptual integration and a set of evaluation safeguards, not a new institutional satisfaction score or an estimate from an unobserved student survey.

2. Research Methods

This study uses a critical narrative literature review to examine digital academic service quality, student satisfaction, and satisfaction measurement in higher education. The manuscript builds on the literature identified in the supplied draft and extends it with identifiable primary studies focused on academic information systems, higher education digital services, and applications of CSI. Scholarly publications were selected purposively for their contextual relevance, clarity of research focus, and contribution to the distinction between explanatory models and descriptive service diagnostics. Seminal methodological publications were retained where necessary to define information-systems success, higher education service quality, and the interpretation of importance-weighted satisfaction indices [1, 5, 10].

The bibliographic coverage extends from 2010 to 2025, with particular emphasis on recent empirical evidence published from 2021 to 2025. Inclusion in the qualitative comparison required an identifiable publication, sufficient accessible bibliographic information, and an explicit link to system quality, academic information, institutional service, digital learning, or customer satisfaction measurement. Direct academic-information-system studies were prioritized. Digital learning and related service contexts were used only when their theoretical or diagnostic lessons could be cautiously transferred to academic administration. No unrecorded database retrieval counts, duplicate-screening statistics, independent reviewer agreement, or formal risk-of-bias evaluations are claimed; the work is not reported as a PRISMA-compliant systematic review [12].

The analytical procedure involved extracting, from the selected published studies, the study setting, focal service construct, evaluation approach, and implication for digital academic administration. Evidence was compared through qualitative thematic synthesis to identify convergence, contradictions, and context-dependence. The five organizing domains were system accessibility and reliability, information accuracy and timeliness, institutional responsiveness, perceived security and privacy, and service convenience. CSI studies were assessed separately from structural equation modeling and service-gap investigations. Because available studies use different populations, scales, attributes, and analytical designs, this review does not compute a pooled effect size, pooled CSI, or new institutional satisfaction rate. Conceptual proposals are explicitly differentiated from observations reported by earlier authors [3, 10, 11].

3. Results and Discussions

3.1. Comparative evidence from previous studies

The reviewed empirical evidence supports a multidimensional view of academic digital service quality, although it does not establish one universally superior instrument. Studies of academic information systems tend to examine reliability, information quality, service responsiveness, and user satisfaction; research on digital classrooms adds instructional interaction and learner characteristics. For example, the Indonesian conference study by Gui and colleagues investigated the combined roles of system, information, and service quality in student e-learning satisfaction [13]. Evidence on academic administration from Indonesia likewise places student responses in relation to both the information system and the organization providing service [6, 14]. These findings are directionally compatible but not directly commensurable because the service objects are different.

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Table 1 presents a selected comparative set of recent primary investigations directly relevant to the manuscript's synthesis. Each entry identifies the dominant measurement approach or service object rather than claiming identical operational definitions across publications. The table is not a meta-analytic evidence matrix and does not imply that every study uses the Customer Satisfaction Index.

Table 1. Overview of Selected Studies on Digital Service Quality and Student Satisfaction

Study	Context and contribution
Gui et al. (2022) [13]	Indonesian e-learning; system, information and service quality
Anam et al. (2023) [6]	SIAKAD and administration in a private university
Riady et al. (2023) [15]	Digital library; IS-success model and satisfaction
Momen et al. (2023) [16]	Digital classrooms; student-level differences
Feronika et al. (2024) [14]	Academic administration and service quality
Kartini et al. (2024) [8]	Academic systems; PIECES-based user evaluation
Nurhidayah and Slamet (2024) [17]	General university services; CSI
Priyambudi and Handayani (2024) [18]	Chatbot-supported academic services; CSI and IPA
Susanti and Jannah (2024) [19]	HESQUAL, CSI, IPA and priority diagnosis
Mater et al. (2024) [20]	Private universities; social student relationship management
Sutiah and Supriyono (2024) [21]	Online learning; IS-success and service quality
Rifa'i and Triana (2024) [22]	Online learning services and satisfaction
Abubakar et al. (2025) [7]	SIAKAD satisfaction; PLS-SEM
Prasetio et al. (2025) [9]	SIAKAD; fuzzy SERVQUAL and gap analysis
Oktariani et al. (2025) [23]	Academic management system effectiveness
Susanto et al. (2025) [24]	Academic chatbot; CSI and IPA
Josua et al. (2025) [25]	Multiple university digital services; consumer-oriented evaluation
Pauji et al. (2025) [26]	Web-based academic information system and satisfaction
Ayubi and Retnowardhani (2025) [27]	LMS evaluation using modified IS-success model

The literature also indicates that measurement outcomes are conditioned by service context. A university e-learning environment includes teaching, content delivery, assessment, and instructor interaction; an academic information system typically delivers registration, grades, schedules, and document transactions. The distinction is important because a high rating of digital course content cannot demonstrate timely grade publication, just as successful registration cannot establish teaching effectiveness. Momen et al. examined digital classroom satisfaction in Bangladesh, while Rifa'i and Triana evaluated online learning service quality in Indonesia [16, 22]. Their evidence informs service design, but not direct estimates of digital academic administration performance.

The emerging academic-service studies provide more proximal evidence. Anam et al. investigated relationships between SIAKAD quality, services, and satisfaction among business students, while Pauji and colleagues addressed a web-based academic information system in Islamic higher education [6, 26]. In a recent quantitative evaluation, Abubakar et al. reported a significant association of information quality with satisfaction in the studied SIAKAD context; the same analysis did not show statistically significant direct effects of all examined technical predictors [7]. This illustrates why assuming that every quality domain operates identically may mislead institutional decision makers.

3.2. System accessibility and transaction reliability

System quality is a prerequisite for academic self-service because registration, academic record retrieval, and online requests depend on a functioning access channel. Across IS-success research, system reliability and usable interfaces are conceptually distinct from information accuracy. An academic platform may have attractive navigation but fail when many users register simultaneously, or it may process requests reliably while presenting outdated academic data [1, 3]. For private universities, evaluation items should therefore distinguish ordinary accessibility, mobile compatibility, login procedures, response speed, availability during critical periods, and success of completed transactions.

Recent applications reinforce the need for institution-specific diagnostics rather than a universal single score. Kartini et al. employed the PIECES framework to examine student satisfaction with an academic information

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system, while Wahyuningsih et al. combined technology-acceptance and information-systems success perspectives for academic activities [8, 28]. Although these frameworks overlap in attention to system usefulness and performance, they operationalize different questions. PIECES describes categories of system conditions; a success model studies relationships among quality, use, and benefits; a satisfaction index reports a coded summary. Comparing their outputs as if they measured the same latent construct would obscure methodological differences.

A practical implication follows from this distinction: a campus evaluation should pair reported system stability with observable transaction evidence where records can ethically be accessed. Completion rates for registration, system downtime during enrollment, and time needed to obtain records would supply operational checks on perceived reliability. None of the reviewed publications supplies those indicators for an unnamed target institution, and the present synthesis does not pretend otherwise. The literature instead supports proposing them as future triangulation opportunities [23, 25].

3.3. Academic information quality and timeliness

Information quality may become visible only after students attempt to act on a message or record. Inaccurate course offerings, late grade updates, inconsistent tuition or timetable information, and unclear requirements can generate repeated contacts with academic offices even when the digital interface works correctly. The IS-success tradition consequently separates the quality of the information from the quality of the system delivering it [1]. Academic information evaluation should retain clarity, accuracy, completeness, relevance, consistency, and timeliness as analytically distinguishable attributes.

A notable contrast appears in the SIAKAD study by Abubakar et al., in which information quality was an important direct correlate of satisfaction, whereas other quality and usability paths were not statistically significant in the reported model [7]. These findings should not be generalized to every university or interpreted as proof that system reliability is unimportant. Rather, they demonstrate that conditional relevance can vary by institutional setting, the experienced quality range, and the way constructs are operationalized. Research in digital libraries with Indonesian university users also places information and service quality within a wider network of use, satisfaction, and benefits, although library interactions remain different from administrative transactions [15].

For future measurement, the unit of inquiry should match the specific academic task. “Information is accurate” is more interpretable when supplemented by separate student evaluations of grade records, class schedules, credit counts, or administrative notices. Overall wording without a reference task could mask different experiences across programs and semesters. Published evidence justifies these proposed distinctions, but empirical instrument testing would be required before they could be treated as verified dimensions [29, 25].

3.4. Responsiveness, service recovery and institutional coordination

An academic information platform is often the visible surface of processes carried out by administrative officers, program coordinators, academic advisers, and information-technology teams. Problems such as registration exceptions or corrections of grade records require coordination after the student has interacted with the software. Indonesian evidence linking academic administrative service quality and student satisfaction therefore helps explain why evaluating the interface alone is incomplete [14, 6]. The review treats access to assistance, communication clarity, response time, completion of requests, and escalation procedures as separable service attributes.

Research employing CSI and IPA highlights a diagnostic advantage of considering service support at the attribute level. Priyambudi and Handayani investigated chatbot-supported academic service development using satisfaction and priority tools, while Susanto et al. subsequently studied an e-service-quality chatbot intervention with CSI and IPA [18, 24]. Their contexts indicate that automated assistance can be incorporated into academic-service evaluation, but reported satisfaction with a chatbot does not establish that the underlying academic transaction has been resolved correctly. Institutional review should preserve the distinction between a quick answer and a completed administrative outcome.

The same caution applies to managerial inference from a student rating. A poor responsiveness score identifies a perception requiring investigation; it does not by itself establish whether the root cause is staff workload, unclear responsibilities, data discrepancies, platform failures, or a complicated approval chain. Evaluations can therefore combine feedback with verified records of first response and final resolution. Oktariani et al. showed the relevance

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of service quality and satisfaction to the effectiveness of academic management system use, supporting the value of considering service experience jointly with system utilization [23].

3.5. Privacy, security and perceived trust

Academic systems handle student records and may combine identity, grades, enrolment status, payments, and administrative correspondence. Students can therefore form impressions of confidentiality, account protection, and appropriate access that influence their broader service evaluations. Electronic service quality synthesis identifies privacy and security as a distinct component, although that literature includes diverse commercial settings and cannot be applied without contextual adjustment [4]. The appropriate conceptual claim is that perceived protection is part of digital service quality, not that a positive survey response verifies encryption, access controls, or institutional compliance.

The importance of relationships and trust is also apparent in research on digitally mediated student relationship management. Mater et al. developed and assessed a system-success model using data from private university students in Jordan [20]. Although the platform examined in that study differs from academic registration or transcript services, it illustrates how students' experience of institutional interactions can extend beyond task completion. Future academic-service instruments may therefore include perceived privacy and confidentiality, while objective security practice should be assessed by a separate technical process rather than inferred from student satisfaction.

3.6. Convenience and end-to-end academic experience

Convenience is often experienced as the reduction of effort needed to complete an academic task, rather than as a property of one screen or application. A service may be accessible on mobile phones yet require students to visit an office to complete the process, thus retaining substantial friction. Higher education service research has emphasized multidimensional relationships among service quality and student outcomes, whereas studies of learning management systems concentrate on continuous use and technological learning experiences [5, 27]. These perspectives support the proposed inclusion of overall task convenience, provided it is not uncritically counted twice alongside narrow usability attributes.

A conceptual framework should distinguish specific drivers from a global evaluative judgment. Individual items may capture time saving, ease of completing routine procedures, consistency between online and offline instructions, and clarity of required steps. A separate global satisfaction question may serve as a useful criterion for examining whether the index tracks student assessments. However, its relationship to the index should be established through actual data rather than asserted from the review alone [10, 29].

3.7. CSI, SERVQUAL, IPA and structural models: complementary, not interchangeable

The CSI is most defensible here as an explicitly defined descriptive weighted composite of attribute satisfaction. An importance-weighted application first computes the mean importance and mean satisfaction of each eligible attribute, divides each attribute's importance by the sum of importance means, and uses these normalized shares to aggregate satisfaction ratings. The weighted satisfaction is then expressed relative to the maximum permitted response category. For a five-point satisfaction scale coded from one to five, this maximum-score convention has a theoretical range from 20% to 100%, not zero to 100%. It is therefore not equivalent to the percentage of respondents who report being satisfied. This procedure is a proposed operational convention, not a claim that every reviewed publication employed identical weights and classification rules [10].

CSI evidence from higher education demonstrates both practical appeal and comparability limits. Nurhidayah and Slamet reported a CSI for general higher education services, while Susanti and Jannah combined HESQUAL dimensions, CSI, IPA, and improvement-priority methods [17, 19]. Priyambudi and Handayani and Susanto et al. also employed CSI and IPA in chatbot-supported academic-service settings [18, 24]. These studies represent valid examples of method application in their own contexts; their reported numerical outcomes should not be averaged or ranked against one another without a common set of service attributes, coding ranges, participant eligibility rules, weights, and satisfaction thresholds.

SERVQUAL-type approaches instead emphasize perceptions, expectations, and service gaps; fuzzy SERVQUAL adds a distinct procedure for interpreting ratings. The SIAKAD study of Prasetio et al. employed fuzzy SERVQUAL to examine academic-system service quality [9]. The identification of a gap does not automatically

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imply statistical significance or demonstrate why the discrepancy occurred. Moreover, the conventional difference between an importance rating and a satisfaction rating is not the same as a perception-minus-expectation gap. The critical IPA literature specifically cautions against overconfident translation of rating configurations into managerial priorities [11].

Structural equation modeling addresses a different question by evaluating modeled relationships among latent variables. The SIAKAD model examined by Abubakar et al. and the digital-library study by Riady et al. illustrate explanatory approaches, while the contextual evaluation by Josua et al. shows another consumer-oriented perspective on multiple university digital services [7, 15, 25]. A structural coefficient cannot be mechanically substituted for an attribute weight: the coefficient refers to an estimated association within a specified model, whereas an importance weight is a normalization of a stated evaluation criterion. CSI offers a concise managerial signal, while structural analysis offers a more explicit examination of hypotheses; neither makes the other redundant.

A robust future study should therefore declare its evaluative purpose before selecting the instrument. For diagnosis, a transparent index plus disaggregated attribute ratings may be appropriate. For measuring service gaps, perceived service and expectation items require coherent anchoring. For examining mechanisms such as usefulness, satisfaction, and continued system use, a theory-driven explanatory model may be preferable. The present review recommends methodological complementarity rather than mandatory combination, since adding methods without clearly differentiated questions can create redundant measures and contradictory interpretations [3, 11, 10].

3.8. Integrative evaluative framework

The synthesis yields a provisional five-domain framework for evaluating students' digital academic-service experiences. System quality covers access, system stability, response speed, and transaction completion; information quality covers accuracy, completeness, clarity, and timeliness; support quality covers availability of help and completion of requests; security/privacy covers perceived confidentiality and proper handling of academic records; and convenience covers the perceived ease of completing an entire administrative task. Table 2 summarizes these domains together with safeguards that prevent misinterpretation. The domains are analytic categories generated through this narrative synthesis, not empirically validated latent factors for any university [1, 4, 5].

Table 2. Literature-Derived Dimensions of Digital Academic Service Quality

Proposed domain	Measurement and interpretation safeguard
System quality	Survey access and reliability; compare with uptime and transaction logs.
Information quality	Rate grade, schedule and record accuracy separately from screen usability.
Institutional support	Separate first response from problem resolution and closure.
Privacy/security	Measure perceived protection; do not substitute it for technical audit.
Convenience	Evaluate completion of academic tasks; avoid double-counting global satisfaction.

This framework retains the student's task as the point of evaluation. A survey should specify which functions respondents used and provide an option when an item is outside their experience. Without this safeguard, a mean score can mix informed evaluations with guesses. The proposed structure also requires content review, pilot testing, and empirical examination before being represented as a stable instrument. Guidance for scale development emphasizes the need to align content, construct specification, and evidence of measurement properties [29]. The five-domain proposal is therefore an agenda for testable measurement rather than a completed validation result.

The review's novelty is not the discovery of an entirely new construct, but the explicit connection of three usually separate layers of academic service evaluation: the information-system layer, the institutional administrative-process layer, and the measurement/decision layer. A student can report dissatisfaction because a technical transaction fails, because an academic record is inaccurate, or because a support request remains unresolved. A composite CSI can summarize these evaluations, but organizational response requires attribute-level evidence and an investigation of the underlying process. The conceptual integration is transferable to private higher education while remaining open to institutional differences [6, 23, 19].

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3.9. Implications for higher education management

The first managerial implication is to avoid interpreting availability of digital infrastructure as evidence of satisfactory academic services. Administrators should review the full service journey, from student authentication to successful completion and confirmation of an academic task. A dashboard could retain item-level measures for registration success, timeliness of grade updates, clarity of notifications, and support closure, alongside a carefully specified overall satisfaction index. The literature supplies a rationale for these categories, but particular thresholds, baselines, and improvement targets must be set using the institution's own authenticated data [1, 7, 25].

The second implication is that the allocation of resources should not be determined solely by a high or low CSI. Attributes with modest ratings may affect only a small group of students or may be tied to limited operational exposure, while apparently satisfactory processes can mask important accessibility problems for users with disabilities or unstable internet connections. Prioritization needs to consider service-criticality, student exposure, verified failure frequency, implementation cost, and practical feasibility. Attribute-weighted CSI and IPA can support decisions, but they do not replace professional assessment of institutional procedures [10, 11, 19].

Third, digital service improvement requires joint responsibility between information technology personnel and academic service units. When students receive an incorrect schedule, the corrective action may concern the database, the academic scheduling procedure, or communication among departments. Responsibility cannot be inferred from the low score alone. Published evaluations of SIAKAD and academic administrative services indicate that technological and organizational quality are closely linked [6, 14]. Institutions should therefore associate each high-priority student-reported issue with a documented process owner and a verifiable response measure.

Fourth, private universities can approach innovation pragmatically rather than treating automated tools as a substitute for service governance. Chatbots may reduce friction for standard questions and provide timely guidance; nevertheless, they must remain aligned with authoritative academic information and be able to escalate exceptions to authorized officers. Studies of e-service chatbots in academic settings demonstrate that CSI-style diagnostics can be applied to such tools, but do not establish that chatbot adoption invariably improves university-wide student satisfaction [18, 24]. Ethical data handling and the accessibility of alternative service channels remain relevant throughout the process.

3.10. Research limitations and future agenda

This review is intentionally selective, rather than an exhaustive systematic literature synthesis. No reproducible database query, independent screening log, standardized quality appraisal, or protocol registration was available for the original source set. The review therefore identifies plausible and important themes; it cannot estimate the share of all published studies supporting any one relationship or assert that the selected evidence represents the entire global literature. International e-learning, digital libraries, and commercial electronic-service settings also differ from the administrative workflows typical of private universities [12, 4, 15].

Future researchers should test content validity and dimensionality using direct experience of registration, transcripts, student records, and administrative support. Studies across multiple private and public institutions could examine whether the five proposed domains are stable or whether support, privacy, and convenience should be represented differently by educational context. A field design may compare satisfaction indices produced by importance weights and equal weights, report scale endpoints transparently, and document uncertainty, nonresponse, and subgroup experience. CSI itself should remain a descriptive summary rather than a substitute for testing explanatory relationships [29, 10, 7].

Further research could also compare digital and face-to-face academic service journeys, measure the relationship between perceived responsiveness and verified resolution time, and investigate how access constraints shape satisfaction among students from different programs and study stages. Where longitudinal records are available, repeated measurement would help determine whether service changes are accompanied by meaningful movement in specific attributes rather than shifts in only the aggregate index. Until these studies are conducted, the present framework should be regarded as a literature-derived proposition rather than validated evidence of a particular institution's performance [5, 16, 25].

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4. Conclusion

This critical narrative literature review establishes that student satisfaction with digital academic services is best examined as a multidimensional evaluation involving system reliability, academic information quality, institutional support, perceived privacy and security, and end-to-end service convenience. Across the selected literature, these dimensions emerge from complementary information-systems, higher education service quality, and digital-service perspectives. Their integration provides a practical conceptual foundation for future evaluations in private higher education, but the proposed domains have not been empirically validated as a single instrument in this article. The review also clarifies the distinct contribution of measurement approaches. An importance-weighted CSI can condense attribute satisfaction into an interpretable descriptive score when its formula, coding limits, and weights are transparently specified. SERVQUAL and IPA provide alternative gap and priority diagnostics, whereas structural models investigate hypothesized relationships among constructs. Their results should be interpreted according to their respective purposes and should not be pooled or substituted without methodological justification. No survey of students at a particular institution, institutional CSI estimate, or new causal result is reported here. For practice, the proposed framework encourages universities to connect student evaluations with verifiable service processes and to diagnose weaknesses at the attribute level before setting priorities. For research, the next step is to validate the candidate measures among actual academic-system users, compare weighting procedures, and assess the framework across institutional contexts. These implications follow from the selected literature and do not constitute evidence of current satisfaction at any named university.

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