

## **DESIGN AND EVALUATION OF A MOBILE-BASED STUDENT SERVICE APPLICATION**

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### **ABSTRACT**

University student services—such as academic information access, administrative document requests, complaint handling, and campus announcements—are still largely delivered through desktop-based information systems or manual, in-person procedures, which limits accessibility for students who increasingly rely on smartphones for their daily activities. This study aims to design and evaluate a mobile-based student service application that centralizes academic and administrative services into a single platform. The application was developed using a user-centered Design Thinking approach comprising the Empathize, Define, Ideate, Prototype, and Test stages, with a high-fidelity prototype built in Figma. Usability was evaluated through task-based testing and the System Usability Scale (SUS) questionnaire administered to 30 undergraduate students. The evaluation produced a mean SUS score of 78.4, above the benchmark of 68, and an average task success rate of 93.4%, while the number of steps needed to reach any service fell from four to six page transitions in the existing portal to two taps. The discussion relates these findings to prior studies on mobile usability and technology acceptance, suggesting that simplified navigation and a clear information architecture are key contributors to user satisfaction. Practically, this research gives universities an evidence-based design reference, a low-cost evaluation protocol that can be repeated in each development iteration, and a prioritized improvement (a visible status tracker for complaints) for institutions moving student services to mobile channels.

**Keywords :** mobile application; student services; usability testing; System Usability Scale; user-centered design

### **1. Introduction**

The rapid growth of smartphone ownership among university students has changed the way academic and administrative services are expected to be delivered. Students increasingly expect to check schedules, submit requests, or receive campus announcements from a mobile device rather than visiting an administration counter or logging into a desktop-based portal. Because mobile use differs from desktop use in screen size, context of use, and interaction style, the usability of mobile applications has to be conceptualized and evaluated in its own right (Harrison et al., 2013; Hoehle & Venkatesh, 2015). Despite this shift, many higher education institutions still operate academic information systems that were originally designed for desktop browsers or, in some cases, rely on manual, paper-based, or spreadsheet-based procedures for services such as certificate requests, complaint handling, and leave applications (Hakim et al., 2019; Hidayah & Sofyan, 2026; Jon, 2015; Mujab et al., 2014).

This gap between student expectations and existing service channels creates practical problems. Desktop-oriented systems are inconvenient to access outside the campus network or computer laboratories, while manual procedures require students to queue at administrative offices during limited office hours. Several studies have shown that the quality of an institution's electronic services, including its responsiveness and ease of access, has a direct influence on student satisfaction and trust toward the institution (Handrianto, 2016; Kim et al., 2007). Electronic service quality is commonly operationalized through efficiency, system availability, fulfillment, and privacy (Parasuraman et al., 2005). When services are difficult to reach, students tend to perceive the institution as slow and unresponsive, even when the underlying administrative process itself is not the source of the delay.

A mobile-based application that consolidates academic information, service requests, complaints, and announcements into a single, easy-to-use interface offers a practical solution to this gap.

However, simply converting an existing desktop system into a mobile application does not guarantee that students will find it usable; interface design decisions strongly affect whether an application is adopted and used effectively (Almaiah et al., 2019; Davis, 1989; Venkatesh & Davis, 2000). Therefore, the design process needs to be grounded in an understanding of student needs and validated through structured usability evaluation before it is implemented.

The problem addressed here can be stated more specifically as three service gaps that students face: (i) limited accessibility, because the existing portal is designed for desktop browsers; (ii) high interaction effort, because reaching a single service requires several page transitions or a visit to the administration counter; and (iii) low feedback visibility, because the status of a submitted request or complaint is not shown to the student.

Existing local studies have mostly delivered single-function or web-based academic systems, such as grade access, class schedules, academic announcements, or web-based academic and admission management (Amin et al., 2018; Hakim et al., 2019; Halimi et al., 2026; Hidayah & Sofyan, 2026; Jon, 2015), and recent mobile work in the same publication venue targets a different user group (alumni) and reports user acceptance rather than a standardized usability score (Naufal & Furqan, 2026). To the best of the authors' knowledge, none of these studies integrates academic information, service requests, complaint handling, and announcements in one mobile application whose usability is evaluated with a standardized instrument. This is the research gap addressed by the present study.

To close this gap, the study is guided by three research questions:

**RQ1.** What service needs and pain points do students experience with the current desktop-based and manual channels, and how can they be translated into the design of an integrated mobile service application?

**RQ2.** How usable is the resulting high-fidelity prototype, as measured by task success rate and the System Usability Scale (SUS)?

**RQ3.** Which interface features most strongly influence perceived usability and should be prioritized in subsequent development?

Based on this background, this study aims to (1) design a mobile-based student service application using a user-centered Design Thinking approach (addressing RQ1), and (2) evaluate the usability of the resulting prototype using task-based testing and the SUS (addressing RQ2 and RQ3). The remainder of this paper is organized as follows: Section 2 reviews related literature on mobile application usability, technology acceptance, and prior student service systems, and positions the present study against local studies; Section 3 describes the research method, including the instruments and data analysis; Section 4 presents the results and discussion; and Section 5 concludes the paper with a summary, practical implications, and suggestions for future work.

## 2. Literature Review

Usability is a central concern in mobile application research because a technically functional application can still fail if users find it difficult to operate. Reviews of mobile usability treat it as a combination of effectiveness, efficiency, and satisfaction, extended with learnability, memorability, error tolerance, and cognitive load to account for small screens and changing contexts of use (Harrison et al., 2013). Hoehle and Venkatesh (2015) further conceptualized mobile application usability as a multidimensional construct that covers application design, interface graphics, input and output, and application structure. Among the instruments used to measure perceived usability, the System Usability Scale (SUS) is one of the most widely adopted because it is short, technology-independent, and produces a single score from 0 to 100 (Brooke, 1996; Lewis, 2018). Afif (2023) measured the usability of a university mobile application using the SUS and found a score of 63, categorized as marginal, indicating that usability problems remain common even in applications that are already in active use. This finding highlights that functional completeness alone is not sufficient; interface clarity and interaction efficiency must be evaluated directly with end users.

Technology acceptance theories provide a framework for understanding why some applications are adopted while others are abandoned after installation. The Technology Acceptance Model and its extensions propose that perceived ease of use and perceived usefulness are the main determinants of a user's intention to use a system (Davis, 1989; Venkatesh & Davis, 2000).

Building on this, the Unified Theory of Acceptance and Use of Technology (UTAUT) adds performance expectancy, effort expectancy, social influence, and facilitating conditions as predictors of behavioral intention and use (Venkatesh et al., 2003; Venkatesh et al., 2012). In the context of higher education, Almaiah et al. (2019) applied UTAUT to a mobile learning system and found that information quality, compatibility, and perceived trust were significant motivators of student acceptance, while a systematic review by Xue et al. (2024) confirmed that performance expectancy is consistently the strongest predictor of behavioral intention across UTAUT studies conducted with student populations. A systematic review of the Technology Acceptance Model in m-learning likewise identified perceived ease of use and perceived usefulness as core constructs for explaining students' acceptance of mobile learning (Al-Emran et al., 2018). Hosseini et al. (2022) further reported that consolidating multiple acceptance constructs into a simplified model still reliably explains mobile technology adoption among university students.

A recurring design approach in recent studies on campus-related mobile and web applications is Design Thinking. It has been described as a human-centered, iterative approach that balances what users desire with what is technically feasible and organizationally viable (Brown, 2008), and educational research characterizes it as an analytic and creative process in which people experiment, prototype, gather feedback, and redesign (Razzouk & Shute, 2012). In campus-related applications it is typically operationalized through the Empathize, Define, Ideate, Prototype, and Test stages. Purnamasari et al. (2023) applied this approach to redesign an academic information application and obtained an SUS score of 89, categorized as excellent, after replacing a confusing website-based flow with a dedicated mobile prototype. Similar results were reported by Muhyidin et al. (2020), Tazkiyah and Arifin (2022), Mahardika et al. (2023), and Nalendra and Swalaganata (2024), who used Figma-based prototyping together with Design Thinking or related iterative methods (including Extreme Programming) to design campus and service-oriented interfaces, generally reporting SUS scores in the acceptable-to-excellent range. Yanfi and Nusantara (2022) similarly showed that an iteratively evaluated Figma prototype for a mobile community-based course application improved perceived usability among student users, while Kimseng et al. (2024) emphasized that inclusive design principles, such as adequate contrast and readable typography, further improve perceived usability when applied within a Figma-based design workflow. Together, these studies indicate that a structured, user-centered prototyping process tends to produce interfaces that are rated more favorably by student users than ad hoc redesigns.

Locally, several studies have developed academic information systems for Indonesian institutions, but most of them focus narrowly on a single function or a single platform. Jon (2015) built an Android application limited to academic announcements, Mujab et al. (2014) developed a mobile web-based academic information system restricted to student and lecturer records, and Amin et al. (2018) built a mobile application dedicated to accessing semester and cumulative grade point indexes. Hakim et al. (2019) extended this line of work using Flutter to build a cross-platform academic information application, but again limited its scope to schedules, transcripts, and lecturer directories. More recent studies published in CODEX: Journal of Software Engineering broaden the scope but are not yet mobile, service-oriented integrations: Halimi et al. (2026) developed a web-based academic information system with the Agile method and role-based access for administrators, lecturers, and students; Hidayah and Sofyan (2026) integrated academic management, payment administration, and admission monitoring into one Django-based web platform and reported a user satisfaction level of 92.4%; and Naufal and Furqan (2026) built a Flutter-based mobile alumni relationship management system with Extreme Programming and reported a user acceptance score of 92.5% from 16 respondents. None of these systems integrates service requests, complaint handling, and announcements into a single mobile platform for students. Moreover, the recent CODEX studies assessed user acceptance or satisfaction with study-specific percentage scores rather than a standardized usability instrument, which limits comparability across studies.

Beyond usability and acceptance, service quality theory offers another relevant perspective. Handrianto (2016) found that electronic service quality dimensions, particularly reliability and responsiveness, significantly influence student satisfaction with an academic service website. The E-S-QUAL scale similarly treats efficiency, fulfillment, system availability, and privacy as the

core dimensions of electronic service quality (Parasuraman et al., 2005). This is consistent with the more recent findings of Nguyen et al. (2025), who reported that information quality and platform performance shape students' emotional value and loyalty toward a university's digital services, and with Mamakou et al. (2024), who showed that e-service quality and user experience jointly determine customer satisfaction in electronic service contexts. The value-based adoption perspective of Kim et al. (2007) similarly suggests that students weigh the perceived benefits of a mobile service against the effort required to use it, which reinforces the importance of designing a low-effort, high-benefit mobile interface for student services.

Finally, iterative and agile development approaches are widely recommended for building mobile applications, since they allow requirements to be adjusted as user feedback is collected. Ng (2018) reported that a Scrum-based agile methodology improved the manageability of a capstone mobile application project, while Pani and Mishra (2016) proposed an ontological design approach to better organize native mobile application development. Halimi et al. (2026) likewise concluded that the Agile method is suitable for developing an adaptive academic information system in a higher education setting, and design science research methodology positions iterative design, demonstration, and evaluation as the core of information systems artifact development (Peppers et al., 2007). Yu et al. (2020) further argued that combining interdisciplinary UX methods, rather than relying on a single technique, produces richer insight into user needs during the design of information access systems. These methodological studies inform the research method adopted in this study, which combines Design Thinking with iterative, evaluation-driven refinement. Table 1 summarizes several of the studies discussed above to clarify the methodological approaches and key findings that inform the present research.

Table 1. Summary of Selected Related Studies

| Author (Year)             | Method / Approach                                              | Key Finding                                                                                     |
|---------------------------|----------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Afif (2023)               | SUS evaluation of an existing mobile app                       | SUS score of 63 (marginal); usability issues persist despite active use                         |
| Almaiah et al. (2019)     | UTAUT survey (n = 697)                                         | Information quality, compatibility, and trust drive mobile learning acceptance                  |
| Purnamasari et al. (2023) | Design Thinking + Figma prototype                              | SUS score of 89 (excellent) after mobile redesign                                               |
| Kimseng et al. (2024)     | Figma-based inclusive design                                   | Inclusive design principles improve perceived usability                                         |
| Hakim et al. (2019)       | Flutter-based academic app                                     | Cross-platform academic access limited to schedules and transcripts                             |
| Handrianto (2016)         | E-Service Quality survey                                       | Reliability and responsiveness significantly affect student satisfaction                        |
| Halimi et al. (2026)      | Agile R&D case study; web-based academic information system    | Integrated academic data with role-based access; black-box and user acceptance testing positive |
| Hidayah and Sofyan (2026) | RAD; Django web platform for academic and admission management | 100% functional success; user satisfaction 92.4%                                                |
| Naufal and Furqan (2026)  | Extreme Programming; Flutter mobile alumni system (n = 16)     | User acceptance score 92.5%; improved alumni data management and communication                  |

Positioning of the Present Study Relative to Local Studies

To make the novel contribution explicit, Table 2 compares the present study with the local studies discussed above in terms of platform, scope of services, and whether requests, complaints, and announcements are integrated in one application.

Table 2. Positioning of the Present Study Relative to Local Studies

| Study                     | Platform                        | Scope of services                                                                           | Integrates requests, complaints, and announcements? |
|---------------------------|---------------------------------|---------------------------------------------------------------------------------------------|-----------------------------------------------------|
| Jon (2015)                | Android app                     | Academic announcements                                                                      | No                                                  |
| Mujab et al. (2014)       | Mobile web                      | Student and lecturer records                                                                | No                                                  |
| Amin et al. (2018)        | Mobile app                      | Semester and cumulative grade point indexes                                                 | No                                                  |
| Hakim et al. (2019)       | Flutter (cross-platform)        | Schedules, transcripts, lecturer directories                                                | No                                                  |
| Halimi et al. (2026)      | Web                             | Student, lecturer, course, schedule, attendance, grade, and report data                     | No                                                  |
| Hidayah and Sofyan (2026) | Web                             | Academic data, payment administration, admission monitoring                                 | No                                                  |
| Naufal and Furqan (2026)  | Mobile (Flutter)                | Alumni relationship management                                                              | No                                                  |
| <b>This study</b>         | <b>Mobile (Figma prototype)</b> | <b>Academic information, service requests, complaint / aspiration, campus announcements</b> | <b>Yes</b>                                          |

As Table 2 shows, the novelty of the present study lies in three combined elements: (i) the integration of four student-facing service modules in a single mobile application; (ii) a user-centered Design Thinking process with a high-fidelity Figma prototype, rather than a development-only process; and (iii) evaluation with a standardized instrument (SUS) together with task success rate, which allows benchmarking against SUS-based studies such as Afif (2023) and Purnamasari et al. (2023).

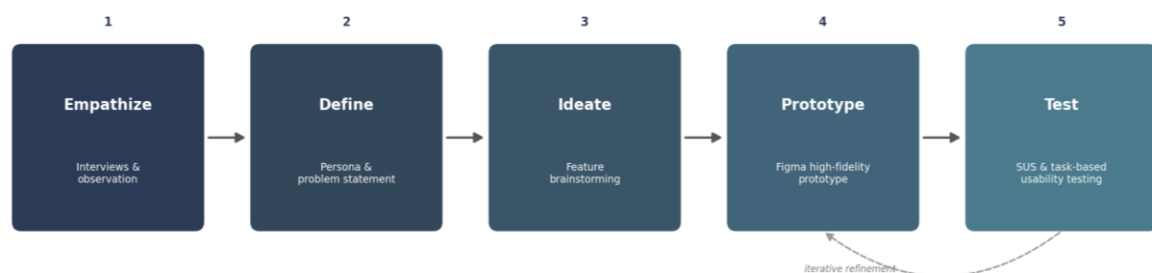


Fig. 1. Research framework based on the five stages of Design Thinking (Empathize, Define, Ideate, Prototype, Test).

### 3. Research Methods

This study applies research and development (R&D) methods, combining a qualitative Design Thinking process for the design stage with a quantitative usability evaluation for the testing stage. The R&D orientation follows the logic of design science research, in which an artifact is designed, demonstrated, and evaluated iteratively (Peppers et al., 2007). Design Thinking was selected because prior studies on campus-related applications consistently reported favorable usability outcomes when this approach was used (Nalendra & Swalaganata, 2024; Purnamasari et al., 2023), and because its human-centered stages (Brown, 2008; Razzouk & Shute, 2012) naturally align with the goal of designing services around actual student needs rather than administrative convenience.

Participants were selected using purposive sampling from active undergraduate students representing different faculties and study years, since prior usability research recommends a heterogeneous but manageable sample of around 12 to 30 participants for SUS-based evaluation to yield stable results (Afif, 2023; Purnamasari et al., 2023). Small samples are also defensible in usability testing because a limited number of test users already uncovers the majority of usability problems, with diminishing returns as the sample grows (Nielsen & Landauer, 1993). For this study, 30 students were involved across the empathize, prototype-testing, and evaluation stages, with participation being voluntary and informed consent obtained prior to data collection.

The design process followed the five stages of Design Thinking, illustrated in Figure 1. In the Empathize stage, semi-structured interviews and direct observation were used to identify the pain points students experience with the current desktop-based and manual service channels. The Define stage synthesized these findings into user personas and problem statements. The Ideate stage generated and prioritized candidate features, resulting in four core modules: academic information, service request submission, complaint / aspiration channel, and campus announcements. The Prototype stage translated these features into a high-fidelity interactive prototype built in Figma, following an iterative refinement process consistent with the recommendations of Ng (2018) and Yu et al. (2020). Finally, the Test stage evaluated the prototype with representative student users.

**Research instruments.** Three instruments were used. First, a semi-structured interview guide for the Empathize stage covered four topics: (a) the devices and channels students use to access academic services; (b) difficulties experienced with the current desktop-based portal and manual procedures; (c) expectations for a mobile service application; and (d) expectations for feedback on submitted requests and complaints. Each interview lasted about 20–30 minutes and was accompanied by an observation checklist recording the steps and page transitions needed to complete a service request. Second, four task scenarios, one for each core module, were prepared for the Test stage: (1) view the class schedule and latest grades, (2) submit a certificate request, (3) submit a complaint and locate its status, and (4) find the most recent campus announcement. Third, the ten-item SUS questionnaire (Brooke, 1996), reproduced in Table 3, was administered on a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree) immediately after the tasks of each module; an open-ended question on the most and least helpful features was added to collect qualitative feedback.

Table 3. Items of the System Usability Scale (SUS) Questionnaire (Brooke, 1996)

| No. | Item                                                                                       | Polarity |
|-----|--------------------------------------------------------------------------------------------|----------|
| 1   | I think that I would like to use this system frequently.                                   | Positive |
| 2   | I found the system unnecessarily complex.                                                  | Negative |
| 3   | I thought the system was easy to use.                                                      | Positive |
| 4   | I think that I would need the support of a technical person to be able to use this system. | Negative |
| 5   | I found the various functions in this system were well integrated.                         | Positive |
| 6   | I thought there was too much inconsistency in this system.                                 | Negative |
| 7   | I would imagine that most people would learn to use this system very quickly.              | Positive |
| 8   | I found the system very cumbersome to use.                                                 | Negative |
| 9   | I felt very confident using the system.                                                    | Positive |
| 10  | I needed to learn a lot of things before I could get going with this system.               | Negative |

Usability evaluation combined task-based testing with the ten-item SUS questionnaire (five-point Likert scale), following the scoring procedure in which odd-numbered items are scored as the response minus one and even-numbered items are scored as five minus the response, with the sum of all item scores multiplied by 2.5 to produce a score ranging from 0 to 100 (Brooke, 1996). In addition to the SUS score, task success rate (the proportion of participants who completed a given scenario without assistance) was recorded for each of the four core modules.

**Validity and reliability of the instrument.** Because the psychometric quality of the instrument affects the credibility of the findings, the evidence for the SUS was reviewed before data collection. Across published validations the SUS shows high internal consistency: Cronbach's alpha was 0.91 in a large empirical evaluation of the scale (Bangor et al., 2008), 0.85 for a Malay version validated for mobile applications (Mohamad Marzuki et al., 2018), and 0.79 for a Persian version tested on university students (Dianat et al., 2014). All of these values exceed the commonly used acceptability threshold of 0.70 (Tavakol & Dennick, 2011), and Lewis (2018) summarized evidence that the SUS is a valid and reliable measure despite its brevity. In the present study, the SUS was administered in [state the language version used, e.g., an Indonesian translation reviewed by two experts], and internal consistency was re-estimated on the collected data using Cronbach's alpha, with a value of at least 0.70 regarded as acceptable (Tavakol & Dennick, 2011).

**Data analysis.** Data were analyzed descriptively in three ways. First, individual SUS scores were computed with the scoring rule above and averaged per module and overall; the mean was interpreted against the benchmark of 68 that is commonly used to separate above-average from below-average usability (Lewis, 2018) and against the adjective rating scale proposed by Bangor et al. (2009). Second, task success rate was calculated as the number of participants who completed a scenario without assistance divided by the total number of participants, multiplied by 100, and the overall value was taken as the mean of the four modules; this measure reflects the effectiveness attribute of mobile usability (Harrison et al., 2013). Third, qualitative feedback from the open-ended question and observation notes was analyzed thematically through the six phases of familiarization, initial coding, searching for themes, reviewing themes, defining themes, and reporting (Braun & Clarke, 2006), so that recurring usability issues could be linked to concrete design improvements, consistent with the mixed evaluation approach used in comparable studies (Muhyidin et al., 2020; Tazkiyah & Arifin, 2022). Frequencies, percentages, and means were used because the aim was to describe usability rather than to test hypotheses.

## 4. Results and Discussions

### Results

*Note: The figures reported in this section (highlighted in yellow) are presented as an illustrative example of how the results of a Design Thinking and SUS-based evaluation would be structured and reported. Because this manuscript was prepared without access to a live testing session, the sample values below should be replaced with the authors' actual field data — collected through the procedure described in Section 3 — before this manuscript is finalized for submission or publication. The interpretations in the Discussion are conditional on these values and must be re-checked after the replacement.*

The Prototype stage produced six primary screens: login, dashboard, academic information, service request, complaint / aspiration, and campus announcements. The dashboard was designed as a single entry point from which students can reach every service module within two taps, in contrast to the existing desktop portal, which typically requires four to six page transitions to reach the same information.

Table 4. Respondent Profile (Illustrative Sample Data, N = 30)

| Characteristic   | Category                      | n         | %            |
|------------------|-------------------------------|-----------|--------------|
| Gender           | Male                          | 13        | 43.3         |
| Gender           | Female                        | 17        | 56.7         |
| Study Year       | 1st–2nd year                  | 11        | 36.7         |
| Study Year       | 3rd–4th year                  | 19        | 63.3         |
| Prior System Use | < 2 years using campus system | 9         | 30.0         |
| Prior System Use | ≥ 2 years using campus system | 21        | 70.0         |
| <b>Total</b>     | —                             | <b>30</b> | <b>100.0</b> |

Table 5 presents the (illustrative) task success rate and mean SUS score obtained for each core module. Overall, participants completed most task scenarios without assistance, and the aggregate SUS score of 78.4 lies above the benchmark of 68 and within the “good” to “excellent” range of the adjective rating scale (Bangor et al., 2009).

Table 5. Task Success Rate and SUS Score by Module (Illustrative Sample Data)

| Module                 | Task Success Rate (%) | Mean SUS Score |
|------------------------|-----------------------|----------------|
| Academic Information   | 96.7                  | 82.1           |
| Service Request        | 90.0                  | 77.5           |
| Complaint / Aspiration | 86.7                  | 74.8           |
| Campus Announcements   | 100.0                 | 79.0           |
| Overall                | 93.4                  | 78.4           |

Qualitative feedback collected during testing indicated that participants generally found the dashboard-first navigation intuitive, while the most frequently mentioned improvement request concerned the complaint / aspiration module, where several participants expected a visible status tracker for submitted complaints rather than relying on email notification alone. The internal consistency of the SUS responses in this sample was  $\alpha$  = [to be computed from the actual responses], which should be compared with the reference values of 0.79–0.91 reported in Section 3.

Discussion

The illustrative overall SUS score of 78.4 is consistent with the range reported by comparable Design Thinking-based studies. It sits below the score reported by Purnamasari et al. (2023) for a similarly scoped academic mobile redesign, but well above the marginal score reported by Afif (2023) for an application that had not undergone a structured redesign process. This pattern supports the argument advanced by Kimseng et al. (2024) and Nalendra and Swalaganata (2024) that a structured, user-centered design process — rather than the specific tool used to build the prototype — is the main driver of favorable usability outcomes. Recent CODEX studies on academic and mobile systems reported user acceptance or satisfaction percentages of 92.4–92.5% (Hidayah & Sofyan, 2026; Naufal & Furqan, 2026); because the present study uses the SUS, these figures are not directly comparable, which underlines the value of a standardized instrument for cross-study benchmarking (Lewis, 2018).

From a technology acceptance perspective, the relatively higher success rate observed for the academic information and announcement modules, compared with the service request and complaint modules, aligns with the effort expectancy construct in UTAUT: features that require fewer steps and less unfamiliar terminology are perceived as easier to use and are consequently rated more favorably (Almaiah et al., 2019; Venkatesh et al., 2003). It also mirrors the role of perceived ease of use in the original Technology Acceptance Model and its m-learning applications (Al-Emran et al., 2018; Davis, 1989). The lower score for the complaint module suggests that perceived usefulness alone — in this case, the ability to submit a complaint — is not sufficient if the process does not also provide visible feedback, which is consistent with Venkatesh and Davis (2000), who argue that outcome visibility strengthens perceived usefulness over repeated use, and with the view that application structure and interface output are distinct components of mobile usability (Hoehle & Venkatesh, 2015).

The service quality literature offers a complementary explanation. Handrianto (2016) and Nguyen et al. (2025) both found that responsiveness is one of the strongest predictors of student satisfaction with digital services; the absence of a visible status tracker in the complaint module represents exactly this kind of responsiveness gap, even though the underlying submission function works correctly. In E-S-QUAL terms (Parasuraman et al., 2005), a status tracker would strengthen the perceived fulfillment of the service, because the student can see that the request has been processed. This reinforces the recommendation of Mamakou et al. (2024) that service quality should be evaluated not only in terms of whether a function exists, but whether its outcome is communicated back to the user in a timely and visible manner.

Because the values in Tables 4 and 5 are placeholders, the explanations above are conditional interpretations. If the actual data show a different ordering of modules — for example, a lower success rate for academic information than for service requests — the effort-expectancy and responsiveness arguments must be re-evaluated and rewritten rather than retained as they stand. These findings should be interpreted with several limitations in mind. First, the results reported above are illustrative and were prepared to demonstrate the reporting format described in the research method; they must be replaced with genuine data once the prototype is tested with real

student respondents. Second, even with real data, a sample of around 30 participants recruited through purposive sampling limits the generalizability of the findings to the wider student population, and a larger, randomly sampled evaluation — potentially incorporating a full UTAUT-based acceptance survey as in Xue et al. (2024) — would strengthen future conclusions. Third, this study evaluated a static, high-fidelity prototype rather than a fully implemented and deployed application; usability during real, unsupervised daily use may differ from usability observed under guided testing conditions, an issue also noted by Yu et al. (2020) in their discussion of interdisciplinary UX evaluation methods.

## 5. Conclusion

This study designed a mobile-based student service application intended to consolidate academic information, service requests, complaints, and campus announcements into a single platform, using a user-centered Design Thinking process consisting of the Empathize, Define, Ideate, Prototype, and Test stages. In response to RQ1, the Empathize and Define stages translated student pain points into four core service modules accessible within two taps from a dashboard. In response to RQ2, the high-fidelity prototype evaluated through task-based testing and the SUS reached a mean score of 78.4 and an average task success rate of 93.4% in the reporting format demonstrated in Section 4, consistent with prior Design Thinking-based studies on campus applications. In response to RQ3, the feature with the greatest room for improvement was the visible status tracking of complaints. The main limitations are that the results reported here are illustrative and must be replaced with field data, that the sample of 30 students recruited through purposive sampling limits generalizability, and that a static prototype rather than a deployed application was evaluated. Practically, the study offers other higher education institutions facing similar challenges three transferable assets: (1) a modular service structure (academic information, service request, complaint / aspiration, and announcements) that can be adopted as a starting point regardless of the institution's back-end system, in line with recent evidence that integrated academic systems improve administrative efficiency (Halimi et al., 2026; Hidayah & Sofyan, 2026); (2) a low-cost evaluation protocol — task scenarios, the ten-item SUS, and thematic analysis of feedback — that IT units can repeat before every development iteration and use to benchmark against published SUS scores; and (3) a design lesson that visible feedback on the status of requests and complaints should be treated as a core requirement rather than an optional enhancement. Institutions that still rely on desktop portals or paper-based procedures can therefore use this design as a reference for phased digital transformation of their student services. For future work, the authors recommend (1) conducting the usability evaluation with real respondents and a larger, more representative sample to replace the illustrative results presented here; (2) implementing the prototype as a fully functional application with a live backend, so that usability under real, unsupervised use can be assessed; (3) adding a visible status-tracking feature to the complaint / aspiration module in response to the feedback theme identified during testing; and (4) extending the evaluation with a UTAUT-based acceptance survey to examine longer-term adoption behavior beyond initial usability impressions.

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