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| Research Article |

Development of a Digital-Based Integrated Academic Service System to Improve Student Service Quality at the Postgraduate School

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Abstract: Academic service quality in higher education faces challenges from fragmented communication channels, lack of tracking mechanisms, and inconsistent service standards. At the Postgraduate School of Universitas Negeri Jakarta, these issues manifest through multiple service channels, unclear status tracking, and absence of real-time monitoring. This study aims to develop a Smart Service Governance model for integrated academic services with a real-time dashboard, addressing service data fragmentation, lack of ticket-based tracking, inconsistent SOPs, and limited monitoring capabilities. This study employs Design Science Research Methodology (DSRM) integrated with Agile development cycles. A survey of 38 respondents comprising students, academic staff, program coordinators, and administrators was conducted using a 25-item Likert-scale questionnaire across four categories. Survey results show strong agreement on the need for integrated services (category means 2.82 to 4.50). The highest agreement was for security and acceptance (M = 4.50) and governance needs (M = 4.38). Key problems identified include fragmented communication channels, difficulty tracking service status, and inconsistent information. Respondents strongly supported ticket-based tracking, real-time status, SLA indicators, and dashboard monitoring. The study contributes a conceptual Smart Service Governance model with design principles, SLA indicators, and a prototype dashboard framework for academic service management in higher education.

Keywords: smart service governance, academic services, dashboard real-time, design science research, service quality

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Introduction

Academic service quality is an important factor in higher education governance because it is directly related to student satisfaction, the effectiveness of academic processes, and institutional reputation. To achieve these goals, every educational institution must ensure effective academic services and the availability of facilities and infrastructure aligned with the national vision. As a concrete effort, the Indonesian government launched the Quick and Best Results Program (Program Hasil Terbaik dan Cepat, PHTC), which focuses on accelerating improvements to educational facilities and infrastructure (Rahayu & Setiawan, 2026; Wijayanti et al., 2025).

At the Postgraduate School of Universitas Negeri Jakarta, academic services are more complex because they involve study programs, academic affairs, finance, leadership, and students in a single chain of interdependent services. Digital transformation in higher education has been a focus of research over the past decade (Judijanto et al., 2025); however, digitizing forms alone is not sufficient to address complex service governance problems.

A preliminary mapping showed that the root causes of academic service problems lie in five main aspects. First, service requests are scattered across several communication channels, making status tracking difficult. Second, there is no single ticket number to identify and track each service request. Third, standard operating procedures (SOPs) across units are not yet fully uniform and are not linked to a Service Level Agreement (SLA). Fourth, leaders do not yet have a real-time dashboard to monitor workload, processing time, and service bottlenecks. Fifth, student feedback has not yet served as a basis for continuous service improvement. These conditions are consistent with findings that identify data fragmentation and limited monitoring as the main problems in university academic services (Nabila & Prabowo, 2026).

The concept of smart governance in the context of public services emphasizes the integration of technology, data, organization, and public value to create transparent and accountable governance (Togala & Parisu, 2025). Applying this concept in higher education requires a model that integrates standardized workflows, SLA indicators, real-time dashboards, and evidence-based escalation mechanisms. Previous studies on academic information systems have generally focused on process automation or data integration (Chastanti et al., 2024), but few have linked processes, data, SLAs, real-time dashboards, and escalation mechanisms into a single, comprehensive smart governance framework. Ilias et al. (2023) criticized the techno-centric approach to the digitalization of education and emphasized the need to understand its social and organizational context.

Based on these conditions, this study aims to: (1) analyze the baseline conditions and root causes of problems in priority academic services at the Postgraduate School; (2) formulate a smart service governance model that integrates data, workflows, SOPs, SLAs, real-time dashboards, and escalation mechanisms; (3) develop an initial prototype of an academic service system based on a real-time

dashboard; and (4) test the functional validity, usability, and potential service quality improvement of the developed prototype.

Method

This study used the Design Science Research Methodology (DSRM) as its main framework because the research aims to design, build, and evaluate artifacts in the form of a model, SOPs, and an information system prototype (Meilinda & Imbar, 2024; Zulman et al., 2025). Agile was used as the technical cycle in the prototype development stage to translate user needs into features iteratively. The unit of analysis was the priority academic services at the Postgraduate School of Universitas Negeri Jakarta, which include academic letter requests, scheduling, examination administration, academic status monitoring, and academic information services.

The research subjects included students, administrative staff, study program coordinators, and leaders who use service data for decision-making. Data were collected through a survey using a 5-point Likert-scale questionnaire (1 = Strongly Disagree to 5 = Strongly Agree) consisting of 25 statements. The statements were grouped into four categories: (1) service problem identification (6 items), (2) system feature needs (7 items), (3) governance and management (8 items), and (4) security and acceptance (4 items). A total of 38 respondents participated in the survey, which was conducted in July 2026.

The data analysis techniques included descriptive analysis to describe respondent characteristics and response distributions, as well as descriptive statistics (mean and standard deviation) for each item and category. The evaluation focused on six main indicators: service completion time, SLA compliance, status traceability, data consistency, ease of use, and user satisfaction. The evaluation models used were the DeLone and McLean Information Systems Success Model for system and information quality, the Technology Acceptance Model/UTAUT (Agustina & Sutinah, 2019; Haris et al., 2020) for user acceptance, and service quality dimensions to assess reliability, responsiveness, and satisfaction.

Results and Discussion

Results

Respondent characteristics are presented in Table 1. Of the 38 respondents, the majority were students (n = 29; 76.3%), followed by administrative staff (n = 3; 7.9%), study program coordinators (n = 2; 5.3%), leaders (n = 1; 2.6%), and others (n = 3; 7.9%). The frequency of academic service use was dominated by the "often" category (n = 21; 55.3%), followed by "sometimes" (n = 11; 28.9%) and "rarely" (n = 6; 15.8%).

Table 1: Respondent Characteristics

Characteristic	Category	n (%)
Status	Student	29 (76.3)
	Administrative staff	3 (7.9)

Characteristic	Category	n (%)
	Program coordinator	2 (5.3)
	Leadership	1 (2.6)
	Other	3 (7.9)
Frequency of use	Often	21 (55.3)
	Sometimes	11 (28.9)
	Rarely	6 (15.8)
Total		38 (100)

The descriptive analysis of the 25 survey statements, grouped into four categories, yielded the results presented in Figure 1 and Table 2. The service problem identification category obtained a mean score of 2.82 (SD = 0.11), indicating a moderate level of agreement with statements that current academic services face channel fragmentation, difficulty in tracking request status, and inconsistent information. The system feature needs category obtained a mean score of 4.14 (SD = 0.23), showing high agreement on the need for features such as a single ticket number, real-time status, request history, notifications, and SLA estimates. The governance and management category obtained a mean score of 4.38 (SD = 0.06), indicating strong support for workload dashboards, leadership dashboards, escalation mechanisms, data integration, and digital SOPs. The security and acceptance category obtained the highest mean score (M = 4.50; SD = 0.08), showing that respondents strongly agreed on the importance of data security, system ease of use, transparency, and dashboards for decision-making.

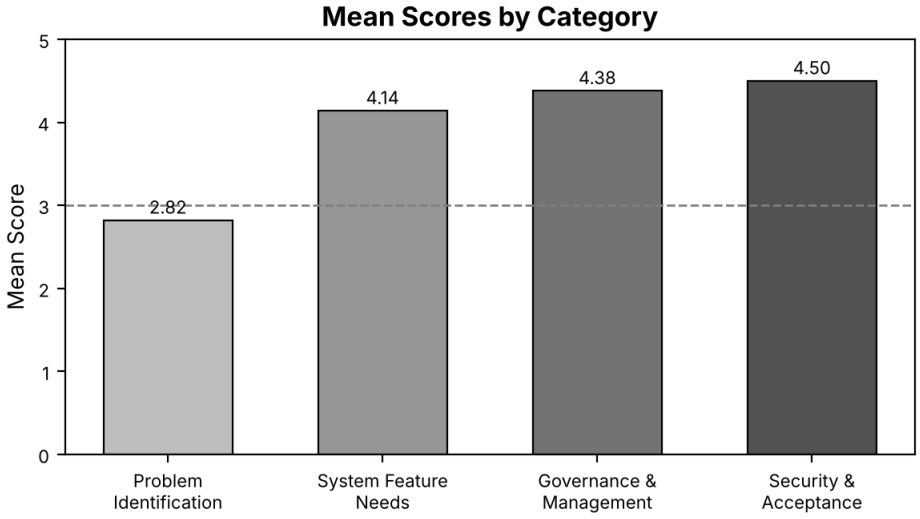


Figure 1: Mean Scores by Category

Table 2: Descriptive Statistics by Category

Category	Items	Mean	SD
Problem Identification	6	2.82	0.11
System Feature Needs	7	4.14	0.23
Governance & Management	8	4.38	0.06
Security & Acceptance	4	4.50	0.08

At the item level, the statement with the highest score concerned the security of personal data and academic documents (M = 4.58), followed by the statement that an integrated service system would increase the transparency of service processes (M = 4.55). Conversely, the statement with the lowest score concerned academic service information received through different channels sometimes being inconsistent (M = 2.68), indicating varying perceptions of this problem among respondents.

Discussion

The results show that respondents consistently perceived a need to transform academic service governance from a fragmented arrangement into an integrated model. This finding is in line with Gil-Garcia et al. (2016), who emphasized that smartness in government requires the integration of technology, data, and organization to create public value (Anthopoulos & Sirakoulis, 2022). The high scores in the system feature needs and governance categories confirm that digitalization alone is insufficient; a governance model that integrates SLAs, workflows, and escalation mechanisms is also required.

The strong agreement on the need for a single service ticket number and real-time status reflects a need for traceability, which is a basic principle of smart governance. This is consistent with the concept of information systems as work systems, which holds that information systems should be designed as work systems that support business processes in an integrated manner. In addition, the high scores in the security and acceptance category indicate that data security and ease of use are critical factors in the acceptance of digital systems.

The survey results also revealed variation in responses to the problem identification items, with some respondents answering "disagree" to the problem statements. This suggests that perceptions of service problems differ across user groups and may be influenced by role and frequency of service use. This variation should be considered in system design to ensure that the solution can accommodate the needs of different user groups.

The smart service governance model proposed in this study contributes to the development of public administration scholarship in the field of higher education service governance. These contributions include: (1) a conceptual smart service governance model for postgraduate academic services; (2) design principles for developing data- and SLA-based services; (3) a real-time dashboard prototype; and (4)

an integrated evaluation instrument (Gregor & Hevner, 2013). The model can be replicated in other university units facing similar challenges.

Conclusion

This study produced several main findings. First, academic services at the Postgraduate School of Universitas Negeri Jakarta face fragmented communication channels, limited status tracking, inconsistent information, and the absence of a real-time monitoring dashboard. Second, all user groups expressed a strong need for an integrated academic service system with a single ticket, real-time status, SLAs, notifications, and dashboards for staff and leaders. Third, the proposed smart service governance model can serve as a conceptual framework for developing academic service systems that are transparent, accountable, and user-oriented.

This study has several limitations: the small number of survey respondents (n = 38), who do not represent the entire population of service users, and the research stage, which remains at Technology Readiness Level (TRL) 4 (alpha prototype). These limitations imply the need for further prototype development, broader trials, and phased implementation to achieve sustainable smart service governance. Future research should test the effectiveness of the model in real-world implementation and measure its impact on academic service quality.

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