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Performance and User Satisfaction Analysis of Kerobokan Village's SIPANDU Using IT Balanced Scorecard and EUCS

Putu Ade Pranata[1], Gede Indrawan[2], I Made Gede Sunarya[3]
[1,2,3] Postgraduate Programs, Computer Science Study Program, Pendidikan Ganesha University, Bali, Indonesia
e-mail: ade@undiksha.ac.id [1], gindrawan@undiksha.ac.id [2], sunarya@undiksha.ac.id [3]
*Correspondence: *ade@undiksha.ac.id*

Abstract: *Information technology advancements push government agencies to utilize information systems to improve public services. Kerobokan Regional Office has utilized the Complaint Management Information System (SIPANDU) to manage citizen complaints digitally. However, a comprehensive evaluation aligning operational technical performance, organizational contribution, future readiness, and the psychological satisfaction of users has not been conducted. This study evaluates SIPANDU's overall performance and user satisfaction using the integration of the IT Balanced Scorecard (IT BSC) as a macro evaluation framework and End User Computing Satisfaction (EUCS) as a micro instrument focused on the User Orientation Perspective. This mixed-methods study involved 15 internal end users (village head, secretary, section heads, and neighborhood heads) selected through saturated sampling. EUCS measures satisfaction based on content, accuracy, format, ease of use, and timeliness. The evaluation results show SIPANDU's performance is highly satisfactory across all IT BSC perspectives with an overall score of 0.918 (91.8%). Corporate Contribution scored 0.900, User Orientation scored 0.964, Operational Excellence scored 0.892, and Future Orientation scored 0.908. User satisfaction measured by EUCS is also very high, averaging 4.82 out of 5. Despite the excellent results, the integration of IT BSC and EUCS revealed gaps primarily in operational excellence and timeliness. Priorities for improvement and the strategic roadmap developed include enhancing system reliability, optimizing server performance, and implementing real-time notification features for complaint status updates.*

Keywords: *SIPANDU, IT Balanced Scorecard, EUCS, System Performance, User Satisfaction*.

1. Introduction

The rapid development of information technology has significantly transformed various sectors, including public-service delivery. The implementation of information systems in government institutions can improve the efficiency, effectiveness, and transparency of services provided to the public[1]. This transition toward digital governance, commonly referred to as e-government, is important because it enables faster information flows and strengthens openness in public-service delivery [2]. In addition, accountability and transparency supported by information technology are essential for public institutions to establish and maintain public trust[3], [4].

One public service that requires effective information management is the handling of citizen complaints. A public complaint mechanism allows citizens to submit grievances, criticism, and recommendations concerning government services or problems within their local environment. Consequently, complaint data must be managed systematically to ensure that every report is recorded, monitored, and followed up appropriately[5]. An increasing number of complaints, combined with the absence of a formal evaluation of user satisfaction, can create an urgent need to assess the quality of services provided by local government institutions[6]. Kerobokan Urban Village has implemented the Complaint Administration Information System, known as Sistem Informasi Penatausahaan Pengaduan or SIPANDU, to record, manage, and follow up on

complaints submitted by the public. The system is expected to support administrative staff in managing complaint data more efficiently and accelerating the complaint-resolution process[7]. However, the availability of a digital system alone does not guarantee that it contributes effectively to organizational objectives or satisfies the needs of its users[8].

The success of a public-sector information system should not be assessed solely based on its technological availability or technical functionality[9], [10]. A comprehensive evaluation must consider operational performance, strategic contribution to organizational objectives, user experience, and readiness for future development. This requirement is particularly important in the public sector, where the benefits of information systems are not always directly measurable in financial terms. Therefore, an evaluation framework is required to examine system performance from multiple and balanced organizational perspectives[11].

The IT Balanced Scorecard (IT BSC) is a comprehensive method for evaluating information technology performance through four perspectives: Organizational Contribution, User Orientation, Operational Excellence, and Future Orientation. The Organizational Contribution perspective assesses the extent to which an information system supports institutional objectives and public-service policies. The User Orientation perspective evaluates how well the system meets user needs. Operational Excellence examines the reliability and efficiency of system-related processes, while Future Orientation evaluates organizational readiness, human-resource capability, and the sustainability of system development [12].

Through the IT BSC framework, the evaluation of SIPANDU can extend beyond technical system performance. It can assess whether the system contributes to administrative efficiency and complaint-management policies, whether its operational processes are stable and effective, and whether the Kerobokan Urban Village administration is prepared to maintain and develop the system in the future. Nevertheless, the User Orientation perspective requires a more detailed and empirically grounded instrument to measure the satisfaction of users who interact directly with the system. End User Computing Satisfaction (EUCS), developed by Doll and Torkzadeh, can be used to measure end-user satisfaction based on five dimensions: content, accuracy, format, ease of use, and timeliness [13]. These dimensions provide a detailed assessment of whether the information generated by a system is relevant and accurate, whether its interface is understandable, whether the system is easy to operate, and whether information is delivered within an appropriate period. User satisfaction is an important indicator of information-system success because it reflects the extent to which user expectations and operational needs are fulfilled. In digital public services, usability and responsiveness may also have a stronger influence on user perceptions than other technical factors.

Previous studies have provided important insights into the evaluation of public-sector information systems. emphasized the importance of evaluating service quality and user satisfaction, particularly when complaints increase and no formal satisfaction assessment has been conducted. However, an evaluation based primarily on satisfaction does not fully explain whether a system contributes to organizational objectives, supports efficient operational processes, or is sustainable in the long term [14]. highlighted the importance of information-flow efficiency, openness, usability, and responsiveness in digital public services. Although these factors are relevant to user experience, they do not independently provide a balanced assessment of strategic, operational, and future-oriented performance. demonstrated the importance of integrating user-oriented indicators into information-system governance evaluation. Nevertheless, the studies discussed above do not specifically explain how a detailed satisfaction instrument can be embedded within a broader performance framework to evaluate a local-government complaint-management system.

This limitation establishes the research gap addressed in the present study. EUCS provides detailed information regarding user satisfaction, but it cannot independently represent the overall performance of SIPANDU because it focuses on users' perceptions of system content,

accuracy, format, ease of use, and timeliness. Conversely, IT BSC provides a broader strategic and organizational evaluation, but its User Orientation perspective requires more specific indicators to identify particular sources of user satisfaction and dissatisfaction. Therefore, this study integrates EUCS into the User Orientation perspective of IT BSC. IT BSC serves as the primary performance-evaluation framework, while EUCS functions as a detailed measurement instrument for the user-related dimension. The integration of these methods enables the evaluation to connect micro-level user perceptions with macro-level organizational performance. The EUCS results are combined with interviews with key users, observation of complaint-management processes, and examination of available technical system data. This integration is intended not only to determine whether users are satisfied, but also to identify performance gaps, investigate their possible causes, assess their organizational consequences, and establish priorities for system improvement.

This study makes several contributions. First, it proposes an integrated evaluation framework in which EUCS is specifically incorporated into the User Orientation perspective of IT BSC. This integration provides a more comprehensive assessment than using either method independently. Second, the study connects user-satisfaction findings with organizational contribution, operational performance, and future development readiness, thereby reducing the limitations of evaluations that focus only on satisfaction categories. Third, the study produces evidence-based technical, operational, and strategic recommendations rather than merely classifying users as satisfied or dissatisfied. Fourth, it develops a phased SIPANDU improvement roadmap consisting of short-, medium-, and long-term priorities based on problem urgency, impact on public services, user needs, resource readiness, and development sustainability.

Accordingly, the expected outcome of this study is not limited to measuring the performance and satisfaction levels of SIPANDU users. The study is intended to provide Kerobokan Urban Village with a systematic basis for identifying root problems, determining improvement priorities, and directing the sustainable development of SIPANDU. The resulting recommendations and roadmap are expected to support a more efficient, responsive, transparent, and user-oriented public complaint-management process.

2. Literature Review

A. Complaint Management Information System

A complaint information system is an information technology-based system used to manage public complaints in a structured and well-documented manner. SIPANDU in the Kerobokan Regional Office was developed using the Laravel Framework. Within the SIPANDU application, there are various functional modules designed to automate administrative workflows, including complaint registration, review by authorized officials, task distribution to relevant sections, and monitoring of complaint resolution.

B.IT Balanced Scorecard

The IT Balanced Scorecard is an information technology performance evaluation framework used to align IT implementation with organizational needs and goals. The evaluation is conducted through four perspectives[15] [16]:

1. Assesses the system's benefits towards service effectiveness, administrative efficiency, documentation orderliness, coordination, reporting, and decision-making.
2. Evaluates IT performance from the viewpoint of business users (customers/users). This perspective focuses heavily on user satisfaction.
3. Assesses reliability, availability, speed, security, business process suitability, and internal operational system disruption handling.

4. Assesses human resource readiness, training, maintenance, feature development, scalability, and future system integration [17].

C. End User Computing Satisfaction

EUCS is an overall evaluation from information system users based on their experience operating the system. This method measures satisfaction based on five dimensions[18] :

1. Measures user satisfaction regarding the completeness, relevance, and benefits of the information produced by the system.
2. Evaluates user satisfaction regarding data accuracy when the system processes inputs into output information without errors.
3. Measures user satisfaction concerning the display layout, system interface aesthetics, and information readability.
4. Assesses user satisfaction regarding how easily the system can be learned (user-friendly) and operate.
5. Measures user satisfaction regarding the system's speed in presenting information and data in real-time[19], [20].

3. Methods

The research consists of several stages, as illustrated in the research flowchart shown in Figure 1.

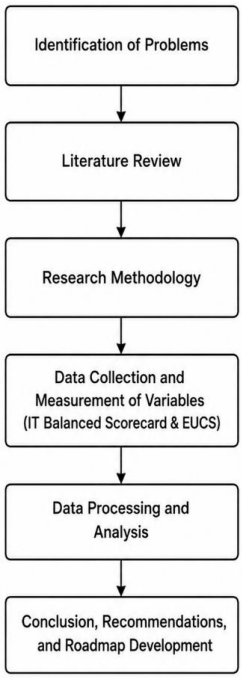

Figure 1. Research flowchart

A. Research Design

This study employed a descriptive-evaluative mixed-method design with a quantitative emphasis to assess the performance and user satisfaction of the Complaint Administration Information System SIPANDU. Quantitative data were obtained through questionnaires, while interviews, observations, document reviews, and available technical system data were used to explain and confirm the quantitative findings.

Table 1. Research Design

Component	Description
Research approach	Descriptive-evaluative mixed method

Research object	SIPANDU at Kerobokan Urban Village
Main evaluation framework	IT Balanced Scorecard
User satisfaction instrument	End User Computing Satisfaction
Quantitative data	Questionnaire responses
Supporting qualitative data	Interviews, observations, and document review
Main output	Performance assessment, user satisfaction, improvement priorities, and development roadmap

The evaluation was conducted because SIPANDU had not previously been formally assessed in terms of system performance and user satisfaction across the dimensions of content, accuracy, format, ease of use, and timeliness.

B. Research Location

The study was conducted at the Kerobokan Urban Village Office, North Kuta District, Badung Regency, Bali, Indonesia. The institution uses SIPANDU to support the registration, verification, disposition, follow-up, status updating, monitoring, and reporting of public complaints.

C. Population and Sample

The population consisted of all active internal SIPANDU users who directly operated the system. The total population was 15 users, comprising ten neighborhood heads, three section heads, one urban village secretary, and one urban village head.

Table 2. Respondent Composition

No.	Position	Number of Respondents	Main Role in SIPANDU
1	Neighborhood head	10	Recording and monitoring complaints
2	Section head	3	Following up complaints and updating their status
3	Urban village secretary	1	Examining and verifying complaints
4	Urban village head	1	Providing dispositions and monitoring complaint handling
Total		15	

The inclusion criteria required respondents to have an active SIPANDU account, use the system directly, participate in at least one stage of complaint administration, and have experience operating the system. Qualitative informants were selected purposively based on their responsibilities, knowledge, and involvement in SIPANDU management.

D. IT Balanced Scorecard

IT BSC evaluated SIPANDU through four perspectives: Organizational Contribution, User Orientation, Operational Excellence, and Future Orientation. EUCS was specifically incorporated into the User Orientation perspective.

Table 3. IT BSC Perspectives for SIPANDU Evaluation

Perspective	Evaluation Focus
Organizational Contribution	The contribution of SIPANDU to administrative effectiveness, service quality, and organizational objectives
User Orientation	Users' satisfaction with the information and functionality provided by SIPANDU

Operational Excellence	System reliability, processing speed, operational effectiveness, and complaint-management quality
Future Orientation	Human-resource capability, system development, maintenance readiness, and adaptation to technological changes

E. End User Computing Satisfaction

EUCS was used to measure user satisfaction through five dimensions:

Dimension	Evaluation Focus
Content	Relevance, completeness, and suitability of the information
Accuracy	Correctness and consistency of the information produced
Format	Clarity and suitability of the interface and information presentation
Ease of Use	Simplicity and convenience of operating the system
Timeliness	Speed and timeliness of information availability and status updates

The questionnaire used a five-point Likert scale.

Table 4. Likert Scale

Response	Abbreviation	Score
Strongly agree	SA	5
Agree	A	4
Neutral	N	3
Disagree	D	2
Strongly disagree	SD	1

F. Data Collection

Data collection was conducted using the following techniques:

1. Questionnaire: distributed to all 15 internal SIPANDU users to measure IT BSC performance and EUCS satisfaction.
2. Interviews: conducted with key users and system managers to identify operational problems, organizational impacts, and system-development needs.
3. Observation: used to examine the actual complaint-management process and interaction between users and SIPANDU.
4. Document and technical-data review: used to examine complaint records, system procedures, available reports, operational disruptions, and other supporting evidence.
5. Literature review: used to establish the theoretical basis for IT BSC, EUCS, information-system performance, and user satisfaction.

G. Validity Test

Questionnaire-item validity was evaluated using the Pearson Product-Moment correlation [21]:

$$r_{xy} = \frac{N\sum XY - (\sum X)(\sum Y)}{\sqrt{[N\sum X^2 - (\sum X)^2][N\sum Y^2 - (\sum Y)^2]}}$$

where:

- r_{xy} = item-total correlation coefficient;
- N = number of respondents;

- X = score of an individual item; and
- Y = total score of all items.

An item was considered valid when $r_{\text{calculated}} \geq r_{\text{table}}$ a at a significance level of $\alpha = 0.05$

H. Reliability Test

Instrument reliability was assessed using Cronbach's Alpha:

$$\alpha = \frac{k}{k-1}\left(1 - \frac{\sum_{i=1}^{k}\sigma_i^2}{\sigma_T^2}\right)$$

where:

- α = Cronbach's Alpha coefficient
- k = number of questionnaire items
- σ_i^2 = variance of each item
- σ_T^2 = variance of the total score.

The questionnaire was considered reliable when the Cronbach's Alpha value exceeded 0.60. The validity and reliability procedures followed the instrument-testing stages described in the research design.

Data Analysis

I. Mean Score Calculation

The mean score for each indicator or dimension was calculated using [22]:

$$\overline{X_d} = \frac{\sum_{i=1}^{n}\sum_{j=1}^{m_d} X_{ijd}}{n \times m_d}$$

where:

- $\overline{X_d}$= mean score of dimension d;
- X_{ijd} = response score of respondent i for item j;
- n = number of respondents; and
- m_d = number of items in dimension d.

The width of each interpretation interval was determined as follows:

$$I = \frac{S_{max} - S_{min}}{K} = \frac{5-1}{5} = 0.80$$

I is the interval width and K is the number of interpretation categories.

Table 5. Interpretation of Mean Scores

Mean-Score Range	Interpretation
1.00–1.80	Very dissatisfied
1.81–2.60	Dissatisfied
2.61–3.40	Neutral
3.41–4.20	Satisfied
4.21–5.00	Very satisfied

J. IT BSC Performance Index

The achievement percentage for each IT BSC perspective was calculated by comparing the observed mean score with the maximum score:

$$A_p = \frac{\overline{X_p}}{5} \times 100\%$$

where:

- A_p = achievement percentage of perspective p; and
- $\overline{X_p}$ = mean score of perspective p.

When different strategic weights were assigned, the weighted score was calculated as:

$$S_p = A_p \times w_p$$

The overall performance index was calculated using:

$$PI = \sum_{p=1}^{4} A_p w_p$$

with:

$$\sum_{p=1}^{4} w_p = 1p = 1$$

where w_p represents the weight assigned to each IT BSC perspective. Perspective weights were determined according to their organizational contribution and strategic priority.

G. Performance-Gap Analysis

Gap analysis was performed at both the dimension and individual-item levels. The performance gap was calculated as:

$$G_i = E_i - P_i$$

where:

- G_i = performance gap of indicator iii;
- E_i = expected performance score; and
- P_i = actual performance score.

A larger positive gap indicated a greater need for improvement. Item-level analysis was used because a dimension could obtain a generally satisfactory score while still containing specific indicators with low performance. The questionnaire results were subsequently confirmed through interviews, observation, and technical-data review. This process was used to distinguish whether a problem originated from the application, user error, network limitations, inadequate procedures, or insufficient training.

F. Improvement-Priority Analysis

Improvement priorities were determined by synthesizing EUCS results, IT BSC findings, interview data, observations, and technical evidence.

Table 6. Improvement-Priority Criteria

Criterion	Description
Performance gap	Difference between actual and expected performance
Urgency	Need to resolve the problem immediately
Service impact	Effect on the speed and quality of complaint handling
Frequency	Frequency with which the problem occurs
User coverage	Number or groups of users affected
Implementation feasibility	Availability of resources, time, costs, and technology
Strategic impact	Contribution of the improvement to organizational objectives

The identified problems were classified into high, medium, and low priorities. High-priority problems were those that occurred frequently, generated substantial performance gaps, and directly affected public-service delivery.

3. Results and Discussion

A. SIPANDU Improvement Priorities and Development Roadmap

The improvement priorities for SIPANDU were determined by integrating the results of the End User Computing Satisfaction (EUCS) assessment, IT Balanced Scorecard evaluation, business-process analysis, interviews with key users, and technical system observations. This approach ensured that the recommendations were not based solely on user satisfaction but also considered operational performance, organizational needs, human-resource readiness, and system sustainability[23], [24].

Overall, SIPANDU achieved an average user-satisfaction score of 4.82, equivalent to 96.31%, and was classified as very satisfactory. Meanwhile, the IT Balanced Scorecard evaluation produced a final score of 0.918 or 91.8%, indicating very good performance. Despite these positive results, several indicators with relatively lower scores were identified as improvement opportunities for enhancing service quality and system sustainability.

B.I dentification of SIPANDU Problems and Development Needs

The identification process was conducted by comparing the results of each EUCS dimension, the IT Balanced Scorecard perspectives, existing business processes, user requirements, and the technical condition of the system. The identified problems and development needs are presented in Table 7.

Table 7. Identification of SIPANDU Problems and Development Needs

Data Source	Research Finding	Impact Analysis	Development Need
EUC-Accuracy	Accuracy obtained an average score of 4.77, the lowest among the EUCS dimensions	Information accuracy was considered very good, but data validation and information consistency could still be improved to reduce input and interpretation errors	Automatic data validation, input-completeness checking, and stronger data-integrity mechanisms
EUCS-Timeliness	Timeliness obtained an average score of 4.80	Information was available promptly, but users still needed to access the system manually to obtain complaint-status updates	Automatic notifications and real-time complaint-status tracking
IT BSC-Operational Excellence	Operational Excellence obtained an average score of 4.46 and an achievement value of 0.892, the lowest among the IT BSC perspectives	Operational processes were effective, but system reliability, workflow efficiency, and service speed could still be improved	System-performance optimization, operational monitoring, and simplification of digital-service workflows
IT BSC-Future Orientation	Future Orientation obtained an average score of 4.54 and an achievement value of 0.908	The organization demonstrated good development readiness, although administrator competence and technological innovation	Regular training, administrator-capacity development, and feature development based on user needs

		must be continuously strengthened	
Business-process analysis	Several service stages still required manual verification	Manual procedures may extend complaint-processing time and increase administrative workload	End-to-end digital workflows and automation of feasible verification processes
Key-user interviews	Users required a more informative monitoring dashboard and easier-to-understand reports	Existing monitoring information did not yet fully support managerial evaluation and decision-making	Analytical dashboards, data visualization, graphical reports, and complaint-progress summaries
Technical observation	The system operated relatively well, but lacked automatic notifications, integrated performance monitoring, and comprehensive backup mechanisms	Limited supporting features may affect service responsiveness and operational continuity during system disruptions	Automatic notifications, server monitoring, scheduled backups, and stronger system security

The results indicate that the identified issues did not represent fundamental system failures. Instead, they reflected opportunities to optimize system quality and service effectiveness. Accuracy received the lowest EUCS score, although it remained within the very satisfactory category. Therefore, the required improvement is focused on automatic validation and data-quality control rather than a complete redesign of the system.

C. Determination of SIPANDU Improvement Priorities

Improvement priorities were determined based on urgency, impact on public-service quality, frequency of occurrence, number of affected users, and implementation feasibility. The resulting priorities are presented in Table 8.

Table 8. SIPANDU Improvement Priorities

No.	Improvement Area	Basis of Finding	Priority Level	Rationale
1	Improvement of system reliability and performance	IT BSC-Operational Excellence and technical observations	Very high	Directly affects system stability, service speed, and operational quality
2	Development of real-time complaint-status notifications	EUCS-Timeliness, interviews, and technical observations	Very high	Accelerates information delivery and improves service responsiveness
3	Strengthening data validation and information accuracy	EUCS-Accuracy	High	Reduces input errors and improves the reliability of system-generated information
4	Development of monitoring dashboards and analytical reports	Key-user interviews and business-process analysis	High	Supports complaint monitoring, evaluation, and managerial decision-making
5	Digitalization of the service-verification process	Business-process analysis	High	Reduces manual activities and improves service-processing efficiency

6	Training and competence development for administrators	IT BSC-Future Orientation	Medium	Supports sustainable system management and optimal system utilization
7	Strengthening system security and backup mechanisms	Technical observations	Medium	Protects data and ensures operational continuity
8	Development of new features based on user and organizational needs	Interviews and Future Orientation	Long-term	Enables the system to adapt to technological developments and changing organizational needs

The highest priorities are improving system reliability and developing real-time notifications. Both directly influence the quality of public services and the operational effectiveness of SIPANDU. System reliability includes application stability, access speed, processing consistency, and the ability to minimize service disruption.

Real-time notifications are also a very high priority because they allow users to receive complaint-status updates proactively. This feature can reduce delays caused by manual system checking and improve coordination among the units responsible for handling complaints.

High-priority improvements include data validation, analytical dashboards, and digital verification. Data-validation mechanisms are needed to strengthen information consistency and reduce input errors. Monitoring dashboards and analytical reports can provide management with more comprehensive information regarding complaint volumes, status distributions, processing times, and unresolved cases. Digital verification can reduce administrative workload and shorten the complaint-handling cycle[25], [26].

Medium-priority improvements focus on system sustainability. Administrator training is necessary to ensure that system operators possess adequate technical and operational competencies. Security and backup improvements are also required to protect complaint data and maintain service continuity. These priorities were derived from the integrated EUCS, IT Balanced Scorecard, interview, business-process, and technical findings.

D. SIPANDU Development Roadmap

The SIPANDU development roadmap was divided into short-term, medium-term, and long-term stages. This division considered the urgency of each problem, implementation complexity, organizational readiness, resource availability, and expected impact on public-service quality.

Table 9. SIPANDU Development Roadmap

Period	Development Focus	Main Programs	Expected Outcomes
Short term, 0–6 months	System stability and operational improvement	System-performance optimization, server-stability improvement, automatic data validation, security strengthening, scheduled backup, standard operating procedure improvement, and operator training	A more stable system, more accurate data, improved security, and more consistent service processes
Medium term, 6–12 months	Functional enhancement and business-process efficiency	Real-time notifications, monitoring dashboards, analytical reports, digital verification, automated reporting, and improved data integration	Faster information delivery, more effective monitoring, reduced manual processes, and better decision support

Long term, more than 12 months	Integration and digital transformation	Mobile application development, API integration, complaint analytics, interoperability with regional-government systems, and decision-support technologies	SIPANDU becomes part of an integrated Smart Government ecosystem

The short-term stage should focus on improvements that directly affect daily operations. System optimization, data validation, security strengthening, and backup mechanisms are required to establish a reliable foundation for subsequent development. Standard operating procedures and user training should also be improved to ensure that the application is operated consistently.

The medium-term stage should focus on expanding system functionality and improving business-process efficiency. Real-time notifications, monitoring dashboards, and analytical reports can improve the quality and speed of information received by users. Digital verification and automated reporting can also reduce repetitive manual activities and provide better documentation of complaint-handling processes.

The long-term stage should transform SIPANDU into a more integrated and adaptive public-service platform. Mobile application development can improve accessibility, while API integration can support data exchange with other regional-government information systems. Complaint analytics may also assist decision-makers in identifying complaint patterns, recurring public-service issues, response-time trends, and areas requiring policy intervention.

Accordingly, the roadmap directs SIPANDU development from operational stabilization toward functional integration and strategic digital transformation. Under this roadmap, SIPANDU is expected to evolve beyond an administrative complaint-recording application and become part of a transparent, responsive, data-driven, and sustainable Smart Government ecosystem.

4. Conclusions

The evaluation of the SIPANDU at Kerobokan Urban Village using the IT Balanced Scorecard and End EUCS demonstrates that the system performs very well and has been positively accepted by its users. The IT Balanced Scorecard evaluation produced an overall performance score of 0.918, equivalent to 91.8% of the maximum target. The Corporate Contribution perspective obtained an average score of 4.50, indicating that SIPANDU contributes positively to improving the effectiveness of public complaint services and supporting organizational objectives. Operational Excellence achieved an average score of 4.46, showing that system operations are effective, although process efficiency and system reliability can still be improved. Future Orientation obtained an average score of 4.54, indicating that the organization is well prepared to develop SIPANDU through human-resource capacity building, feature enhancement, and adaptation to technological developments. From the user perspective, the EUCS evaluation produced an overall average score of 4.82 or 96.31%, which falls within the very satisfied category. All EUCS dimensions were rated very satisfactory, comprising Content at 4.82, Accuracy at 4.77, Format at 4.82, Ease of Use at 4.87, and Timeliness at 4.80. These results confirm that SIPANDU provides relevant and accurate information, presents an understandable interface, is easy to operate, and delivers information promptly. Nevertheless, data accuracy and proactive information delivery remain areas for continuous improvement.

The study also developed improvement priorities and a SIPANDU development roadmap by integrating the results of EUCS, the IT Balanced Scorecard, business-process analysis, interviews with key users, and technical system observations. The main priorities include improving system reliability and performance, developing real-time notifications, strengthening data-validation mechanisms, digitalizing service processes, developing monitoring dashboards, improving administrator competence, and strengthening security and data-backup mechanisms. These priorities were organized into short-, medium-, and long-term

development stages to provide a structured and sustainable direction for system improvement. In addition, the study produced a Multi-Evaluation-Based SIPANDU Development Integration Model that combines quantitative and qualitative evaluation findings as a basis for decision-making. This model constitutes the main contribution of the study because it provides a more comprehensive system-evaluation approach than the separate application of a single evaluation method.

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