



Budget Resource Monitoring System For Cagayan State University – Aparri Campus, Philippines

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ABSTRACT

This study developed and evaluated a budget resource monitoring system tailored for the budget management needs of Cagayan State University – Aparri Campus. Focused on automating the monitoring of fund allocations and utilization. Using a descriptive-analytical developmental research design, the study applied Agile methodology for development and ISO 25010:2011 standards alongside the Technology Acceptance Model (TAM) for evaluation. Nine budget officers and ten IT experts participated via purposive sampling. Data were collected through semi-structured interview, document reviews, and system assessments.

The Evaluations indicated high compliance with ISO standards with overall weighted mean of 3.46 and strong user acceptance regarding usefulness and ease of use with overall mean of 3.91. The CSU-Aparri is recommended to support its implementation and expansion, with further studies suggested to include more budget functions across all CSU campuses.

Keywords: *Budget Monitoring, System Development, ISO 25010, Technology Acceptance Model, CSU-Aparri.*

I. INTRODUCTION

Budgeting is a critical tool for financial planning and management, enabling individuals, organizations, and governments to allocate resources effectively. In education,

budgeting supports financial independence, strategic resource allocation, and institutional efficiency (Feicher, 2022). As Prakoso and Apriliani (2022) noted, budgeting helps manage income, monitor cash flow, and reduce unnecessary spending. It also plays a vital role in advancing Sustainable Development Goal 8 (Decent Work and Economic Growth) by promoting transparent and efficient financial operations.

The Budget Office at CSU-Aparri oversees multiple funding sources—Fund 101 (Regular Agency Fund), Fund 164 (Internally Generated Fund), Fund 161 (Income-Generating Projects), and Fund 184 (Research and Mangrove Projects)—ensuring compliance with ISO 9001:2011 standards and supporting strategic goals.

Despite the office's commitment to quality management, its reliance on manual processes using Microsoft Excel poses significant challenges. Budget entries, balance calculations, and report generation are done manually, increasing the risk of errors, data inconsistency, and delayed access to financial information. These inefficiencies contribute to underutilized budgets, overspending by some units, and heavier workloads for budget officers, ultimately affecting institutional performance.

Objectives of the Study

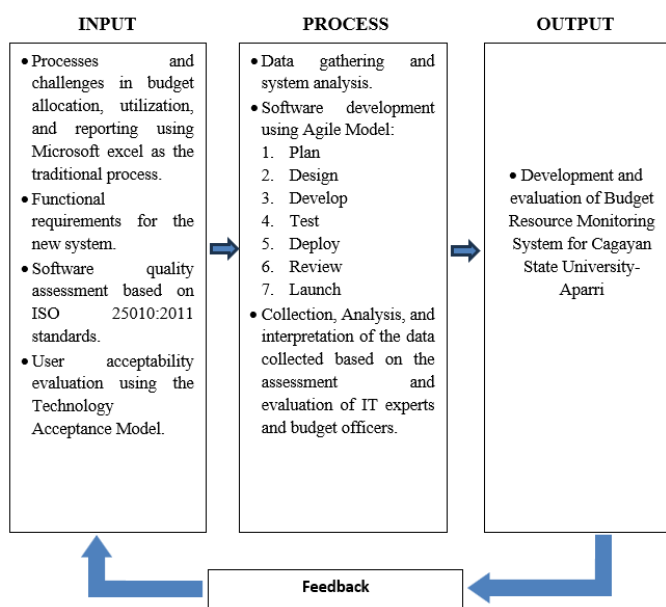
This study aims to develop a Budget Resource Monitoring System for CSU-Aparri. It sought to analyze the challenges with the

existing manual process and to develop a new system that addressed the needs of the stakeholders and improved the Cagayan State University - Aparri's budget allocation, utilization and reporting capabilities

Conceptual Framework of the Study

This study was guided by the Diffusion of Innovation Theory, Technology Acceptance Model (TAM), Digital Transformation Framework, and Agile Methodology to develop and evaluate the Budget Resource Monitoring System (BRMS) for CSU-Aparri. It aligned with legal standards from the Government Accounting Manual (GAM) and Republic Act No. 9184 to ensure compliance in public financial management. The Input-Process-Output (IPO) model structured the research, from identifying system limitations to developing and refining the BRMS. System quality was assessed using ISO/IEC 25010:2011, while user acceptability was measured through TAM, ensuring the system's usability and acceptability.

Figure 1. Input Process Output diagram



SIGNIFICANCE OF THE STUDY

The development of the system was useful for the following:

The study has equipped the Cagayan State University -Aparri Campus with a system for budget monitoring and improved reporting processes.

The system provided the Budget Office a way to digitally monitor the daily budgetary allocations and utilizations as well as to store financial data and generate financial reports.

The system provided a reference for educational institutions which seeks to enhance their budget monitoring and management processes.

The study offered a valuable research opportunity for the researcher to gain a deeper understanding of the campus's procedures, examine budgeting procedures within the campus and apply the system development methodologies.

The system served as a reference for future researchers and developers in designing related budget monitoring systems and improving technology-based solutions in the related field of study.

SCOPE AND LIMITATIONS

This study focused on developing a Budget Resource Monitoring System for Cagayan State University – Aparri Campus, intended for use by the campus budget officer. Conducted during the second semester of A.Y. 2024–2025). The system was designed to support budget officers in tasks such as obligation entry, budget allocation and utilization monitoring, and report generation while ensuring data integrity. It excludes complex accounting, procurement functions, and integration with other financial systems. Budget monitoring relies on manual data entry, and the system's full implementation depends on the University's policies and regulations.

II. METHODOLOGY

This study utilized both Descriptive-Analytical Research Design and Developmental Approach to explore the challenges related to the usage of manual system for budget monitoring and related tasks of the budget officer of Cagayan State University -Aparri Campus and develop an IT system solution that meets the campus's needs. The study conducted a semi-structured interview to determine the practices, challenges, and functional requirements of the system, and to give the opportunity to the budget officer to justify and go more in-depth with his answers and point of view (Saunders, Lewis and Thornhill, 2019). This study specifically focused on the financial sector of the campus, specifically budget office due to the type of system needed and that the selected user is the individual responsible for the approval of the budgetary requests and related financial activities.

As for the developmental approach, Agile model under the Software Development Lifecycle framework (SDLC) was used for the system development.

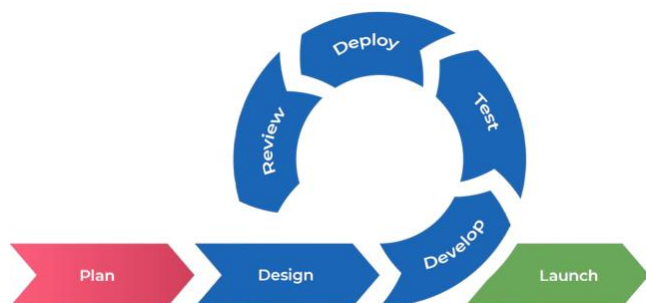


Figure 2. Agile model for system development

III. Summary of Findings

The assessment of the developed Budget Resource Monitoring System, based on ISO 25010:2011, showed a high level of compliance

across eight quality characteristics, with an overall weighted mean of 3.46. Functional Suitability received the highest mean (3.57), confirming the system's effectiveness in delivering relevant and accurate information.

Table 1. Assessment of the IT experts based on ISO 25010"2011 software quality standards

ISO Characteristics	Mean	Descriptive Value
Functional Suitability	3.57	High Extent
Performance Stability	3.43	High Extent
Compatibility	3.43	High Extent
Usability	3.43	High Extent
Reliability	3.47	High Extent
Security	3.43	High Extent
Maintainability	3.43	High Extent
Portability	3.5	High Extent
Overall Weighted Mean	3.46	High Extent

Table 2. ISO 25010 Software Quality Evaluation (IT Experts)

Table 2 presents the user acceptance of the developed BRM system using the Technology Acceptance Model, focusing on perceived usefulness, ease of use, and adoption intention.

TAM Characteristics	Mean	Descriptive Value
Performance Expectancy	3.78	Agree
Effort Expectancy	4.04	Agree
Social Influence	3.70	Agree

The overall weighted mean of 3.91 indicates a positive user perception of the system's relevance and functionality. "Perceived Usefulness" scored highest at 4.33, showing that users find the system efficient and time-saving for budget monitoring tasks. However, "Behavioral Intention" received the lowest mean (3.56), suggesting some hesitation in fully integrating the system into regular use despite overall agreement.

Facilitating Conditions	3.74	Agree
Behavioral Intention	3.56	Agree
Perceived Ease of Use	3.94	Agree
Perceived Usefulness	4.33	Strongly Agree
Self-Efficacy	4.00	Agree
Response Efficacy	4.17	Agree
Adoption Intentions	3.83	Agree
Overall weighted mean	3.91	Agree

IV. Conclusion

Supported by the findings of the study, the Budget Resource Monitoring System is concluded to be a functionally suitable and a useful IT solution for Cagayan State University – Aparri, specifically for the budget officer as it will help them in recording and monitoring budgets which supports long-term usefulness by providing easy access and retrieving past records, better budget data management, and sustained data integrity. The study also presents a path for continuous improvement, particularly in enhancing user interface design, integrating additional budgetary functions, facilitating integration with other accounting systems connected to the budget monitoring system, ensuring consistent user adoption through support, and develop policies and

regulations that can support its effective implementation.

V. Recommendations

In light of the findings and conclusions of this study, the following recommendations are proposed to enhance the effectiveness, usability, and long-term adoption of the Budget Resource Monitoring (BRM) System at Cagayan State University – Aparri:

1. It is recommended for the Cagayan State University to ensure long-term adoption and consistent system use, user training, system integration support, and institutional commitment, and possibly develop policies and regulations that can support its effective implementation.
2. The budget officers should use the system frequently when implemented to familiarize themselves with its functionalities and ensure its effective utilization.
3. It is recommended that further studies be conducted to address shared budgetary challenges and incorporate more budget-related tasks into the system.
4. For future researchers, it is recommended to accommodate all budget-related tasks such as but not limited to automated real-time utilization reports, and multi-departmental data integration to facilitate easier data access and sharing as this supports a centralized budget management process.

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