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Project DISVURS: Disbursement Information System for Voucher Utilization, Recording and Safekeeping for the Accounting Department of Isabela State University – Cauayan Campus

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ABSTRACT

This research study focuses on the design and development of a web-based Disbursement Voucher System tailored for the Accounting Department of Isabela State University – Cauayan Campus. The project was initiated in response to the identified limitations of the department's current manual processes, which rely primarily on Microsoft Excel for managing financial transactions. While Excel is widely used due to its accessibility and affordability, it lacks the robustness required for handling large-scale data operations, secure access control, and streamlined reporting functionalities. To address these gaps, the researchers employed a systems development research design using the Systems Development Life Cycle (SDLC) framework. A mixed-method approach was utilized to gather data through interviews, observations, and survey questionnaires. The system was then evaluated based on four quality attributes—accuracy, functionality, efficiency, and security—guided by the ISO/IEC 25010 standard. Findings revealed that the developed system significantly enhanced the disbursement workflow by automating voucher recording, monitoring, and reporting processes. The evaluation results indicated a high level of user satisfaction, with the system receiving a composite mean score of 4.10, signifying that it effectively met the users' operational needs. The study concludes that the implementation of the web-based system contributes to improved data accuracy, operational efficiency, and system security within the accounting office. Furthermore, it serves as a foundational step toward the university's broader goal of digital transformation and improved governance in financial management.

Keywords *– Accuracy, Disbursement Voucher, Efficiency, Functionality, Security, Web-based system*

Introduction

Information system integration has become the driveway of competitiveness between different industries. Technology and various fields have transformed operations into a more systematic and organized workflow. Also, integrating information systems, especially in the accounting industry, fosters an efficient and interconnected system, allowing a cycle of operational workflow and using its tools, such as data entry to reporting, results in faster communication and objective decision-making processes. As a result of the integration, the Accounting Information System was born. This specialized system provides various tools such as an overview of financial transactions, managing

financial data, and processing financial information for decision-making.

According to Burgos and Namoc (2012), implementing an accounting information system enhances the productivity of an accounting department. At present, the accounting department of Isabela State University utilizes MS Excel as an accounting information system tool for disbursement voucher management. However, despite MS Excel's efficiency in the everyday operation of a business, its limitations when handling large datasets became evident. Also, the capacity to ensure efficient financial transaction management poses significant challenges. As Lee et al. (2018) noted, MS Excel was developed for calculation, lookup functions, and graphical representations of data. However, those features may not fully meet the demand for a comprehensive accounting operation (Lee et al., 2018). Furthermore, Lee et al. (2018) also found that the accounting profession's most essential tool is MS Excel; however, the study also found that the availability of complex tools remained limited. The study further solidified the findings that MS Excel only focuses on the applicability of public accounting but offers minimal benefits to other areas, thereby denoting adopting a more specialized software solution.

Accounting software nowadays offers more complex functions and features than MS Excel. For instance, QuickBooks, an accounting software commonly used by small and medium enterprises (SMEs), is designed to function similarly to MS Excel regarding recording. However, given the complex functions besides recording, QuickBooks is generally more expensive, while MS Excel is more cost-effective for small businesses. Dmytrenko et al. (2020) found that QuickBooks is the most popular software for small and medium enterprises, showing automation is the most sought-after feature. Automation improves efficiency, but it does not include certain critical functions. These functions include verification and approval. Dmytrenko et al. (2020) further noted that the software is not within full range and may not cater to specific needs.

Dmytrenko et al. (2020) also found that SMEs subscribe only to free versions with limited functions compared to pro versions since they cost a lot. These findings strengthen the specific idea of developing an improved system. Such a system applies to SMEs and institutions such as Isabela State University.

Looking through the concept of disbursement systems, according to Contreras (2007), a disbursement system includes preparing and processing disbursement vouchers (DV); issuing checks; making cash payments; granting, using, and liquidating cash advances; and replenishing these advances. Similarly, Aflina (2022) defines cash disbursement as a transaction process that decreases cash balances or bank accounts, covering cash payments, salaries, transfers, or other expenses.

Furthermore, Pramestri and Putri (2023) describe cash disbursements as records detailing various payment activities associated with purchasing or paying for goods and services, whether made by check or cash. Moreover, Nurchasannah and Ramayamti (2024) identify two primary accounting systems for processing cash disbursements: one that uses checks and another that utilizes a petty cash fund for cash payments. A well-organized cash disbursement system can help support a company's objectives. For smaller transactions that cannot be processed by check, payments are made through a petty cash fund, which operates under either a fluctuating balance system or an imprest system (Lasmana et. Al., 2022).

Moreover, a cash disbursement transaction means it decreases a company's cash and bank balances due to expenditures such as purchases, debt repayments, transaction fees, employee wages, and other activities that reduce cash. (Sari, 2022). Wulaningrum, et. Al. (2023) believe that the effective implementation of cash disbursement procedures is essential to prevent the misuse of funds. Consequently, an appropriate system for monitoring these procedures is necessary, as cash expenditures are unavoidable in an organization's daily operations. Cash is a crucial financial asset in financial statements, requiring careful management and control to prevent misuse. Given that cash is central to most transactions and is the only asset exchangeable for all other asset types, rigorous oversight of cash disbursements within a company is critical. All activities related to cash disbursement must be carried out properly so that they can be accounted for (Nurchasannah & Ramayamti, 2024).

In addition, a cash disbursement system ensures that payments are made only to legitimate

creditors and that the amounts are accurate. Key controls in the cash disbursement process include using a voucher system to authorize check withdrawals and maintaining a separation between payment approval functions and bank reconciliation (Ramadiyansari and Sasongko, 2020).

Given these gaps between the information system and accounting integration as well as a focus on the disbursement systems in the university setting, neither MS Excel nor accounting software such as QuickBooks has efficiently catered to the needs of each business organization and, in this case, the university's accounting department. Since every financial transaction, such as disbursements, needs efficient and secure data handling and recording, the university must have a better system that supports its operation. Through the development of a specific system tailored for disbursement voucher management, the university's accounting operation may significantly improve to save time and resources.

Methods

This research followed a systems development approach, utilizing a mixed-method methodology combining qualitative methods, such as interviews and discussions, with quantitative methods like performance testing and user satisfaction surveys. The development process was structured through the Systems Development Life Cycle (SDLC) to ensure an iterative and systematic approach. This mixed-method approach aimed to address both technical and practical challenges of disbursement management in the university setting.

The participants involved in the study were the staff of the Accounting Department, including the head accountant and accounting aide responsible for managing disbursement vouchers, as well as the MIS staff who handled the technical aspects of the system. Data collection was done primarily through face-to-face interviews using semi-structured questionnaires, complemented by survey questionnaires validated by the research adviser and IT professional. These instruments assessed various system performance metrics, such as accuracy, functionality, efficiency, and security, aligned with ISO 25010 standards.

The system development methodology followed the Waterfall model, which was deemed appropriate for this project due to its structured and sequential flow. The phases included requirements gathering, system design, development, testing, and deployment. In the first phase, interviews were conducted to understand the existing disbursement process, which informed the system design in the second phase. During development, the design specifications were translated into a functional system, followed by rigorous testing to ensure it met the requirements.

The testing phase focused on unit testing, performance testing, security testing, and user acceptance testing to ensure the system's reliability, efficiency, and security. The results from the testing phases were analyzed, with feedback from end-users incorporated to improve the system. After successful testing, the system was deployed for pilot use, where it was evaluated for real-world functionality and user satisfaction. Feedback gathered during this phase was used to refine and optimize the system.

System Architecture

Fig 1. System Architecture

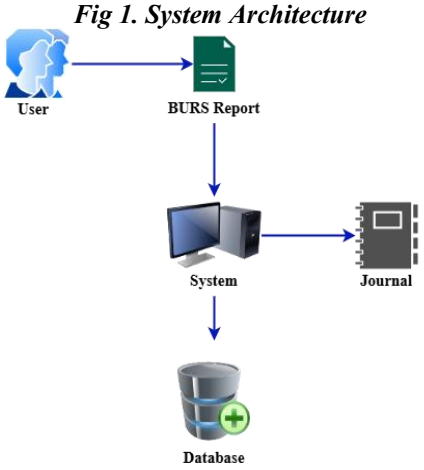

Fig 1 shows the basic architectural flow of the system. The system follows this design in the development of the system itself. The end user has the BURS Report coming from the budget office indicating utilization of the budget. Through the BURS report, the end user can create the voucher through the system using dedicated data entry forms. Then, upon saving the record in the system, the system stores it in the database for easy tracking, monitoring and storing records for reporting purposes. And when the disbursement voucher is approved and already issued by checks,

then the records are now ready for reporting. Using this design, the department is ensured of efficient and reliable disbursement voucher management.

Results and Discussions

Table 1. Profile of the Respondents

Position/Role	*Frequency*
Accountant	1
Accounting Aide	3
Technical Support	1
Total	5

Table 1 summarizes the respondent's assigned roles in the disbursement voucher system. One of the five is the accountant who served as admin head of the system. The three users are composed of the accounting aide or those in the accounting office who are experienced in managing disbursement vouchers. One is assigned to manage the technical aspects of the system from the Management Information System office. The respondents have the highest number of roles, accounting aides and accountants, which means that the insights and experiences of the accounting office heavily influence the majority of the results gathered.

Table 2. Category Mean and Descriptive Interpretation of the experiences of end users to the developed web-based Disbursement Voucher System in terms of Accuracy.

	Statement	*Mean*	*Descriptive Interpretation*
1.	The data recorded in the system is free from errors.	4.20	Strongly Agree
2.	Confident in the accuracy of the financial records maintained using the system	3.80	Agree
3.	Verifying the accuracy of recorded transactions in the system is straightforward.	4.20	Strongly Agree
4.	Errors recorded in the system are rare.	4.00	Agree
5.	Reports created in the system are accurate and reliable.	4.20	Strongly Agree
	Category Mean	4.08	Agree

Table 2 presents the mean values and descriptive interpretations of the end users' experiences with the developed system in terms of accuracy. The findings revealed that the end users found the data recorded in the system to be error-free (4.20). Also, the end users find the accuracy of the recorded transactions accurate and straightforward (4.20). Regarding report generation, the end users strongly agreed (4.20) that the reports are reliable and accurate. Furthermore, they also find minimal to rare errors during the usage of the system (4.00). Meanwhile, there is a slight concern regarding the end user's confidence in the financial records maintained in the system (3.80). Overall, the computed category mean of 4.08 signifies that the system is perceived as accurate and reliable.

Concerning the findings, Kimani (2024) found that the accuracy of accounting information systems significantly impacts the accuracy of financial data. The study concluded that functions like reducing errors, data integrity, and audits positively impact the accuracy of financial data. In comparison, the system received a satisfactory mean score, where an emphasis on data accuracy and error minimization is practical, as perceived by the end users.

Table 3. Category Mean and Descriptive Interpretation of the experiences of end users to the developed web-based Disbursement Voucher System in terms of Functionality.

Statement	*Mean*	*Descriptive Interpretation*
1. Recording in the system supports all necessary functions for disbursement voucher monitoring.	4.20	Strongly Agree
2. The tools available in the system are sufficient for daily recording and monitoring tasks.	4.00	Agree
3. The system allows for smooth organization of data for reports.	4.00	Agree
4. Can create and customize reports easily using the system.	3.60	Agree
5. The system supports all the operations needed for tracking disbursement vouchers.	3.80	Agree
Category Mean	3.92	Agree

Table 3 presents the mean values of the end users' evaluation of the web-based disbursement voucher system in terms of functionality. The table revealed that the end users find the transaction recording necessary for disbursement voucher monitoring, as evidenced by the mean score of 4.20. The end users also agree (4.00) that the data entry and monitoring tools are sufficient. In addition, the system allowed smooth data organization as perceived by the end users with a mean of 4.00 (Agree). Furthermore, in terms of tracking disbursement vouchers, the end users agree that the system provides the necessary tools to support their operations (3.80). In contrast, the customization of reports received a mean score of 3.60. Despite receiving the lowest scores, the end users still find the customization of reports easy and reliable.

According to Mian et al. (2020), one of the key aspects of an effective system is its ability to transform theoretical practices into practical ones. The study highlighted that a working system ensures the sufficiency of tools to support operation. As such, the findings of this study indicate that the said tools sufficiently supported the operations of the accounting office. Overall, the system received a mean score of 3.92, which suggests that the end users find the system functional, offering essential tools for transaction recording, monitoring, and customization of reports.

Table 4. Category Mean and Descriptive Interpretation of the experiences of end users to the developed web-based Disbursement Voucher System in terms of Efficiency.

Statement	*Mean*	*Descriptive Interpretation*
1. Tasks in the system are completed quickly and efficiently.	4.60	Strongly Agree
2. Data entry using the system is easy and straightforward.	4.60	Strongly Agree

3.	Retrieving historical data from the system records is quick and less hassle.	4.60	Strongly Agree
4.	The system allows users to complete tasks in a timely manner.	4.40	Strongly Agree
5.	The system is not time-consuming when creating reports or tracking records.	4.40	Strongly Agree
	Category Mean	4.52	Strongly Agree

Table 4 shows that the end users find the system efficient in terms of task completion (4.60). The end users also agree that the system is easy and straightforward regarding data entries (4.60). Similarly, retrieving historical records is quick and less hassle, as perceived by the end users, receiving a mean score of 4.60 as well. Meanwhile, the system's ability to enable users to complete tasks on time when creating and generating reports received a mean of 4.40. Despite receiving a lower mean score compared to other statements, these scores still reflect the system's high-level performance.

According to Sadybekov and Katritch (2023), efficiency is a key indicator in evaluating a system's performance. The study highlights that computational metrics and reducing manual errors and processing time are essential to the system's efficiency. As evident from the findings, the disbursement voucher system processing time and task completion receive high mean scores as per end users' evaluation. Overall, the system received a 4.52 mean score (Strongly Agree), which suggests that the system efficiently streamlines the process of managing disbursement vouchers.

Table 5. Category Mean and Descriptive Interpretation of the experiences of end users to the developed web-based Disbursement Voucher System in terms of Security

	Statement	*Mean*	*Descriptive Interpretation*
1.	Confident that the data recorded in the system is safe.	4.00	Agree
2.	Unauthorized access to records in the system is not a concern.	3.80	Agree
3.	Security measures for protecting sensitive financial data in the system are sufficient.	4.00	Agree
4.	The financial data in the system is well protected from theft or loss.	3.80	Agree
5.	The system is not vulnerable to security risks, such as unauthorized changes or data breaches.	3.80	Agree
	Category Mean	3.88	Agree

Table 5 shows the evaluation results of the web-based disbursement voucher system in terms of security. The study revealed that the end-users are confident about the records' safety and the system's sufficient security measures, both having 4.00 mean scores. Meanwhile, the end users' perception of unauthorized access, data loss, and data breaches is slightly decreased, with each receiving a mean score of 3.80. This implies

that the end-users remain hesitant regarding the security of the data in the system.

According to Rajagopal (2025), data security is the primary concern between accounting systems. The study reveals that some of the concerns accounting professionals have over accounting systems are risks of data breaches, data losses, and unauthorized access. In connection with the findings, it is evident that concerns regarding security matters are also reflected and experienced by the end users. Overall, the system's security category received a mean score of 3.88, highlighting the need for further enhancement, specifically safety measures against data breaches and loss.

Table 6. Summary of the Category Means and Descriptive Interpretations of the developed disbursement voucher system.

Category	*Mean*	*Descriptive Interpretation*
Accuracy	4.08	Agree
Functionality	3.92	Agree
Efficiency	4.52	Strongly Agree
Security	3.88	Agree
Composite Mean	4.10	Agree

Table 6 summarizes the mean scores for each category based on the evaluation results. The highest mean score of 4.52 entails that the system efficiently supports the operational workflow of the accounting department. In comparison, the system's ability to ensure minimal to no errors received a 4.08 mean score, suggesting that the system's error identification is satisfactory but needs enhancement. Furthermore, a mean score of 3.92 in the functionality category also needs further enhancement, specifically, customization of reports. Despite receiving the lowest mean score of 3.88, the system's security category highlights the need for stricter safety measures to enhance data protection and integrity.

The system received a 4.10 mean score, which falls under the "Agree" category. This entails that the system is effective and generally streamlines the process of recording, monitoring, and reporting disbursement vouchers. However, there are areas for improvement in terms of functionality and security.

Conclusion and Future Works

After meticulously analyzing the data gathered from the evaluation, it was revealed that the developed web-based disbursement voucher system is an effective tool for enhancing the efficiency and accuracy of financial record-keeping in the accounting department. The end users generally agreed that the data entry and recording functions streamlined their operation. While functionality and security were rated satisfactorily, some areas, such as customization and building users' confidence in financial data, need further enhancement. Furthermore, the system's security performance posed a significant weakness, as financial records required robust protection. As the lowest-rated category, there is a clear need to strengthen protective measures against unauthorized access and data breaches. Despite these areas for improvement, the system meets the essential requirements of the accounting department, proving to be a valuable innovation for financial management.

To further enhance the system, several recommendations are proposed. First, improving data validation tools, especially in data entry forms, can significantly minimize errors in financial records. Implementing automated error detection mechanisms will help reduce data entry mistakes and ensure the accuracy of processed information. In addition, conducting regular audits can maintain the correctness of recorded transactions, ultimately increasing the reliability of the financial data and boosting user confidence in the system. Second, since accounting reports vary depending on users' specific needs, incorporating advanced customization options for report generation would further enhance the system's functionality and adaptability. Third, given the confidentiality of financial data, enhancing system security is crucial. This may involve the implementation of multi-factor authentication and stronger encryption methods to protect user information. Regular security audits can also help detect and address vulnerabilities, ensuring robust protection against unauthorized access. Fourth, maintaining regular system updates is essential to address bugs, resolve issues, and improve overall performance. Finally, future researchers and developers are encouraged to upgrade the system's accessibility by enabling internet-based access rather than limiting it to a local intranet. This advancement would allow for broader and more flexible usage, benefiting users

who work remotely or across various departments.

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