JURNAL RISET DAN APLIKASI: AKUNTANSI DAN MANAJEMEN

A Contextual Digital Accounting Application for Strengthening Village-Owned Enterprises Governance

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Abstract: A Contextual Digital Accounting Application for Strengthening Village-Owned Enterprise Governance

Purpose: *This research aims to document the participatory design process of the SI-BUMDes application as a contextual digital accounting solution tailored to the needs of Village-Owned Enterprises (BUMDes).*

Method: *This research used a qualitative case study approach conducted at BUMDes Pulotondo Mulyo, East Java, through focus group discussions, in-depth interviews, field observations, and prototype usage simulations.*

Results: *The results showed the development of a functional SI-BUMDes prototype equipped with a role-based dashboard, automatic journal entries, a simple cash module, and an adaptive financial reporting system. The application design was developed based on local needs, emphasizing ease of use and transparency in financial management.*

Novelty: *Unlike a top-down systems approach, this research prioritizes a user-driven approach, where digital features are designed to align with the work patterns and literacy levels of village operators.*

Contribution: *The findings of this research offer a practical model for strengthening accountability and transparency in village governance through the use of contextual digital innovation.*

Kata kunci:

Akuntabilitas;
Akuntansi Digital;
Perancangan Partisipatif;
SI-BUMDes;
Tata Kelola Desa.

Abstrak: Aplikasi Akuntansi Digital Kontekstual untuk Memperkuat Tata Kelola BUMDes

Tujuan: Penelitian ini bertujuan mendokumentasikan proses perancangan partisipatif aplikasi SI-BUMDes sebagai solusi akuntansi digital kontekstual bagi Badan Usaha Milik Desa (BUMDes).

Metode: Penelitian menggunakan studi kasus kualitatif di BUMDes Pulotondo Mulyo, Jawa Timur, dengan teknik focus group discussion, wawancara mendalam, observasi, dan simulasi prototipe.

Hasil: Penelitian menghasilkan prototipe fungsional SI-BUMDes yang dilengkapi dashboard berbasis hak akses, jurnal otomatis, mode kas sederhana, dan laporan keuangan adaptif. Desain aplikasi menekankan kemudahan penggunaan serta transparansi sesuai kebutuhan lokal.

Kebaruan: Berbeda dengan sistem pemerintah yang bersifat top-down, penelitian ini menekankan pendekatan berbasis pengguna dengan menyesuaikan fitur digital terhadap pola kerja dan literasi operator desa.

Kontribusi: Temuan ini memberikan model praktis untuk memperkuat akuntabilitas dan transparansi tata kelola desa melalui inovasi digital.

1. Introduction

Village-Owned Enterprises (BUMDes) plays a strategic role as community-based institutions that not only stimulate economic activity at the village level but also contribute to improving community welfare. Since their inception, BUMDes have been expected to manage village potential and resources productively and transparently, thereby strengthening village income and supporting sustainable development. However, various studies have shown that financial management in many BUMDes is still dominated by manual record-keeping using a simple cash system. This condition limits accountability and slows down the decision-making process [1-2]. In Pulotondo Mulyo Village, for example, several newly established business units, such as catering and maggot farming, actually have significant potential, but their development is hampered by the lack of a standardized reporting system and structured operational procedures.

Conversely, previous studies on the digitalization of village finances have tended to focus more on evaluating top-down systems developed by the government, such as Siskeudes and FORSA, or on broader discussions of the transformation of BUMDes governance and value chains [3–9]. Although these studies highlight various institutional and technical challenges such as the continued dominance of manual bookkeeping and limited user readiness only a few provide a detailed explanation of the user-level design process of digital accounting applications within specific BUMDes contexts [5,9]. Empirical evidence on how simple cash input modules, automated journaling, and role-based dashboards can be collaboratively designed with village managers to address the gap between system functionality and user capabilities in rural environments also remains limited. This study addresses this gap by describing the participatory design and implementation process of SI-BUMDes in BUMDes Pulotondo Mulyo, resulting in a contextual digital accounting model that aligns system functionalities with the daily work practices and capacities of village operators, while also providing practical contributions to strengthening accountability and transparency in village financial governance. In recent years, the government and several academic institutions have introduced digital accounting application for villages, such as Siskeudes, FORSA, or applications developed by higher education institutions. Although these systems were designed to improve transparency, their implementation has often been partial. Users reported difficulties with technical requirements such as understanding the chart of accounts (COA), complex journal formats, and poor connectivity [10-11]. Consequently, many BUMDes continue to rely on manual cashbooks while treating digital systems merely as administrative complements [3].

Moreover, numerous studies have shown that the success of digital transformation in rural areas is largely determined by the alignment between system design and user capabilities, known as human-system fit [12-13]. When this aspect is not addressed properly, technology implementation often fails to run optimally, especially in environments with limited digital literacy and inadequate infrastructure support [14-15]. Furthermore, a top-down digitalization approach often ignores the contextual needs of village-level businesses, resulting in systems that are technically sound but less relevant to everyday practice [16]. This situation emphasizes the importance of a participatory design approach that directly involves users from the design stage, ensuring the system is truly tailored to their needs and sustainable in use.

Based on these issues, this study focuses on the development of the Village-Owned Enterprise (SI-BUMDes) application through a participatory approach at the Pulotondo Mulyo Village-Owned Enterprise (BUMDes), Tulungagung. Unlike previous studies, which generally highlight the transformation of BUMDes accounting practices from a broader perspective, such as value chain analysis [17], this study specifically documents the design

process of an application prototype tailored to local user needs. The strength of the developed model lies in the development of a contextual digital accounting system, through features such as a simple cash module, automated journal entry, adaptive reporting, and a role-based dashboard. By outlining this process, this research not only enriches theoretical studies on user-driven rural digitalization but also offers a practical, replicable model to improve accountability and transparency in village financial management.

2. Method

This research employed a qualitative case study approach with a participatory action research (PAR) orientation. The case study approach was chosen to delve deeply into the daily practices of BUMDes managers, while the PAR orientation enabled stakeholders to actively participate in the formulation, testing, and evaluation of the developed digital system [18-20]. The SI-BUMDes prototype was directly tested by parties involved in daily financial management and governance: two bookkeeping operators, the BUMDes director and treasurer, village officials, and community representatives who participated in focus group discussions (FGDs) and simulation sessions. During this process, participants tested key features such as a simple cash module, journal preview, and financial reporting using real transaction data from catering and maggot farming businesses. They then provided structured feedback regarding ease of use, menu clarity, perceived benefits, and the system's suitability to their existing work routines. This approach ensured that the system evaluation reflected not only the users' technical experience but also broader governance aspects.

This research conducted at the Pulotondo Mulyo Village-Owned Enterprise (BUMDes) in Tulungagung, East Java, which has been operating since 2016 and manages several business units, including LPG distribution, financial agency services, bottled water production, catering, and maggot cultivation. Of these units, the catering business is the main contributor, contributing more than 60% of revenue, while maggot cultivation is emerging as a promising green economy-based business unit. These two units were chosen as the focus because they demonstrate an urgent need for an accurate costing system and transparent financial reporting. The initial study also indicated that financial management at the BUMDes still relies on manual cash recording, with a low level of consistency and not yet supported by structured financial reports.

The study involved 22 participants with different roles: First, management: director, treasurer, and secretary of BUMDes. Second, technical operators: two staff responsible for bookkeeping and application testing. Third, village representatives: head of village, two officials, and a supervisory board member. Fourth, community stakeholders: representatives from youth groups who often interact with BUMDes activities.

This composition ensured that the voices of decision-makers, system users, and community members were equally represented during the design process.

Data collection employed four complementary techniques: First, in-depth interviews. Conducted with BUMDes managers, operators, and village officials to explore experiences with manual bookkeeping, previous encounters with government accounting systems (e.g., Siskeudes, FORSA), and expectations of SI-BUMDes features. Each interview lasted 45–60 minutes and was recorded with consent. Second, focus group discussions (FGD) (2 sessions). Used to collectively identify problems, prioritize application features, and validate prototype drafts. Each FGD involved 8–10 participants, lasted ±120 minutes, and was moderated by the research team.

Third, Participant observations (6 visits). Researchers attended training and prototype simulation sessions, observing how operators interacted with digital tools, which functions were considered easy/difficult, and what technical issues arose (e.g., limited

internet, fear of data loss). Notes were systematically coded into observation matrices. Fourth, documentation review. Program reports, baseline financial statements, training modules, and design drafts were analyzed to triangulate findings.

Fifth, data Analysis. The analysis process combined inductive thematic analysis and deductive mapping using the value chain framework. Inductive coding: Field notes and transcripts were segmented into units of meaning, which were then categorized (e.g., "delayed transaction input," "difficulty with journal format," "lack of device access"). Deductive coding: Findings were mapped onto adapted value chain components. Primary activities: cash inflows, operations, reporting, marketing, public accountability. Support activities: human resources, infrastructure, technology adaptation, and procurement.

Triangulation was applied across methods (interviews, FGD, observation), sources (managers, operators, officials, community), and documents to ensure credibility [21-22]. Member-checking was done in FGDs where participants validated preliminary interpretations.

Research Procedure. The participatory design was carried out in five stages: First, identification and socialization**.** At this stage, the team mapped the baseline conditions of BUMDes financial management, which were still dominated by manual bookkeeping, the absence of written Standard Operating Procedures (SOP) for recording and reporting transactions, and unstandardized financial reports across business units. The findings were then discussed in socialization meetings with village leaders and BUMDes management to confirm that the main focus of the program would be the development of a digital accounting application and the accompanying SOPs Planning.

Designing application modules: login, role-based dashboard, simple cash input, automatic journal preview, financial reports (profit-loss, balance sheet, cash flow, cost of good sold).

Agreeing on usability principles: simple interface, offline availability, exportable PDF reports.

BUMDes Application System Flowchart. Login & User Access Rights. The login system ensures only authorized users can access SI-BUMDes, while role-based access rights (super admin, manager, operator, staff) secure data, minimize errors, and support transparency and accountability in financial management.

Dashboard. The dashboard provides real-time financial and operational insights, showing cash flow, recent transactions, and key indicators in a simple view, enabling faster and more accurate decision-making.

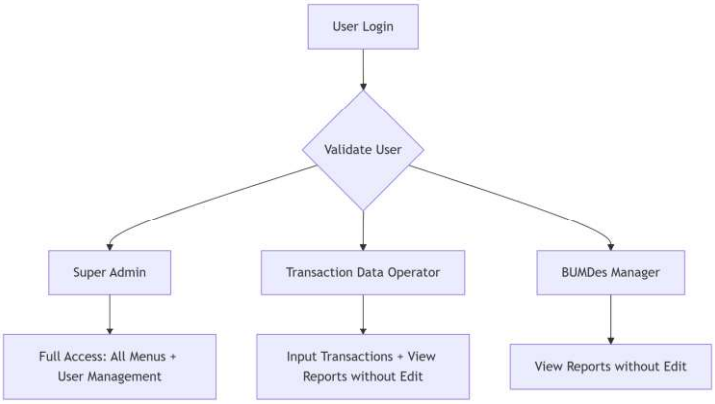

Illustration 1. User Access Flowchart

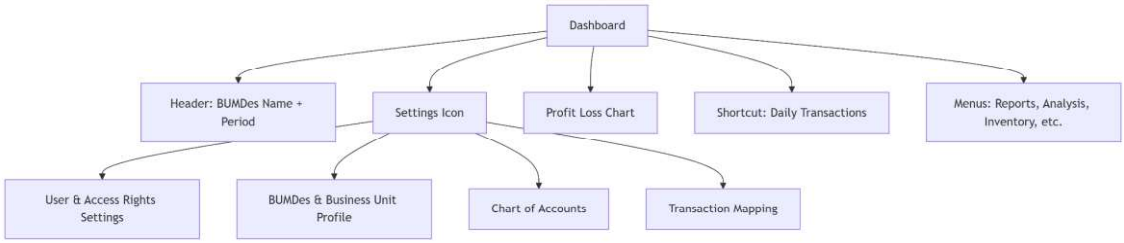

Illustration 2. Dashboard sitemap

Daily Transactions. The Daily Transactions module allows BUMDes to record all routine financial activities, including cash inflows, operational expenses, sales, and purchases. By capturing each transaction systematically, the system ensures data accuracy, supports smooth cash flow monitoring, and provides a reliable foundation for financial reporting and accountability.

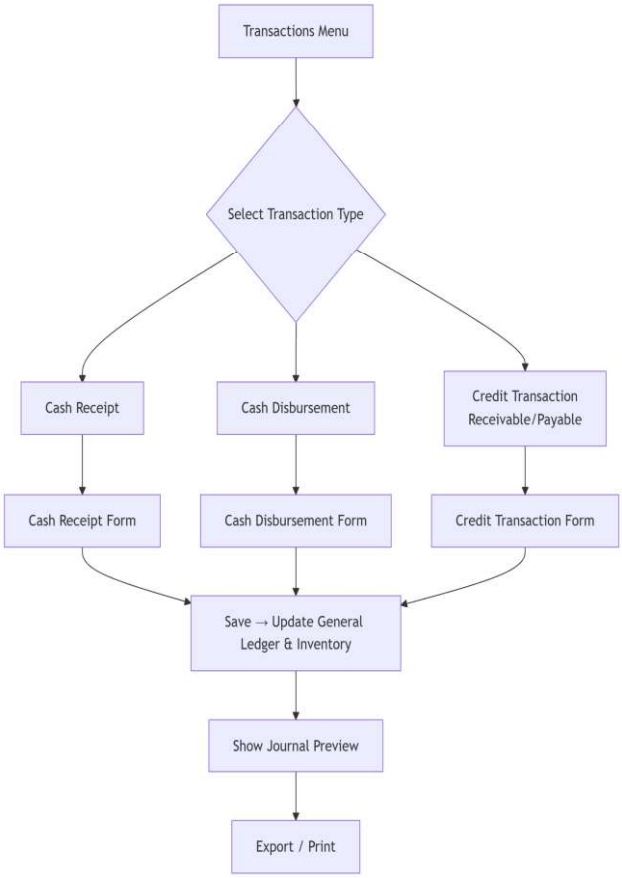

Illustration 3. Daily Transactions Flowchart

Non-Routine Transactions. The Non-Routine Transactions module is designed to capture financial activities that occur outside daily operations, such as investments, grants, loans, or special expenditures. By recording these activities separately, the system helps distinguish regular cash flows from extraordinary events that may significantly affect the organization's financial position. This clarity allows managers to track funding sources and irregular expenditures more effectively, ensuring better financial oversight and accountability.

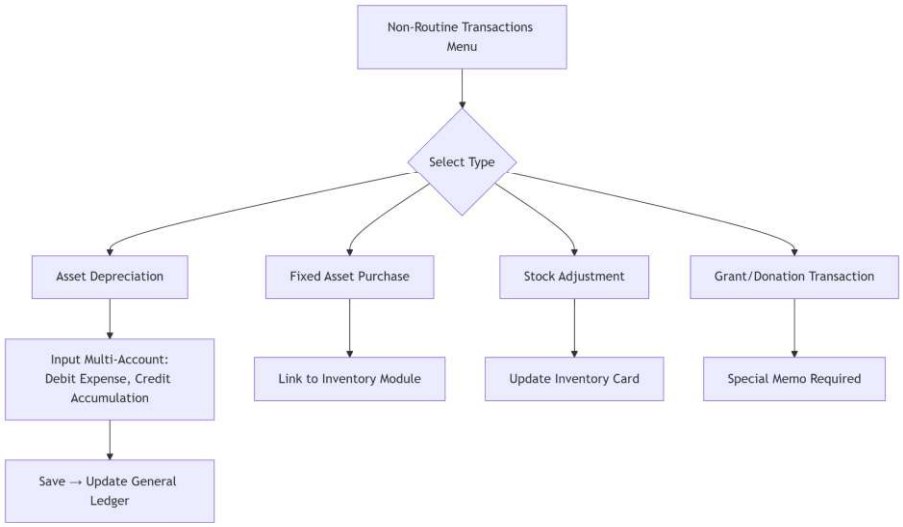

Illustration 4. Non-Routine Transactions Flowchart

Reports. The Reports module generates comprehensive summaries of financial and operational data, including income statements, cash flow reports, balance sheets, and business activity reports. Automated and accurate reporting enables BUMDes managers to regularly evaluate performance, meet transparency requirements for the village community, and provide a solid foundation for strategic decision-making.

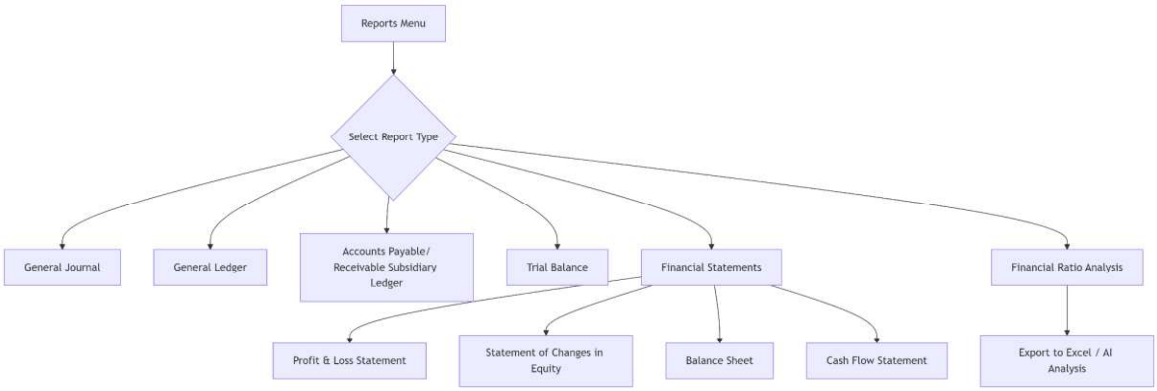

Illustration 5. Reports Flowchart

Second, training and technical assistance. Training sessions for treasurers and operators on accounting basics and prototype use. Exercises included inputting sample transactions, reviewing journal previews, and generating reports. Third, prototype simulation. Running a working draft of SI-BUMDes with test data from real transactions. Observing operator interaction: ease, errors, hesitation, suggestions for improvement. Iterative revisions after each simulation round. Fourth, evaluation and reflection. Collecting feedback on usability, technical constraints, and expected benefits. Identifying sustainability needs: mentoring schedule, SOP (Standard Operating Procedure) integration, device procurement. Drafting a business plan that includes application implementation as part of governance improvement.

The system evaluation was conducted through a series of prototype simulations integrated into focus group discussions (FGDs) and training sessions. The evaluators consisted of two bookkeeping operators as the primary users of the application, the BUMDes director and treasurer as decision-makers, village officials with a supervisory role, and

community representatives who directly interact with BUMDes services. During the simulations, participants were asked to perform various common tasks, such as recording daily cash transactions, reviewing automated journal entries, and preparing profit and loss reports for catering and maggot farming businesses.

During the simulations, participants were also asked to assess the system's ease of use, the clarity of menus and terminology used, the application's usefulness in supporting decision-making, and their level of readiness to adopt the system in their daily operations. The feedback obtained, both in the form of direct comments and observations of errors, doubts, and how participants resolved problems, served as a crucial basis for refining the prototype. Improvements focused on restructuring the interface, simplifying the cash module, and adjusting the format of financial reports for easier understanding and use.

Fifth, ethical considerations. All participants provided informed consent, and data confidentiality was guaranteed. No financial or operational decisions were made solely based on research findings without approval from BUMDes leadership.

3. Results and Discussion

In the early stages of the program, financial management at the Pulotondo Mulyo Village-Owned Enterprise (BUMDes) still relied on manual recording through daily cash books. Financial reports, such as profit and loss statements and balance sheets, were not routinely prepared, while calculations of cost of goods sold (COGS) remained rudimentary and often failed to account for important cost components such as overhead and depreciation. This resulted in low transparency and limited managers' ability to make data-driven decisions. Similar phenomena have been observed in other villages across Indonesia, where digital systems were introduced but discontinued due to perceived lack of relevance or insufficient support for daily practice [10].

Through FGDs and interviews, several challenges were identified: First, fear of errors: operators worried about making mistakes when selecting accounts from the chart of accounts. Second, low digital literacy: users were more comfortable with "cash in–cash out" notation than with journal entries. Third, infrastructure limitations: limited access to PCs and unstable internet connections hampered adoption. Fourth, lack of training continuity: government-provided applications often came without sustained mentoring.

Based on these findings, the research team and users jointly prioritized features: First, simple cash module (record income and expenses without requiring immediate journal classification). Second, automatic journaling and reporting (system generates journal entries and financial statements). Third, role-based dashboard (different access for treasurer, operator, and supervisor). Fourth, offline usability and PDF export (to address connectivity issues). Fifth, preview function (users can check entries before saving).

This participatory prioritization process differs from top-down approaches, as it explicitly aligned the design with the daily practices of village operators.

Prototype Design of SI-BUMDes. The functional prototype of SI-BUMDes included: First, login page with role-based access. Second, Dashboard presenting income, expenses, and balance summaries. Third, transaction forms for routine and non-routine activities. Fourth, automated journal and ledger generated from cash entries. Fifth, reports: profit and loss, balance sheet, cash flow, and cost of good sold.

Unlike previous applications such as Siskeudes or FORSA, which require early classification into accounts, SI-BUMDes allowed operators to input transactions in plain language, with the system classifying them in the background. This design directly addressed the mismatch between system requirements and user capacity, a problem repeatedly identified in rural accounting digitalization [3,11].

Simulation and User Feedback. The trial and prototype simulation provide complementary perspectives on the usability and potential adoption of SI-BUMDes. On the one hand, the structured evaluation with accounting students showed mean scores ranging from 3.4 to 3.8 on a 5-point scale, indicating generally positive perceptions. Respondents agreed that the system features matched the needs of village accounting (mean = 3.82), were practical for daily operations (mean = 3.82), and useful for managing BUMDes finances (mean = 3.77).

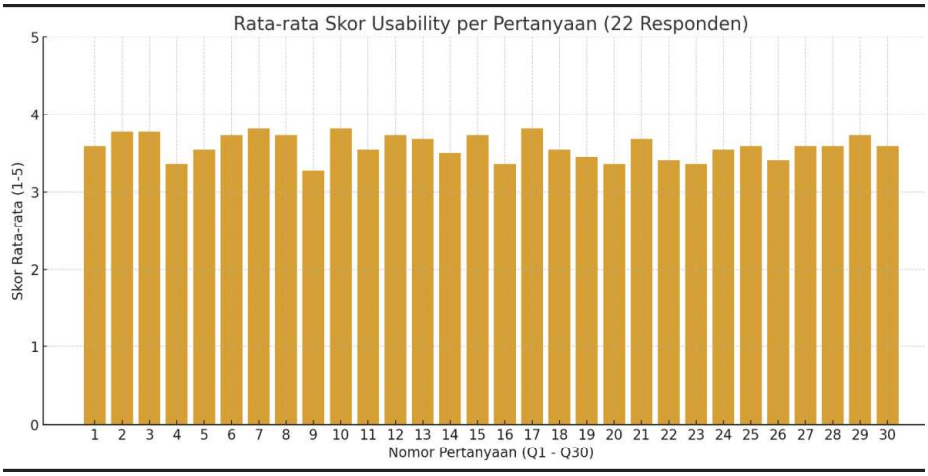

Illustration 6. Average usability score for each question

They also perceived gains in productivity, such as recording transactions more efficiently (mean = 3.77) and saving time in data entry (mean = 3.73). These findings support the argument that the cash-first input and automatic journal generation successfully addressed long-standing difficulties with previous systems that forced users to classify accounts at the outset [3,11].

At the same stage, simulation results involving operators and managers further reinforced previous findings. Operators reported that the cash-based interface felt more aligned with their understanding of daily bookkeeping. Furthermore, the preview feature helped alleviate concerns when recording, particularly regarding potential errors. From the managers' perspective, role-based reporting was considered very helpful because it simplified the monitoring process and increased accountability.

However, both students and operators identified several aspects that needed improvement. These included the need for simpler navigation, the use of more intuitive icons, and the use of terminology that better aligns with local contexts rather than overly technical accounting terms. These findings align with previous studies showing that digital system implementation in rural areas is often less successful when the interface is too complex for non-specialist users [10].

A comparative analysis with existing applications also demonstrated the uniqueness of SI-BUMDes. Compared with FORSA and the model developed by PKN STAN, SI-BUMDes offers a more contextual combination of features, such as cash-based input, a role-based dashboard, offline usability, a preview feature, and support based on local needs (Table 1). This combination directly addresses the limitations of previous systems, which, while technically robust, often lacked a strong social understanding of users. Through a participatory design approach, this study demonstrates that digital systems can be simplified without compromising accountability, while remaining aligned with the principles of good village governance: transparency, accountability, and inclusiveness [23-24].

Overall, both the survey-based evaluation results and feedback from the simulation indicate that SI-BUMDes has strong potential to address the partial adoption issues frequently encountered in village accounting applications. Although the average score remains below 4.0, indicating a need for improvement, particularly in user experience, these findings confirm that the developed prototype is relevant and applicable. Therefore, further development should focus on simplifying the interface and providing ongoing support to ensure consistent use of the system in real-world BUMDes environments These findings further emphasize the critical role of a user-centered approach in increasing acceptance and readiness for adoption of digital systems, as emphasized in research on human-system fit [13-14].

Comparative Analysis with Existing Systems. The comparison results indicate that the BUMDes-IS has several unique features not found in other systems, particularly the use of cash-based input as a starting point, the presence of a preview feature, and a dashboard structured by user role. This combination represents a key innovation in the developed application design.

Furthermore, the findings of this study confirm that digital transformation in the BUMDes environment is not simply about implementing new software. Successful implementation is largely determined by the extent to which the developed technology aligns with user literacy levels, infrastructure conditions, and existing organizational culture. Through a participatory design approach, this study demonstrates that digital systems can be designed more simply without sacrificing accountability. This also strengthens the implementation of good village governance principles, which emphasize transparency, accountability, and inclusiveness [23-25].

Table 1. Differentiation SI-BUMDes with existing applications

Feature	FORSA (Excel)	PKN STAN	SI-BUMDes (Prototype)
Cash-based input	×	×	✓
Automatic journal & reports	✓	✓	✓
Role-based access	×	×	✓
Offline usability	✓	✓	✓
Preview before saving	×	×	✓
Local contextual support	×	×	✓

4. Conclusion

This research documented the participatory design process of the SI-BUMDes application as a contextual digital accounting solution for Village-Owned Enterprises. The results showed that features such as a simple cash module, automatic journal entry, adaptive reporting, and a role-based dashboard can bridge the gap between the complexity of the accounting system and the limited literacy of village-level operators. Findings from trials and simulation sessions also indicate that the developed prototype is deemed relevant, useful, and capable of increasing efficiency in the process of recording transactions and preparing financial reports.

Theoretically, this research enriches the study of human-system fit in the context of rural digital transformation, demonstrating that a user-centered approach can be a solution to overcome barriers to technology adoption. Practically, SI-BUMDes offers a potentially replicable model to strengthen transparency and accountability in village financial management, while maintaining simplicity and ease of use for non-specialized users. The novelty of this research lies in its emphasis on a participatory approach, where the application design is developed based on the actual needs and capacities of local users, rather than a purely top-down approach.

However, this research still has

limitations. The current findings are based on limited trials through simulations and the involvement of potential users, so direct implementation in BUMDes operations has not yet been fully implemented. Therefore, further research needs to test the system's application in a field context in various villages and measure its impact quantitatively, for example by reducing delays in transaction recording or increasing the timeliness of reporting. Furthermore, the development of advanced features such as integration with national systems and the use of local language-based interfaces is also crucial to ensure the sustainability of implementation. With these developments, it is hoped that SI-BUMDes will not remain merely a prototype but can develop into a real solution to support digital village governance. The findings of this study indicate that the acceptance of Village-Owned Enterprise' information systems is influenced by the level of fit between user characteristics, work needs, and the system design used. These results align with the human-system fit perspective, which emphasizes that technology will be more easily accepted if the system's features, workflows, and interface align with the user's abilities, work context, and daily operational needs. In Village-Owned Enterprise (BUMDes) financial management, system users generally require applications that are simple, easy to understand, and directly represent real-world work processes. When the system adapts to the cash management workflow, the user's cognitive load is reduced, their confidence in using the system increases, and their perception of its usefulness is strengthened. Thus, these findings reinforce the notion that technology adoption is determined not only by feature sophistication, but primarily by how well the system fits the needs of the people who operate it.

Furthermore, the findings of this study indicate that a participatory design approach plays a crucial role in increasing user acceptance of technology. Involving potential users from the early stages from needs identification and menu design to terminology adjustments and system testing makes the resulting solution more aligned with daily work practices. In the context of Village-Owned Enterprises (BUMDes), this approach becomes even more relevant because most users have strong practical experience, although not always supported by adequate technical backgrounds.

When users are actively involved, they are no longer simply recipients of technology but also become part of its development process. This fosters a sense of ownership, increases trust in the system, and reduces resistance to change. Users tend to be more open to adopting technology when they see the system as a product of their own needs and contributions, rather than something imposed from the outside. Thus, participatory design not only improves the functional quality of the system but also strengthens the technology's social and psychological legitimacy in the eyes of users.

Overall, the results of this study confirm that the successful implementation of a BUMDes information system is largely determined by the system's ability to address real operational needs, particularly in cash management, and by the level of user involvement in the design process. These findings reinforce the view that technology adoption in rural areas will be more effective if built through a simple, contextual, and participatory system [26]. Therefore, the development of a BUMDes information system should not only focus on technical aspects, but also need to consider user characteristics and local work patterns so that technology implementation can run optimally and sustainably.

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