

Optimizing Business Management Functions in Public Agricultural Institutions: A Community Service Study at BBIB Singosari

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ABSTRACT:

This community service project was conducted to improve management functions at the Center for Artificial Insemination (BBIB) Singosari, a key public institution in Indonesia's agricultural sector. The initiative focused on addressing internal challenges, including human resource misalignment, financial rigidity, and outdated operational systems. Using a participatory approach, the team conducted field observations, interviews, and document analysis to identify key constraints and propose targeted improvements. The intervention led to strategic recommendations, such as competency-based staff development, revised budget reallocation plans, and the proposal of digital solutions like Laboratory Information Management Systems (LIMS). The outcomes provide a framework for enhancing public institutional performance and offer practical insights for similar government-run agencies. This initiative highlights the relevance of contextual, participatory interventions in supporting institutional transformation.

Keywords: BBIB Singosari, business function management, community service, digital transformation, public sector

1. INTRODUCTION

Public agricultural institutions play a strategic role in strengthening food security, improving agricultural productivity, and ensuring the sustainability of national livestock development. Their performance depends not only on technical expertise, but also on the effectiveness of internal management functions, including human-resource management, financial planning, operational management, organizational coordination, and information systems. This managerial dimension has become increasingly important as public institutions are expected to provide reliable services, respond to technological change, maintain accountability, and use public resources efficiently. Indonesia's National Medium-Term Development Plan for 2025–2029 also places food-system transformation, agricultural innovation, institutional capacity, and technology utilization among the foundations of national food resilience (Bappenas, 2024; President of the Republic of Indonesia, 2025).

Within this institutional landscape, the Balai Besar Inseminasi Buatan (BBIB) Singosari occupies an important position in Indonesia's livestock-development system. BBIB Singosari is a Technical Implementation Unit under the Directorate General of Livestock and Animal Health, Ministry of Agriculture. Its principal responsibilities include the production,

marketing, testing, and quality monitoring of frozen semen from superior livestock, as well as the development and strengthening of artificial-insemination methods. The institution has also adopted the Public Service Agency or Badan Layanan Umum (BLU) financial-management model, which is intended to provide greater managerial flexibility while maintaining public accountability (BBIB Singosari, 2026). Through these functions, BBIB Singosari contributes to genetic improvement, reproductive efficiency, livestock productivity, and the broader objective of national food security.

The strategic importance of BBIB Singosari, however, also creates complex organizational demands. The institution must simultaneously maintain technical standards, manage specialized employees, ensure the reliability of laboratory and production assets, respond to market and stakeholder expectations, and comply with government financial and administrative regulations. Its operations require coordination among production laboratories, livestock-management units, quality-control functions, administrative divisions, financial units, and marketing or service-delivery functions. Weaknesses in one managerial area may consequently generate difficulties in other areas. For example, inappropriate employee placement can increase training costs and slow operational processes, while delayed budget execution can prevent the timely replacement of aging equipment and the adoption of digital systems.

One of the main issues identified during the preliminary assessment was the misalignment between employees' educational or professional backgrounds and the technical requirements of their assigned positions. Several employees recruited through the centralized public-sector recruitment system were placed in functions that required specialized knowledge of livestock management, laboratory operations, reproductive biotechnology, or quality assurance, despite having academic backgrounds that were not directly related to these fields. Such conditions do not necessarily indicate low employee capability; rather, they reveal a gap between existing competencies and job-specific demands. If this gap is not managed systematically, it may lead to longer adaptation periods, greater dependence on informal learning, inconsistent work quality, and increased institutional expenditure on remedial training.

This condition can be explained through the person-job fit perspective, which emphasizes the compatibility between employees' knowledge, skills, abilities, and other characteristics and the requirements of their jobs. Evidence from civil servants shows that both training and person-job fit are positively associated with job performance. Person-job fit also partially mediates the relationship between training and performance, indicating that training produces stronger results when it is aligned with the actual competencies required by a position (Bhat & Rainayee, 2019). Therefore, BBIB Singosari requires more than general employee-development activities. It needs competency mapping, role-specific training pathways, supervised technical practice, periodic competency assessment, and placement or career-development decisions based on verified institutional needs.

Financial management constitutes another major challenge. As a BLU institution, BBIB Singosari is expected to apply sound business practices while continuing to prioritize its public-service mandate. This arrangement theoretically provides greater flexibility in managing service revenues and operational expenditure. However, the initial assessment indicated that financial flexibility did not always translate into timely strategic investment. Even when operational revenues or surpluses were available, bureaucratic procedures and approval requirements could delay their reallocation to urgent priorities, including equipment maintenance, asset renewal, laboratory modernization, and digital-system development.

The problem is therefore not simply the absence of financial autonomy, but how institutional flexibility is balanced with public accountability. Research on government agencies describes this condition as the autonomy paradox: public organizations are granted greater managerial discretion to improve responsiveness and efficiency, while simultaneously being subjected to stronger performance controls to protect transparency and accountability (Ahlbäck Öberg & Wockelberg, 2021). In the BBIB context, financial flexibility should be connected to clearly defined operational and public-service indicators, such as equipment uptime, production continuity, frozen-semen quality compliance, delivery reliability, training-service coverage, and the timeliness of responses to operational risks. Furthermore, accounting and budgeting systems become managerially meaningful when financial information is incorporated into daily organizational practices and decision-making rather than being treated solely as administrative compliance documentation (Ahrens & Chapman, 2007).

Operational infrastructure and information management represent a third area requiring improvement. BBIB Singosari depends on laboratory equipment, livestock facilities, cold-storage systems, production machinery, inventory systems, and reliable quality-control records. Field observations indicated that several operational assets were aging, while some data-recording and monitoring processes remained manual or fragmented. These conditions may increase the risk of transcription errors, incomplete traceability, delayed information retrieval, inconsistent reporting, and difficulties during internal or external audits. In a laboratory-based public institution, data reliability is essential because production records, sample identities, quality-test results, storage conditions, and distribution information are interconnected components of quality assurance.

The introduction of a Laboratory Information Management System (LIMS) is therefore considered a potential component of BBIB's operational modernization. A LIMS can support sample registration and tracking, workflow standardization, data validation, reporting, inventory control, and the creation of audit trails. Empirical evidence from the implementation of a customized LIMS in a resource-constrained public laboratory demonstrated improvements in sample throughput, data management, reporting consistency, accessibility, and the reduction of transcription errors. Nevertheless, the same study showed that successful implementation depended on reliable infrastructure, system customization, sustained funding, technical support, user training, and stakeholder engagement (Oakley et al., 2025). Thus, the implementation of LIMS should not be approached merely as the procurement of software.

Instead, digitalization should be embedded within a broader laboratory quality-management system. Pillai and Fox (2025) emphasize that laboratory reliability is produced through the integration of workflow management, document and record control, risk assessment, equipment management, corrective action, staff competency, and continual improvement. Digitizing an inconsistent process may only reproduce existing weaknesses in electronic form. BBIB Singosari therefore needs to standardize its workflows, sample-identification procedures, data-access rights, validation rules, retention schedules, audit-trail requirements, and exception-handling mechanisms before implementing LIMS on a wider scale.

Despite the importance of these issues, previous discussions about public agricultural institutions frequently focus on technical production, livestock genetics, artificial-insemination outcomes, or service achievements. Comparatively less attention has been directed toward the interdependence of human-resource alignment, financial responsiveness, asset management, and digital information systems within a specialized public agricultural institution. Moreover, many institutional-improvement programs assess

managerial functions separately, even though workforce capability, budgeting flexibility, operational infrastructure, and data quality interact in practice. This creates a practical and conceptual gap concerning how an integrated managerial intervention can be designed and initiated within a government-run livestock institution.

Community-service programs conducted by universities can help address this gap by facilitating institutional diagnosis, collaborative problem-solving, and the translation of management knowledge into organizational practice. However, such programs should not position institutional personnel solely as recipients of recommendations. A participatory approach recognizes employees and managers as holders of contextual and experiential knowledge. Participatory action research emphasizes relationship building, shared problem definition, collaborative analysis, action planning, and reflection as essential components of locally relevant change (Cornish et al., 2023). In this approach, the academic team contributes analytical frameworks and facilitation, while institutional stakeholders contribute operational knowledge and determine the feasibility of proposed interventions.



Figure 1. BBIB Facility
Source: Researcher's Documentation, 2025



Figure 2. BBIB Office
Source: Researcher's Documentation, 2025

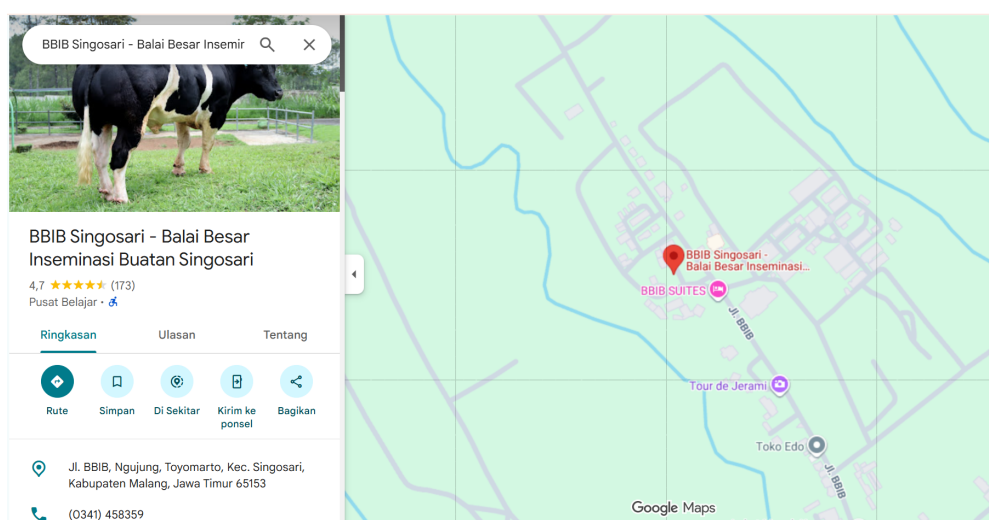


Figure 3. Gmaps

Source: Researcher's Documentation, 2025

Against this background, the present community service initiative was conducted to analyze and strengthen the implementation of key business-management functions at BBIB Singosari. The program focused on three interconnected areas: (1) employee competency alignment and human-resource development; (2) financial responsiveness and priority-based budget planning under the BLU framework; and (3) operational efficiency, asset modernization, and the prospective adoption of LIMS. Field observations, semi-structured interviews, document analysis, problem-tree analysis, and participatory stakeholder forums were used to identify institutional constraints and formulate context-specific improvement pathways.

This initiative contributes in three ways. First, it provides an integrated diagnosis of managerial constraints in a technically specialized public agricultural institution. Second, it demonstrates how participatory academic-institutional collaboration can translate management concepts into feasible improvement plans. Third, it proposes a staged transformation pathway that connects competency mapping, controlled financial flexibility, asset prioritization, laboratory-quality management, and digitalization. Accordingly, the program does not claim to have produced complete institutional transformation within a limited intervention period. Instead, it seeks to strengthen institutional readiness, develop jointly agreed improvement priorities, and establish a foundation for subsequent implementation and performance evaluation.

2. METHODS

This community service project adopted a descriptive qualitative method with a participatory action approach aimed at improving the internal business management functions at the Center for Artificial Insemination (BBIB) Singosari. The intervention focused on diagnosing key managerial challenges and implementing context-specific strategies through collaboration with institutional stakeholders.

Approach and Design

The methodological framework consisted of five stages: (1) preliminary problem identification, (2) stakeholder engagement, (3) intervention planning, (4) limited implementation, and (5) evaluation. This structure followed the logic of community-based problem solving, emphasizing contextual understanding, joint reflection, and organizational learning.

Data Collection

Data were gathered using three primary techniques:

1. Observation: Direct field observations were conducted in core units such as the production lab, administration, and HR departments to assess workflow efficiency, infrastructure condition, and resource utilization.
2. Interviews: Semi-structured interviews were held with BBIB personnel, including division heads and operational staff, to identify internal bottlenecks in areas such as HR allocation, financial control, and equipment usage.
3. Document Analysis: The team analyzed organizational documents including SOPs, financial statements, strategic plans, and audit reports to triangulate findings and ensure validity.

Problem Framing and Stakeholder Engagement

A participatory forum involving BBIB management and selected staff was facilitated to confirm key problem areas. These included: (1) misalignment between employee qualifications and job demands, (2) budget rigidity and limited surplus utilization flexibility, and (3) outdated operational assets. Problem identification was visually structured using a problem tree analysis to align interventions with root causes.

Intervention Focus

Based on the diagnostic phase, the project proposed three targeted recommendations:

1. Human Resource Development:
Initiation of a skill-upgrading roadmap for staff without relevant technical backgrounds, focusing on livestock handling, laboratory standards, and digital reporting.
2. Financial Planning Enhancement:
Adjustments to budget planning procedures, emphasizing surplus reallocation and spending efficiency in priority areas such as technology renewal.
3. Operational Strategy:
Structured plan for asset evaluation and phased modernization of obsolete equipment, alongside digital system recommendations such as Laboratory Information Management System (LIMS) adoption.

Evaluation

The effectiveness of the intervention was evaluated based on qualitative indicators, including stakeholder feedback, clarity of job functions, improved SOP adherence, and alignment of training proposals with organizational needs. Although limited in implementation scope, the project fostered strategic insight and prepared a framework for scalable improvement.

3. RESULTS

The implementation of this community service program at the Center for Artificial Insemination (BBIB) Singosari has produced several tangible and strategic outcomes that directly contribute to the improvement of institutional management functions. The outcomes are discussed across three thematic areas: (1) human resource alignment and competency development, (2) financial responsiveness and budget optimization, and (3) operational efficiency and technology integration. Together, these reflect a systemic improvement approach rooted in participatory problem-solving and contextual diagnosis.

Enhancing Human Resource Alignment and Competency Development

One of the most prominent issues identified during the diagnostic phase was the misalignment between the qualifications of BBIB's employees and the actual operational

demands of their job descriptions. Many staff members assigned by the central recruitment system lacked the specific expertise required to perform in highly technical roles—particularly those related to livestock handling, laboratory operations, and reproductive biotechnology. For instance, technical divisions were populated by employees with backgrounds in English literature or economics, resulting in performance gaps, prolonged adaptation periods, and increased institutional training costs.

Through structured interviews and direct observation, the project team documented this mismatch and facilitated a forum where division heads and HR representatives collaboratively analyzed the root causes. As a result, the institution initiated an internal human capital mapping process to classify employee skills, identify technical training needs, and formulate a phased competency development plan.

Moreover, BBIB expressed commitment to revising its training roadmap in collaboration with local vocational institutions. This aligns with best practices in public institutional development, which emphasize capacity building tailored to technical functions and long-term organizational goals (Ahrens & Chapman, 2007). The intervention also inspired a review of internal promotion policies, signaling a broader cultural shift toward performance-based HR management.

Strengthening Financial Responsiveness and Budget Optimization

Another key result of the intervention was a refined understanding of BBIB's financial structure under the Public Service Agency (BLU) model. While the institution has consistently generated operational surplus—primarily from frozen semen sales and training services—its ability to reallocate surplus funds for strategic innovation remains limited due to bureaucratic and regulatory constraints.

The financial analysis, supported by document reviews of BBIB's annual reports and surplus records from 2015 to 2021, revealed that although annual income exceeded projections (with up to 221% realization in 2017), surplus utilization was often delayed or restricted by approval processes. This rigidity hindered timely investments in asset renewal and the adoption of new technologies. The project team facilitated a collaborative workshop to analyze these constraints and co-develop a revised budgeting scenario focused on priority-based spending, liquidity forecasting, and surplus reinvestment into productive assets.

The implication of this finding extends beyond BBIB. It underscores the need for greater autonomy in financial decision-making within public institutions operating under BLU governance. More flexible budget execution mechanisms would empower agencies to respond swiftly to external shocks such as livestock disease outbreaks or changing regulatory environments. In this context, BBIB is also encouraged to implement financial dashboards for real-time monitoring and to strengthen internal audit practices to support transparent resource mobilization (Putri et al., 2023).

Improving Operational Efficiency and Technology Integration

BBIB's core operation revolves around the production, storage, and distribution of high-quality frozen semen to support Indonesia's livestock genetic improvement program. However, field observations and staff interviews revealed that several key operational infrastructures were aging, under-maintained, and not integrated into a centralized monitoring system. The lack of a digital inventory tracking system and manual data handling practices posed risks to quality assurance, traceability, and auditability.

In response, the community service team proposed a phased operational optimization plan. Central to this proposal was the introduction of a Laboratory Information Management System (LIMS), a digital tool that can automate sample tracking, improve data integrity, and reduce error in laboratory workflows. While full implementation of LIMS was beyond the scope of the project, the initiative created momentum among BBIB

stakeholders to explore its feasibility and begin benchmarking against best practices in similar institutions.

Additionally, recommendations were provided to reclassify aging assets based on operational utility and to set up a procurement priority list. The institution acknowledged the need for technological modernization and expressed readiness to allocate part of the future surplus for this purpose.

This result illustrates how context-driven operational diagnostics can uncover latent inefficiencies and initiate long-term transformation. Operational sustainability in public agricultural institutions depends not only on technical excellence but also on agile systems and adaptive infrastructure (Bappenas, 2020).

Institutional Reflections and Broader Implications

Beyond technical improvements, this project yielded critical institutional learning outcomes. The participatory engagement process fostered a culture of reflection and cross-functional communication among BBIB staff. The use of collaborative tools such as problem tree analysis and stakeholder mapping was well-received and provided a new framework for internal decision-making.

Importantly, the project bridged the gap between academic frameworks and real-world public service challenges. University students and faculty members served as facilitators and knowledge translators, offering external perspectives while remaining embedded in the local context. This model of academic-practitioner collaboration is highly replicable and relevant for other government-affiliated institutions dealing with similar structural constraints.

The implications of this initiative are both scalable and strategic. For BBIB, it provides a roadmap to transition toward a more responsive, data-driven, and performance-oriented institution. For the broader public sector, it demonstrates that managerial reform in state-run institutions must be approached holistically—considering human capital, financial agility, and technological support in tandem.

Furthermore, the project aligns with the goals of Indonesia's RPJMN 2020–2024, which emphasizes institutional modernization, digital transformation, and agricultural resilience. BBIB's experience reflects how even technically specialized units can benefit from general management interventions when approached systematically and collaboratively (Bappenas, 2020).

4. DISCUSSION

This community service initiative demonstrates that the managerial constraints experienced by BBIB Singosari are interconnected rather than isolated. Workforce misalignment, limited financial responsiveness, aging operational assets, and fragmented information practices form a mutually reinforcing system. Technical staff who are not fully aligned with job demands require longer adaptation periods and additional training; delayed financial decisions constrain asset renewal; and outdated assets and manual records increase the workload placed on employees. The principal contribution of the intervention is therefore the integration of human-resource, financial, and operational diagnoses into a single institutional improvement agenda.

The human-resource findings are consistent with the person-job fit perspective. Bhat and Rainayee (2019) found among civil servants that training and job fit were directly associated with performance and that job fit partially mediated the training-performance relationship. This evidence helps explain why generic training alone may not resolve BBIB's competency gaps. Training will be more useful when it is preceded by a competency inventory and linked to clearly specified technical standards for livestock handling, laboratory procedures, reproductive biotechnology, quality assurance, and digital reporting.

In this sense, the competency-mapping process initiated by BBIB is strategically relevant because it changes the intervention logic from 'training all employees' to 'closing verified role-specific gaps.' Nevertheless, the present project did not measure competency before and after training. Claims of improved performance should therefore be reserved until subsequent evaluations demonstrate changes in technical proficiency, SOP adherence, error rates, or task completion time.

The financial findings reveal a similar need for alignment, in this case between BLU flexibility and public accountability. The observation that BBIB generated operational surplus but faced delays in reallocating funds suggests that revenue performance does not automatically translate into timely strategic investment. Ahlbäck Öberg and Wockelberg (2021) describe an autonomy paradox in public agencies: managerial autonomy is expected to improve efficiency, yet governments also intensify results control to safeguard public accountability. BBIB's budgeting reform should therefore avoid treating autonomy and control as opposing choices. A more appropriate approach is controlled flexibility, in which pre-agreed thresholds permit timely spending on critical maintenance, digital infrastructure, and quality assurance while dashboards, internal audit, and outcome indicators maintain transparency. Ahrens and Chapman's (2007) practice perspective further suggests that accounting systems gain managerial value when budget information is embedded in day-to-day organizational action rather than treated only as formal compliance documentation.

This interpretation has an important practical consequence. Revenue realization or surplus size should not be used as the sole indicator of institutional success. Budget performance needs to be connected to public-service and operational outcomes, such as production continuity, equipment uptime, semen-quality compliance, delivery reliability, training reach, and the time required to respond to urgent operational risks. Such an outcome-linked dashboard would make financial flexibility more defensible because it would show how the use of funds contributes to BBIB's public mandate. It would also provide a clearer basis for prioritizing investments when resources are constrained.

The proposed LIMS responds directly to the operational risks identified in manual sample and data handling. Recent implementation evidence shows that LIMS can increase sample throughput, standardize reporting, improve accessibility, and reduce transcription errors, but also highlights persistent challenges involving connectivity, financing, technical support, and user training (Oakley et al., 2025). Accordingly, BBIB should not conceptualize digital transformation as a one-time procurement decision. A phased implementation is more suitable: process mapping and data standardization; pilot deployment in one critical workflow; validation and user training; integration with inventory and quality-control records; and subsequent scale-up based on documented performance. This sequence reduces implementation risk and allows staff feedback to shape system configuration.

LIMS adoption should also be embedded within a broader laboratory quality architecture. Pillai and Fox (2025) emphasize that reliable laboratory performance depends on the integration of process management, documents and records, risk control, corrective action, and continual improvement. For BBIB, this means that digitizing an inconsistent process could merely reproduce existing weaknesses electronically. Prior to deployment, sample identifiers, access rights, data-validation rules, retention schedules, audit trails, equipment interfaces, and exception-handling procedures should be standardized. Relevant indicators could include sample-tracking completeness, transcription-error frequency,

turnaround time, system uptime, audit findings, and the proportion of staff certified as competent users.

The participatory process is another meaningful outcome of the program. BBIB managers and staff were involved in problem confirmation, root-cause analysis, and intervention planning, which increased the contextual relevance of the recommendations. This is consistent with participatory action research, where relationship building, common problem framing, collaborative analysis, and action planning are central design elements (Cornish et al., 2023). In a technically specialized public institution, such participation is particularly important because external academic teams may provide analytical frameworks, but operational personnel possess the tacit knowledge needed to judge feasibility. The intervention therefore functioned as a knowledge-translation mechanism between managerial concepts and institutional practice.

However, participation should not be equated automatically with shared decision-making or sustained organizational change. Participatory approaches can be weakened by uneven power relations, limited representation, or consultation that does not influence final decisions (Cornish et al., 2023). Future cycles should document who participated, how priorities were selected, which recommendations were accepted or rejected, and how staff feedback changed implementation. Establishing a joint steering group and scheduled review cycles would help convert an initial forum into an ongoing learning mechanism.

Taken together, the findings support a staged institutional transformation model. The first stage is diagnostic alignment through competency mapping, asset criticality assessment, financial process review, and workflow mapping. The second stage is controlled piloting through targeted training, a limited LIMS module, and priority-based capital spending. The third stage is performance institutionalization through measurable indicators, internal audit, SOP revision, and periodic participatory review. This model is potentially transferable to other specialized public agricultural institutions because it links managerial reform to operational context. Transferability, however, depends on differences in mandate, regulatory authority, digital maturity, staff capability, and resource availability.

Several limitations qualify the interpretation of the results. First, the project relied predominantly on qualitative evidence and stakeholder feedback, without baseline and follow-up measurements of employee competency, operational efficiency, financial responsiveness, or data quality. Second, the limited implementation period does not establish whether proposed changes will be sustained. Third, the number and characteristics of interview participants were not reported in sufficient detail, limiting assessment of representativeness and saturation. Fourth, the intervention occurred in a single institution, so analytical transfer rather than statistical generalization is appropriate. Future evaluation should use a mixed-method design with pre-post indicators, including competency scores, SOP nonconformities, processing time, equipment downtime, budget-reallocation lead time, transcription errors, and stakeholder satisfaction. A follow-up period of at least six to twelve months would provide stronger evidence of institutional impact.

Overall, the program indicates that BBIB's modernization requires more than separate technical fixes. Sustainable improvement depends on the joint alignment of people, financial discretion, operational assets, information systems, and accountability mechanisms. The strongest implication is that institutional transformation should be

managed as an iterative learning process: diagnose with stakeholders, pilot selectively, measure operational outcomes, and revise the intervention based on evidence. Under these conditions, the recommendations generated by this community service project can progress from institutional readiness to demonstrable and sustainable public-service performance.

5. CONCLUSION

This community service project at BBIB Singosari addressed key institutional challenges across human resource management, financial planning, and operational systems. Through participatory diagnosis and collaborative engagement, the team identified core issues such as workforce misalignment, rigid budget structures, and outdated infrastructure.

The intervention resulted in strategic recommendations, including a tailored competency development roadmap, improved budget reallocation planning under the BLU framework, and a proposal for adopting digital tools such as the Laboratory Information Management System (LIMS). These outcomes strengthened BBIB's readiness for institutional modernization and enhanced its ability to respond to national food security goals.

Moreover, the project demonstrated the effectiveness of integrating academic expertise into public service improvement efforts. The collaborative approach fostered organizational reflection, built stakeholder ownership, and offered a replicable model for similar institutions across Indonesia.

In summary, BBIB Singosari shows strong potential to transform into a more adaptive, efficient, and technology-driven public agricultural agency. Continued investment in human capital, responsive financial management, and digital innovation will be key to ensuring its long-term sustainability and strategic contribution to livestock development nationally and internationally.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY

The data supporting the findings of this study are available from the corresponding author upon reasonable request and subject to approval from BBIB Singosari. Certain organizational documents, financial records, interview materials, and operational information cannot be made publicly available because they contain confidential institutional information. Any data sharing will comply with applicable institutional policies and confidentiality agreements.

AUTHOR CONTRIBUTIONS

Achmad Satrio: Conceptualization, project administration, stakeholder coordination, methodology, data collection, formal analysis, and writing—original draft. Andra Alif: Field observation, interviews, document analysis, data validation, and writing—review and editing. Cornelia Angelina: Data collection, participatory activity facilitation, documentation, visualization, and writing—review and editing. All authors participated in interpreting the findings, reviewed and approved the final version of the manuscript, and agreed to be accountable for the integrity of the work.

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