



RESEARCH ARTICLE

Information System for Reporting the Provision, Procurement, and Distribution of Production Facilities at the Aceh Animal Health and Livestock Department

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Funding information

LPPM STMIK Indonesia Banda Aceh.

Abstract

Data management related to the provision, procurement, and distribution of production facilities at the Aceh Animal Health and Livestock Department currently relies on manual methods using Microsoft Excel, without utilizing an integrated database system. This study focuses on developing an information system specifically for reporting the provision, procurement, and distribution of production facilities within the department. The objective is to understand and design an Information System for Reporting the Provision, Procurement, and Distribution of Production Facilities using Microsoft Visual Basic.NET. Data collection methods include observation, interviews, and literature review. In this system development, Microsoft Visual Basic.NET is utilized for designing the user interface, while Microsoft Office Access serves as the Database Management System (DBMS). Testing results indicate that the developed system meets the established requirements. The data input process and generated reports align with the desired needs.

Keywords

Information System; Reporting; Provision; Procurement; Distribution of Production Facilities; Visual Basic.NET.

1 | INTRODUCTION

In the era of globalization, effective management within organizations has become increasingly vital due to the intensifying business competition. The success of any company hinges on its ability to professionally optimize resources to achieve its goals. Effective management is contingent upon the availability of relevant and up-to-date information, which can be obtained through precise data processing. To ensure that information is processed systematically and practically, integrated information system management is required. In the context of the Aceh Province, livestock development is an integral part of agricultural and national development. This necessitates a new paradigm in livestock development focusing on modernization, independence, and sustainability. Modern livestock development relies on the utilization of reliable science and technology to achieve higher efficiency. Advanced, independent, and sustainable livestock development considers the empowerment of human resources and livestock and possesses strong agribusiness insights.

However, data management related to the provision, procurement, and distribution of production facilities at the Aceh Animal Health and Livestock Department still relies on manual methods without utilizing an integrated database system. This reliance leads to inaccuracies in report presentation, as data is only recorded using Microsoft Office Excel and stored in annual files on computers. This situation also poses issues related to data security and computer usage by other staff members. To overcome these challenges and facilitate more accurate decision-making, accurate, relevant, and timely information provision is necessary. In response to this need, this study titled "Information System for Reporting the Provision, Procurement, and Distribution of Production Facilities at the Aceh Animal Health and Livestock Department" employs Microsoft Visual Basic.NET. The study aims to understand and design an information system that meets the needs of the Aceh Animal Health and Livestock Department.

The theoretical foundation of this study involves discussing basic concepts of systems, information, information systems, reporting on the provision, procurement, and distribution of production facilities, computers, Microsoft Visual Studio, Microsoft Visual Basic.NET, Microsoft Office Access, and Crystal Report. According to Hartono (2013) and Rosa and Shalahudin (2013), a system is a collection of components related to a specific goal. Lucas (1993) and Moekijat (1991) describe a system as interacting elements to achieve a particular goal. Information, as stated by Hartono (2013) and Sutarman (2012), is the result of data processing with broader meaning and utility. Information functions to reduce uncertainty in decision-making. According to Noviandi, Destiani, and Partono (2012), an Information System is a framework coordinating resources to transform inputs into outputs to achieve organizational goals, involving people, procedures, data, information, and information technology.

The reporting on the provision, procurement, and distribution of production facilities is a policy and work program based on livestock development plans. This report has a legal basis consisting of several laws and related regulations. A computer, according to Hartono (2013) and Asropudin (2013), is an electronic machine capable of data processing, reading input, processing it, storing commands and results, and providing output. Microsoft Visual Studio is a comprehensive software used for developing applications in various forms, such as business applications, personal applications, and application components. It includes various compilers and Integrated Development Environment (IDE). Microsoft Visual Basic.NET is a programming language used to create application programs. It is part of Visual Studio.NET and provides various tools to facilitate development processes. Microsoft Office Access is a database management application allowing electronic and systematic data management, with components like tables, queries, forms, reports, web pages, macros, and modules. Crystal Report is a program used for creating, analyzing, and translating information from databases or programs into various flexible report types, supporting multiple programming languages and common file formats.

With this understanding of basic concepts, we can proceed to further discussion on information system development in specific contexts. Mulyati (2013) highlights the importance of designing an inventory data information system, emphasizing the need for efficient data management in cooperative settings. Similarly, Gunawan and Pasaribu (2020) discuss farmers' perceptions in implementing the Farmer Card Program to support the distribution of subsidized fertilizers, underscoring the need for effective information systems in agricultural contexts. Anwar and Saty (2017) explore procurement and distribution systems for agricultural production facilities, emphasizing the necessity for integrated systems to enhance efficiency and accuracy. Sumbarwati (2016) analyzes strategies for providing subsidized fertilizers to farmers, highlighting the importance of systematic information management in agricultural supply chains. Prihantini and Lutfiyanto (2019) examine stakeholder perceptions in the distribution of agricultural production facilities, illustrating the need for transparent and efficient information systems. Rahmani (2022) and Dewi (2022) provide insights into the mechanisms of distributing subsidized fertilizers, demonstrating the critical role of information systems in ensuring effective distribution processes. Rondonuwu, Pangemanan, and Elim (2019) analyze accounting information systems for procurement and distribution of medical supplies, showcasing the significance of integrated systems in healthcare contexts.

Yuhono (2007) discusses the agribusiness system for pepper and its development strategies, emphasizing the

need for robust information systems to support agribusiness growth. Indah (2022) investigates the administrative information system for distributing subsidized fertilizers, highlighting the importance of efficient data management in retail settings. By integrating these references, the study aims to develop an information system that addresses the challenges faced by the Aceh Animal Health and Livestock Department, enhancing the accuracy and efficiency of data management related to the provision, procurement, and distribution of production facilities. The implementation of Microsoft Visual Basic.NET and Microsoft Office Access in system development is expected to provide a comprehensive solution, facilitating better decision-making and supporting the department's goals in livestock development. The study underscores the necessity of transitioning from manual methods to integrated information systems to improve data accuracy, security, and efficiency. By leveraging technology and adopting best practices from related fields, the Aceh Animal Health and Livestock Department can enhance its operations, contributing to the broader objectives of agricultural and national development.

2 | BACKGROUND THEORY

The underlying theory and practice of data management and information technology play a crucial role in enhancing operational efficiency and accuracy. Various studies and literature provide valuable insights into how information systems can be effectively implemented across different sectors, including agriculture, cooperatives, and public services. Angelia (2015) highlights the importance of partnerships in Village Unit Cooperatives (KUD) as a means to improve performance and operational efficiency. This study underscores that effective partnerships can strengthen management and distribution systems within cooperatives, which is a critical element in information system development. In this context, the development of information systems can serve as a tool to optimize partnerships by enhancing communication and coordination among cooperative members. Darwin (2014) provides an analysis of the accounting treatment of fixed assets in cooperatives in Palembang, demonstrating the importance of information systems in accurate financial recording and reporting. Proper and standardized accounting treatment is a crucial component in developing information systems that can help cooperatives manage assets and resources more efficiently.

Akbar (2019), in his thesis on the development of information systems for member services, agricultural inputs, and insurance, emphasizes the importance of integrating services into a single information system platform. Developing an integrated system allows for more efficient data management and provides users with easy access, thereby enhancing the quality of services offered. Nababan and Pakpahan (2022) discuss the empowerment of farmer groups in the procurement of vegetable production facilities and infrastructure. This study shows that information systems can serve as an empowerment tool for farmer groups by providing accurate and up-to-date data on the availability and distribution of production facilities. Thus, information systems can assist farmer groups in making better decisions and increasing productivity.

Wali (2017, 2018, 2020) in his various publications provides technical guidance on developing applications using Visual Basic.NET and Microsoft Office add-ins. This technical knowledge forms an essential foundation for developing effective information systems. Visual Basic.NET, as a software development tool, offers the flexibility and capability to design applications tailored to specific user needs, while Microsoft Office add-ins can extend application functionality with deeper integration into the Microsoft Office ecosystem. The theory and practice discussed in these references provide a comprehensive framework for understanding the importance and methods of developing effective information systems. By combining aspects of partnership, accounting treatment, service integration, group empowerment, and technology utilization, the development of information systems can significantly contribute to improving efficiency and productivity across various sectors.

3 | METHOD

The research method employed in this study encompasses two main approaches: field study and library study. The field study approach involves direct engagement in the field, including interactions with employees at the Aceh Animal Health and Livestock Department. Interview techniques are used to gain firsthand insights into the processes and challenges faced in the provision, procurement, and distribution of production facilities. Additionally, observations are conducted to directly understand the systems currently in place. Meanwhile, the library study approach involves gathering relevant materials from libraries, including books and literature related to the issues discussed in this research. These two approaches are utilized to collect comprehensive and in-depth data about the system being studied and to support the analysis and formulation of appropriate solutions. With this combination of approaches, the research aims to provide a comprehensive understanding of the information

system needed in the context of the Aceh Animal Health and Livestock Department.

4 | RESULT AND DISCUSSION

4.1 Results

The Animal Health and Livestock Service of Aceh Province was established based on Aceh Qanun Number 5 of 2007 concerning the Organizational Structure and Work Procedures of the Service, Regional Technical Institutions, and Regional Institutions of Nanggroe Aceh Darussalam Province. This service acts as an implementing element of the Aceh Government in the field of Animal Health and Livestock, led by a Head of Service who is responsible to the Governor through the Regional Secretary. The office address of the Animal Health and Livestock Service is located at Jl. Tgk. Malem No. 5 Banda Aceh. The Animal Health and Livestock Service has the main task of carrying out general government and development tasks in the field of Animal Health and Livestock in accordance with applicable laws and regulations. Its functions and authorities include the implementation of secretarial affairs, policy formulation, technical guidance, supervision, evaluation, guidance of technical implementing units, and many more. The vision of this agency is "Realizing Resilient Livestock Development with Agribusiness Insight, Based on Local Resources and Independent in 2017," with missions that lead to the provision of policies, increasing livestock production, improving livestock farmers' welfare, fulfilling food needs, and improving the professionalism of public administration. The organizational structure of the Animal Health and Livestock Service consists of several sections, including the Head of Service, Secretariat, Program and Reporting Division, Animal Health and Veterinary Public Health Division, Processing and Marketing Business Division, Livestock Production and Development Division, and the Technical Implementation Unit of the Service (UPTD). Animal Health and Livestock Service of Aceh Province, the Report on the Provision, Procurement, and Distribution of Production Facilities (LP4SP) is an integral part of the work program. LP4SP is an important instrument in monitoring and evaluating the success of livestock development and animal health programs in Aceh. However, the current system still faces a number of challenges. One of the visible obstacles is the limited use of the Microsoft Office Excel application in inputting data. Although there are computers as tools, their use is still limited to typing letters and documents, not for inputting LP4SP data. In addition, data systematization is also a problem, where the data managed is not structured effectively. This can complicate the process of data processing and analysis.

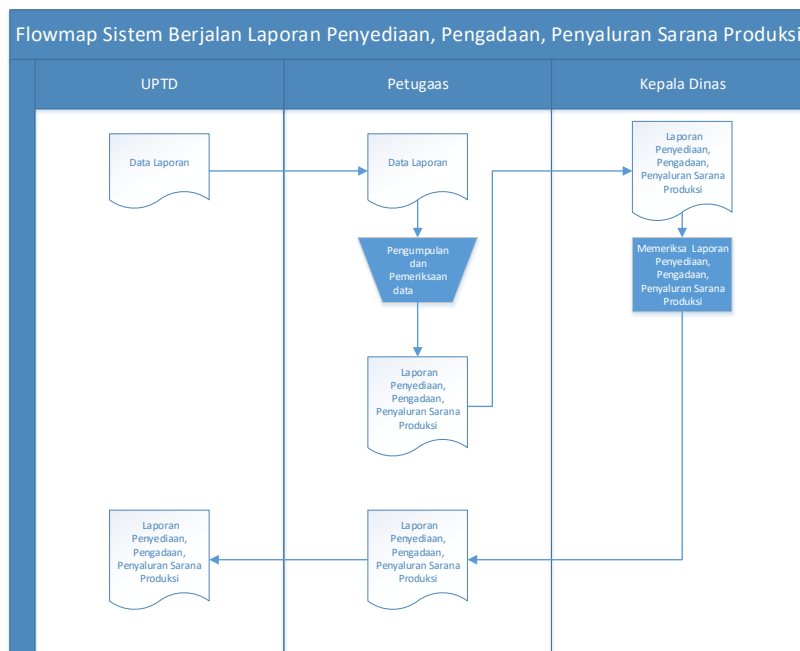


Figure 1. FlowMap Running

Current data processing procedures are not systematic. The data managed does not have clear coding, making it difficult to identify and analyze data efficiently. The use of Microsoft Word and Excel applications still dominates, without a comprehensively integrated system. This causes file accumulation and difficulty in managing information. The flow of information in the LP4SP system starts from the UPTD section of the Aceh Animal Health

and Livestock Service which provides LP4SP data. The data is then filled in by officers according to their main duties and job functions. After the data is filled in, it is submitted to the leadership for review and evaluation. However, this flow of information is still not optimal in ensuring data efficiency and accuracy.

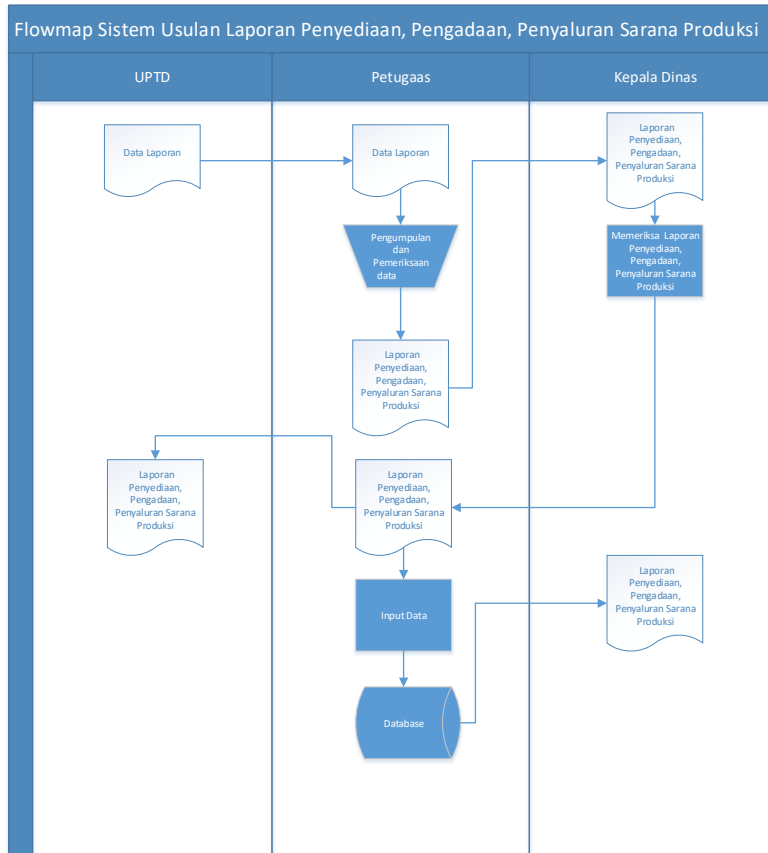


Figure 2. Proposed Flowmap

The design of a new system is a solution to overcome the obstacles in the current LP4SP system. The new information system is planned to integrate LP4SP data management as a whole, starting from input, processing, to data reporting. The program menu structure is designed to make it easier for users to access the features provided by the new information system. An intuitive menu will help users navigate the system more efficiently.

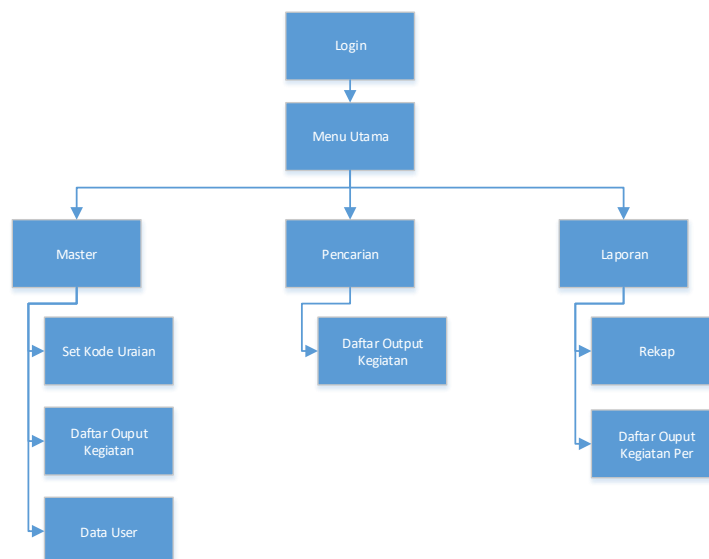


Figure 3. Program Menu Structure

The program flowchart is used to visually describe the workflow in the new LP4SP information system. This includes the login process, data input, data search, and reporting process. With a clear flowchart, users can better understand the steps to be taken. Data structure design involves creating tables that will be used to store LP4SP data. Each table will have appropriate attributes to ensure the accuracy and effectiveness of data management. The relationships between tables in the database will allow data to be grouped based on existing entities and relationships. This will facilitate data access and ensure the sustainability of the system. Input design includes creating forms that will be used for data input. These forms are designed with user needs in mind and will facilitate the LP4SP data input process.

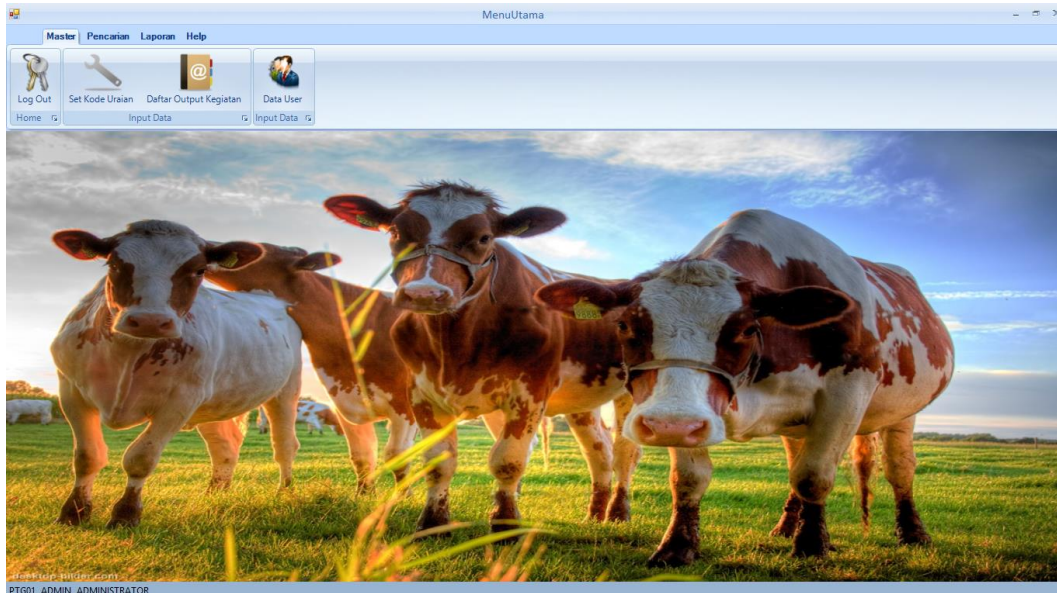


Figure 4. Main Menu Form

Output design involves creating report formats that will be used for reporting data. These reports will be prepared in a clear and structured format to facilitate interpretation and analysis..

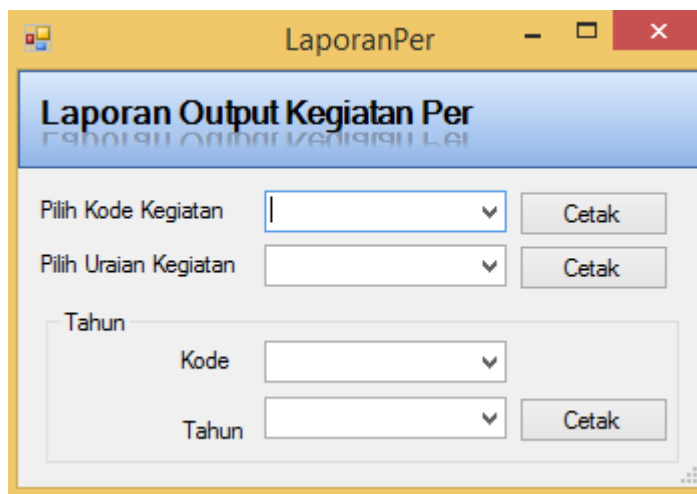


Figure 5. Print Report Form Report

The hardware and software specifications required to use the LP4SP information system include components such as CPU, RAM, hard disk, monitor, keyboard, mouse, and software such as Windows, .NET Framework, Visual Basic .NET, and Microsoft Office Access. With the appropriate specifications, it is expected that the LP4SP information system can run smoothly and efficiently. With the design of a new integrated information system, it is expected that LP4SP data management at the Aceh Animal Health and Livestock Service can increase effectiveness and efficiency in achieving better livestock development goals.

4.2 Discussion

The establishment and operation of the Animal Health and Livestock Service of Aceh Province, as outlined in Aceh Qanun Number 5 of 2007, highlights the importance of structured governance in the field of animal health and livestock management. This service plays a crucial role in implementing government policies and development tasks, aiming to enhance livestock resilience through agribusiness insights based on local resources. The existing challenges in data management, particularly with the LP4SP (Report on the Provision, Procurement, and Distribution of Production Facilities), underscore the need for a more integrated and efficient information system. The current reliance on Microsoft Office applications, primarily Excel and Word, for data input and management has led to inefficiencies and difficulties in data processing and analysis. This is consistent with findings from Wali (2017, 2018, 2020), which emphasize the limitations of using basic office software for complex data management tasks and advocate for the development of more robust systems using tools like Visual Basic.NET. The proposed redesign of the LP4SP system aims to address these inefficiencies by integrating data management processes, from input to reporting. This approach aligns with Akbar (2019) emphasis on the importance of integrated systems for improving service quality and data accessibility. The intuitive design of program menus and structured workflows, as depicted in the proposed flowmap and program menu structure, are expected to facilitate user navigation and enhance data management effectiveness.

Moreover, the design of a new data structure, involving clear coding and relational databases, is critical for improving data organization and retrieval. This approach is supported by Darwin (2014) analysis of the importance of standardized data structures for effective asset management in cooperatives, which can be applied to the context of livestock data management. The hardware and software specifications required for the new LP4SP information system, including components like Visual Basic.NET and Microsoft Office Access, are designed to ensure smooth and efficient system operation. This technical foundation is crucial for supporting the comprehensive data management needs of the Animal Health and Livestock Service, as highlighted by Nababan and Pakpahan (2022) in their discussion on empowering farmer groups through effective data systems. In conclusion, the redesign of the LP4SP information system is a strategic move to enhance the efficiency and effectiveness of livestock development programs in Aceh. By addressing current data management challenges and implementing a more integrated system, the Animal Health and Livestock Service can better achieve its mission of improving livestock production, farmer welfare, and food security, ultimately contributing to the resilience and sustainability of the region's livestock industry.

5 | CONCLUSIONS AND FUTURE WORK

Based on the analysis results, the LP4SP data processing system at the Aceh Animal Health and Livestock Service still relies on Microsoft Office Excel, which can reduce the accuracy and efficiency of record-keeping. However, the current computerized system has several advantages, such as faster data processing, efficient data retrieval, ease in report generation, and higher data security. Nevertheless, the risk of data damage or loss remains a concern. To enhance the quality of the LP4SP data processing system, it is recommended to develop an application capable of processing LP4SP data not only on an annual basis and limited to a single provincial area but also on a daily, monthly, and cross-agency basis. Innovation and new ideas in developing application features are needed to facilitate the operation process. The authors acknowledge the shortcomings in the development of this application and welcome feedback, criticism, and evaluation for future improvements. It is hoped that the LP4SP data processing application can be utilized optimally and continuously developed to provide maximum benefits to users. With further improvements and development, it is expected that this system can significantly contribute to the management of LP4SP data in the future.

ACKNOWLEDGEMENTS

Thank you to the entire research team and LPPM STMIK Indonesia as funders for research development activities in 2022.

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How to cite this article: Haikal, A., Ihsanudin, I., & Suswati, D. (2023). Information System for Reporting the Provision, Procurement, and Distribution of Production Facilities at the Aceh Animal Health and Livestock Department. *Journal Dekstop Application (JDA)*, 2(1), 1-8. <https://doi.org/10.59431/jda.v2i1.318>.