



RESEARCH ARTICLE

# Implementation of a Potential Information System to Improve Data Collection Efficiency at the Central Statistics Agency of Pidie Regency

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## Abstract

The implementation of a new information system at the Central Statistics Agency (BPS) of Pidie Regency aimed to improve the efficiency of data processing, replacing the manual system that relied on Microsoft Word and Excel. The previous system led to delays, errors, and inefficiencies in generating reports. A new solution was developed using Microsoft Visual BASIC 6.0, addressing these issues by automating the data processing workflow. The development process included a feasibility study, system design, and coding, followed by thorough testing and staff training to ensure effective use of the system. The new system has successfully sped up data processing, reduced errors, and improved the accuracy of reports. This digital upgrade also enhanced transparency and accountability within BPS. The findings from this study demonstrate that the shift to automated information systems can significantly improve the operational efficiency of government agencies. The successful implementation of this system at BPS Pidie offers a potential model for other regions looking to modernize their data management processes.

## Keywords

Information System; Data Processing; BPS Pidie; Visual BASIC 6.0; Automation; Report Generation.

## 1 | INTRODUCTION

Efficient data management is essential for supporting development planning and decision-making in the public sector. The Central Statistics Agency (BPS) plays a critical role in providing accurate and timely data to facilitate development at both national and regional levels. However, in Pidie Regency, BPS faces significant challenges in data processing, particularly related to regional and economic potential. The current system, which relies heavily on software like Microsoft Word and Excel, is unable to deliver optimal efficiency and often adds to the workload of staff. Relying on manual methods for processing data creates several inefficiencies. The process is slow, delays in reporting occur, and there is an increased risk of data entry errors. These challenges affect the quality of the reports generated and hinder the decision-making process. With the growing need for quick and accurate data to support policy decisions and development programs, there is an urgent need to adopt a more advanced system. A computer-based system that automates data processing could significantly improve efficiency, reduce errors, and lighten the staff's workload. By implementing an integrated system, BPS can streamline the process of managing and analyzing data, making it easier to produce timely reports and support effective decision-making. This change would not only enhance the overall efficiency of BPS Pidie Regency but also improve the quality and reliability of the data managed.

Efficient data management plays a critical role in supporting development planning and decision-making within the public sector. The Central Statistics Agency (BPS) holds an essential responsibility in providing accurate and timely data that is crucial for development at both national and regional levels. However, in Pidie Regency, BPS faces significant challenges in managing data related to regional and economic potential. The current system, which relies on software such as Microsoft Word and Excel, has proven to be inefficient and burdensome, increasing the workload of staff (Iqbal, 2022). These manual processes slow down data retrieval, delay report generation, and increase the risk of data entry errors. This inefficiency not only impacts the quality of data but also affects the timely decision-making required for effective governance. As the demand for accurate and readily available data grows, particularly for policy formulation and development strategies, the existing system is no longer adequate. To address these challenges, there is a clear need for a more advanced and integrated data management system. By transitioning to an automated, computer-based solution, BPS would streamline its data management, improve accuracy, and reduce the burden on staff, ultimately leading to more efficient and effective decision-making in Pidie Regency.

Manual methods of data processing often result in several challenges, including slow processing speeds and a higher likelihood of data entry errors. These problems can significantly affect the effectiveness of data management and delay decision-making. Studies have shown that using more advanced technology can greatly enhance both the efficiency and accuracy of managing data, which is crucial for making informed, data-driven decisions (Arsa *et al.*, 2024). Adopting a computer-based information system that automates the data processing flow is essential to address these challenges. Such systems help reduce human error, speed up data handling, and improve the quality of generated reports. By automating routine tasks, staff can focus on more complex analysis, leading to more insightful outcomes and better decisions. Switching to a more modern system allows for more effective data management, ensuring both accuracy and timely reports. These improvements are necessary for organizations that depend on reliable data for making critical decisions. As a result, the efficiency of operations increases, leading to faster and more informed decision-making, which is vital for achieving development goals and enhancing overall productivity (Yulientinah & Nugraha, 2023).

For BPS Pidie Regency, the decision to adopt Microsoft Visual BASIC 6.0 was made to replace the existing manual system. This new system is designed to accelerate data processing, enhance accuracy, and improve the integration of data. The development process begins with a feasibility study to assess the limitations and needs of the previous system. This step ensures that all areas requiring improvement are clearly identified, helping guide the development of the new solution. Following the feasibility study, the system design phase begins. This includes creating the structure for how the system will operate and ensuring that all necessary components are included for efficient data management. The next step is coding, where the system is built using Visual BASIC 6.0 to meet the requirements outlined in the design phase. Once the system is developed, user training is conducted to ensure that the staff at BPS Pidie Regency can operate the new system effectively. By adopting this approach, the new system aims to streamline workflows, reduce errors, and enhance the overall efficiency of data handling. With improved system functionality, BPS Pidie will be able to better manage and process data, ultimately supporting more timely and accurate decision-making (Zahara *et al.*, 2022).

The implementation of a computer-based system at BPS Pidie Regency is expected to significantly improve data processing. With the introduction of this system, the time required to process data will be shortened, and reports will be generated more efficiently. Additionally, the risk of data entry errors will be greatly reduced. These improvements are vital in ensuring that reports are produced in a timely manner and contribute to more accurate decision-making. The new system is also designed to increase transparency and accountability in managing statistical data. As the public sector continues to adopt new technologies, it is essential that government agencies keep up with these advancements.

By upgrading the system at BPS Pidie Regency, it will be possible to offer more reliable and precise data, meeting the growing demand for clear and timely information. This study emphasizes the need for government institutions to adopt modern technology in their data management practices. The successful application of this system at BPS Pidie Regency can serve as an example for other regions facing similar challenges. By embracing technology, other government agencies can improve their operations, leading to greater efficiency, accuracy, and transparency in their data handling (Ginting, 2021; Adriansah & Santoso, 2021). This study aims not only to implement a technological solution at BPS Pidie Regency but also to illustrate the importance of digital transformation in government data management. The successful implementation of this system is expected to serve as a model for other regions looking to upgrade their information systems with more modern technology. By adopting advanced systems, local governments can enhance their data management processes, improve efficiency, and provide more accurate and timely information for decision-making. The results of this research highlight the crucial role of technology in streamlining public sector operations, ensuring transparency, and meeting the growing demand for reliable data. As digital transformation continues to evolve, it will be vital for other regions to follow suit and modernize their systems.

## 2 | BACKGROUND THEORY

In today's digital era, information technology plays an essential role in improving operational efficiency and effectiveness, especially within the public sector. The Central Statistics Agency (BPS) is a key institution responsible for collecting and processing statistical data, which is crucial for government planning and decision-making. Accurate and timely data is necessary for both national and regional development programs (Mirza *et al.*, 2023). However, in several regions, including Pidie Regency, data processing is still carried out manually. This approach not only causes delays in generating reports but also increases the likelihood of data entry errors, which can compromise the reliability of the information provided (Ayuningtias & Huda, 2021; Wali, 2020). The use of manual methods in data management at BPS is inefficient, especially as demands for quick and accurate data grow. As the need for real-time information becomes more pressing, adopting modern technology has become essential. Transitioning from manual systems to automated processes will allow for faster, more accurate data processing and reporting (Alfaris *et al.*, 2022; Wali, 2017). By integrating advanced technologies, BPS can enhance the quality of its data, thereby improving decision-making and governance efficiency. An information system, which is a combination of human components, hardware, software, data, and procedures, has the potential to improve the management of statistical data (Mahendra *et al.*, 2022). This system allows for more efficient and faster data processing, as well as the generation of more accurate reports. Specifically, the implementation of Geographic Information Systems (GIS) can effectively manage and analyze location-based data, providing a more easily understandable visualization in the form of maps (Marliana *et al.*, 2024; Wijayanto *et al.*, 2022). Thus, BPS can perform more in-depth analysis of regional and economic potential using geospatially presented data.

A significant advantage of adopting information technology in government is the improvement in transparency, efficiency, and accessibility of data (Heryanto *et al.*, 2022; Wali *et al.*, 2023). The concept of e-government promotes the use of integrated systems that support data-driven decision-making with accurate and timely information. By implementing more advanced technology, government institutions can streamline their operations, reduce delays, and provide better access to reliable data for both decision-makers and the public (Wali, 2018). In Pidie Regency, implementing information systems aims to speed up data processing and presentation. This shift allows for automated data collection and reporting, which reduces the chance of errors and ensures that the data is available faster. As a result, the accuracy and relevance of the information improve, enabling more informed decision-making. Additionally, the adoption of these systems makes it easier for government officials and the public to access important data (Wijayanto *et al.*, 2022). This improved accessibility supports transparency and accountability, as citizens can easily obtain the information they need. Overall, integrating information technology into public sector operations ensures more efficient governance and helps in making decisions based on up-to-date, accurate data.

The development of an information system begins with the analysis of user needs, which is a critical step in understanding the challenges and specific requirements of the BPS staff (Wali, 2017). This phase ensures that the system will address the unique needs of the users and streamline their processes. After analyzing the requirements, the next phase is system design, which focuses on creating an intuitive user interface and designing a database structure that can efficiently store and process large amounts of statistical data (Niamilah *et al.*, 2023; Wali, 2020). Once the design is finalized, the system moves into the coding phase. At this stage, developers write the necessary code to implement the features identified during the design process, ensuring that the system will meet the users' needs and function properly (Wali, 2018; Mahendra *et al.*, 2022). Special attention is given to the system's capacity to manage data effectively and efficiently, which is crucial for accurate data processing and reporting. After coding, thorough system testing is performed to identify any issues or bugs (Alfaris *et al.*, 2022). This step is vital to ensure that the system meets user expectations and operates efficiently under various conditions. Once the testing phase is completed successfully, the

system is ready for implementation. By following these steps, the information system will be well-equipped to support BPS in managing and processing data effectively. The implementation of a computer-based information system at BPS Pidie Regency is expected to improve data processing significantly (Wali *et al.*, 2023). With this system, data handling will become faster, reports will be generated more efficiently, and the chances of data entry errors will be greatly reduced. This change will help ensure that decision-makers receive accurate and timely information, supporting better governance (Wijayanto *et al.*, 2022). Furthermore, the system will enhance transparency and accountability in managing statistical data. As public sector agencies continue to adopt new technologies, BPS Pidie Regency will be better equipped to meet the growing demands of data management (Wali, 2017; Wali, 2020). By automating key processes, the system will ensure better data control and monitoring, making sure information is handled with care. Overall, adopting this technology will not only streamline operations at BPS but also establish a higher level of accountability in managing public data (Mahendra *et al.*, 2022; Alfari *et al.*, 2022).

### 3 | METHOD

This study focuses on the development and implementation of a computer-based information system at BPS Pidie Regency. The goal is to examine how the new system improves data processing speed, reduces errors in data entry, and enhances the efficiency of report generation. The methodology follows a structured approach, outlined in the following phases.

#### 1) System Development Phases

The system development process begins with the Feasibility Study, the first crucial step in evaluating the needs and challenges of the existing system. This study identifies the limitations of the current manual system, which relies on Microsoft Word and Excel. The new system, developed using Microsoft Visual BASIC 6.0, is designed to address these issues by automating data processing tasks, ultimately improving both speed and accuracy. Following the feasibility study, the next phase is Planning, where the scope of the project is defined. During this phase, various design diagrams, such as Data Flow Diagrams (DFD), are created. These diagrams help visualize how data will flow through the system and be processed. By doing this, the development team gains a clearer understanding of the information flow and the structure needed for the new system. The System Analysis phase involves detailed discussions with BPS staff to understand their needs. Data is gathered through interviews and questionnaires, ensuring that the system addresses these needs while improving efficiency and accuracy in processing data. Diagrams such as the Context Diagram and Hierarchical DFD help illustrate the interaction between users and the system. Next, System Design focuses on creating a user-friendly interface and a functional database structure. Key tables, such as "Potensi Wilayah" and "Potensi Ekonomi," are created to store regional and economic potential data. This phase also involves developing wireframes and program specifications to guide the programming process. Finally, System Implementation begins after the design phase. The system is coded using Visual BASIC 6.0, ensuring it performs essential tasks like data input, report generation, and error reduction. Testing follows coding to identify and address any bugs or issues with the system. The implementation phase concludes with training BPS staff on how to effectively use the new system.

#### 2) Data Collection

Data collection for this study involves both qualitative and quantitative methods. Interviews and observations are conducted to gather feedback on users' experiences with the system, assess their satisfaction, and identify any challenges they face while using it. These insights help in understanding how effectively the system supports BPS staff. Additionally, document analysis is carried out, comparing reports generated before and after the system was implemented. This comparison helps assess improvements in report speed, data accuracy, and the reduction of errors. Lastly, system testing is performed, where data regarding the time taken to generate reports and the frequency of errors is collected. The testing results are then analyzed to determine the extent of improvements, providing clear evidence of the system's impact on data processing efficiency.

#### 3) Data Analysis

The data analysis for this study adopts a comparative approach. First, a pre- and post-implementation comparison is conducted to assess the performance of the old system versus the new one. This comparison focuses on measuring improvements in processing time and data accuracy. Additionally, qualitative analysis is performed by analyzing feedback from staff and users to evaluate their satisfaction with the new system and how well it meets their needs. This helps to understand the system's practical effectiveness and its alignment with user expectations. Furthermore, quantitative analysis is used to evaluate key performance metrics, such as report generation time and error rates. By analyzing these metrics, the study quantifies improvements in operational efficiency, providing concrete evidence of the system's impact on data processing and overall performance.

4) Expected Outcomes

The new system is expected to improve data processing times, reduce errors in data entry, and generate reports more efficiently. Additionally, the system should enhance transparency and accountability in managing statistical data by providing better control over data input and output. This research aims to evaluate the system's effectiveness in improving BPS Pidie Regency's data management processes and provide a framework that other regions can use to upgrade their systems.

## 4 | RESULTS AND DISCUSSION

### 4.1 Reults

#### 4.1.1 System Development

System development refers to the process of designing and creating a new system to either replace or enhance an existing one. The existing system at the Central Statistics Agency (BPS) of Pidie Regency required improvements due to several issues, primarily the long time required for retrieving potential data. Currently, BPS Pidie still uses basic applications like Microsoft Word and Microsoft Excel, which makes report generation slow and inefficient. To address this issue, a new information system was developed using Microsoft Visual BASIC 6.0, aiming to simplify data processing tasks and improve overall efficiency. The development of the new system followed several stages. The first phase, Feasibility Study, began with identifying the requirements for the new system. This step not only considered the new needs outlined by management but also took into account the existing system's shortcomings. Since BPS Pidie was still using manual processes, a computerized system was proposed as the new solution. The second phase, Preliminary Planning, focused on defining the project scope. During this phase, Data Flow Diagrams (DFD) such as Context DFD, Hierarchical DFD, and Level 0 DFD were created to outline how the system would operate. The third phase, System Analysis, involved in-depth discussions with BPS staff to gather detailed information about their needs. Data was collected through interviews, observations, and questionnaires. This helped ensure that the new system would address the users' requirements and enhance data processing efficiency. Diagrams like the Context Diagram and Hierarchical DFD clearly illustrated the flow of data within the system, highlighting the interactions between users and the system. The System Design phase was divided into two parts: database design and process design. The database design focused on creating structures that would meet user needs, such as tables for regional and economic data. Process design, on the other hand, involved creating program specifications and system structure diagrams that would guide the development of the system's functionality. Finally, the System Implementation phase involved coding the new system using Visual BASIC 6.0 and testing it to ensure all features worked as intended. The system was designed to improve data processing, generate reports faster, and reduce data entry errors. Staff training was also part of the implementation to ensure smooth adoption of the new system.

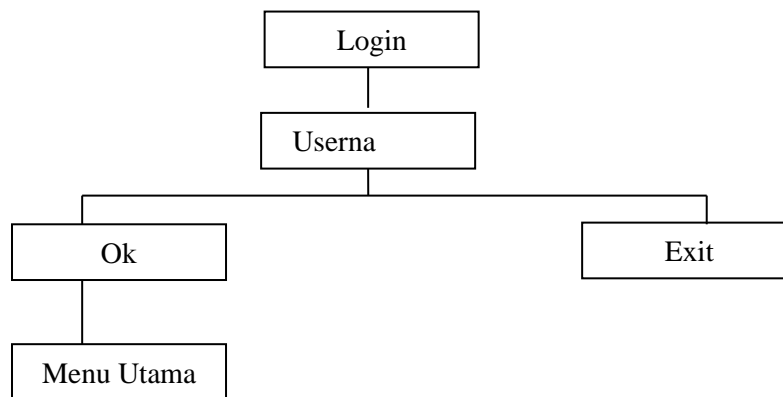


Figure 1. Login Chart

The system implementation phase includes several key steps. First is coding, which involves developing the application using Visual BASIC programming. During this phase, the program's code is written to implement the system's features. Next is program testing. After the program has been developed, it is tested by inputting existing data into the system. The speed of the system is then measured, and these results are compared to the performance before the program was implemented. This helps determine if the system is meeting the desired improvements in efficiency and accuracy. Program installation is the next critical step. To implement the new system, the necessary hardware and software must be in place. The system will only operate effectively if

supported by the appropriate equipment. For hardware, this includes personal computers with Intel Core i3 processors, monitors, and printers. For software, it requires the Windows 7 operating system, Microsoft Visual BASIC programming language, Microsoft Access, and application software. Finally, user training is conducted to ensure that BPS staff can operate the new system efficiently. This training provides hands-on instruction on how to use the new data management system, ensuring smooth adoption and effective use of the system.

#### 4.1.2 System Design

The designed information system provides features for fast data processing, significantly improving the efficiency of operations at the Central Statistics Agency (BPS) of Pidie Regency. The primary objectives of the system design are to improve the information system within data processing procedures and replace the previous system, which relied on Microsoft Excel 2007, with a more advanced system using Microsoft Access 2007 and Microsoft Visual BASIC 6.0. This transition aims to streamline the data management process and enhance overall performance. The creation of the system involves several steps. First, the program folder is created by right-clicking on the Start menu, selecting Explorer, and navigating to Drive D. A new folder named "program" is created to store all the necessary files. The next step is the project creation process, where Microsoft Visual BASIC 6.0 is used to create a new project by selecting "Standard EXE" and opening the project. Once the program structure is set up, the database is created by opening Microsoft Access, selecting "New Access," and then saving the database under the name "Aplikasi Anggota Potensi." The design also includes the creation of two main tables: the Potensi Wilayah table and the Potensi Ekonomi table. The Potensi Wilayah table stores regional data related to potential land use, including fields like village name, area size, population, and distance from the district and provincial capitals. The Potensi Ekonomi table focuses on economic potential, storing data on livestock, crops, and facilities within the region. Finally, the system also includes the design of user interfaces, starting with the Login Form, which requires users or administrators to input their username and password to access the system. This ensures that only authorized personnel can operate the system. The design of these forms and tables ensures that the system will be user-friendly, efficient, and capable of handling all required data processing tasks.

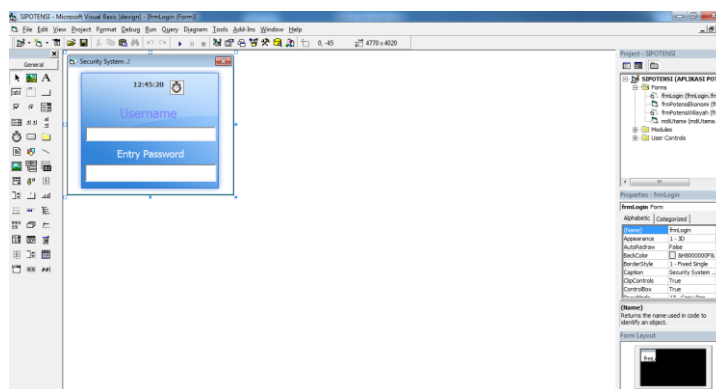


Figure 2. Login Form Design

The main menu form organizes several sections from different forms into one interface. It includes menus for file operations, data input for regional potential, economic potential, and report generation. Each component is clearly defined in Table 4 and visually represented in the design of the main menu form. This layout allows users to easily navigate between various functions, making the system more user-friendly. The properties of the form are outlined as follows: Form 1 is labeled "Menu," with the toolbar containing buttons named "Setup," "Process," "Report," and "Exit." This arrangement ensures that users can quickly access key features, improving the overall usability of the system.

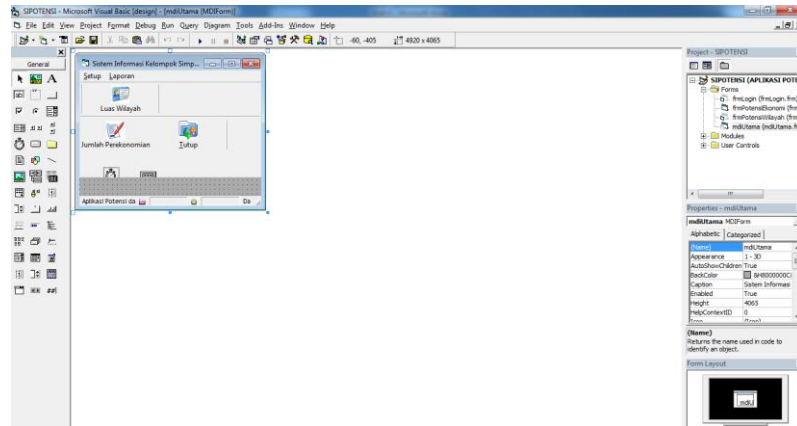


Figure 3. Menu Form Design

The Input Data Potensi Wilayah form allows users to input data related to regional potential. It includes fields such as village name, area size, characteristics, population, and distances to nearby districts and the capital. Each field is clearly labeled, including terms like "No," "Nama Gampong," "Luas," "Karakteristik," "Jlh. Penduduk," and "Mukim." The form also includes action buttons for adding, saving, editing, deleting, and closing the form, with labels such as "Tambah," "Simpan," "Edit," "Hapus," and "Tutup." These features make data entry straightforward and efficient, improving the speed and accuracy of the process. The Input Data Potensi Ekonomi form is used to enter economic potential data. Like the previous form, it consists of fields for village name, livestock data, crop areas, and available facilities. Fields are labeled with terms such as "No," "Nama Gampong," "Jumlah\_TernakBesar," "Jumlah\_TernakKecil," "LuasTanam," and "JumlahSarana." Action buttons such as "Tambah," "Simpan," "Edit," "Hapus," and "Tutup" allow users to manage the data. The layout is designed for easy and efficient data input, ensuring smooth operations. Both forms are structured to simplify the data entry process, ensuring that staff at BPS Pidie Regency can input and manage data quickly and accurately, enhancing the overall workflow and efficiency.

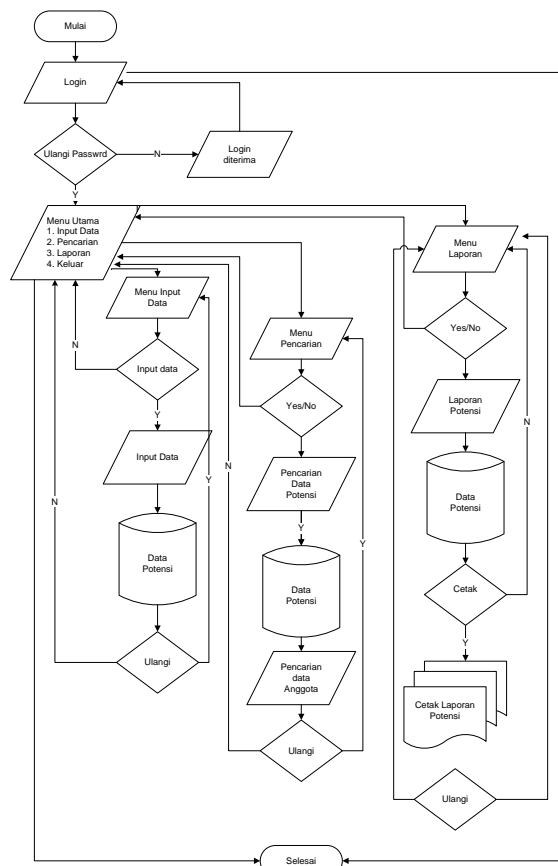


Figure 4. Flowchart

The flowchart illustrates the user journey within the system. It begins with the Login process, where users input their credentials to access the platform. After logging in successfully, users are directed to the Main Menu, offering options such as entering data, managing regional potential, or generating reports. If the Input Data option is selected, users proceed to input data regarding regional or economic potential. Once the data is entered, the system stores it in the Data Potensi category. Users can also manage this data by adding, editing, or deleting entries as necessary. Additionally, users can generate reports based on the stored data. The final step in the process is Create Report, where the system compiles and generates the relevant reports. After completing their tasks, users can either log out or return to the main menu to continue working. This setup ensures a seamless user experience throughout the process.



No	NAMA GAMPONG	LUAS	KARAKTERISTIK GAMPONG	JUMLAH PENDUDUK	MUKIM	JARAK KE	
						KECAMATAN	KABUPATEN
1	Keude Ie Lueue	143	-	400	-	14	12

Figure 5. Report Results of Regional Potential Data

The image above displays a report on regional potential data generated by the system at BPS Pidie Regency. The report provides details about a specific village, "Keude Ie Lueue," and includes key information such as its area size of 143 hectares and a population of 400 residents. Fields for village characteristics and residence type are empty, indicating that no data was entered for these sections. The report also shows the distance to the subdistrict, which is 14 kilometers, and the distance to the regency, recorded as 12 kilometers. This format allows for quick and organized access to relevant data, helping streamline the process of data management and facilitating decision-making at BPS Pidie Regency. It reflects the system's ability to generate clear reports that support efficient data processing.

## 4.2 Discussion

The development and implementation of a new information system at the Central Statistics Agency (BPS) of Pidie Regency were driven by the need to improve data management efficiency. Prior to the new system, BPS relied on Microsoft Word and Excel for data processing, which caused delays and errors. To address these challenges, the new system was developed using Microsoft Visual BASIC 6.0 to automate data processing, reduce errors, and increase operational efficiency. The development process began with a Feasibility Study, which identified the limitations of the old system and the requirements for the new one. The shift from a manual system to a computerized one was crucial for improving both the speed and accuracy of data management (Mirza *et al.*, 2023; Ayuningtias & Huda, 2021). Following this, the Preliminary Planning phase defined the project scope, including the creation of Data Flow Diagrams (DFD) such as the Context DFD and Hierarchical DFD, which visualized the data flow and system operation (Niamilah *et al.*, 2023). The System Analysis phase involved detailed consultations with BPS staff, using interviews, observations, and questionnaires to ensure the system would meet user needs and improve data processing capabilities (Arsa *et al.*, 2024). This approach made sure that the new system would address all critical issues and be user-friendly. Diagrams were used to clarify data flow within the system, ensuring all components interacted smoothly.

The System Design phase focused on both database and process design. The database was designed to handle both regional and economic data, stored in tables like Potensi Wilayah and Potensi Ekonomi, which ensured efficient data storage and retrieval. The process design created detailed program specifications that guided the development of the system's features, ensuring all tasks were automated and streamlined (Yulientinah & Nugraha, 2023). System Implementation involved coding the system with Visual BASIC 6.0 and testing its functionality. The system's performance was compared with the previous manual process to ensure improvements in speed and accuracy. Results showed that the system significantly outperformed the old system, confirming its ability to meet its objectives (Iqbal, 2022). The hardware and software required for the new

system, including Intel Core i3 computers and Microsoft Access, ensured the system ran smoothly and efficiently.

User training was also a key component of the implementation process, ensuring BPS staff could effectively use the new system. The training helped users become familiar with the new interface, functions, and data input processes, ensuring a seamless transition (Ajirni *et al.*, 2023). The new system provided several improvements, such as faster data processing and easier generation of reports, which were essential for BPS Pidie in managing regional and economic data. Forms like the Input Data Potensi Wilayah and Input Data Potensi Ekonomi simplified the data entry process, while the report generation feature allowed for quicker decision-making (Marliana *et al.*, 2024). By automating tasks that were previously manual, the system helped improve data accuracy and operational efficiency, providing better insights for planning and decision-making. The new system at BPS Pidie has shown considerable success in improving the speed and accuracy of data processing. The transition from a manual to a computerized system has not only increased efficiency but also reduced the risk of errors, allowing for more reliable data management. This development serves as a model for other regions looking to modernize their data management systems. By embracing new technology, BPS Pidie has positioned itself to better serve the public sector, demonstrating the importance of digital transformation in government operations.

## 5 | CONCLUSIONS AND FUTURE WORK

The newly implemented information system at the Central Statistics Agency (BPS) of Pidie Regency has effectively replaced the previous manual processes, leading to significant improvements in data processing and report generation. By transitioning to an automated system developed using Microsoft Visual BASIC 6.0, BPS has successfully addressed issues such as slow data retrieval, frequent errors, and delayed reporting. The new system streamlines the data management process, making it faster, more accurate, and less prone to human error, which directly enhances the efficiency of decision-making and governance. Additionally, the system has strengthened transparency and accountability within BPS, as the automated processes ensure that data is managed in a more organized and accessible way. The automation allows staff to focus on more complex tasks, improving overall productivity. Looking ahead, there is potential to further enhance the system by incorporating advanced features, such as Geographic Information Systems (GIS), which could provide more insightful data visualization and spatial analysis. Expanding the system's capabilities to handle larger datasets and offer real-time access to data would also improve its functionality. Additionally, future improvements could include the adoption of cloud-based solutions, which would increase system scalability and make data more accessible across multiple platforms. The success of the BPS Pidie system serves as a valuable model for other regions aiming to modernize their data management processes. As digital transformation continues to shape the public sector, further advancements in technology will be key in enhancing efficiency, accuracy, and transparency in government operations.

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