



RESEARCH ARTICLE

Desktop-Based Employee Data Management Information System at the Public Works Office of Pidie Jaya Regency

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Abstract

The Public Works Office (PU) of Pidie Jaya Regency is a government institution engaged in infrastructure and facility development. In the process of employee data management, the Public Works Office (PU) of Pidie Jaya Regency uses office applications such as Microsoft Office. The activities in the office, ranging from document reception to report generation, have been inefficient due to the semi-computerized nature of the report recording. The purpose of this thesis is to design an employee data management application, create a computerized data storage system, reduce data duplication and report errors, and analyze the system used at the Public Works Office (PU) of Pidie Jaya Regency. Based on research and observations conducted at the Public Works Office (PU) of Pidie Jaya Regency, it can be concluded that the implementation of this employee information system at the Public Works Office (PU) of Pidie Jaya Regency is effective and accurate, particularly in the human resources department. It makes obtaining employee information easier. This information system can address issues often encountered at the Public Works Office (PU) of Pidie Jaya Regency, such as difficulty in monitoring and overseeing employee data and reports. It helps prevent delays in generating annual and periodic employee reports, and facilitates the development of an information system program to obtain high-quality information.

Keywords

Information System, Employee Data Management, Desktop.

1 | INTRODUCTION

The rapid advancement of information and communication technology (ICT) has significantly impacted various sectors, especially in engineering and computer technology. This progress has transformed almost every aspect of life, ranging from business operations to educational systems and public sector services. As technological innovations continue to emerge, it has become increasingly essential for individuals and organizations to harness these technologies effectively. The appropriate application of ICT is a crucial factor in improving operational efficiency and enhancing productivity across different sectors. As a result, both individuals and organizations must continuously adapt to these changes in order to remain competitive and fully leverage the potential of modern technologies (Syahnur, 2023). In particular, with the explosive growth of the internet, the ability to effectively utilize digital resources has become a fundamental component for success in numerous industries. Organizations that successfully integrate digital technologies into their processes are better positioned to respond to market demands, innovate, and improve service delivery. Therefore, embracing technological advancements and adopting digital tools is not merely a choice but a necessity for sustained growth and success in today's increasingly digital world (Usmana *et al.*, 2023). The ongoing evolution of ICT offers vast opportunities, but it also presents challenges that require organizations to stay agile and continually improve their technological capabilities.

In Pidie Jaya, the Public Works Office (PU) plays a vital role in the development of public infrastructure, which is critical to supporting regional growth and improving the quality of life for residents. However, when it comes to managing administrative tasks, especially regarding employee data, the office continues to depend on traditional office applications like Microsoft Office. This method presents significant challenges, particularly in terms of efficiency, as the number of employees fluctuates regularly due to staff turnover or the addition of new personnel. The manual process of inputting data is time-consuming and increases the likelihood of human error. These errors can affect the accuracy of reports and hinder the office's ability to produce timely, reliable information. Given the responsibilities of the Public Works Office in overseeing major public projects and services, maintaining accurate and up-to-date employee records is essential for effective operations. The reliance on manual systems makes it difficult to manage staffing changes and resource allocation efficiently. This approach slows down the decision-making process and delays the production of essential reports. As a result, operational inefficiencies emerge, and the quality of service delivery can be compromised, making it evident that a more automated and integrated solution is necessary to improve the office's data management system (Nugroho *et al.*, 2023; Given & Rachmadi, 2023).

The primary challenge faced by the Public Works Office of Pidie Jaya is the inefficiency in managing employee data, which is currently handled through a semi-computerized system. This process involves manual data entry, followed by inputting the information into Microsoft Office applications. While this method was initially sufficient, it has become increasingly problematic as the volume of data grows and staff numbers fluctuate. The reliance on manual processes is not only time-consuming but also increases the likelihood of human error, especially when there are frequent changes in the staff roster. These errors can result in discrepancies in the data, which ultimately compromises the accuracy and reliability of the information available for decision-making. This situation significantly hinders the office's administrative efficiency, as delays and mistakes in data management create bottlenecks in other areas of operations. Given the essential role that the Public Works Office plays in regional infrastructure development and the management of public resources, having a streamlined, efficient system for handling employee data is crucial for smooth operations. Therefore, the development of an automated employee data management system is necessary to address these inefficiencies. The proposed system, utilizing Visual Basic.NET and Microsoft Access, is expected to offer a more reliable and efficient solution, enabling faster data processing, reducing the risk of errors, and ensuring accurate, up-to-date records that can improve overall administrative performance (Ardhana *et al.*, 2022; Purnama *et al.*, 2022).

The primary goal of developing this application is to replace the existing manual data management system with a more efficient, computerized solution. By integrating a robust database, the new system will significantly reduce errors, minimize data duplication, and streamline data retrieval processes. This will enhance the overall management of employee data by providing a more structured and reliable platform for data storage and access. The automation of these processes will not only improve data accuracy but also speed up the updating and retrieval of employee information, making it more effective and efficient. This transition to a computerized system will allow the Public Works Office to keep employee records up-to-date, minimizing the risk of errors that can occur when data is entered manually. Furthermore, by reducing reliance on manual input, the likelihood of mistakes in generating reports and other administrative tasks will be significantly decreased, ensuring that the information is both accurate and available in a timely manner. The streamlined system will also facilitate quicker decision-making by providing real-time access to accurate data, which is essential for the office's operational effectiveness. Ultimately, this new system will improve the efficiency of administrative processes, contribute to better data management practices, and support the Public Works Office in fulfilling its responsibilities more effectively (Rendragraha & Heriadi, 2023; Kharisma *et al.*, 2022).

The primary objective of this thesis is to design an efficient and reliable employee data management application

that will address the current challenges faced by the Public Works Office of Pidie Jaya. By implementing this system, the management of employee data will become faster, more organized, and less prone to human error. The application is intended to streamline data entry processes, making them more systematic and accurate, which will help reduce the risks associated with manual data input. Furthermore, one of the key goals of the system is to eliminate data duplication, which has been a recurring issue with the current system. By ensuring that all data is stored in a centralized and integrated database, the application will allow for faster data storage and retrieval, significantly improving the overall efficiency of administrative tasks. The system will also facilitate the timely generation of reports, ensuring that all reports are accurate, consistent, and available when needed. This will greatly enhance the office's ability to make informed decisions based on up-to-date employee information. Moreover, the implementation of this system is expected to optimize human resources management at the Public Works Office by improving operational efficiency, reducing errors, and enabling better monitoring of staffing and resources (Astitioni & Widnyani, 2022; Monica *et al.*, 2023).

The anticipated benefits of developing this application are significant, both for employees and administrators. For employees, the application will provide a much easier way to access and manage employee data. The transition to a computerized system will also enhance data security, which is a major concern with manual methods. Traditional data management techniques are often prone to errors, and the risk of data loss is higher when information is stored in physical files or spreadsheets. By moving to an automated system, the Public Works Office of Pidie Jaya will significantly reduce these risks, ensuring that all employee information is stored securely and can be retrieved quickly when needed. In addition, the system will streamline the process of generating reports. Currently, producing accurate and timely reports can be time-consuming and prone to human error, especially when data is entered manually. With the new system, reports will be generated faster, and the chances of errors will be minimized, as all employee data will be integrated into a centralized database. The automated system will also allow for real-time updates, so that data remains current and accurate at all times. Ultimately, the implementation of this application will support the Public Works Office in improving the efficiency of employee data management and streamlining administrative processes, making it easier for the office to manage its workforce and resources more effectively (Wahid & Homaidi, 2023).

As information technology continues to evolve, this application is expected to have a positive impact on the administrative operations of the Public Works Office of Pidie Jaya. Proper use of information technology can enhance the management of employee data, increase efficiency, and expedite administrative processes, all of which contribute to the organization's goals. Therefore, the development of this information system is expected to address current challenges and significantly enhance the overall performance of the Public Works Office of Pidie Jaya.

2 | BACKGROUND THEORY

In today's digital era, the integration of Information and Communication Technology (ICT) in the public sector has become vital for enhancing operational efficiency and modernizing administrative systems, particularly in the management of employee data. The rapid growth of ICT has driven a significant shift from traditional manual systems to automated processes. This shift not only enhances operational efficiency but also reduces the risk of human errors and improves the security of sensitive data. For government institutions, such as the Public Works Office (PU) in Pidie Jaya, the adoption of ICT is especially critical. Historically, the office has relied on semi-computerized or manual methods for managing employee data. These outdated systems, while functional to some extent, present various challenges. They are prone to human error, slow data processing, and the risk of inefficiencies as employee information continuously changes and requires frequent updates. Additionally, the reliance on manual methods often results in delays when accessing or processing data, which in turn hampers decision-making processes. With the increasing need for more dynamic and real-time management of resources, it is evident that traditional methods are no longer sufficient. As such, transitioning to an automated system that leverages modern ICT tools is essential for improving the efficiency, accuracy, and reliability of employee data management in government institutions like the Public Works Office of Pidie Jaya (Lawan *et al.*, 2019).

The implementation of an automated employee data management system offers several key advantages, most importantly the ability to integrate data into a single, unified database. Centralizing employee information enables faster, more accurate data entry, retrieval, and updates, ensuring that records are current and easy to access. This integration also helps streamline administrative tasks, reducing the inefficiencies common in manual systems. Research on the adoption of electronic Human Resource Management (e-HRM) systems in government institutions, such as the Ministry of Housing and Public Works, has demonstrated how transitioning from slow, error-prone processes to automated systems results in more accurate data and quicker decision-making. Automation significantly enhances the speed and reliability of administrative operations, allowing organizations to allocate human resources more effectively. By moving away from manual methods, public institutions can improve efficiency and reduce the risks associated with human error. Moreover, this digital transformation enables better resource management, ultimately leading to higher-quality public

services. With the shift to automated systems, public agencies are able to deliver services more efficiently, respond to public needs more effectively, and ensure that critical operations run smoothly (Farhana *et al.*, 2022; Leo, 2022).

Adopting new technology is not without its challenges, especially when it involves transitioning from traditional methods to automated systems. One of the most critical factors in this process is effective change management. Successfully implementing new technology requires that employees are adequately prepared to embrace automation and adapt to more modern management systems. Research in the public sector has highlighted the importance of employee readiness for automation initiatives, as it directly impacts the success of the transition. Proper preparation and training ensure that employees are equipped with the skills and mindset needed to use new technologies effectively. When employees are supported and properly trained, the transition is smoother, and the acceptance of the new system increases significantly. This preparedness is essential for overcoming resistance to change and ensuring that the implementation of automated systems is not disruptive to daily operations. As a result, the integration of automated systems for managing employee data not only enhances operational efficiency but also improves the overall performance and productivity of public institutions. Automated systems streamline administrative tasks, reduce human error, and increase the speed of data processing, allowing organizations to focus more on strategic goals and less on manual processes. By reducing inefficiencies, the adoption of automation ultimately leads to improved service delivery, better decision-making, and more effective resource allocation (Jumanne & Njoroge, 2019; Baran *et al.*, 2021). The integration of ICT in human resource management has shown the ability to reduce manual data input errors, optimize data update times, and accelerate the reporting process, which supports strategic decision-making. This trend is further reinforced by recommendations urging the public sector to increase investment in ICT and provide training to address the technological skills gap that still exists. This will help create a workforce better aligned with the demands of the digital age. Overall, the adoption of an automated employee data management system is a strategic step toward ensuring that the government can respond effectively to modern demands and enhance the quality of public services.

3 | METHOD

The research followed a structured approach, focusing on the design, development, and implementation of an automated employee data management system for the Public Works Office (PU) of Pidie Jaya. The aim was to improve administrative efficiency, reduce human error, and streamline data management. The methodology consisted of several key stages:

1) System Design Phase

The System Design Phase began by defining the core components necessary for the new employee data management system. The design process was broken down into several key elements, including input design, output design, process design, control mechanisms, workforce design, and cost design. For the Input Design, the first task was to create several programs to handle different types of data. These programs were designed to manage the input of user data, job position and classification details, as well as employee information, such as promotions, transfers, and educational history. Each program was carefully crafted to ensure consistency and accuracy of the data being entered, thus minimizing the risk of human error during the input process. In terms of Output Design, the system was built to generate several important reports and summaries. These included employee classification and job position reports, education and training records, and promotion and transfer reports. These outputs were essential for decision-making and needed to be clear, concise, and accessible to authorized personnel to ensure the effective management of employee data. The Process Design aimed to automate the data management system. The primary objective was to transition from the previous manual system to an automated, computerized solution. This shift would improve data processing speed and minimize errors, allowing for quicker updates and easier access to employee information. Effective Control Design was implemented to safeguard the integrity and security of the data. User access to the system was restricted, and login credentials, along with sensitive data, were encrypted to prevent unauthorized access. Only authorized personnel were allowed to access or modify critical information, while redundant data entries were eliminated to maintain the accuracy of the system. The Workforce Design ensured that minimal staffing was required to operate the system effectively. After appropriate training, one individual was designated to manage the system, overseeing its daily operations. Ongoing training sessions were also provided to ensure other employees could use the system effectively. Finally, a Cost Design analysis was conducted to estimate the financial resources needed for the system's implementation. The budget covered the costs of hardware, software development, and maintenance, ensuring that the entire project could be completed within the allocated budget. This structured approach to system design allowed for a comprehensive and efficient solution to employee data management at the Public Works Office of Pidie Jaya, optimizing the administrative processes and ensuring the system met the needs of the organization.

- 2) **System Implementation and Testing**

After the design phase was completed, the system was developed and subjected to thorough testing to ensure its functionality and effectiveness. During this phase, a series of test cases were created to evaluate various aspects of the system, including data entry, report generation, and user access. The testing process was designed to verify that the system performed as expected under different conditions and *met all* the requirements outlined in the design phase. Any potential issues, such as bugs or inconsistencies, were identified during these tests and promptly addressed by the development team. This process ensured that the system was stable, secure, and fully functional before it was deployed for use by the Public Works Office of Pidie Jaya. Additionally, feedback from users during the testing phase helped make final adjustments to improve the system's overall performance and usability.
- 3) **User Training and System Deployment**

After completing the testing phase, the system was deployed for use at the Public Works Office of Pidie Jaya, and staff members were provided with training on how to use it effectively. The training was hands-on, focusing on key tasks such as data input, report generation, and navigating the system's various features. Staff members were given the opportunity to practice using the system and familiarize themselves with its functions. To further support the training, detailed user manuals were distributed to ensure staff could easily access step-by-step instructions when needed. These manuals served as a valuable reference, helping users navigate the system without difficulty. The goal of the training was to make sure that all staff felt confident using the system and could fully leverage its features to streamline their workflow and improve the management of employee data.
- 4) **Maintenance and Updates**

After the system was deployed, a plan for ongoing maintenance was established to address any technical issues that might arise and to make necessary improvements. Regular updates were scheduled and implemented to ensure the system remained functional and aligned with the evolving needs of the Public Works Office. User feedback played a crucial role in this process, as it helped identify areas for improvement and highlighted any challenges staff encountered while using the system. These updates were designed to optimize the system's performance, fix any bugs, and enhance usability. Continuous maintenance and updates ensured the system remained efficient, secure, and capable of supporting the office's administrative tasks in the long term.
- 5) **Evaluation and Final Review**

The final stage of the process focused on evaluating the overall performance and impact of the system. The evaluation assessed the system's efficiency by examining how well it streamlined administrative tasks, reduced errors, and improved the management of employee data. Several key performance indicators, such as data accuracy, time saved on administrative tasks, and user satisfaction, were analyzed to determine the effectiveness of the system. Feedback from users and staff was collected to understand how the system had influenced their day-to-day operations. The evaluation concluded that the system successfully met its intended objectives. It significantly improved operational efficiency, minimized human error, and provided more accurate and accessible data. Furthermore, the system supported better decision-making by providing timely and reliable information, ensuring smoother operations within the Public Works Office.

4 | RESULTS AND DISCUSSION

4.1 Results

4.1.1 Information System Analysis

The design of the Employee Information System at the Public Works Office (PU) of Pidie Jaya Regency was developed through several key stages, including input design, output design, process design, control design, workforce design, and cost design. The goal of this design is to simplify the tasks for users, especially in the personnel section, by creating a system that is more efficient and user-friendly. In the input design, several programs were created to manage different types of data, such as user data, job positions, employee details, educational history, family history, ranks, training, and employee transfers. Each program was designed to ensure the consistency and accuracy of the data entered. The output design included various reports, such as class summaries, job position summaries, employee reports, rank and job position history reports, and retirement and transfer reports, all of which were critical for decision-making and were easily accessible by authorized personnel. The process design focused on automating the data management system, transitioning from the previous manual system to a computerized one, improving data processing speed and reducing errors. In terms of control design, measures were implemented to ensure data security and integrity, including user access control,

encryption of sensitive information, and restricting modifications to authorized personnel only. Additionally, the workforce design involved minimal staffing, with only one person needed to operate the system after receiving proper training. The system's cost design included hardware, software, and ongoing maintenance costs, ensuring the project could be completed within the allocated budget. This comprehensive design approach is expected to enhance administrative efficiency, improve data management, and support better decision-making at the Public Works Office.

4.1.2 Cost Design

To ensure the successful execution of a project, the cost factor must be carefully considered. The cost breakdown required for managing the employee data process based on a desktop system at the Public Works Office (PU) of Pidie Jaya Regency is crucial for ensuring the project runs smoothly and within budget. The required costs cover various components, including hardware and software procurement, system development costs, user training, and system maintenance. Each cost element needs to be calculated accurately to ensure the project is carried out effectively without exceeding the allocated budget. The cost components include purchasing hardware such as computers and printers, developing software for the application, providing training for staff members who will use the system, and maintaining the system to ensure it operates smoothly. Additionally, the budget includes operational costs such as purchasing office supplies, printer ink, and other essential items to support daily operations. Table 1. Provides a detailed breakdown of the costs required for the employee data management process at the Public Works Office (PU) of Pidie Jaya Regency, offering a comprehensive overview of the budget needed to ensure the successful and efficient implementation of this project.

Table 1. Details of Design System Costs

N o	Equipment/Ma terial	Quant ity	Unit	Unit Price (Rp)	Procurem ent Type/Tot al Cost	One- time Purcha se (Rp)	Monthly (Rp)	Quarte rly (Rp)	Yearly (Rp)
1	Core Computer	i3 1	Unit	6,700,0 00		6,700,0 00			6,700,0 00
2	Epson Printer	L350 1	Unit	2,200,0 00		2,200,0 00			2,200,0 00
3	Computer Desk	1	Piece	500,00 0		500,00 0			500,000
4	Labor	1	Perso n	2,700,0 00		2,700,0 00	32,400, 000		32,400, 000
5	External Drive	Hard 500 MB	Piece	540,00 0		540,00 0			540,000
6	Flash Drive	1	Piece	100,00 0		100,00 0			100,000
7	System Development Cost	1	Piece	5,000,0 00	5,000,000	5,000,0 00			5,000,0 00
8	System Training Cost	2	Perso ns	1,000,0 00	2,000,000	2,000,0 00			2,000,0 00
9	Database Maintenance Cost	1	Perso n	1,600,0 00		1,600,0 00			1,600,0 00
1 0	Printer Ink	2	Pack	50,000		100,00 0	720,000		720,000
1 1	Maintenance Cost	1	Packa ge	1,000,0 00		1,000,0 00	4,000,0 00		4,000,0 00
1 2	Stationery	1	Box	15,000		15,000			180,000
1 3	A4 Paper	2	Ream	32,000		64,000			768,000
1 4	A HVS Legal Paper	2	Ream	35,000		70,000			840,000

The total cost breakdown for the proposed system includes several key expenditures. Monthly procurement costs are estimated at Rp 2,949,000, which cover ongoing operational expenses such as maintenance and supplies. The quarterly procurement cost is Rp 1,000,000, allocated for periodic requirements and updates. The total cost for implementing the designed system is Rp 57,548,000, which includes the initial purchase of hardware, software development, staff training, and other one-time setup costs. These costs ensure that the system is effectively implemented and maintained for optimal functionality.

4.1.3 Application Usage

The design of the Employee Information System at the Public Works Office (PU) of Pidie Jaya, based on a desktop platform, is reflected in the application's interface design. The application interface is divided into several sections to make it easier for users to navigate. The login form serves as the system's security feature, preventing unauthorized access and ensuring data protection. Users are required to enter their username and password to access the system. This process helps guarantee the security of the data stored. A more detailed explanation of the login process can be seen in the following image. The main menu form consists of several submenus, including master data, family history, educational history, personnel data, employee transfer, recapitulation, and reports. The master data submenu includes user data, echelon, job positions, classifications, employees, and employee lists. The family history submenu includes spouse, children, and parents' details. The educational history submenu consists of school and language information. The personnel submenu includes job positions, ranks, and training records. The transfer submenu has only one option: employee transfers. The recapitulation submenu includes classifications, job positions, and education. Finally, the report submenu provides various reports, such as nominative lists, staffing, employee recaps, rank and position history, education and training history, retirement reports, and employee transfer data. Users can simply click on the desired menu icon to view the content within each section.

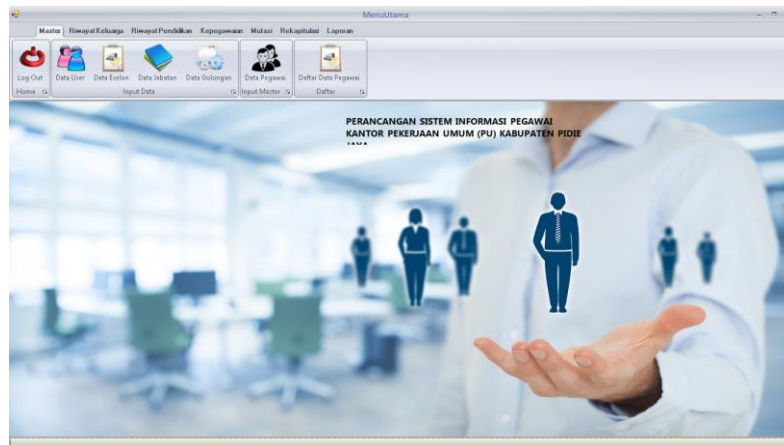


Figure 1. Main Menu Display

The User Input menu allows users to enter data such as user code, name, password, and status. This form is essential for adding user details into the system, ensuring that each individual has a unique profile and access credentials. The Echelon Input menu is used to enter echelon data. This form contains information about the employee's echelon level, which is crucial for categorizing and managing staff positions. The Job Position Master menu provides a form where users can view and manage a list of job positions. These job positions are used later when entering employee data, ensuring consistency across the system. The Classification Input form is used to record employee classifications, which are essential for organizing staff based on various criteria. It serves as the master data for classifying employees and is a critical part of their personal records. The Employee Input menu serves as the master data entry for employee details. This form includes fields such as employee ID (NIP), name, date of birth, religion, gender, blood type, marital status, employment status, promotion dates, salary increment dates, phone number, and email address. This form is used to enter family history data for the employee's spouse or partner. It helps keep a record of the employee's immediate family, which is important for various administrative purposes. The Children Family History Input form allows users to input data regarding the employee's children. This helps maintain a complete record of the employee's family details. This form is for entering information about the employee's parents. It is useful for creating a complete family record for each employee. The Educational History Input form allows for the addition of an employee's education history, starting from primary school up to university level. This helps track the employee's educational background for administrative and career development purposes. The Job Position History Input form is used to document

changes in an employee's job positions, including the echelon, position start date (TMT), and the end date of the position. The Rank History Input form records an employee's rank information, including rank, classification, rank type, approving officer, SK number, rank start date (TMT), and SK date. This form allows the input of training data for employees, including training name, duration, location, organizer, batch number, certificate number, and training date. It helps track the employee's professional development. The Mutation Input form is used to record any employee transfers, including transfer type, transfer date, and SK number. The mutation types include incoming, outgoing, inter-agency transfers, retirement, death, and promotions. The Classification Recap form provides a graphical representation of the number of employees, displayed based on their classification as recorded in the system. This form helps to easily visualize staff distribution by classification. The Classification Recap form also includes a button that allows users to print or display the classification recap in document form. The result of the classification recap in document format can be seen in the following image.

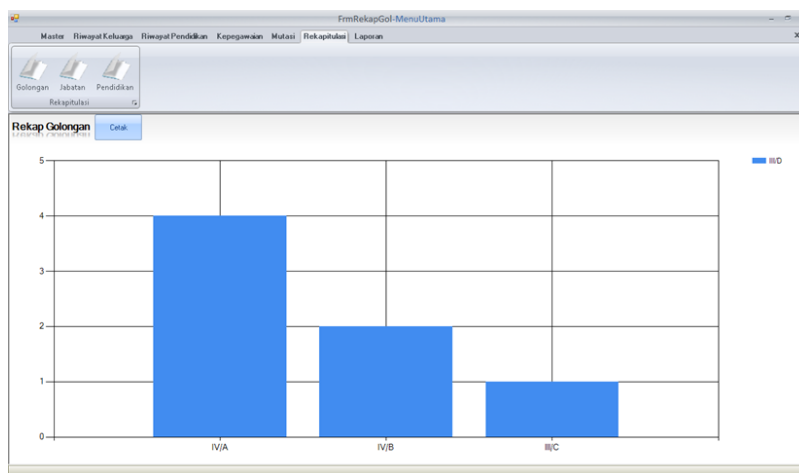


Figure 2. Group Recapitulation Form

The Job Position Recap form displays the number of employees, organized by their respective job positions. This allows users to quickly understand the distribution of staff within various roles in the organization. The form includes a button that lets users generate or print the job position recap in a document format, making it easy to have a physical or digital record of the information. Similarly, the Education Recap form shows the distribution of employees by their educational levels. This visual tool helps users assess the overall educational background of the workforce. It also has a button to print or display the education recap in document format, offering a simple way to generate formal reports. The Nominative List report organizes Civil Servants according to their classification in the organizational structure. This report provides a clear and structured overview, allowing users to quickly find information about staff members based on their positions within the institution. The nominative list is an essential resource for managing employee data, especially for administrative purposes or decision-making that requires detailed information.

NO	NAMA, TTL, NIP, AGAMA	JENIS KELAMIN	POKT TERAKHIR	GOL. BEANG	TMT	JABATAN	NAMA	TMT	ESL	PEND. JURUSAN, TALEUS	ALAMAT & NO. TLPN	KET
1	AGUSTIAR, S.P. Banda Aceh 190003199811001 ISLAM	LAKI-LAKI	IV/B		01 April 2016	Kepala BLSH	23 Maret 2015	III/B	S1	UNIVERSITAS ARIANINGRAT 01 November 2004	-	PNS
2	AMRIZA, SE Banda Aceh 1909022194031001 ISLAM	LAKI-LAKI	IV/B		01-10-2016	Sekretaris	23-03-2015	III/B	S1	STBM Arahanti 01 Januari 2000	-	PNS
3	CUTPUTRO OOS HUT SOLI 190308131199602002 ISLAM	PEREMPUNAN	IV/A		01-10-2012	Kabid Koperasi dan Swastana	16-06-2015	III/B	S1	PANTEKILLU Konservasi Swastana 01 Januari 1996	-	PNS
4	SAIFULLAH, S.E. Sabang 196612311968081001 ISLAM	LAKI-LAKI	IV/A		01-10-2014	Kabid Koperasi regional Langkat	20-03-2014	III/B	S1	STBM Magisterman Koperasi 01 Januari 2000	-	PNS
5	RINALDISYAHPUTRA, S.E., MT Arak sidi 19730222199301003 ISLAM	LAKI-LAKI	IV/A		01-04-2015	Kabid Analisis Manajemen	23-03-2015	III/B	S2	Shahid, Diponegoro, Prahingana Widyak 01 Januari 1996	-	PNS
6	BAHRIZI, SE Banda Aceh 050201965	LAKI-LAKI	IV/A		01-04-2014	Kepala di Laboratorium	23-03-2015	IV/A	S1	UNIVERSITAS ARIANINGRAT	-	PNS

Figure 3. Nominative List Report

The Staffing Report is based on guidelines for calculating the employee requirements based on workload in order to prepare the Civil Servant staffing structure. "Bezetting" refers to the current number of employees or Civil Servants available. This report provides a clear overview of staffing needs, and its details can be accessed below. The Employee Recap Report provides general information about employees. This report serves as an overview of employee data, offering key details that are important for organizational management. The report is displayed below. The Rank and Position History Report offers detailed information on each employee's rank and job position history. It tracks promotions and changes in job positions over time. This report is available below. The Education and Training History Report presents an overview of each employee's educational background and training history. This report helps in tracking professional development and qualifications of the staff. The report can be found below. The Retirement Employee Mutation Report is generated based on data entered in the mutation form when an employee retires. This report highlights employees who have retired and can be accessed below. The Employee Transfer Mutation Report is similar to the retirement report. The difference is that, during the data entry in the mutation form, the selected type is "employee transfer." This report, which displays employees who have transferred to other positions or institutions, can also be seen below.

4.2 Discussion

Based on the research findings, the design and implementation of the Employee Information System at the Public Works Office (PU) of Pidie Jaya focus on improving efficiency and simplifying administrative tasks, particularly in the personnel department. The system's design addresses the common challenges of manual data entry, such as errors and delays, and enhances the overall speed and accuracy of data processing. Various modules have been developed to handle specific data types, including user information, job positions, employee details, educational history, family background, ranks, and training. These modules help ensure data consistency and reduce the risk of errors, which is critical for effective operations. The output design includes essential reports such as job position summaries, employee records, and rank and job position histories. These reports provide clear, accessible information for authorized personnel and support better decision-making. Studies on similar systems (Usmana *et al.*, 2023) have shown that effective output designs enable more efficient personnel management and decision-making by providing critical data at the right time. The system's process design emphasizes automation, moving away from manual methods. This transition helps speed up data updates and retrieval, while minimizing the potential for errors. Automation of the data management process also ensures that the system remains scalable and adaptable to future needs. Previous studies (Monica *et al.*, 2023) have demonstrated that automating such processes reduces operational inefficiencies and enhances data accuracy.

In terms of security, the system integrates strong control measures, including user access restrictions and data encryption. These measures ensure that sensitive employee data is well protected and can only be accessed or modified by authorized personnel. Studies on similar implementations (Leo, 2022) confirm that robust security measures are essential for safeguarding data integrity and maintaining system reliability. The workforce design is also a crucial aspect of the system, with a focus on minimizing staff involvement for system operation. The system is designed to be operated by a single person after receiving proper training. This reduces the need for a large workforce to manage the system, which is both cost-effective and efficient. Training programs ensure that the designated staff member is fully equipped to manage the system and that other employees are well-versed in using the system for their daily tasks. This approach is consistent with recommendations from studies that highlight the importance of training and workforce adaptability in managing automated systems (Jumanne & Njoroge, 2019).

Cost management is another key area in the system's design. The budget for the system covers hardware, software development, training, and maintenance. The cost structure ensures that the system can be implemented without exceeding financial limits, providing long-term value for the Public Works Office. Research has shown that clear and effective cost management is crucial for ensuring the sustainability of such projects (Ariani, 2022). The breakdown of costs, including expenses for computers, printers, system development, and training, allows for effective planning and allocation of resources, making sure that every aspect of the system is covered without overspending. The Employee Information System designed for the Public Works Office of Pidie Jaya represents a significant step forward in improving data management, operational efficiency, and decision-making. By automating data entry and report generation, enhancing security, and ensuring that the system is cost-effective, the design addresses key challenges faced by the office. The implementation of the system is expected to enhance productivity, improve the accuracy of employee records, and support more informed decision-making. This approach is aligned with the findings of studies on similar systems that demonstrate the value of digital tools in enhancing public sector efficiency.

5 | CONCLUSIONS AND FUTURE WORK

This study successfully designed and implemented a Desktop-Based Employee Data Management Information System for the Public Works Office of Pidie Jaya Regency. The project was driven by the need to address significant inefficiencies inherent in the office's prior manual data management system, which was prone to human error, slow processing speeds, and frequent delays in updating employee data. The newly implemented system has provided a more efficient, automated solution that addresses these challenges. It has not only streamlined administrative tasks but also improved the accuracy, reliability, and timeliness of employee records, resulting in better decision-making and overall operational efficiency. The system's design focuses on key elements such as input design, output design, process automation, and robust security controls. Through a series of well-designed programs, the system allows for easy data entry across various categories, including user data, job positions, employee records, education history, and family background. These measures have greatly reduced the risk of errors and inconsistencies in employee data management. Additionally, automated processes for data retrieval and reporting have accelerated workflows and reduced the time spent on administrative tasks, further enhancing operational efficiency. Moreover, the implementation of strong security measures, such as user access controls and data encryption, has ensured that sensitive employee data remains protected. The simplicity of the system's interface, combined with clear user guidance and training, has also facilitated a smooth transition for staff members, ensuring minimal disruption to daily operations.

While the system has proven to be effective, future work should focus on expanding its functionalities and integrating it with other administrative processes within the Public Works Office. One potential area of development is the integration of the employee management system with financial systems, project management tools, and performance evaluation systems. This would create a more unified platform for handling a range of organizational tasks, further improving workflow efficiency. Additionally, continuous system maintenance and regular updates are essential to ensure that the system remains up to date with changing technologies and evolving office needs. Future updates could include the addition of mobile support, allowing users to access employee data and generate reports remotely, further improving flexibility and accessibility. Another area for future work is enhancing the training program for staff. While initial training has been effective, further specialized training is needed to ensure that employees are fully aware of the system's advanced features and updates. Ongoing training initiatives will ensure that staff can fully leverage the system's capabilities and contribute to its continuous improvement.

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