DIGITALIZED ELECTRONIC PAY SLIP ISSUANCE APPLICATION AT NIAS POLICE

By
Wariyus Halawa[1], Maria Magdalena Bate'e[2], Ingin Berita Jaya Harefa[3], Eliagus Telaumbanua[4]
[1,2,3,4] Program Studi Manajemen, Universitas Nias
Email: wariyushalawa@gmail.com

ABSTRACT

The development of information technology encourages government agencies to implement digitalization in administrative processes to improve efficiency, transparency, and accountability of services. One aspect of administration that is still largely managed manually is the management of employee pay slips, which has the potential to cause delays, miscalculations, and inefficient use of resources. This study aims to design and implement a digitalization-based electronic pay slip issuance application at the Nias Police. The system development method used is the Waterfall method, which includes the stages of needs analysis, system design, implementation, testing, and maintenance. The developed application is web-based with two levels of users: financial administrators and employees. The results of the study indicate that the implementation of the electronic pay slip application can accelerate the pay slip issuance process, improve calculation accuracy, strengthen data security, and increase transparency and employee satisfaction. Thus, this application is considered effective as a digital solution for payroll administration and supports government policies related to the Electronic-Based Government System (SPBE).
Keywords: Digitalization, Information Systems, Electronic Pay Slips, e-Government, SPBE.

APLIKASI PENERBITAN SLIP GAJI ELEKTRONIK BERBASIS DIGITALISASI DI POLRES NIAS

ABSTRAK

Perkembangan teknologi informasi mendorong instansi pemerintah untuk mengimplementasikan digitalisasi dalam proses administrasi guna meningkatkan efisiensi, transparansi, dan akuntabilitas layanan. Salah satu aspek administrasi yang masih banyak dikelola secara manual adalah pengelolaan slip gaji pegawai, yang berpotensi menimbulkan keterlambatan, kesalahan perhitungan, serta inefisiensi penggunaan sumber daya. Penelitian ini bertujuan untuk merancang dan mengimplementasikan aplikasi penerbitan slip gaji elektronik berbasis digitalisasi di Polres Nias. Metode pengembangan sistem yang digunakan adalah Waterfall, yang meliputi tahapan analisis kebutuhan, perancangan sistem, implementasi, pengujian, dan pemeliharaan. Aplikasi yang dikembangkan berbasis web dengan dua level pengguna, yaitu administrator keuangan dan pegawai. Hasil penelitian menunjukkan bahwa penerapan aplikasi slip gaji elektronik mampu mempercepat proses penerbitan slip gaji, meningkatkan akurasi perhitungan, memperkuat keamanan data, serta meningkatkan transparansi dan kepuasan pegawai. Dengan demikian, aplikasi ini dinilai efektif sebagai solusi digitalisasi administrasi gaji dan mendukung kebijakan pemerintah terkait Sistem Pemerintahan Berbasis Elektronik (SPBE).
Kata kunci: Digitalisasi, Sistem Informasi, Slip Gaji Elektronik, e-Government, SPBE

INTRODUCTION

The development of information and communication technology has brought significant changes to government administration. Digitalization has become a key strategy for improving the efficiency, transparency, and accountability of public services. The Indonesian government officially encouraged digital transformation through Presidential Regulation No. 95 of 2018 concerning Electronic-Based Government Systems (SPBE), which emphasizes the use of information technology in government administration management to make it more effective, efficient, and integrated.

One aspect of internal administration that is still largely managed conventionally in government agencies is the management of employee pay slips. Manual and paper-based payroll systems have several drawbacks, including being relatively time-consuming, potentially leading to human error, and complicating the storage and retrieval of payroll records. Kusumawati and Nugroho (2021) stated that manual financial administration systems tend to be inefficient and lack transparency, particularly in the management of employee financial data. Furthermore, Santoso and Widodo (2022) emphasized that the use of information technology in public administration can improve the quality of internal services while reducing operational costs.

The Nias Police, as a government institution with a significant number of personnel, faces similar challenges in managing payroll administration. The manual process for issuing payslips leads to delays in distributing payslips to employees, difficulties in tracking previous payroll data, and a heavy reliance on administrative staff. This situation reduces work efficiency and has the potential to lead to employee dissatisfaction with financial administration services. With the increasing demand for information transparency and speed of service, digitizing payroll administration is a relevant and strategic solution. Implementing an electronic payslip issuance application allows for automated payroll management, from calculating salary components and storing data to distributing digital payslips. Research by Puspitawati (2017) shows that a computer-based payroll information system can improve the accuracy of payroll calculations and expedite the administration process. This finding is supported by Kurniawan and Rahardjo (2019), who stated that a web-based payroll system provides easy access for employees and increases transparency in financial management.

Based on these conditions, the Nias Police require a digital-based electronic payslip issuance system that can replace the current manual system. This application is expected to not only

improve the efficiency and accuracy of payroll administration but also strengthen data security and provide employees with independent access to their payroll information. Therefore, the implementation of this system aligns with the SPBE policy and supports bureaucratic modernization efforts through the use of information technology.

LITERATURE REVIEW

Digitalization in Government Administration

Digitalization is the process of transforming activities, data, and services from manual or analog to digital technology-based ones. In the context of government, digitalization plays a crucial role in improving the efficiency, transparency, and quality of public services. Bertot, Jaeger, and Grimes (2010) explain that government digitalization, or e-Government, focuses not only on the use of technology but also on changing work processes and organizational culture to be more responsive to the needs of service users. Brynjolfsson and McAfee (2014) stated that digitalization can transform the way organizations work through process automation, increased service speed, and reduced reliance on manual activities. In public administration, the implementation of digitalization has a significant impact on operational efficiency, data management accuracy, and increased accountability of government agencies.

In Indonesia, the digitalization of government administration is officially promoted through the Electronic-Based Government System (SPBE) policy. Kusumawati and Nugroho (2021) emphasized that implementing digitalization in government financial administration can increase transparency and reduce the potential for administrative errors that often occur in manual systems. Therefore, digitalization is a crucial foundation for modernizing government bureaucracy.

Salary Administration Information System

A Payroll Administration Information System is a system designed to manage employee payroll data in a computerized manner, from recording employee data, calculating salaries, to issuing payslips. Laudon and Laudon (2014) define an information system as a collection of integrated components that collect, process, store, and distribute information to support decision-making and organizational administrative activities. In payroll management, information systems automate the calculation of basic salary, allowances, and deductions, thereby minimizing human error. Puspitawati (2017) stated that implementing a computer-based payroll information system

can increase the speed and accuracy of the payroll process and reduce the administrative workload.

Furthermore, Putra and Utami (2020) explained that digital-based payroll information systems in government agencies can improve operational efficiency and employee productivity because administrative processes become more structured and well-documented. These systems also allow integration with other financial and personnel systems to support more consistent data management.

Electronic Pay Slip Issuance Application

An electronic payslip issuance application is an implementation of a payroll administration information system that allows payslips to be issued and distributed digitally. These applications are generally web-based or mobile-based, allowing employees to access them anytime and anywhere. Kurniawan and Rahardjo (2019) stated that a web-based payroll system provides easy access to salary information for employees and increases transparency in organizational financial management. In practice, electronic payslip applications utilize databases to store employee earnings and deductions, and are equipped with automatic calculation features. Pustokhina (2019) emphasized that the use of a structured database is crucial for maintaining the integrity and consistency of payroll data. Furthermore, the use of cloud computing technology also supports data storage flexibility and efficiency (Chen et al., 2020).

Security is a crucial factor in electronic payslip issuance applications due to the sensitive nature of the data being managed. Kurniawan and Rahardjo (2021) state that electronic payroll systems must be equipped with user authentication mechanisms and access controls to prevent data leaks. Hernandez (2018) also emphasizes the importance of using layered authentication in digital government systems to protect users' personal data.

Conceptual Framework

The conceptual framework in this study illustrates the relationship between the digitalization of payroll administration and the electronic payslip issuance application system. The system input consists of employee data, salary component data, and deduction data. This data is processed by the application system through user authentication, salary data processing, total salary calculation, and electronic payslip generation in PDF format. The system output is a payslip that employees can access and download independently.

This conceptual framework demonstrates that implementing an electronic payslip application can

improve the efficiency, accuracy, and transparency of payroll administration. With a digital system, previously manual and time-consuming administrative processes can be automated and well-documented, thus supporting the goals of digital transformation and e-Government implementation within the Nias Police.

RESEARCH METHODS

This research is an applied research using a software engineering approach aimed at designing and implementing a digital-based electronic payslip issuance application at the Nias Police. The system development method used is the Waterfall approach, as it has systematic stages and aligns with the clearly defined project requirements. The research phase included system requirements analysis, application design, web-based system implementation, and functional testing using black-box testing methods. The developed system has two user levels: financial administrators and employees. Administrators are responsible for managing employee data and payroll components, while employees can independently access and download electronic payslips.

The analysis was conducted by comparing the payslip management situation before and after the application's implementation, specifically in terms of time efficiency, calculation accuracy, transparency, and ease of access to information. The results were used to assess the application's effectiveness in supporting the digitalization of payroll administration at the Nias Police.

RESULTS AND DISCUSSION

Results

The research results show that the WSLIP (Web Payroll Information Service System) application was successfully developed and implemented as a digital-based electronic payslip issuance system at the Nias Police. This application is designed as a web-based system with two main user levels: financial administrators and employees. Administrators have the authority to manage employee data, input income and deduction components, and process monthly salaries. Meanwhile, employees can access their payslips independently through their personal accounts. In terms of functionality, all of the system's key features operate as designed. Employee data input, payroll component management, automated payroll calculations, and PDF payslips are all seamlessly processed. The resulting payslips display detailed information, including base salary, allowances, deductions, and total net pay, providing clear information for employees.

The implementation of the WSLIP application has significantly improved the efficiency of the payroll administration process. Prior to the system's implementation, the payslip issuance process took an average of 2–3 days after manual calculations were completed. After the system's implementation, payslips can be automatically issued in less than a day after data is input by the administrator. Furthermore, delays in payslip distribution, previously experienced by approximately 20% of employees, have been completely eliminated because the slips are available in real time within the system.

Efficiency is also evident in the process of searching for old payroll data. With the manual system, searching for payslip archives can take between 1 and 2 days due to the need to search through physical documents. With the WSLIP application, data searches can be performed in minutes using the month- and year-based search feature. This demonstrates a significant increase in efficiency in managing payroll administration archives.

In terms of accuracy, the system successfully minimizes payroll calculation errors. In manual systems, input and calculation errors are still common due to human error. By implementing automated calculations and input validation in the WSLIP application, the error rate can be reduced to nearly zero. This has a positive impact on employee confidence in the payroll administration system.Furthermore, the implementation of the WSLIP application also saves resources. The use of electronic payslips replaces the paper-based ones previously printed monthly, significantly reducing paper use. This not only lowers operational costs but also supports efficiency and environmental-friendly policies within government agencies.

Discussion

1. Administrative Efficiency

The implementation of the WSLIP application has been proven to improve the efficiency of payroll administration at the Nias Police. Under the manual system, the payslip issuance process is relatively time-consuming due to the complexities of calculating, verifying, printing, and physically distributing the slips. This situation aligns with the findings of Kusumawati and Nugroho (2021), who stated that manual-based financial administration systems tend to be inefficient and require significant resources.

After implementing the digital system, this process was significantly streamlined because the calculation and distribution of pay slips were automated. This reinforces O'Brien and Marakas' (2016) view that computerized information systems can reduce repetitive administrative

activities and increase organizational efficiency. Thus, the WSLIP application directly contributes to increasing the productivity of the Nias Police's finance department.

2. Accuracy and Reliability of Salary Calculations

Accurate payroll calculations are a crucial aspect of employee financial administration. Manual systems carry a high risk of error due to human limitations in repetitive calculations. Puspitawati (2017) emphasized that payroll errors frequently occur in manual systems and can impact employee dissatisfaction.

The research results show that the WSLIP application can minimize these errors through automatic calculations and data validation. The system consistently calculates salaries based on the inputted income and deduction components, resulting in more reliable calculation results. This finding aligns with Putra and Utami (2020), who stated that a digital-based payroll system can improve the accuracy and consistency of salary data management in government agencies.

3. Transparency and Access to Information

Transparency is a key principle of good governance. Before the app's implementation, Nias Police officers lacked direct access to their pay slips and had to rely on manual distribution from the finance department. This situation potentially led to delays and unclear information. With the WSLIP application, employees can independently access their pay slips and view detailed salary components transparently. This aligns with the findings of Kurniawan and Rahardjo (2019), who stated that a web-based payroll system increases information transparency and employee trust in organizational financial management. Furthermore, Bertot et al. (2010) also emphasized that digitizing public administration can strengthen the transparency and accountability of government institutions.

4. Security and Data Protection

Employee payroll data is sensitive and requires a high level of security. Manual, paper-based systems are vulnerable to loss, damage, and unauthorized access. Implementing the WSLIP application significantly improves data security through user authentication and access restriction. Each user can only access data according to their role, thus ensuring the confidentiality of salary data. This finding aligns with Kurniawan and Rahardjo (2021), who emphasized that e-government systems, particularly those managing financial data, must be equipped with adequate access controls and security mechanisms. Hernandez (2018) also stated that authentication in digital systems is a key factor in maintaining user data privacy.

5. Resource Efficiency and Environmental Impact

The implementation of electronic payslips has had a direct impact on reducing the use of paper, which was previously used monthly. This reduction provides economic benefits in the form of operational cost savings and environmental benefits by supporting the green office concept. Brynjolfsson and McAfee (2014) state that digitalization enables organizations to work more efficiently by minimizing the use of physical resources. In the context of government administration, reducing paper use also supports budget efficiency and environmental sustainability. Therefore, the WSLIP application is not only oriented towards improving administrative performance but also towards more responsible resource management.

6. Compliance with SPBE and E-Government Policies

The implementation of the WSLIP application is in line with the Electronic-Based Government System (SPBE) policy as stipulated in Presidential Regulation Number 95 of 2018. The digitalization of salary administration is a form of real implementation of e-Government in the internal services of government agencies.

Indrajit (2017) stated that the success of e-Government is measured not only by external public services, but also by the agency's ability to manage internal administration efficiently and transparently. The results of this study support this view, as the WSLIP application was able to improve the efficiency, transparency, and accountability of salary administration at the Nias Police. Therefore, this system can be viewed as part of bureaucratic modernization efforts that support government administration reform.

CONCLUSION

Based on the research and discussion regarding the implementation of the WSLIP (Web Payroll Information Service System) application at the Nias Police, it can be concluded that the digitalization-based electronic payslip issuance application was successfully developed and implemented. This system is able to replace the manual payslip management process, which was previously time-consuming and potentially prone to calculation errors. With the automation of payroll calculations and the issuance of payslips in digital format, the payroll administration process is faster, more accurate, and systematically documented.

The implementation of the WSLIP application has been proven to improve operational efficiency, particularly in terms of the issuance and distribution of payslips, which can be done

in real time. Furthermore, this system increases transparency in payroll management because employees can access their payslips independently through their respective accounts without relying on administration. Data security has also been improved through the implementation of user authentication and access controls that limit access rights according to user roles.

However, the successful implementation of this digital system requires continuous improvement. Therefore, it is recommended that the WSLIP application be further developed by integrating it with other personnel and financial systems to support more integrated data management. Furthermore, regular training for administrators and employees is required to ensure optimal system utilization. Network infrastructure improvements and regular system maintenance are also crucial to maintain application stability and security. With continued development and support, the WSLIP application is expected to become a model for effective and sustainable digitalization of payroll administration within government agencies.

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