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Sistem Informasi untuk Pengelolaan AK1 dan Lowongan Kerja (Studi Kasus: Diskominfo Kota Tanjungpinang)

Information System for AK1 Management and Job Vacancies (Case Study: Diskominfo Tanjungpinang City)

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Abstrak

Transformasi digital berperan penting dalam meningkatkan kualitas pelayanan publik, termasuk di sektor ketenagakerjaan. Dinas Ketenagakerjaan Kota Tanjungpinang masih menghadapi kendala dalam pengelolaan data pencari kerja dan lowongan kerja akibat proses manual yang memakan waktu dan rawan kesalahan. Untuk menjawab permasalahan ini, dikembangkan sistem informasi administrasi ketenagakerjaan berbasis web menggunakan framework Laravel yang dirancang untuk memudahkan pengelolaan data AK1, pencari kerja, perusahaan, serta informasi lowongan kerja. Pengembangan sistem dilakukan dengan metode Waterfall, melalui tahapan analisis kebutuhan, perancangan sistem, implementasi, pengujian, hingga pemeliharaan. Kebutuhan sistem diperoleh dari hasil observasi dan wawancara langsung di Disnaker. Sistem ini terdiri dari lima modul utama dan diuji menggunakan pendekatan User Acceptance Testing (UAT) yang dilakukan secara langsung dan bertahap oleh tiga staf dari Dinas Kominfo dan satu admin Disnaker. Hasil implementasi menunjukkan perbaikan nyata: waktu pembuatan Kartu AK1 berkurang dari 20–30 menit menjadi 7–10 menit, dan jumlah kartu yang diproses meningkat dari sekitar 10 menjadi lebih dari 30 per minggu. Sistem ini membantu mempercepat layanan, meningkatkan efisiensi kerja admin, serta mendukung penerapan SPBE dan transformasi digital di tingkat pemerintah daerah.

Kata kunci—Sistem Informasi, Kantor Tenaga Kerja, AK1, Laravel, Pelayanan Publik, Transformasi Digital

Abstract

Digital transformation plays an important role in improving the quality of public services, including in the employment sector. The Manpower Office of Tanjungpinang City faced challenges in managing job seeker and job vacancy data due to manual processes that were time-consuming and prone to errors. To address this issue, a web-based employment administration information system was developed using the Laravel framework. The system was designed to streamline the management of AK1 cards, job seekers, companies, and job vacancy information. The system was developed using the Waterfall method, consisting of requirement analysis, system design, implementation, testing, and maintenance stages. System requirements were gathered

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through observations and interviews conducted at the Manpower Office. The system consists of five main modules and was tested using a step-by-step User Acceptance Testing (UAT) approach involving three staff from the Communication and Information Office and one admin from the Manpower Office. The implementation results showed significant improvements: the processing time for AK1 cards was reduced from 20–30 minutes to just 7–10 minutes, and the number of cards processed increased from around 10 to over 30 per week. The system helps speed up services, improve administrative efficiency, and support the implementation of SPBE (Electronic-Based Government Systems) and digital transformation at the local government level.

Keywords— Information Systems, Manpower Office, AK1, Laravel, Public Services, Digital Transformation.

1. INTRODUCTION

The development of information and communication technology (ICT) has had a major impact on various sectors of life, including the employment and public service sectors. The use of digital technology in public services has great potential to improve the quality and efficiency of services, expand public access, and reduce costs and time in the service process [1]. Although digital transformation is not a simple process, with strong commitment, effective management, and involvement of all stakeholders, this change can have a real impact in realizing the provision of public services that are more optimal, adaptive, and in accordance with the demands of the times [2]. The Indonesian government has shown its commitment to encouraging digital transformation through Presidential Regulation Number 95 of 2018 concerning the Electronic-Based Government System (SPBE). This regulation emphasizes the importance of implementing information and communication technology in an integrated manner in the implementation of government in order to create an efficient, transparent, and accountable bureaucracy. SPBE also aims to improve the quality of public services that are integrated and easily accessible to the public [3]. In line with the spirit of SPBE, the use of digital technology in public services has great potential to improve the quality and efficiency of services, expand public access, and reduce costs and time in its implementation. This technology enables the creation of public services that are more responsive to the needs of the community. Although digital transformation is a complex process, with high commitment, good management, and active participation from all stakeholders, the implementation of SPBE can have a real impact in realizing a more adaptive, integrated, and excellent public service-oriented government administration.

Digital transformation in government still faces challenges such as limited infrastructure, low digital literacy of human resources, and manual work culture. E-government regulations and policies are also considered slow to respond to ICT developments and public demands for digital services. The lack of data integration between agencies makes public services less efficient and disconnected. In fact, Presidential Regulation No. 95 of 2018 concerning SPBE emphasizes the importance of a digital, integrated, and responsive government system. Without improvements in the regulatory, human resource, and system integration aspects, these goals are difficult to achieve [4].

The Communication and Informatics Agency (Diskominfo) has a strategic role in supporting digital transformation in government agencies, including in providing information technology solutions for the Tanjungpinang City Manpower Agency (Disnaker). As an institution responsible for the field of employment, Disnaker still faces various challenges, especially in managing job seeker data and job vacancies. This is due to the continued use of manual systems and the unavailability of an integrated digital platform.Through support and collaboration with Diskominfo, the development of an employment information system is expected to be able to increase the efficiency of public services, strengthen information technology infrastructure, and accelerate the administration process which has been slow and less responsive. This collaboration

also strengthens the role of Diskominfo as an institution that encourages innovation in the application of information technology to support modern and adaptive public services.

The main problem currently being faced is the absence of an integrated information system that can be used to manage employment administration effectively at the Tanjungpinang City Manpower Agency. Processes such as job seeker data recording, job vacancy management, to AK1 Card creation and verification are still done manually, resulting in various obstacles such as inefficiency, time-consuming processes, and the potential for data errors. This condition is certainly an obstacle in efforts to improve the quality of public services in the employment sector, as well as showing a gap between current administrative practices and the spirit of digital transformation being promoted by the government.

To overcome these problems, a technology-based solution is needed that not only automates work processes but also supports comprehensive digital transformation in public services. One solution approach is to build an integrated web-based Employment Information System [5]. so that it can facilitate the management of company data, job vacancies, job seekers, and the process of making and verifying AK1 Cards. This digital transformation is not just replacing manual processes with computerization, but also includes changes in organizational culture, strengthening digital infrastructure, and increasing digital literacy capacity for officials and the community [6].

In this context, the development of an integrated Disnaker administrative information system is a relevant solution. This system aims to facilitate the management of job seeker data, job vacancies, companies, and other administration more efficiently and effectively. With an integrated system, it is expected to improve the quality of public services in the field of employment and support sustainable digital transformation [7]. This system is specifically designed to help Disnaker admins manage job seeker data, job vacancies, companies, and other administration more easily and efficiently. Through this admin website, the management of company data, job vacancies, and job seekers becomes structured, including the process of creating and verifying AK1 Cards digitally. This system is also built with authentication that ensures that only registered admins can access and manage data, and is supported by a modern and responsive display with animated icons for an interactive and professional user experience.

The development of an efficient and modern employment administration information system can be achieved by utilizing the Laravel framework, one of the popular PHP frameworks and widely used in web application development. Laravel offers various superior features, such as the Model-View-Controller (MVC) architecture that helps separate application logic, views, and data, so that the code becomes more structured and easy to maintain [8]. In addition, Laravel provides a flexible and intuitive routing system, making it easy for developers to organize access to various pages or functions in the application [9]. By utilizing appropriate technology and a structured approach, the development of the Disnaker administrative information system is expected to provide a positive contribution to increasing the efficiency and effectiveness of employment services, as well as supporting government efforts in realizing digital transformation in the public sector [10].

Based on these problems, this study aims to design and develop an integrated, web-based employment administration information system built using the Laravel framework. This system is expected to assist the Department of Manpower in providing faster, more efficient, and more accountable services, while supporting the implementation of SPBE in the local government environment.

2. RESEARCH METHODS

This study uses a type of software engineering research that aims to design and develop a web based information system for managing employment data, namely the management of AK1 and job vacancies by the Disnaker of Tanjungpinang City. This research is applicative because it produces a product in the form of a system that can be used directly by the Disnaker of

Tanjungpinang City. The system development method used in this research is the Waterfall method. The Waterfall method applies a linear and sequential approach, where each stage must be completed before starting the next stage. Each stage produces clear documents and artifacts, which become input for the next stage [11]. This method is suitable for projects that have relatively stable and clear system requirements. The prototype method used in this study can be seen in Figure 1.

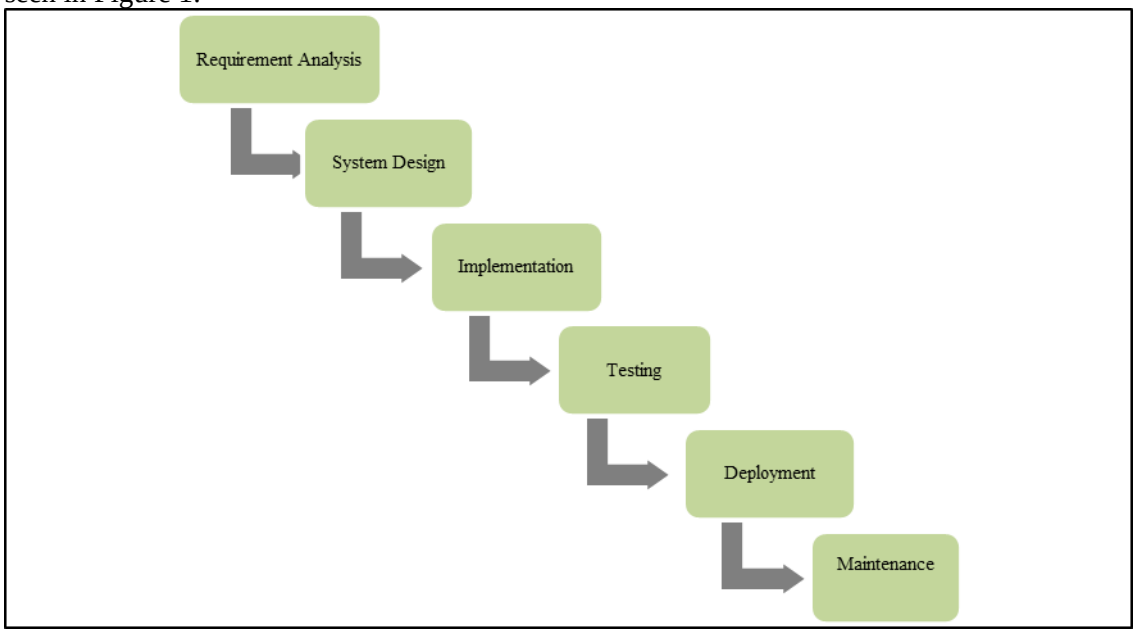

Figure 1. Waterfall Method

The following are the stages of the prototyping method applied in this study:

1. Requirement Analysis

   At this stage, data collection and system needs analysis are carried out through observation, interviews, and document studies at the Disnaker of Tanjungpinang City. The goal is to find out the current workflow and functional needs of the system to be built.
2. System Design

   System design is done to build a strong technical foundation before entering the implementation stage. The Disnaker Administration Information System requires a system structure that is able to handle the process of managing job seeker data, job vacancies, and other employment service administration efficiently and automatically.
3. Implementation

   The system is developed using the PHP programming language and the Laravel framework. The database used is MySQL. Implementation is carried out based on the system design that has been created in the previous stage.
4. Testing

   System testing was conducted by implementing the User Acceptance Testing (UAT) method, which aims to evaluate whether the system meets the needs and expectations of end users. This UAT involved three staff from the Tanjungpinang City Communication and Informatics Agency (Diskominfo) and one staff from the Manpower Agency (Disnaker) who will act as system admin. Diskominfo staff come from two main fields, namely the Public Information Services Division and the Information and Communication Technology (ICT) Division. The Public Information Services Division focuses on ease of access and system appearance, while the ICT Division assesses

technical aspects such as system stability and efficiency. The involvement of Disnaker staff as prospective direct users aims to ensure that the system truly meets service needs in the field.

The UAT analysis process is carried out directly and in stages during system development. No structured test scenarios are used, but each feature is tested and reviewed directly after it has been developed.The Disnaker Admin tests the features first, then continues with a review by a team from the Tanjungpinang City Diskominfo. This review includes service functions, data security, interface appearance, and compliance with SPBE policies. If there are any deficiencies, the development team makes improvements, then the feature is retested until it is declared feasible to be implemented.

5. Deployment

   After passing the test, the system is uploaded to the server and officially used. During this stage, system documentation is also prepared for admin and user training purposes.

6. Maintenance

   This stage includes monitoring the system after use, fixing bugs or errors that arise, and updating features according to future user needs. Maintenance is carried out periodically to ensure the system continues to run optimally and safely.

3. RESULT AND DISCUSSION

The system developed in this study is a job seeker information system for the Disnaker of Tanjungpinang City. This system is designed to help manage job seeker data, job vacancies, and administration related to the recruitment process. The development of this system was carried out at the Department of Communication and Informatics (Diskominfo) as part of an effort to digitize employment services. This website was developed using the PHP programming language, with the Laravel framework version 10, and using MySQL as the database for data storage.

3.1 System Design

In the process of designing an information system, a crucial initial stage is to understand the user's needs and how the system will be used in real life. For this purpose, Use Case Diagrams are used as the primary tool in designing the system. Use Case Diagrams are chosen as the initial method in system design because of their ability to bridge communication between technical and non-technical teams, as well as being a foundation in designing a system that meets user needs. These diagrams not only help in understanding how the system will be used, but are also very useful in ensuring that all important functions have been identified from the start as in Figure 2.

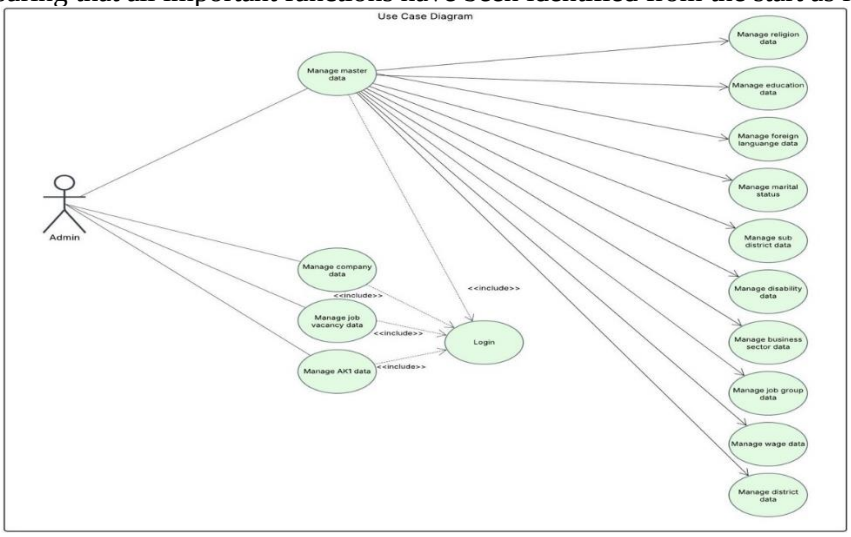

Figure 2. Use case Diagram

This use case diagram generally describes the interaction between an Admin and the system, where the Admin can log in and then manage various types of master data such as company data, job vacancy data, AK1 data, religious data, education data, foreign language data, marital status, sub-district data, disability data, business sector data, job group data, wage data, and district data.

3.2 System Results

This System Result is expected to provide a clear picture of the system's performance in meeting previously designed needs. Evaluation of these results will also be the basis for the process of improving or developing the system further.

3.2.1 Login Page

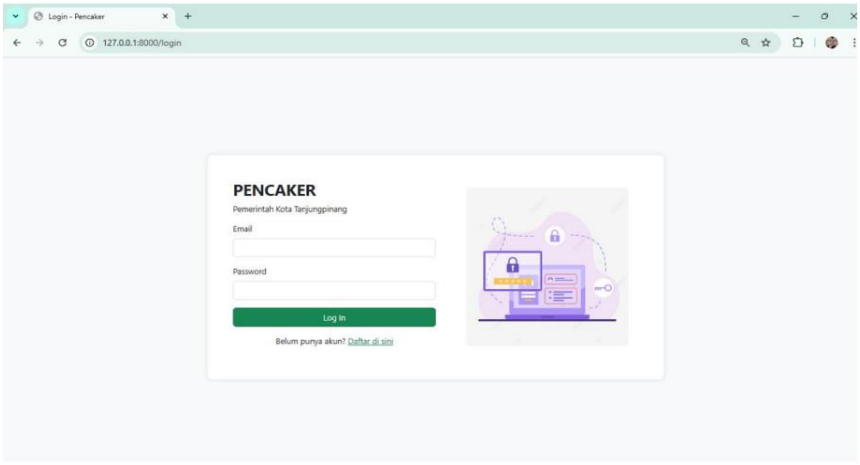

Figure 3. Login Menu

Figure 3. shows the login page of a system called "Pencaker" which is part of the Tanjungpinang City Government. This page has columns to enter "Email" and "Password" for users who already have an account. There is a green button that says "Log In" to enter the system. Below the login button, there is a small link that says "Don't have an account? Register here" which indicates that there is an option for new users to create an account.

3.2.2 Admin Dashboard

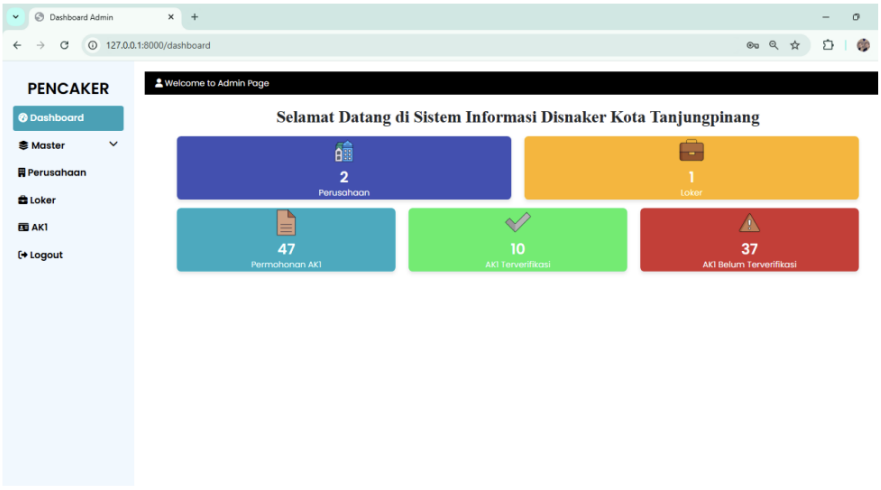

Figure 4. Admin Dashboard

Figure 4. is an implementation of the admin dashboard page of the Disnaker of Tanjungpinang City Information System which displays a summary of data such as the number of companies, job vacancies, AK1 applications, verified AK1, and unverified AK1. On the left side there is a navigation menu for the admin.

3.2.3 Master Data

To support data consistency, this website is also equipped with a master data module, such as religious data, education level, foreign language, marital status, sub-district, village, business sector, disability, job group, and wage amount, all of which can be managed flexibly by the admin. The master data display is shown in Figure 5.

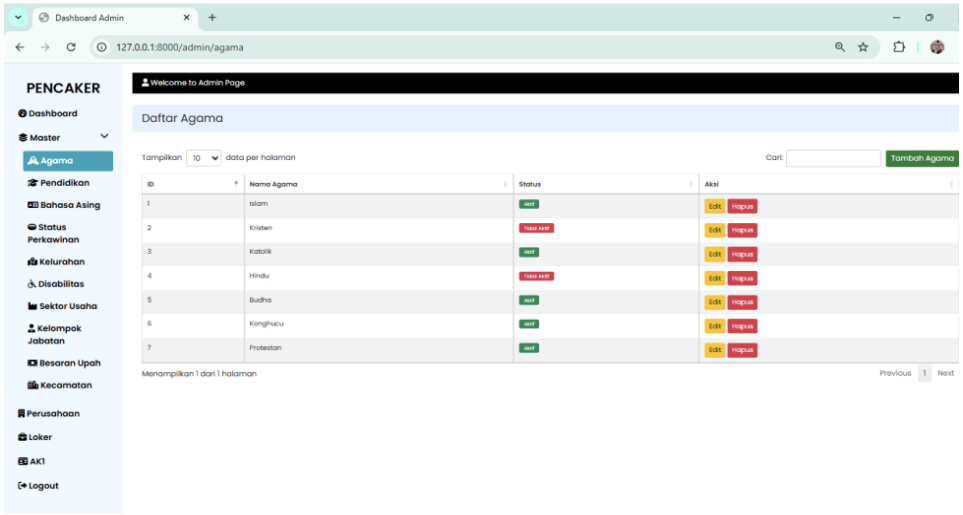

Figure 5. Master Data

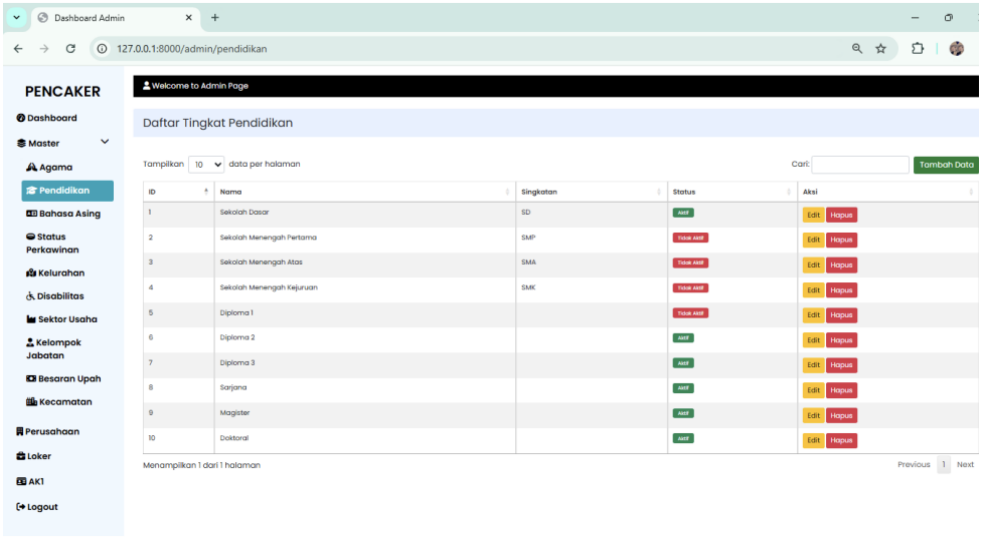

Figure 6. Master data for education

Figure 6. displays the "List of Education Levels" page under the "Master" menu in the "Pencaker" system. This page is used to manage master data regarding education levels. A list of various education levels such as Elementary School, Middle School, High School, Diploma 1

Doctoral is visible, along with abbreviations, status (active or inactive), and action options to edit or delete each data.

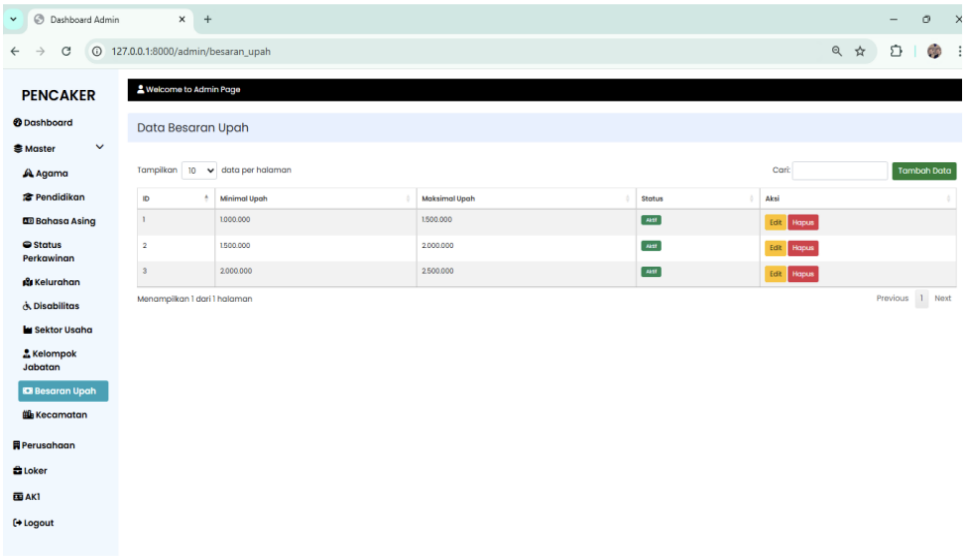

Figure 7. Master for wage amount

Figure 7. displays the "Wage Amount Data" page located in the "Master" menu in the "Pencaker" system. This page is used to manage master data related to the wage range.

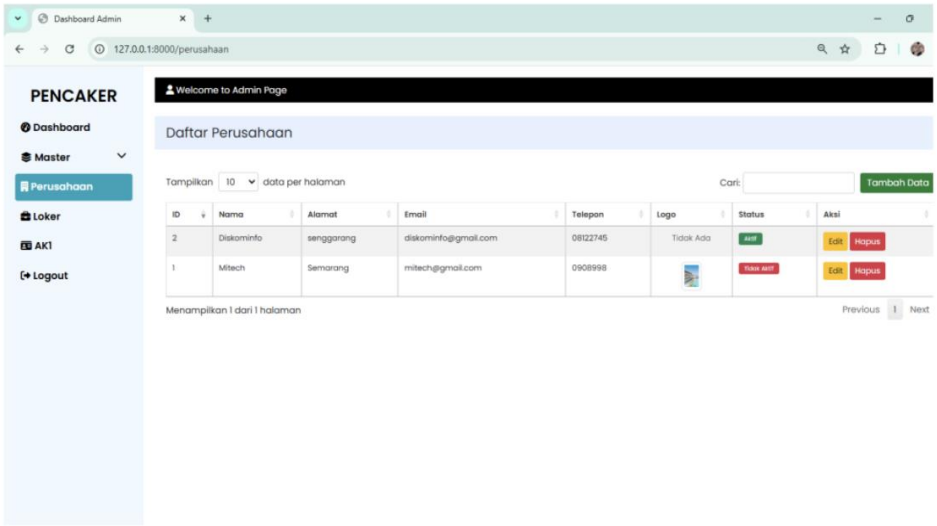

Figure 8. Master for company list

Figure 8. displays the "Company List" page which functions to manage company data and provide and manage essential information about companies that have the potential to offer jobs to job seekers in Tanjungpinang. Accurate and well-managed information on this page will increase the effectiveness of the website in connecting job seekers with suitable job opportunities.

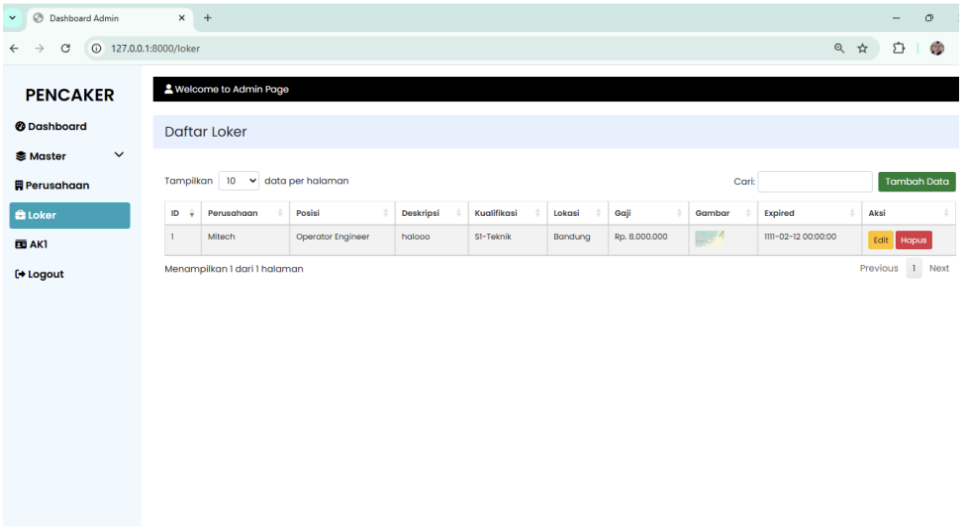

Figure 9. Master data for job vacancy list

Figure 9. displays the Job Vacancy List page which functions to manage available job vacancy information. Through this page, the admin can ensure that accurate, relevant, and up-to-date job vacancy information is available to job seekers in Tanjungpinang, thus facilitating the friendship process between job seekers and companies that need workers.

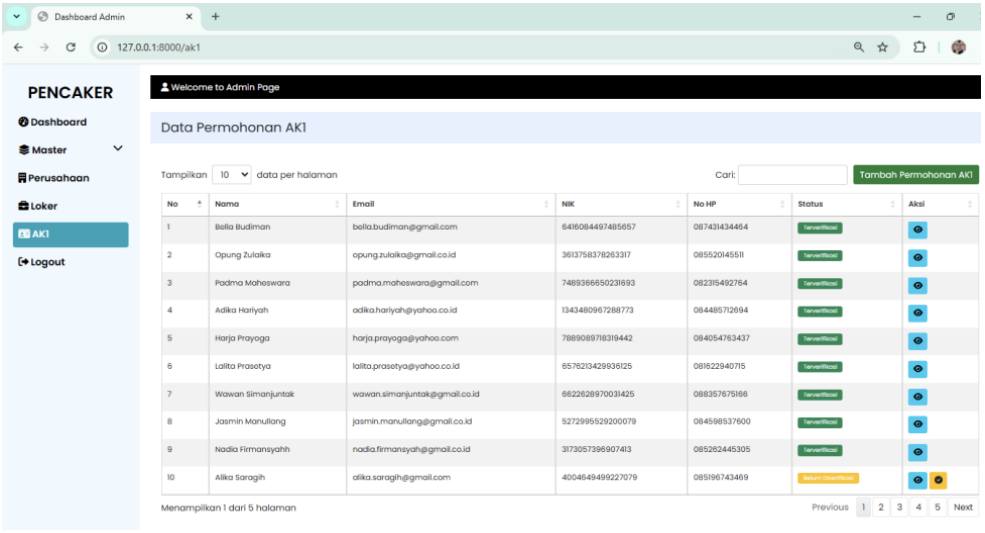

Figure 10. Master data for AK1

Figure 10. displays the "AK1 Application Data" page which can be accessed through the "AK1" menu on the "Pencaker" system. This page functions to manage Yellow Card (AK1) application data, which is a job seeker's card. "AK1 Application Data" is an important tool for admins to manage job seeker information that is officially registered through the system. This data is not only important for the issuance of AK1 cards, but also becomes a valuable source of information for more effective analysis, planning, and provision of employment services in Tanjungpinang.

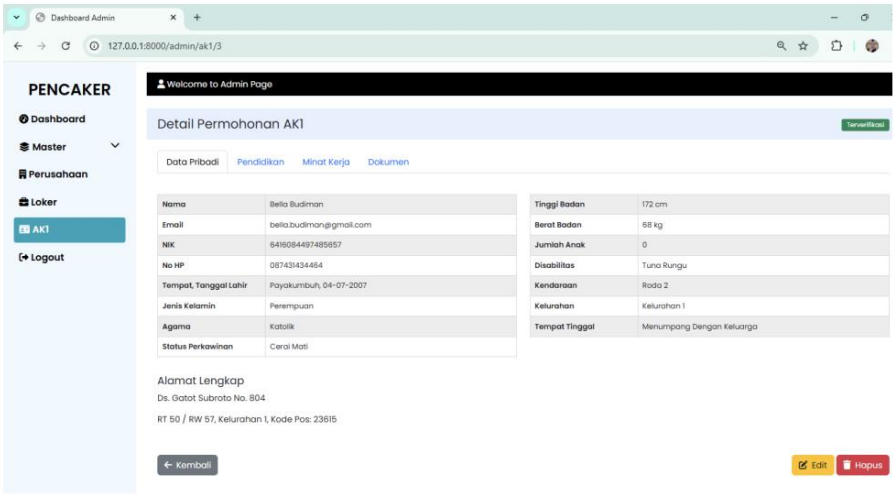

Figure 11. Verified AK1 Data display

Figure 11. displays the verified AK1 data page which is crucial for the admin to deeply understand the profile of each registered job seeker, conduct accurate verification, and ultimately facilitate a more effective job placement process.

After the employment information system was implemented on a limited basis at the Tanjungpinang City Manpower Office, a number of positive changes began to be seen in the service process. One of the most noticeable changes is the time efficiency in making AK1 Cards. If previously this process took around 20 to 30 minutes per person because it was done manually, now it only takes around 7 to 10 minutes with the digital system.

During the trial period, one Disnaker admin on duty noted an increase in the number of cards that were successfully processed. Before the system was implemented, only around 10 AK1 cards could be completed in one week. After using the system, that number increased to more than 30 cards per week. This shows that the system not only speeds up the service process, but also helps increase service capacity and administrative efficiency.

However, in the implementation process, several challenges also emerged in the field. One of them is the habit of admins who are still used to working manually, so it takes time to adapt to the new system. In addition, the internet connection that is not always stable sometimes causes the system to run slowly, especially when used simultaneously. Another challenge is that old data that was previously stored in paper form, so it needs to be manually re-inputted into the system.

To overcome this, the development team took several steps such as providing brief training to users, compiling a system usage guide, and slowly improving network connections in the office environment so that the system can run more smoothly and stably.

To provide a clearer picture of the improvements that have occurred, the following is a comparison between the previously used manual system and the (new) digital system that has been developed. This comparison covers several key aspects of the service that show significant differences in terms of speed, efficiency, and ease of access as shown in Table 1.

Table 1. Comparison of Manual System vs Digital System

Aspect	Manual System	Digital System (New)
Data entry	Filled in using paper forms	Filled directly through an online form on the website
Data storage	Stored in physical folders, hard to find	Neatly stored in a database, easy to access anytime
AK1 card creation	Manually typed and printed one by one, takes a long time	Instantly printable from the system, much faster process

Data verification	Manually checked, often prone to errors	Automatically validated by the system
System access	Only accessible at the office	Can be accessed anywhere with an internet connection
Reporting & monitoring	Calculated manually using calculator or Excel	Automatically generated through the system dashboard

3.3 Testing System

The testing of the Disnaker administrative information system was carried out using the User Acceptance Testing (UAT) approach, which was carried out directly and in stages during the development process. UAT is a qualitative analysis method used to assess the extent of user satisfaction when interacting with the interface of a website or application [12]. No structured test scenarios were prepared, but rather a direct review of each feature that had been developed was carried out. What makes this process different is the active involvement of the Tanjungpinang City Communication and Information Service (Diskominfo), which acts as an evaluator for each progress in system development.

Testing and Review Flow by Diskominfo:

1. Development and Testing of Staged Features
   Each module and feature that has been developed is directly tested by internal parties (Disnaker admin), then immediately submitted for review by Diskominfo.
2. Review by Diskominfo
   The Diskominfo party conducts a review from the following aspects:
   - Suitability of feature functions with public service needs
   - Compliance with the principles of system security and data management
   - Consistency of interface appearance (UI/UX)
   - Compliance with SPBE (Electronic-Based Government System) policies
3. Improvements and Adjustments
   If any inconsistencies or deficiencies are found, the development team makes improvements according to the direction and notes from the Communication and Information Service.
4. Re-verification
   The features that have been improved are re-tested and re-verified by the Communication and Information Service until they are declared appropriate and in accordance with digital government service standards.
5. Acceptance and Implementation
   After all features are declared appropriate, finalization is carried out and the features are officially activated in the system.

Figure 12. System testing by the Communication and Information Service

This iterative and collaborative UAT process not only ensures that the system runs according to the needs of the Manpower Service, but also supports the provision of standardized, safe, and

integrated public services, as mandated in Presidential Regulation No. 95 of 2018 concerning SPBE.

4. CONCLUSION

Digital transformation is an urgent need to improve the quality of public services, including in the employment sector. The Tanjungpinang City Manpower Office (Disnaker) faces various obstacles in data management because it still relies on an inefficient and less responsive manual system. To answer this challenge, a web-based Manpower Information System has been developed using the Laravel framework supported by the Communication and Informatics Office (Diskominfo). This system is designed to help manage job seeker data, job vacancies, companies, and AK1 administrative processes in a structured, efficient, and secure manner. The implementation of this system shows an increase in service efficiency, speed of administrative processes, and data accuracy, as well as supporting the implementation of electronic-based government in accordance with the mandate of Presidential Regulation Number 95 of 2018 concerning SPBE. The active involvement of Diskominfo in the development and testing of the system also strengthens the strategic role of this agency in the digital transformation of government. With an integrated and modern system, Disnaker can provide public services that are more adaptive to the needs of the community and are able to keep up with developments in information technology in a sustainable manner.

5. RECOMMENDATION

In order for the Laravel-based Disnaker administrative information system to run more optimally, it is recommended to continue to improve features, such as notification communication and visual data reporting. Regular training for admins also needs to be carried out to improve digital literacy and minimize errors in data management. In addition, the development of web-based public service access for job seekers can expand the reach and accelerate the service process. Routine system evaluation and maintenance as well as infrastructure support and data security are also important to ensure the sustainability and stability of the system in supporting modern and responsive employment services.

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