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Web-Based Design of an Official Travel Information System

Perancangan Sistem Informasi Perjalanan Dinas Berbasis Web

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A B S T R A C T

Official travel is a routine activity carried out by employees of the North Sumatra Food Safety, Food Crops and Horticulture Service in order to support the implementation of official duties and functions. The official travel administration process which is still carried out manually causes inefficiencies in data management and preparing official travel reports. To overcome these problems, this research aims to design a web-based Official Travel Information System for the North Sumatra Food Safety, Crop and Horticulture Service. The method used in this research is a descriptive method with a waterfall system development model. Needs analysis is carried out by observation, interviews and literature study. System design includes designing data, processes, interfaces and system architecture. The system was built using the PHP programming language, CodeIgniter framework, and MySQL database. The results of this research are a design for a web-based Official Travel Information System that can facilitate the official travel application process, manage official travel data, and create integrated official travel reports. With this system, it is hoped that management of official travel data can become more effective and efficient.

Keyword: information systems, business travel, waterfall

A B S T R A K

Penelitian ini bertujuan untuk mengevaluasi SMILE di BPJS Ketenagakerjaan Cabang Tanjung Morawa dengan menggunakan metode User Compatibility yang menilai sejauh mana aplikasi tersebut memenuhi kebutuhan, kemampuan, dan harapan pengguna. Metode penelitian ini melibatkan survei terhadap pengguna SMILE di BPJS Ketenagakerjaan Cabang Tanjung Morawa dengan mempertimbangkan aspek usability, efisiensi, dan kepuasan pengguna. Pengumpulan data dilakukan melalui kuesioner, wawancara, dan observasi langsung terhadap pengguna SMILE di BPJS Ketenagakerjaan Tanjung Morawa. Hasil evaluasi menunjukkan bahwa Sistem Pengelolaan Data dan Informasi SMILE di BPJS Ketenagakerjaan Cabang Tanjung Morawa memiliki tingkat user compatibility yang tinggi. Hal ini ditunjukkan oleh semua variabel independen EUCS (End User Computing Satisfaction) yang terdiri dari Konten, Format, Akurasi, Ketepatan Waktu, dan Kemudahan Penggunaan memiliki hubungan yang signifikan terhadap kepuasan pengguna SMILE. Hasil evaluasi dan rekomendasi yang dihasilkan dapat menjadi pedoman untuk pengembangan dan perbaikan di masa mendatang.

Kata kunci: SMILE, manajemen informasi, EUCS

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1. INTRODUCTION

The Food Security, Food Crops and Horticulture Service is a government agency established since 1981. This agency focuses on food security through increasing food production and distribution, as well as building strategic food reserves [1][2][3]. It aims to develop superior crop varieties, promote modern agricultural technology, and manage land and water sustainably [4][5]. In horticulture, the agency works on developing horticultural plants, increasing production, and managing ornamental plants, with a focus on marketing and supporting agricultural sustainability [6][7]. Additionally, it addresses food safety, disease prevention, and farmer empowerment to achieve national food security [8][9].

Currently, the department manually inputs official travel data into Microsoft Excel, which is time-consuming due to multi-level approvals from superiors [10][11]. To address this issue, a web-based system is proposed for creating and managing official travel documents (SPD). This system aims to improve efficiency in data uploads, verification by administrators/directors, and data storage [12][13][14][15].

1.1. Previous Research

The creation of an official travel information system for the Regional Office of the Directorate General of Treasury (SIPD-Kanwil DJPBN) involved using Microsoft Excel for data recording, which lacked detailed reporting. The system utilized a MySQL database and ICONIX Process [16]. The current research proposes a web-based system with Laravel and SQL Server for improved efficiency [17][18].

1.2. Supporting Theories

a. Definition of Official Travel Letter

An Official Travel Letter (SPPD) is a document issued by the North Sumatra Food Security, Food Crops and Horticulture Service for employees on business trips. It includes details such as employee name, travel purpose, destination, time period, and costs covered by the agency [19].

b. Definition of Employee

Employees of the North Sumatra Food Security, Food Crops and Horticulture Service include those who meet the qualifications, are appointed by authorized officials, and are tasked with duties in state positions or other responsibilities. They consist of Civil Servants (PNS) and Non-Permanent/Honorary Employees involved in food safety, crop farming, and horticulture programs [20].

2. METHODOLOGY

In this investigation, the researcher applied a qualitative research approach that involved the acquisition of data from original sources in order to achieve specific research objectives. Qualitative research method is an approach used to investigate the condition of objects naturally, with the researcher acting as the main instrument. Therefore, this research was conducted using a qualitative approach, focusing on an in-depth and detailed description of the Service Report Information System at the Food Security Service. The data collection techniques applied in its development are as follows:

1. Observations are carried out directly at the internship location, where the results of these observations are recorded to serve as a reference for ongoing system improvements.
2. The interview process is carried out by asking questions directly to the IT support department, so that an explanation can be obtained regarding the needs of the helpdesk support system.
3. In the literature study, researchers conducted a literature review by collecting and studying a number of journals and books that support and are related to the official travel report input system using web programming.

2.1 System Development Methods

One of the software development methods (System Development Life Cycle) is the Waterfall method. According to the Waterfall Method, it is a classic method used by systems researchers, which includes several research stages, namely:

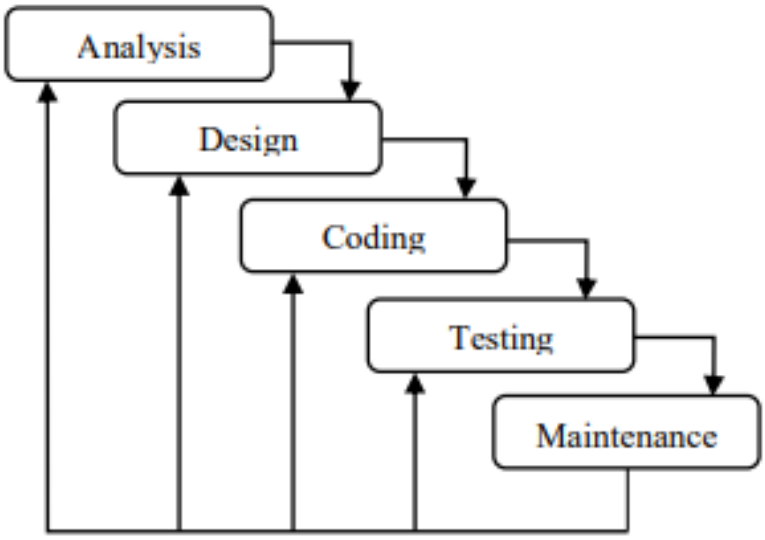

Figure 1. Waterfall method

1. Analysis

   Official trip data input process: Employees will make reports based on official trips that will be carried out through this application. The official travel data entered will then be verified regarding approval of the data report which reaches the administrator or director for follow-up.

2. Design

   The design stage is a phase in system design where the system concept and design is realized through system workflow modeling, which will be represented in the form of UML (Unified Modeling Language) and context diagrams.

3. Coding

   The programming languages used are PHP, HTML, CSS and the Laravel Framework. Text editor uses Visual Studio Code and MySQL database. At this stage the system is expected to be implemented by users according to their needs.

4. Testing

   This stage refers to program testing after the system flow has been adjusted to the initial design. The program must pass testing to prevent the possibility of fatal errors (bugs) when the system is ready to use, especially in terms of functionality. The system testing process uses the black box testing method, where the input from the system is tested against the expected output.

5. Maintenance

   Maintenance is the act of maintaining and maintaining factory facilities or equipment by carrying out necessary repairs, adjustments and replacements. The aim is to ensure that production operations remain satisfactory according to planning, so that facilities can continue to be used for the production process throughout or even before reaching the planned time period.

3. RESULTS AND DISCUSSION

3.1 Current System Analysis

In the system being built, the main components of a system have been analyzed and designed. The technology used in developing this application is web-based technology. In the process of running the application, a browser is needed such as Google Chrome, Mozilla Firefox. System testing uses black box testing to avoid errors or bugs and is proven by black box tables.

To access the application, you need an account to log in consisting of a username and password to access and carry out activities according to the role that has been created. Every official travel report that is entered can request verification from the administrator or director. The data received by the administrator can verify approval.

3.2 System Design

a. Use Case Diagram

As a system requirement analysis, here is the use case diagram depicting the functionality of the Business Trip Report Input Application.

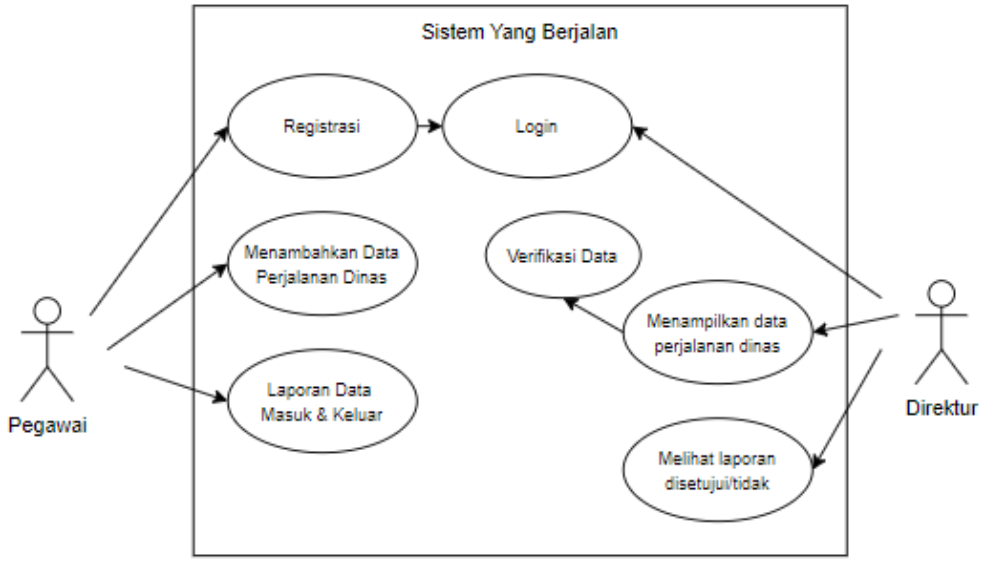

Figure 2. Use Case Diagram

b. Activity Diagrams

The Activity flow diagram of this system is a pragmatic description of the system that explains the function or logic applied to the process of the official travel report data input system. The activity diagram below provides an explanation of the flow starting from the user/employee process in inputting official travel reports to the director, which can be seen in figure 3 of the running system activity diagram.

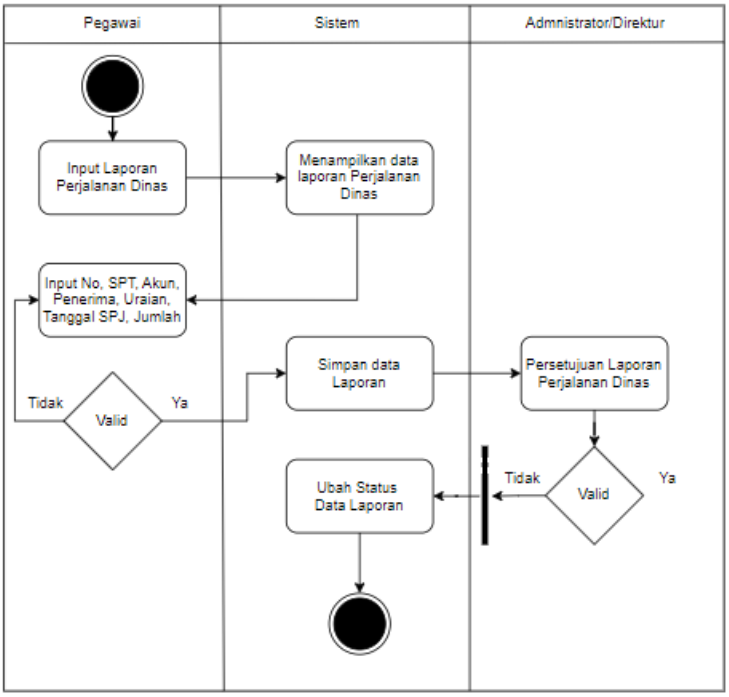

Figure 3. Activity Diagram

3.3 User Interface Design

Implementation of the results of the user interface design built on the website-based helpdesk support system on CV. Indonesian Gyar is as follows:

a. Login Page

Users log in first to access the system, users can immediately enter their username and password if they already have an account to log in, if they don't have an account, users can register which is available on the login page, users can register by entering their name, email and password. . The login page can be seen in Figure 4.

Figure 5. System Login Page

b. Admin Dashboard Page

This page displays a dashboard of the running system. This page displays the vision and mission of the Food Security, Food Crops and Horticulture Service.

Figure 5. System Dashboard Page

c. Organizational Structure Page

This page contains the organizational structure of the Food Security and Horticulture Service. This page was added not only to add to the current system, but so that new users or employees can see the organizational structure of the service. The Organizational Structure page can be seen in Figure 6.

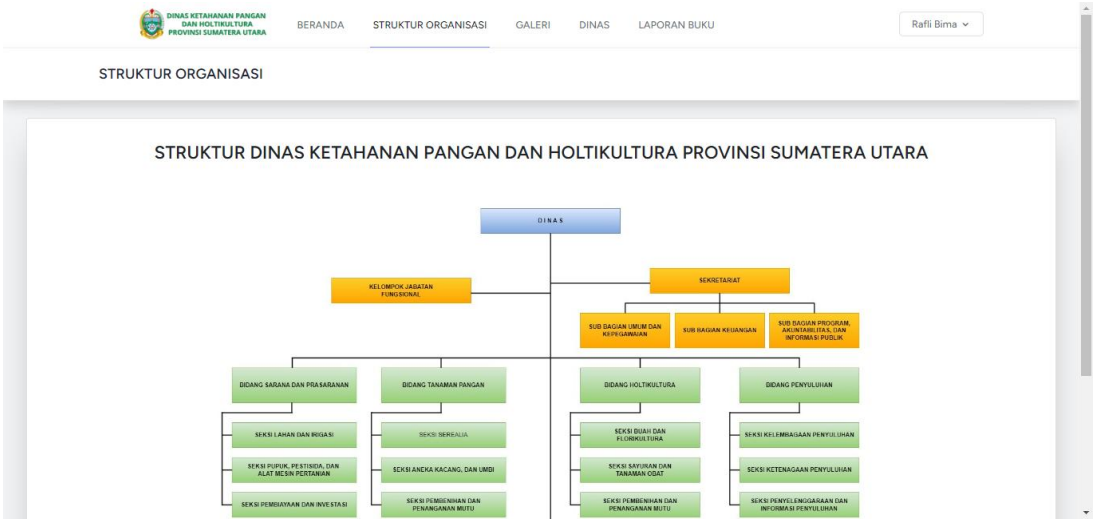

Figure 6. Organizational Structure Page

d. Activity Gallery Page

This page contains data on activities carried out by Food Security and Horticulture, this page can be seen in Figure 7.

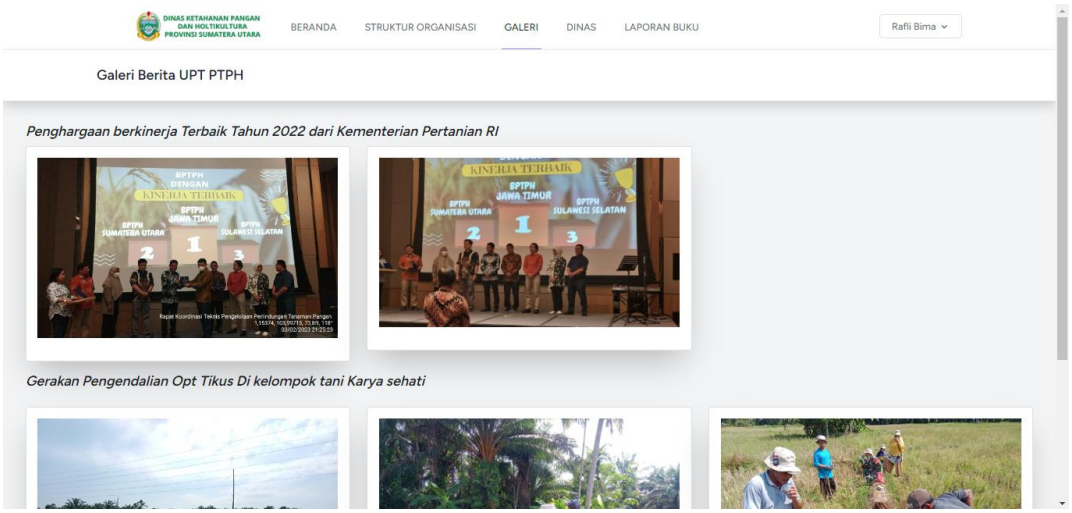

Figure 7. Gallery of Service Activities

e. Business Travel Report Data Page

The following display is a page from the official travel report, it can be seen that 5 data have previously been filled in by the user/employee. Following in figure 9.

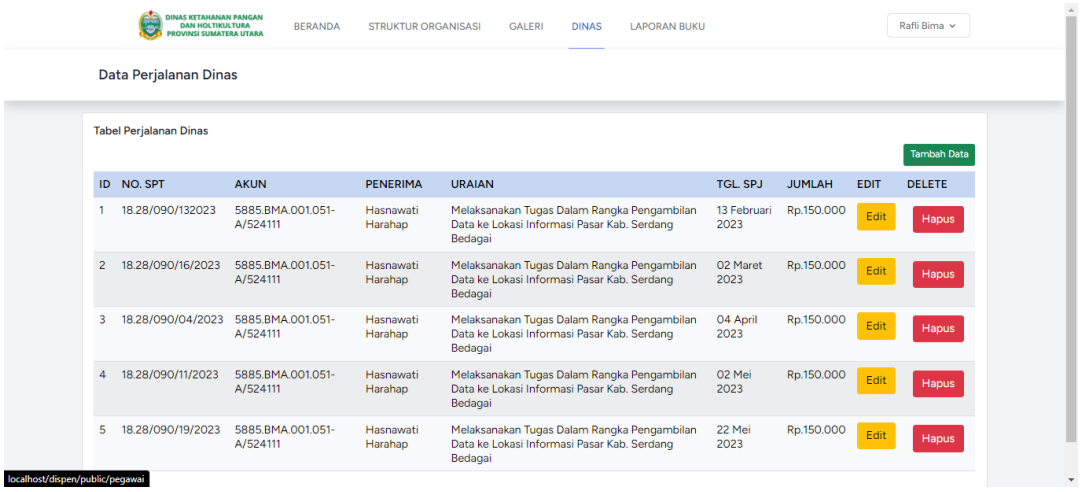

Figure 8. Trip data report page

f. Official Travel Data Report Input form page

The following display is an input form page for official travel data reports, the user/employee fills in the tax return no., account, recipient, activity description, date. Spj, as well as the amount, data that has been filled in can be edited and deleted, and data that has been approved later is displayed in the report data, the input form page can be seen in Figure 9.

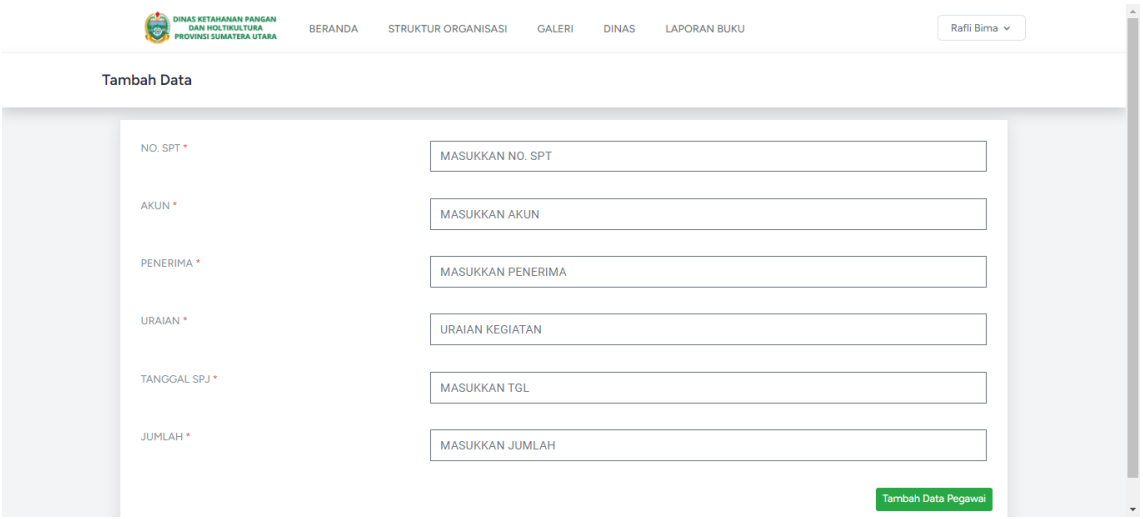

Figure 9. Data Input Page

g. Approved and rejected Reports page.

This page contains the amount of data that has been approved and rejected, data information based on what has been verified by the administrator/director. The report page can be seen in Figure 10.

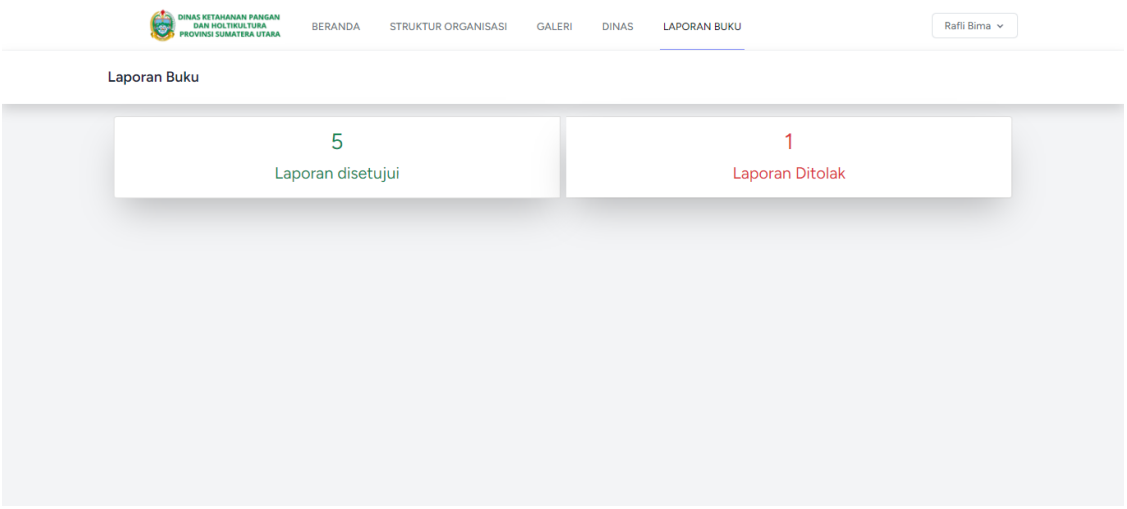

Figure 10. Book Report Page

h. The administrator verification page displays

This page displays official travel report data that has been received by the administrator/director. The data received then waits for the director to approve or reject the report that has been received. Can be seen in figure 11.

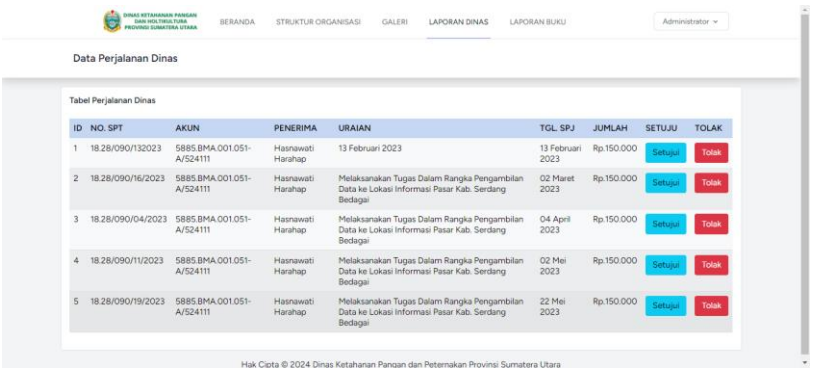

Figure 11. Administrator Verification Page.

i. Display when the data has been approved

If the data has been approved by the administrator/director, it can be seen in Figure 12 below.

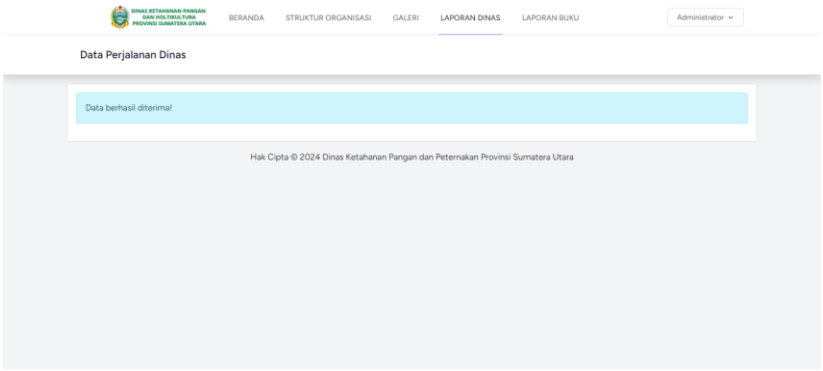

Figure 12. Data has been successfully approved.

j. Display if data has been rejected

If the data has been rejected by the administrator/director, it can be seen in Figure 13 below.

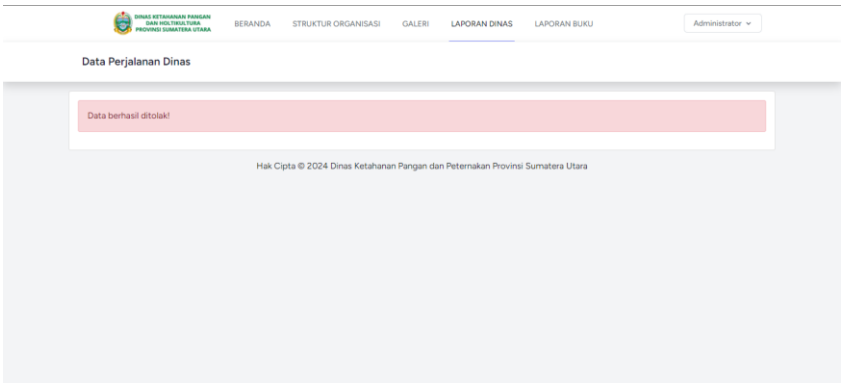

Figure 13. Data rejected successfully.

The development of this web-based official travel information system aims to improve the efficiency and transparency of administrative processes at the Food Security, Food Crops, and Horticulture Department of North Sumatra Province. The analysis results show that the system integrates essential functionalities, including user login, travel data input, and verification processes by the administrator and director. The use of black-box testing ensures that the system operates without functional errors.

In terms of design, the use case and activity diagrams provide a clear overview of system flow and the roles of each actor involved, aligning with the approach used by Geniusa and Samopa [2], as well as Prasetyaningrum and Juanita [3], who emphasize the importance of visual documentation in web-based systems to facilitate development and evaluation.

The user interface of the system is structured and responsive, featuring key pages such as the login page, admin dashboard, organizational structure, activity gallery, and the official travel report input form. This aligns with the findings of Sudariyanto [18] and Aulia [12], who stated that successful implementation of official travel systems depends heavily on intuitive navigation and comprehensive features.

Moreover, the system not only supports submission and reporting of official travel but also ensures transparency through features that display the approval or rejection status of each report. This approach reflects the principles of good governance in public service, as highlighted by Savitri and Amaliah [4], who stressed the importance of information openness and accountability in managing government activities and budgets.

With this web-based system, the process of managing official travel becomes more organized and accessible, reducing the potential for administrative errors and accelerating decision-making. These findings are consistent with Sulissetiyo [11], who noted that digitalizing official travel processes significantly improves work efficiency and reporting accuracy.

Overall, the development of this information system meets the organizational needs for efficient, accurate, and transparent management of official travel data. However, continuous improvements are still necessary, particularly in terms of system security and integration with other personnel information systems to create a more comprehensive solution, as recommended by Rahmawati [7] and Ariza [1].

4. CONCLUSION

Based on the results of designing a web-based official travel information system for the North Sumatra Food Security, Food Crops and Horticulture Service, it can be concluded that this information system is designed to facilitate the administration and management of official travel data at the service.

This web-based official travel information system allows employees to submit official travel requests online, which will then be processed by the personnel department. Application status can also be monitored in real-time by employees. After the official trip is completed, employees can make an official trip report through this information system.

Thus, the designed web-based official travel information system is expected to increase the efficiency and effectiveness of the administrative process and management of official travel data at the North Sumatra Food Security, Food Crops and Horticulture Service. Apart from that, reporting on official travel is also easier and better managed through the database in this information system.

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