Web-Based Monitoring Information System for Official Travel Letters on Food Security and North Sumatera Horticulture

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Abstract

The Food Security and Horticulture Office of North Sumatra faces challenges in the management of Service Travel Letters (SPD), such as submitting letters, making letter notes, operational costs, which are still done manually using manual methods, so it is time consuming. This hampers the effectiveness of document management and data-based decision making. To overcome these problems, this research develops a web-based monitoring information system. This system is designed to manage official travel letters, to minimize the time and recording of letter reports. With the web-based Monitoring Information System, the management of official travel letters becomes more structured and can be accessed in real-time, thus increasing efficiency in carrying out official duties in various regions of North Sumatra. This research uses the Research and Development (R&D) method with stages including needs analysis, system design, prototype development, testing, and evaluation. The results of the system implementation show that the use of this Monitoring Information System can speed up the process of submitting and approving official travel letters, as well as reducing errors in data collection and recording of trips.

Keywords: Information System, Monitoring, Official Travel Letters, R&D

1. Introduction

In an increasingly digital era developing, needs will system efficient and effective information become the more important, especially in industry creative like photography [1]. Progress knowledge knowledge at this time always accompanied by increasingly advanced technology advanced, science knowledge and technology has Lots bring change for life man Good in method thinking and behavior behavior, and has make man more perfect in master and manage nature for the benefit and welfare his life. With make knowledge knowledge and technology as bridge and instructions for doing so A change expected able and able to help well in economy and in development area [19].

Use computer be one of choice main at each agencies, both large scale big and small. Manual data processing, where dependence on sheets paper as a data storage medium already No effective again and no efficient from aspect cost, time, effort, guarantee will the truth and integrity of the data will be processed. Digital transformation in various agency government has increase transparency and convenience in access data and relevant information. According to Supriyadi (2020), the implementation of technology web based has

proven optimize service public and reduce complicated bureaucracy. Therefore, integration technology in management administration is very important to improve quality service public.

Travel Letter (SPD) is document official issued by the agency government as permission for employee to do journey service in frame carry out state duties. Procedures and rules related letter journey service set up in Regulation of the Minister of Finance No. 113/PMK.05/2012 concerning Domestic Service Travel for State Officials, Civil Servants and Non Permanent Employees. SPD also includes rights that must be accepted by the employee related cost travel, such as cost transportation, accommodation, and daily money [2].

Agency Food Security and Horticulture of North Sumatra has role important in guard stability food as well as manage various aspect agriculture in this province. Tasks main This agency includes supervision distribution food, development plant horticulture, and ensure availability food for society. With breadth of work area and complexity not quite enough the answer is, use technology Integrated information is needed to support effectiveness operational agency [3]. The North

Sumatra Food Security and Horticulture Service is agency government that often on duty do journey Service. Travel service is part main in carry out task agency, but management report journey service Still become constraint Because use application MsWord and MsExcel. The process of making report eat long time and less accurate. Every employee from the work unit that carries out journey service must submit a signed service note head part as condition making letter order assignment (SPT). Service notes and SPT then submitted to secretary area to get approval. If approved, the admin will make SPPD according to order secretary. This is often cause error in data collection, such as incompatibility between travel data with available budget, delays reporting, as well as data duplication [4]. In addition, the system does not This computerization results in the monitoring and supervision process to activity journey service become difficult done in a way effective.

Programming language to be used for development system This information is PHP. According to Jannah (2019), PHP is abbreviation from PHP Hypertext Preprocessor which works as Language server-side script in integrated website creation in HTML documents. Using PHP allows dynamic website creation, so that site maintenance becomes more easy and efficient. To design system activity unit monitoring information students, the method used is Rapid Application Development (RAD). According to Wijoyo (2021), RAD is method development device software that emphasizes speed development through prototype iterative and engagement intensive user. Stages in This method starts with planning needs, which involve user in a way active to determine need system in a way fast. Next, it is done design prototype with create a system model that can tested and evaluated by users. Stage next is development fast, where the features and functions the system is implemented in a iterative based on bait come back user. Finally, testing and completion done to ensure system free from errors and ready to use. This method is perfect for projects with ongoing needs develop, because allow development system in a way flexible and efficient.

This is reinforced with study previously that entitled "MANAGEMENT INFORMATION SYSTEM AND MONITORING OF OFFICIAL TRAVEL AT THE BKKBN REPRESENTATIVE OF SOUTH KALIMANTAN PROVINCE" by [5]. This study resulted in system information designed to improve travel data management office at the BKKBN Representative Office of South Kalimantan Province. Previously, the process of data input and creation report journey service done manually using Ms. Word and Excel applications, which are often cause problem like lost documents and activities overlap overlap consequence less than optimal data management. The system developed use Language PHP programming and MySQL as a database is successful overcome problem the with provide more solutions integrated. However, the appearance of this system is still not too futuristic, as well as the appearance of the system for each user role is still not appropriate. This is the basis that this research refers to the shortcomings that exist in previous studies.

Based on explanation above, the author interested in making it A theme Final Assignment Based on need on with utilise existing technology to make it happen A the system that will become a media manager data collection journey service [6]. With existence web- based monitoring system , management journey service can done in real-time, accurately, and efficiently, as well as minimize error in data collection.

With existence System Web- based Official Travel Letter Monitoring Information is expected can optimize management letter journey service in the environment Food Security and Horticulture of North Sumatra. This solution does not only will improve management processes administration, but also improve accountability and efficiency Work agency This research aims to build a system that can be implemented and provides contribution real in support activity journey service agency government.

2. Research Methods

Research and Development (R&D) is a research method used to produce certain products and test the effectiveness of these products. In this study, the authors used the R&D research method which aims to develop products and test their effectiveness in achieving goals. The first goal is referred to as the developer function, while the second goal is called validation. Thus, development research can be interpreted as a development effort accompanied by validation [7].

Data collection based on the stages in the Research and Development (R&D) method has main steps, such as finding potential problems, gathering information, conducting small-scale research, planning, design development, initial stage trials, revising trial results, retesting, revising results, feasibility testing, final revision, and implementation [8]. In this study, the authors used eight main stages as follows:

a) Research and Information Gathering, Researchers conduct observations and literature studies to collect relevant data.
b) Planning, Develop a design plan and system development strategy.
c) Development, Making the initial design of the system in accordance with the needs.

d) Initial Trial, Conduct initial testing of the system to identify potential errors or weaknesses.

e) System Revision, Make revisions to the system based on the results of the initial trial.

f) Feasibility Test, Testing the effectiveness and feasibility of the system to ensure that the system can function properly.

g) Final Revision, Refine the system based on feedback from the feasibility test. h) Implementation: Publish the results of the product that has been developed so that it can be used by users.
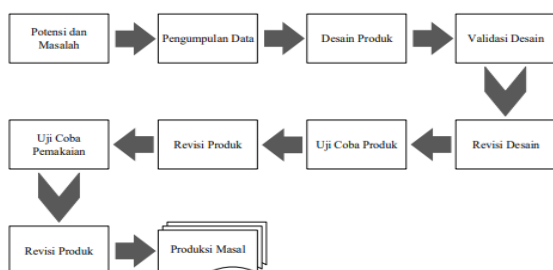
Figure 1. R&D Method

2.1. *Data Collection Techniques*

In this study, system testing was carried out by involving a number of users. The number of users involved in the test was 3 employees who were selected based on their roles in accordance with the system. System evaluation was carried out using the following metrics:

a) Observation, This technique is used to collect data by direct monitoring of the research topic [9]. Researchers made observations related to the efficiency and problems that occur in the official travel letter recording system at the North Sumatra Food Security and Horticulture Office [11].

b) Interview, Data collection is carried out by means of direct interviews with related parties orally or in writing [7][5]. Researchers conducted interviews with several respondents to obtain relevant information related to the official travel letter recording system to avoid data bias.

c) Literature Study, This technique is used to collect data through research, reading, and collecting reference books, journals, and other documents related to the research [10].
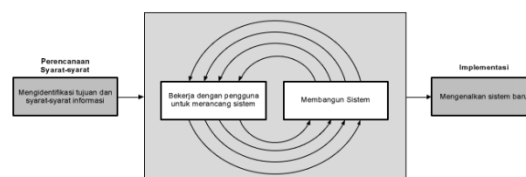
2.2. *Development Methods System*

Figure 2. RAD Development Method

Rapid Application Development (RAD) method is A method development device software that aims to produce application with fast and efficient [11].

Main purpose from The RAD approach is to save time and cost development with involving user in every phase development system. There is three phase in RAD which involves analyst and user in stage assessment, design , and implementation [12].

The RAD method has phases do planning terms and conditions need system, involving users to design dam building system system (this activity is carried out in a way over and over again until reach agreement together). There is four The phases in the RAD method are:

a) Requirements Planning Phase at this stage the meeting between analysts and users identify objective from the system that will built, then identify terms and conditions information that will be appear to achieve objective This initial stage is useful for providing a broad overview of the project being worked on. In the process, the team may move on to more specifics.

b) RAD *design workshop*, during phase design user, users interact with analysis systems and develop models and *prototypes* that represent all system processes, output and input [11]. During this process, the user respond existing *prototypes* and analysts repair designed modules based on response user

c) Implementation at this stage is: implementation into the system information web-based. This phase focuses on programs and tasks development similar system with SLDC. On assignment the main developer is patching possible shortcomings happen during the development process application. This task includes do optimization for stability the application, fix *interface*, up to do *maintenance* and compilation documentation. In RAD, users Keep going participate and still can recommend change or improvement moment system developed. Then done data conversion, testing, switching to system new and trainer user

2.3. *Monitoring*

Monitoring, in Indonesian known as with term monitoring. Monitoring is A activities to ensure will achievement all objective organization and management [13]. On this occasion In other words, monitoring is also defined as a step to study whether activities carried out has in accordance with plan, identify problems that arise so that they are immediate can overcome, do evaluation whether pattern work and management used already right to achieve purpose, to know connection between activity with purpose of obtaining size progress [14].

3. Results and Discussion

Usecase Diagram explains the activities carried out by the admin as part of the personnel and employees in a system that is built and developed.
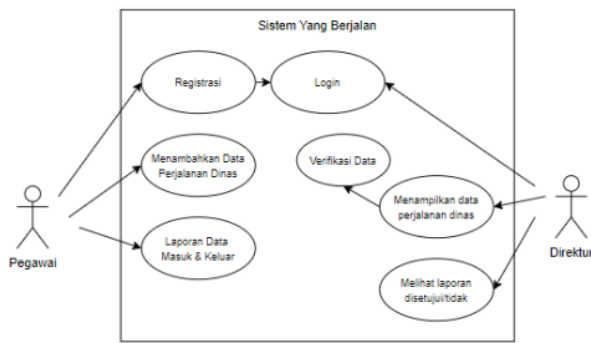
Figure 4. Usecase diagram

In the picture on *Use case diagrams* describe the functionality that a system wants to achieve [16]. *Use case diagrams* carry out several activities such as activities carried out by admins, managers, and managers. services and employees, namely *login,* registration, and add travel data service.
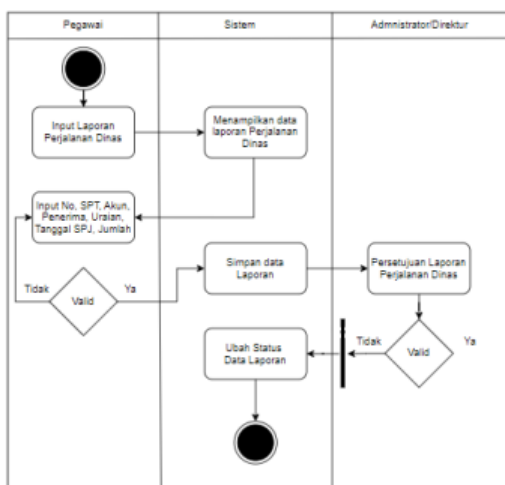
Figure 5. Activity Diagram

In the picture on depict activity diagrams for illustration system in a way pragmatic explaining about function or logic applied to the process of report data input system journey service [17]. The activity diagram below provides explanation channel start from user/ employee process in do input report journey service until director, can seen in figure 4 activity diagram of the running system

Figure 6. System Admin Activity Diagram

The image above illustrates the admin Activity Diagram for the proposed system. The view main, next there is manage menu options system and user, travel data service, submission data service and report data in and out.

Class diagrams are one a type of diagram in the Unified Modeling Language (UML) that is used to model static structure of A system [15]. The class diagram displays the classes that will be There is in systems and relationships between class This diagram is very important. in stage design system based on object because it helps to describe structure logical from application or the system in progress developed [18].

Figure 7. Class diagram

The image above is class diagram image built consisting of from names, attributes, and operations that happen on class the [20].

3.1. *Implementation*

Implementation is something very important thing. This is because with he did implementation, then We can know in detail whether design that has been made in accordance with hope user, is it appearance system Already in accordance with desire users and whether Still there is things that are still left behind and not yet accommodated in system the.

The Index page is Implementation displayed page when the user enters system URL address. On this page there is a login form that will filled in by the user with the existing username and password to log in into the system dashboard page.
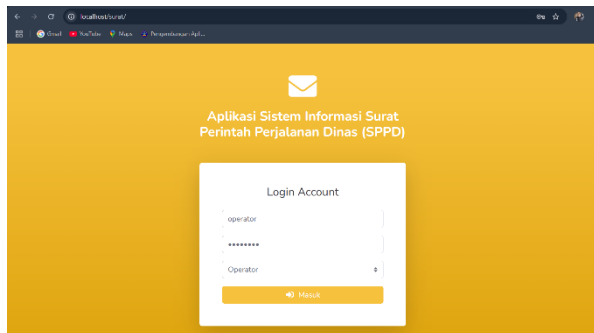

Figure 8. System Login Page

The admin login page is implementation login page, where admin needs to moreover formerly Enter your username and password to be able to enter into the main menu from Application for Warrant Official travel.
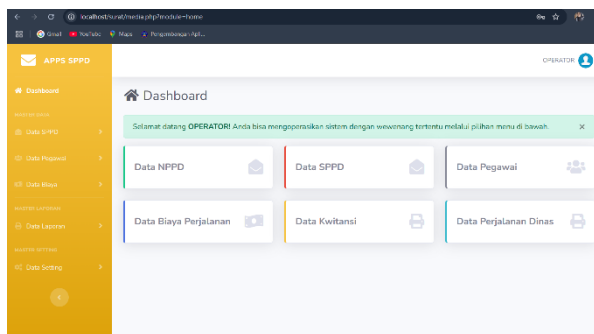

Figure 9. Registration Page System

Operator system dashboard page is page front system accessed by the operator, the operator can operate sppd data features, request note tasks, employee data, cost data related vehicles and transportation, and data report.
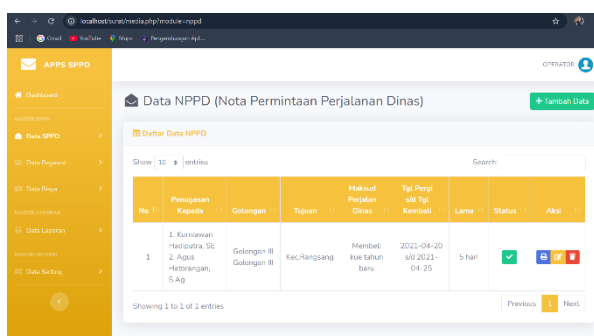

Figure 10. NPPD data page

On this NPPD page, operators can add travel notes services, including print report and process NPPD data.
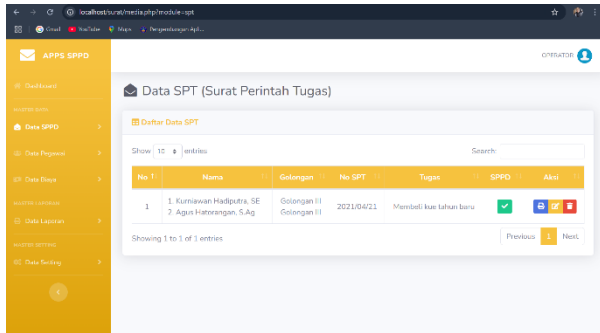
Figure 11. Display page letter order task

This page is appearance letter order tasks that can be done accessed by operators including CRUD data processing. Operators can also verify SPT data.

Figure 12. Travel Data Page

On the page above , the operator can enter data of employees of the Horticultural Food Security Service . Admin can also do crud action for employee data.

Figure 13. Cost data page journey .

On the page on display page cost travel, costs journey can arranged, based on destination, group, lump sum, accommodation, transportation including CRUD access.
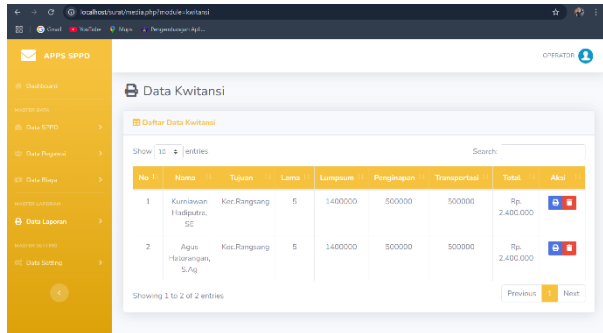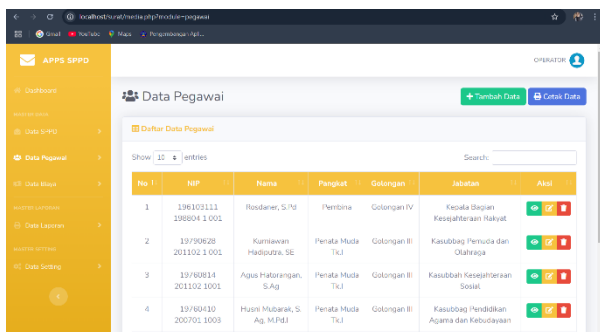

Figure 14. Receipt Data Page

On this page, the operator does not can do crud actions on receipt data. Operators can also verify receipt data.

On the page above admin can view the submission data made by employees. On this page the admin can to approve submission and also do rejection to submissions made by employees / users.
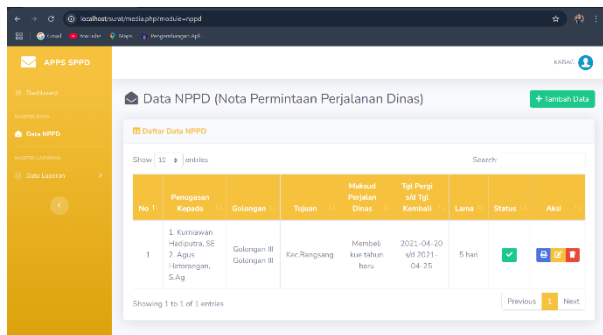

Figure 15. Accessed NPPD data Head of Division

On this page, the head of the can do crud access to NPPD data, inputted data Then enter to the operator for approval.
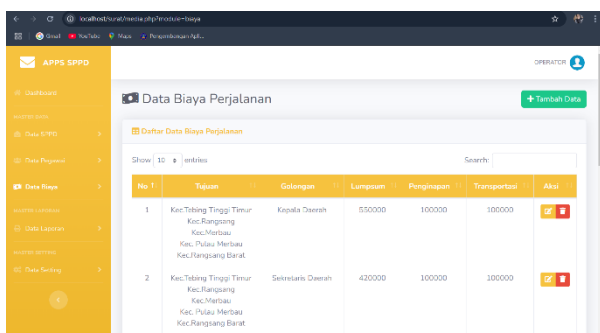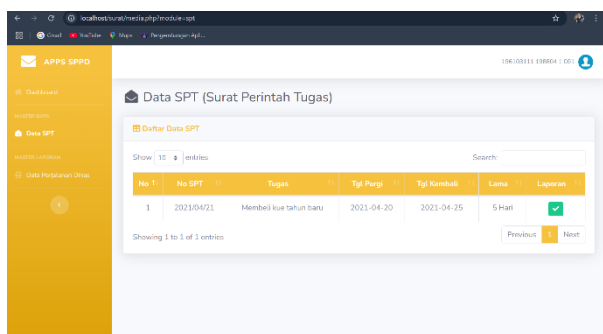

Figure 16. Travel Data Page

This page contains appearance page journey services accessed by employees. Employee only can accept information letter journey services provided by the head

of the section, and which have been approved by the operator.

3.2. *Black Box Testing*

Black box testing is method testing device software that focuses on testing functions from a application without notice How internal structure or code from application said. In testing system, *black box testing* aims to verify whether submission letter employee functioning in accordance with specifications and requirements user without notice How system is implemented in a technical.

The purpose of The purpose of black box testing is to ensure that the system can take notes letter in and out employee based on valid location, In addition, this test is carried out to test whether all defined features in specification system has been implemented and is functioning with OK, Ensure that the system in accordance with need identified business in phase planning and testing various possible inputs provided by the user (e.g. , time) submission, employee data) and checking what is the output produced in accordance with what is expected .

No	Fitur yang Diuji	Skenario Pengujian	Input	Ekspektasi Output	Hasil
1	Login	Pengguna memasukkan username dan password yang valid	Username: valid	Berhasil masuk ke dashboard pengguna	Berhasil
2	Login	Pengguna memasukkan username atau password yang salah	Username: salah	Muncul pesan kesalahan "Username atau Password salah"	Berhasil
3	Register Pengguna	Pengguna mendaftar dengan informasi yang benar	Nama, username, password	Pengguna baru berhasil didaftarkan dan dialihkan ke halaman login	Berhasil
4	Register Pengguna	Pengguna mendaftar dengan username yang sudah ada	Nama, username, password	Muncul pesan kesalahan "Username sudah terdaftar"	Berhasil
5	Pembuatan Surat Perjalanan Dinas	Pegawai membuat surat perjalanan dengan data yang lengkap	Tujuan, tanggal pergi, tanggal pulang, lokasi	Surat perjalanan baru berhasil dibuat dan disimpan di sistem	Berhasil
6	Pembuatan Surat Perjalanan Dinas	Pegawai membuat surat perjalanan tanpa mengisi semua data wajib	Tujuan, tanggal pergi, tanpa tanggal pulang, lokasi	Muncul pesan kesalahan "Data wajib tidak lengkap"	Berhasil
7	Peta Interaktif	Admin mengakses fitur peta untuk melihat lokasi tujuan dinas	Lokasi dinas	Peta interaktif berhasil menampilkan lokasi tujuan	Berhasil
8	Peta Interaktif	Admin mencoba memuat peta tanpa koneksi internet	Tidak ada koneksi internet	Muncul pesan kesalahan "Gagal memuat peta, periksa koneksi internet"	Berhasil
9	Pelacakan Status Surat Perjalanan Dinas	Pegawai mengecek status surat perjalanan yang sudah dibuat	Nomor surat perjalanan	Status surat ditampilkan (misalnya: "Sedang diproses" atau "Disetujui")	Berhasil
10	Pengelolaan Lokasi Tujuan	Admin menambah lokasi baru dengan data lengkap	Nama lokasi, latitude, longitude	Lokasi baru berhasil ditambahkan ke sistem	Berhasil
11	Pengelolaan Lokasi Tujuan	Admin mencoba menambah lokasi baru tanpa mengisi semua data wajib	Nama lokasi tanpa latitude atau longitude	Muncul pesan kesalahan "Data wajib tidak lengkap"	Berhasil
12	Pembuatan Laporan Perjalanan	Pegawai membuat laporan setelah perjalanan dinas selesai	Isi laporan, tanggal laporan	Laporan perjalanan dinas berhasil disimpan di sistem	Berhasil
13	Pembuatan Laporan Perjalanan	Pegawai membuat laporan tanpa mengisi data wajib	Tanpa isi laporan atau tanpa tanggal laporan	Muncul pesan kesalahan "Data wajib tidak lengkap"	Berhasil

Table 1. Black Box Testing Results

Based on results the tests carried out, no found existence errors in each testing process functional system presence that is built. With applying black box testing to "System "Web-Based Monitoring Information for Official Travel Letters on Food Security and Horticulture in North Sumatra" can ensure that the system functioning with Good in condition real and appropriate with need as well as hope user without must check implementation details technical from system the. This can be said to be going well because the Food Security and Horticulture Office can easily report official travel data which previously took 2 to 3 days, with a system that can be easily accessed, official travel orders and other submission letters can be easily completed in just a few hours.

This research was successful design and implement System Web -based Travel Document Information at the Food Security and Horticulture Service North Sumatra Province. This system is capable of facilitate management and monitoring journey service in a way efficient with utilise technology based on map interactive. Features like making letter journey service, determination location objective service, tracking travel status, and creation report journey, successfully implemented and can accessed in real-time.

4. Conclusion

Based on results research conducted writer, then writer interesting conclusion as following :

1) With the existence of an information system letter order journey service, can assist in the processing of Official Travel Letter data a employee and the team as a whole fast, precise and accurate

2) With use This web-based SPPD system, the administration process journey service become more fast, structured, and error free. In addition, the integration map interactive make it easier user in understand location objective service visually, so it helps in taking decision related journey service. This system also improves transparency and accountability in management journey service

3) With system information letter journey service This employee makes it easy admin in do recap report journey services in the North Sumatra Food Security and Horticulture Service

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