Travel Management Information System Employee Service at the Office of Industry and Trade of Provsu

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Abstract: Technological developments and advances in science are currently developing rapidly, especially in the management of data that has used computers. The use of computers today is also used by individuals and groups that can facilitate their work. With the development of this information technology, there is an increasing need for an information system that can complete work in a systematic and efficient manner so as to facilitate the work of individuals or groups in the form of data management.The official trip itself is a work program at the agency in the form of a field activity that functions to find out and share experiences in accordance with the field of the program being carried out. With this official trip, every time a business trip is carried out, a trip report is needed to find out what activities have been carried out so as to produce a new work program for each existing agency. However, the BPK (Corruption Supervisory Agency) is often scrutinizing official travel itself, which is because every official trip is carried out, a budget will be given according to the stipulated budget, and the budget is quite large. Therefore every employee must also report official travel activities in a systematic and realistic manner.
Keywords: SIM, RAD, PIECES,PROTOTYPE,QUALITATIVE

INTRODUCTION

Technological developments and advances in science are currently developing rapidly, especially in the management of data that have used computers. The use of computers today is also used by individuals and groups that can facilitate their work. With the development of this information technology, there is an increasing need for an information system that can complete work systematically and efficiently to facilitate the work of individuals or groups in the form of data management.

The official trip itself is a work program at the agency in the form of a field activity that functions to find out and share experiences by the field of the program being carried out. With this official trip, every time a business trip is carried out, a trip report is needed to find out what activities have been carried out to produce a new work program for each existing agency. However, the BPK (Corruption Supervisory Agency) is often scrutinizing official travel itself, which is because every official trip is carried out, a budget will be given according to the stipulated budget, and the budget is quite large. Therefore every employee must also report official travel activities systematically and realistically.

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Official trips at the Office of Industry and Trade of North Sumatra Province itself have a very simple system using Microsoft Excel to provide reports on official trips. So it is necessary to develop a system so that official travel reports are more efficient and systematic, both in managing report data, letters, budgets, and activities carried out. Therefore, a management information system is needed to report all activities and costs incurred in a transparent manner which can be carried out with only one system.

This system is applied to make it easier for employees to be more administrative and provide better control of official travel activities. This research was previously developed by M.Iqbal in his journal (Dinas & Pusat, 2022)where in their research there were differences in terms of the methods used and the output or cases produced. In previous studies there were no financing reports listed on the system being developed, with the problems and differences that exist, the researchers designed a system entitled "Employee Official Travel Management Information System at the Office of Industry and Trade of North Sumatra Province" whose method analysis uses Rapid application development. Rapid application development was chosen as the basis of the method because this method is a very fast and short development method, and uses the pieces analysis method. With the development of this research, it is hoped that it will be a solution to existing problems and employees can more easily report business trips in a systematic and realistic manner.

LITERATURE REVIEW

Several studies have discussed the same topic but there are differences from previous research with research that will be made including:

The First

research. Research that raised the same topic, namely the research conducted by Heru Kurniawan and Effiyaldi, in his research entitled "Analysis and Design of Travel Management Information Systems at the Jambi Province Environmental Service (DLH), where in the research of Heru et al there are differences the underlying method and different outputs (Iriawan & Devitra, 2020)

The Second

research. This research also has the same topic but the difference is in the research compiled by evi ana Kusuma et al entitled "Design and Build an Information System for Official Travel Orders at the Provincial Secretariat of the Web-Based Province (The Design and Develop the Web-Based Information System). of the Official Travel Warrant in the Regional Secretariat of NTB Province,)" in this study only manages SPPD data from manual input to computerization, and uses Codeigniter as the framework, MySql as the database server and Xampp as the local server(Ana et al., 2018)

The Third

research is the same and relevant third research, namely the research written by veri and rijalul entitled "Design and Application of Information Systems in the Application of Official Travel Orders" which in this study discusses the same problem, namely about official travel orders, but which distinguishing this research from previous ones, namely in the form of tools and objects studied to produce different studies with the same topic and different results (Ilhadi & Arif, 2021)

METHOD

Method Of Collecting Data

As a supporting and strengthening material that is useful for researchers to find and collect data in research, therefore researchers use several methods, namely:

*name of corresponding author

Observation (Observation)

In this observation process, the method used to collect data is by observing directly/participating at the research location so that you can find out the system that is currently taking place (Maulana et al., 2020)at the Department of Industry and Trade of the North Sumatra Province of Medan, this research was conducted under the supervision of Mr. Ahyat Perdana Kesuma as Officer and Chair of the Domestic Trade Sector

Interview (Interview)

Researchers collect data to get information from the sources directly so that the data obtained is more accurate and relevant.

Document Analysis

Researchers collected data by studying official travel documents at the Office of Industry and Trade of North Sumatra, Medan.

Qualitative Method

The research method used is a qualitative method in which the researcher obtains information directly from existing sources. This method is used to examine the problems encountered and can produce certain information as a form of solving existing problems. Quoted from Amrulloh's research (Amrulloh & Saintika, 2022).

Which explains that qualitative research is a method that has characteristics in the form of opinions and views in which researchers participate in the participation process continuously until they get the expected information through written or non-written documents, as well as in the form of pictures or photos obtained to strengthen research.

Metode Analisis Pieces

The Pieces method is a method that defines a problem that existed before a system was designed. Where these pieces are carried out based on an analysis consisting of Performance, information, economy, security, efficiency, and service, with also known as the PIECES method. With the PIECES analysis method, the designer can more easily describe and design a new system based on the identified problems which in the end can find the main problem (Wijaya, 2018).

This analysis is analysis that is carried out in an organized way to see an activity or event, to produce a theme that will later be used as a reference in making the system and making a solution to the existing problem (Aulia et al., 2022).

Below are the characteristics that must be present in the analysis of pieces according to James Wetherbe in the evaluation journal of ICT utilization using pieces (Thenata & Prabawati, 2018), namely:

Performance

Increased production and the number of existing jobs during a predetermined period where transactions or requests are responded to requests or transactions where in this flow can be interpreted as a situation of response at the time that occurs when transactions have been entered. Delays can occur if there is a queue in this processing caused by previous transactions(Adiningrat, 2023).

Information and Data (Information and Data)

Factors that make progress in an agency or company are in the form of presenting data as well as information that is valuable and used in decision-making. Several components must be considered when the system evaluation process related to data and information takes place, namely:
1) Output (Output), is the final form obtained when presenting data on the system.

*name of corresponding author

2) Input (Input), is the input of data that will be managed into information that will be useful to agencies
3) Data stored (Stored Data), is data storage that has a level of reliability in the system.

Economics

The economic variable serves to determine or qualify the system for companies in information systems that produce a variable that will be obtained by the company. In the process of economic evaluation

It consists of two, namely:
1) Cost, which is a value that must be paid by the company to implement the required system.
2) Profit, is a value that is generated from the evaluation of the benefits that the company gets from the information system, thus making the company more advanced and developing (Pangri et al., 2021).

Supervision(Control)

Supervision is an assessment of the information system in aspects of control and data security consisting of:
1) Integrity, namely increased access to software or data by unauthorized persons who can be controlled.
2) Security, namely a mechanism in the form of steps that can regulate or protect a system or program and data that is in the information system(Lukman, n.d.).

In the current state or stage regarding control over the flow of data, as well as information, when faced with controls that appear weak, the security of data and information will be more easily leaked and can be exploited by people who do not have authority, and if security or control over the flow of data and information is too tight, the system can become burdened by security procedures or controls and also disrupt the security and comfort of data users and can be utilized by the information generated on the system.

Efficiency

The information system in terms of its use must be superior to the manual system, therefore efficiency can be obtained, where this level is in the processing of the operation of the information system that is made. The things that must be considered in terms of efficiency in the company are as follows:
1) Implementation of employees, system tools such as machines, and the like and spending excessive time so that the existing material inventory in the company will not be controlled.
2) Implementation of tasks and performance, can be seen from how the level of performance generated in carrying out tasks becomes redundant.
3) Meeting the needs of companies that are excessive just to complete a task.

Services

Service is a way to increase customer satisfaction of system users. Within the scope of this service itself has important aspects including:
1) Accuracy, namely the accuracy in performing computation and control.
2) Reliability, increasing customer confidence to perform the requested function.
3) Simplicity, namely increasing the value of a system where customers can easily understand as   well use it.

In this case, the situation that exists in the services provided is very important in the running system, thus making the evaluation and updating of the system to further increase

*name of corresponding author

customer confidence. As well as being able to evaluate deficiencies in system data services that can be identified below:

1) The system generates inaccurate products.
2) System produceproduct Which inconsistent.
3) The system produces an unbelievable product.

The pieces analysis method is a method that can identify problems through several performance categories in terms of economy, security, efficiency, and service. Pieces itself is a series of Performance, information, economy, control, efficiency, and service. To identify the problem can be seen in the table below

Table 1. Analysis Method Pieces

Analysis	Of Current System	Proposed New System
Performance	Delay in receiving assignment letter.	By doing a computerized connection, it willbe fast to manage business travel letters, as well as management planning.
Information	Information on travel assignment letters to employees who will conduct official trips is not systematic	Can inform official travel letters quickly andsystematically
Economy	Uncontrolled budget in the previous application system.	Controlled budget with the budget that comesout in the system to be made
Control	Control It is difficult tocontrol who will go on business trips..	Using this system makes it easier for employees or leaders to find out who isholding official trips..
Eficiency	For data management and financial report management at the industrial office is less efficient, so in the management of the report, it isdifficult to data from employees at the agency.	With this system, the leadership can more easily find out which members are on officialtrips and employees are more efficient in managing their data.

*name of corresponding author

Service	system was not realized and there was never any development, so employees only recorded it manually because the system was limited.	It made iteasier for employees and leaders tofind out all the data in one system

System Development Method

The system development method used in the design of this system is using the Rapid Application development method where this development method combines several existing methods such as structured methods that utilize prototype techniques and joint application development techniques. The application of this merger is done to facilitate development in the system to be fast and easy(Hidayat & Hati, 2021).
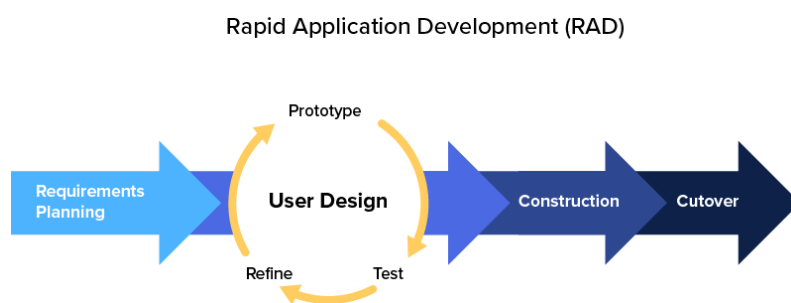
Figure.1 The Cycle RAD

The Rapid Application method itself has 4 process stages consisting of (P et al., 2022):

1. Requirement planning
   The cycle at this early stage contains problem identification, and data obtained in a design to determine the ultimate goal of the system project being developed.
2. User design
   This second cycle is in the form of design planning for the system to be created, which once designed will enter the testing stage, and if there is a lack of focus and incompatibility with the system to be developed, it can be refined.
3. Construction
   The design aspects that have been designed on the system will be applied to the beta version until the final stage. Where at this stage the system is following what is needed and designed.
4. Cutover
   At the method stage, the system has the required implementation in the final method which makes the implementation executable.

System development Rapid application development is system development that interacts continuously between users and designers which combines the planning and analysis phases of the system development cycle into one phase and also develops prototype rapid application systems using interactions that are better known as incremental development which repeats the development steps and testing system design according to needs based on user feedback using a visual interface.
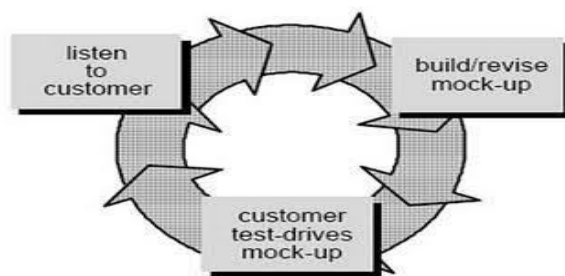
*name of corresponding author

Fig. 2 Development Prototype

Prototyping is an engineering base approach which is a literature process that involves designers and users. The prototype paradigm above consists of (Karim & Pratowo, 2021):

1. Listen to the customer

The customer and the developer jointly identify all requirements, where the customer will provide an outline to explain the system to be developed to the developer. Then the developer will provide inputs in planning the system.

2. Build/revise mock-up

At this stage, the developer builds a design that has been agreed upon by the customer and is designed through code. The design that is made and will be adjusted to the specifications of the needs in making this Information System for Employee Travel Management at the Department of Industry and Trade.

3. Customer test drives mock-up

If the evaluation carried out by the customer whose prototype has been built according to what the customer wants is appropriate then the developer will complete the development, if it is not following what the customer wants then it will repeat the previous prototype.
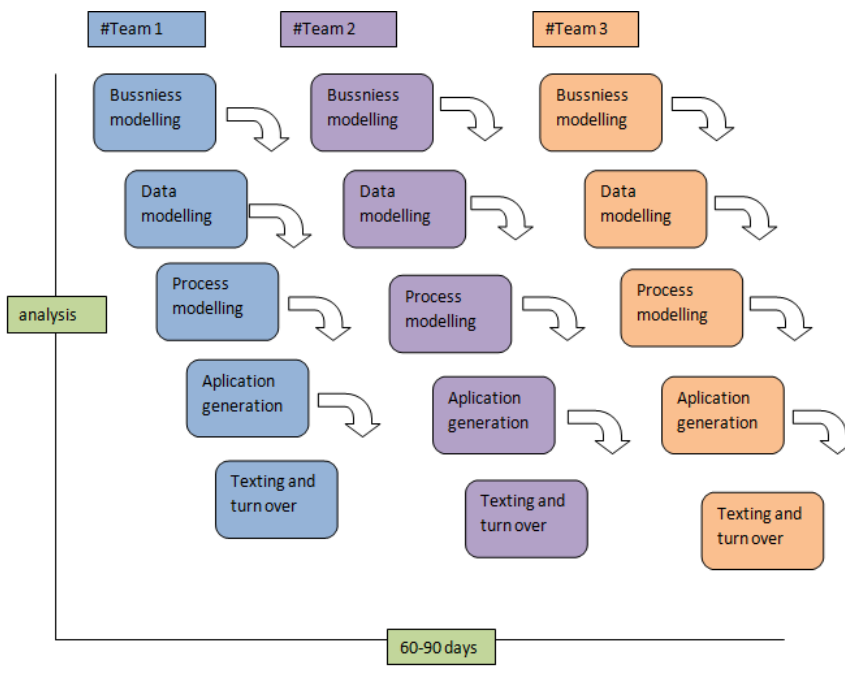
Figure 3 RAD Model Development Phase

*name of corresponding author

In this development phase, it is divided into 3 teams where each team carries out different development but will produce the same goals, in the sense that each team will provide a comparison, and each will be analyzed to obtain a development system. Each team consists of business modeling, data modeling, process modeling, application generation, texting, and turnover (- AMIK BSI Bekasi & - AMIK BSI Bekasi, 2018). Each development team is given a relatively short time of 60-90 days.

1. Bussiness Modeling

Business modeling is a distribution between various business channels and products to be designed. In this business model where designers and developers identify problems, collect materials, and observe the needs to be channeled. In this business model, the developer coordinates with the General Head of Subdivision at the North Sumatra Provincial Office of Industry.

2. Data modeling

Data modeling is engineering to represent models that determine information collection and management systems, whereas this data modeling contains attributes that can explain other data.

3. Process modeling

Process modeling is implementing business functions that have been identified as related to defining data. In this process modeling, developers use cases and activity diagrams.

4. Application generation

Application generation is the application of modeling that has been processed into a program. At this stage the developer uses php html and CSS to implement it in a program.

5. Texting turnover

In this texting and turnover, the developer tests the program that is designed, if the program that has been designed by each team will be analyzed and only one program will be given to the customer if the test does not run as needed then a turn will be made over is to repeat back to the previous phase.

System Planning

The application of system design to the rapid application method in this system includes:

1. Requirement planning

This design contains what will be made on the system in a project and strategies for dealing with some of the problems that will arise. At this stage, several important things are explained from the user's point of view to determine what the user needs in the system to be designed, to make it easier to make the system according to what the user needs.The information system that is in the Requirement planning stage has a requirement specification (system request) which consists of:

a) Admin page which includes the login or logout page, main page, assignment letter data menu, and official travel reports

b) Administrative pages include login or logout pages, main pages, employee data menus, budget data, official travel reports, and official travel documents.

c) Business employee pages include login or logout pages, main pages, employee data menus, budget data, official travel reports, official travel documents

d) The leader's page includes a login or logout page, a main page, an official travel report menu, and an assignment letter. On the leadership page after the employee inputs the existing report it will be connected to the leader, where the leader will validate all reports that have been input by the employee and the employee cannot change it back.

*name of corresponding author

1)   Activity diagram

An activity diagram is a depiction of how the activity flow of the system will be designed and in depiction using diagrams, also in every flow starting from a decision that may occur and how until the flow ends (Maharani et al., 2021). Activity diagrams can also be described through parallel processes that may occur in several executions.
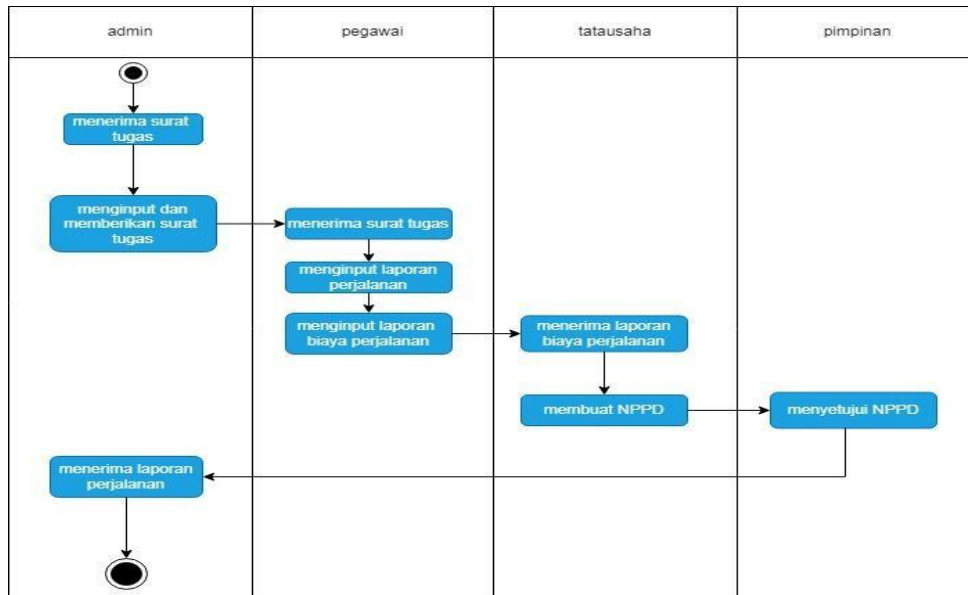

Fig. 4 Activity Diagrams

2)   Use a Case Diagram

A use case can be defined as a description of the system in the form of diagrams. The use case can also verify whether this diagram has explained the features that can be used by the admin (Setiyani, 2020) The use case diagram also includes modeling in an information system that will be made in other words the use case itself is the relationship between users of the system and the system it self (Suhada et al., 2020). Use cases are used to find out what functions are in an information system and determine anyone who has access rights to use the system's functions, according to a research journal compiled by Samsudin et al also mentions use case diagrams also called depictions of interface flows that can be seen and where actors can interact with each other (Samsudin et al., 2019). The following Use Case Diagram is:
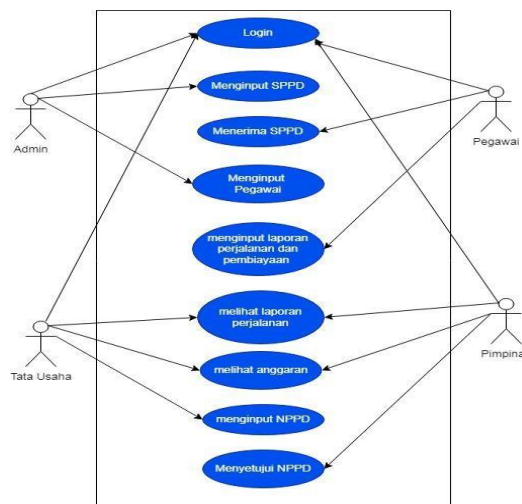
Figure 5. Use Case Diagram

*name of corresponding author

2. User Design

This is the stage of making a design on the display to make it more attractive that has been proposed and according to what is planned which is expected to solve the problems that occur. The user interface focuses on anticipating the possibility of what will happen to the user and ensuring the interface system elements can be accessed as a whole and can be understood and understood.

3. Construction

Construction is the stage in RAD where developers work directly with users, to make final designs, and build and test prototypes. The output of this stage is the necessary documentation and instructions for operating the new application and the procedures required for the system to operate.

At this stage, the designer has started to create a system that has been planned by compiling program code to change the system that is made into an application that is planned so that it can run. Applications were created using Visual Studio code, PHP for the programming language, and MySQL for the database.

4. Cut over

This stage is the stage of testing the entire system being built. All components need to be thoroughly tested. The last phase includes the finalization of features, interfaces, functions and everything related to the software project. To do this, automated tools are used based on the last phase, namely testing received by the user, which functions to ensure the desired level of maintenance, stability and usability of the software being developed before sending the system product to the client.

RESULT

Login Page Display

The following is a login page display consisting of the main page in the form of a username and password. Those who can access the web include admin, administration, and leadership.

Figure. 6 Login Page Display

Display After Login

The following is a display of the administration consisting of home, and employee data, budget data, official travel reports, official travel documents, and exit menus. Each username that is logged in has a different menu, for example, if the person accessing the leader then the menu contained in the leader is only official travel data home, assignment letter data, and travel reports, if the person accessing is an admin then the menu that will appear is official travel reports, upload assignment letters, print official travel documents, print receipts.
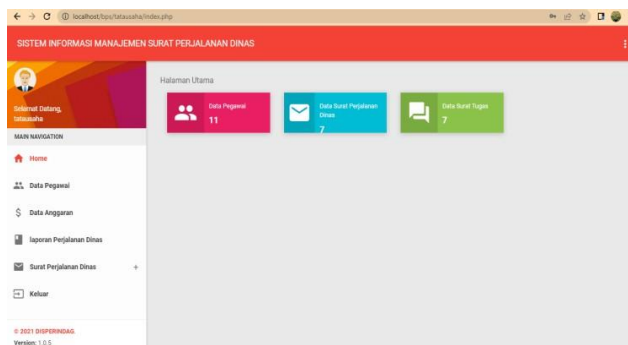
*name of corresponding author

Figure.7 Display After Login

Display Input On The Leader

The image above shows the official travel report data display where the leader can view and search for members who go on business trips. Then on that page, there is also an assignment letter data display menu that can be accessed.
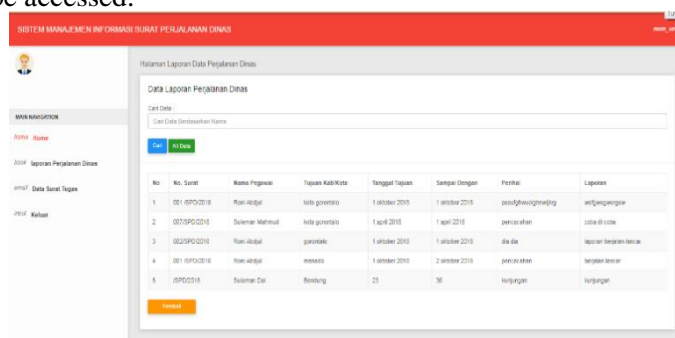

Figure 8. Display of Input on Leaders

Administrative Input Display

The display above is an access menu from the administration consisting of employee data, budget data, official travel reports, and assignment letters. Where the menu is the access rights menu on the administration.
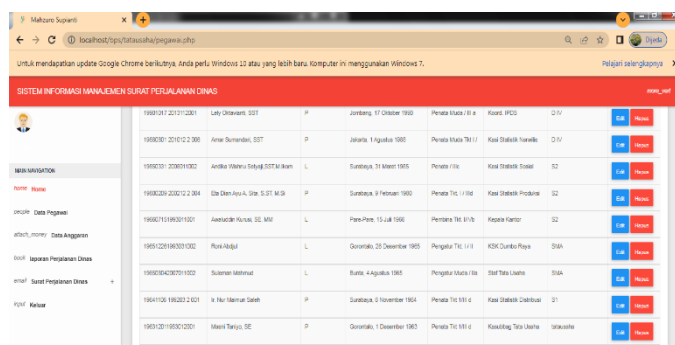
Figure 9. Administrative Input Display

Business Travel Report Print Format

The display above is the format of a business trip report which consists of commitments and financing as well as business trip reports that have been carried out.

*name of corresponding author

684

Figure 10. Report Print Format Official Travel Funding Receipt Format

Figure 11. Financing Receipt Format

DISCUSSIONS

This Official Travel Management Information System at the Office of the Industry Office is a development of the existing system which will produce a new look than before. The Differences And The Very Wide Coverage Space Makes Researchers Provide A New System. In the previous system, which consisted of an official travel assignment letter output and to whom it was addressed, meanwhile the reports generated for employees carrying out tasks were inputted outside the system and the budget given and used on official trips was input manually. Therefore researchers provide solutions to these problems with system development. Where the system that will be made can be accessed by many users such as leaders, administration, admins, and employees.

This development system also provides cases that are different from the previous ones, including inputting assignment letters, assignment letter data, employee data, travel reports, and financing receipts. In this view, the leadership will be able to see it directly so that the official travel reports and the budget used can be systematic. The method used, among others, is RAD, where this development method is used because it has the advantages of both an affordable cost and relatively short processing

*name of corresponding author

time, and the analysis method uses the pieces method. The pieces analysis method itself has a function to describe existing problems so that it can be easier to provide solutions.

CONCLUSION

After doing research at the Industry and Trade Office of North Sumatra Province, it can be concluded that the system that was running previously at this agency still had many shortcomings and was not realized, employees also still use the manual system to report trips this service, therefore we need a system development where in this one system has many cases so that employees and leaders can use it in one website system only, with the method used is Rapid Application Development (RAD) where this method is a development method that quickly and briefly then assisted by the pieces method which serves to identify problems that occur in the system and the field. The researcher hopes that this research will not only end here, but that there is a system development that is more than the resulting system, with different cases and additional cases, and can also use new methods that are currently developing.

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