



Employee Self Service (ESS) Information System at PT. Pilar Timur Teknologi

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Abstract. A company that is reliable in providing its products or services never escapes the good quality of human resources. These qualities can generally be viewed from the development and maintenance of human resources within the company. In the research conducted at PT. The Eastern Pillar of Technology, the company hopes to maximize service to its employees so that they can focus on working and the level of employee satisfaction can increase. The service in question is oriented towards Human Resource Management, where so far, every bureaucratic, administrative, and recapitulation process related to human resources has not been fully recorded and optimally documented. For example, on its implementation, employees who want to apply for leave or permission will be faced with a long bureaucratic process. On the other hand, employees must also confirm to the Human Resource Management party whether they still have leave and permit allotments or not. This causes problems in some conditions, where the occurrence of employee indiscipline in applying for leave or permits. In addition to the application and attendance process that is still done manually, it causes inconsistencies or errors in the recap of employee data. That have a bad impact on the calculation of the payroll that will be carried out. Mobile-based Employee Self Service plays an important role in solving these problems because it can display accurate data and reports for each employee, both in terms of permits, leave, overtime, attendance or even payroll calculations. This research was conducted using a descriptive research method with a data collection method through interviews and observations on the object of study. For the system development method used, the author used the prototype development method with Unified Modelling Language modelling. While in prototype development, the author uses kotlin and MySQL programming languages for his database. The result is the construction of Employee Self Service with the aim of providing easier access for employees in utilizing the facilities provided by the company, as well as minimizing errors and omissions that may occur in the employee service process.

Keywords: Employee Self Service, Human Resource Management, Information System, Mobile-based

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1. Introduction

In the current era of globalization, companies must be able to become superior companies and be able to compete in their fields. Every company must fight over the market with their respective strategies to get customer loyalty. In addition to a good strategy in reaching markets and customers, the quality and sustainability of the company is also largely determined by the quality of superior human resources. Companies that are negligent in paying attention to and maintaining their human resources often have employees with relatively low levels of loyalty.

In research conducted at PT. Pilar Timur Teknologi, the company still has several weaknesses in the ongoing employee service system, including in applying for facilities provided by the company such as leave and permits. Everything is still done manually and goes through a long bureaucracy. Then in the case of attendance that is still done manually and is not documented neatly and centrally, it can also have a bad impact on employee discipline and allow errors in payroll calculations for payroll. This makes the company to be committed to serving employees better.

The commitment to improve service facilities and create a superior work tradition requires the management to think of solutions to create facilities that can improve the quality of service for employees. Facilities need to be made as efficient as possible according to the needs of existing business processes, reviewed and streamlined to increase the efficiency of the ongoing business process cycle, minimize errors, and prevent omissions that may occur. Based on the commitment and problems in the object of research, the authors propose a solution, namely, building a mobile-based Employee Self Service (ESS) Information System at PT. Pilar Timur Teknologi which aims to improve the quality of employee service, create a superior work tradition, and minimize errors and omissions that may occur in the employee service process. Determination of ESS based on Employee Self Service (ESS) is a solution based on the B2E model that allows employees to access important information about the company's human resources for 7x24 hours. While the mobile platform was chosen because of the needs and ease of activity of each user. It is hoped that the application can meet the needs of the company in creating a facility that can improve services for its employees.

The importance of the role of self-service services significantly impacts the organizational environment and results in certain improvements in the organization both in its leadership and staff [1-3]. These roles, namely: (a) organizational support and information policy are positively related to ease of use; (b) usability is positively related to system satisfaction and use; (c) ease of use and usability are negatively related to user tension; and (d) ease of use fully mediates the relationship between organizational support and tension and between information policy and boundaries [4]. Indirectly, employee self-service discusses information systems that can provide information about human resources in the organization. It becomes clear that when an information system focuses on effectiveness and efficiency, its small unit in the form of an ESS has the same purpose as the information system. This is important because

a company will get speed and accuracy in managing human resources which directly impacts the performance of its leaders and employees [5].

The advantages of several previous things were also obtained based on research at PT. Data Utama that discusses getting to know Employee Self Service which focuses on applying for permits to streamline the process [6]. The same is the case with the research entitled Company Profile Combination ESS (Employee Self Service) and CSS (Customer Self Service) PT. Dewasutratex Web-based Using Ruby On Rails with the waterfall method is also in accordance with the previous statement where the purpose of the research is to assist the company in storing and disseminating information owned by PT. Dewasutratex to employees, consumers, and the public [7]. Another research entitled Employee Self Service Application and Database Design on the Payroll System of PT. Syntesis Karya Pratama discusses similar things about how ESS applications can be a means of applying for and approving leave and permits through technological media, especially web-based applications so that they can be accessed in various places [8]. Previous studies emphasized the author that ESS is an important information system media to provide efficiency in managing human resources in an organization.

2. Importance of Early Heart Disease Prediction

The research method that the author uses is the prototype method. This method allows for the occurrence of similarities in perception and initial understanding of the basic processes of the system to be developed so that good communication will be established between the developer and the user of the system [9]. The following are the steps in creating a system with the prototype method as described in figure 1: (1) Needs Analysis - Consulting with system users, to describe the needs and outline of the system to be created; (2) Planning and modelling - Create plans and modelling for the system to be built; (3) Building prototypes - Building temporary prototypes to show the basic concepts and functions of the application to be created; (4) System evaluation - Evaluation is carried out together with the user of the prototype that has been built in accordance with the description carried out before it. If it is appropriate, it will be implemented in accordance with the business process that has been determined; and (5) Communication - Interact with users as to the extent to which the application can be used as intended.

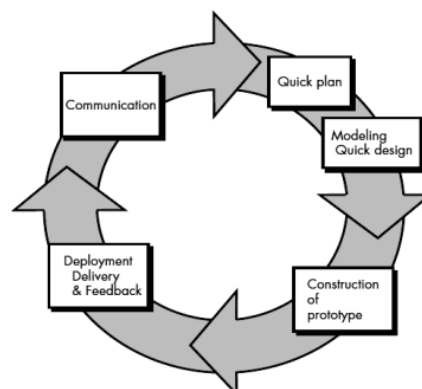


Figure. 1. Prototype Method

3. Results and Discussion

An overview of this proposed system is an android-based mobile application for employee service used by PT. Pilar Timur Teknologi. The application is built using the Kotlin programming language which is a modern programming language that supports Android application development and fixes many errors owned by the Java programming language, such as null pointer exceptions to boilerplate code. Kotlin itself is inspired by Swift, Scala, Groovy, C# and many other programming languages. Kotlin was designed by JetBrains based on analysis in terms of developer experience, best practices to data on how a programming language is used [10-13]. Then authors use Firebase cloud messaging as a service to provide connections to devices through messages and notifications [14].

The application is an information system that makes it easier for employees and the company in employee service matters where employees can apply for and access various kinds of facilities provided by the company such as leave, permits, and overtime. In the application, employees can access staffing data more quickly and transparently because the source of the application data created can be accessed centrally. In practice, applying for employee leave, permits, or overtime is much easier because there is information on the rest of their application allotments in real time and ascertaining whether they can apply for the facilities they want or not. If employees still have allotments to apply for facilities such as leave, permits, or overtime, they can simply enter the data according to the form provided. If there is an input error, the system immediately warns the employee to correct the wrong part of the input. This can shorten the format correction process of the previous system. In addition, employees can also monitor the status of their application in real-time whether their application was successfully submitted, rejected, or approved. Employees do not always have to monitor the status of their submissions because when there is an update on the status of the application recorded by the system, each employee gets a notification about the latest status of their submission. On the approver's own side, they will get a notification every time they get a submission from their employees.

The approver will be presented with complete data surrounding the submission. For the rejection or approval process, the approver simply presses a button, and the system automatically updates the status of the application. Then for the payroll, the system can quickly perform calculations for salary that must be paid to employees in accordance with the company's policy scheme. This is possible because the employee data is already integrated. Human Resource admins (HR admins) can see the salary data of each employee along with the detailed salary calculation. HR admins only submit the payroll scheme to the board of directors for approval. If the scheme has been approved, then the employee's salary slip can be drawn up immediately. In this application, employees can also do attendance by clock-in and clock-out. The system will automatically record employee attendance in addition to that employee can also see their attendance data with a more intuitive presentation of information.

3.1. For Data, Procedures, and Brainware

Data, procedures, and brainware are part of the development of a system. The section is depicted from the proposed procedure. The procedure is included in three main modules, namely leave application, permit application and overtime application. In the three modules, there will be four actors involved, namely employees, HR admins, approvers, and directors.

1. Application for Leave

- a. Employees who want to apply for leave must log in to the system and select the leave menu and check the remaining available leave allowance.
 - b. After it is confirmed that the employee still has a leave allowance available, the employee can input the data needed for the leave application in accordance with the proposed leave.
 - c. After the application process is carried out, employees can monitor the status of leave applications submitted periodically, if the application has not been rejected or approved, the employee can cancel or change the application at any time.
 - d. After the application process has been carried out, the system will send a notification to the approver for the application for employee leave.
 - e. Approvers must enter the system to check the leave application submitted by the employee.
 - f. The leave application data is then approved or rejected by the approver.
 - g. The system will automatically send notifications of application status updates to employees and update data on leave allowances from the employee concerned.
2. Permit Application
- a. Permit applications that can be applied for by employees are divided into two, namely permission for personal affairs or permission for work matters.
 - b. Employees who want to apply for permission must log in to the system and select the permit menu in the menu. Employees will be presented with a recap of the permit data that has been submitted and approved during the year.
 - c. The employee can immediately apply for a permit by filling out the form provided, the necessary data include the type of permit submitted, the date of submission and a remark or description of the permit application.
 - d. After the application process has been carried out, the system will send a notification to the approver of the employee's permit application.
 - e. The approver must enter the system to check the permit application submitted by the employee.
 - f. The permit application data is then approved or rejected by the approver.
 - g. The system will automatically send notification of application status updates to employees and update permission data from the employee concerned.
3. Overtime Submission
- a. Employees can apply for overtime when doing work that takes time outside of regular working hours.
 - b. Employees who want to apply for overtime must log in to the system and select the overtime menu in the menu, employees will be presented with a recap of overtime data in the previous month and this month.
 - c. The employee can directly apply for overtime by filling out the form that has been provided, the data needed include a description of a job that requires overtime, the date and length of overtime in units of hours.
 - d. After the application process has been carried out, the system will send a notification to the approver for the employee's overtime application.
 - e. Approvers must enter the system to check overtime applications submitted by employees.
 - f. Overtime application data is then approved or rejected by the approver.

- g. The system will automatically send notification of application status updates to employees and update overtime data from the employee concerned.
- 4. Attendance
 - a. Employees who want to do attendance need to log in to the system first.
 - b. From the main menu, employees can clock directly in to record the start of work hours.
 - c. The next feature is a clock-out that can be used by employees to record the hours after work. This feature can only be used if the employee has clocked in first.
 - d. After the attendance process is complete, the system will record employee attendance and employees can see their attendance data.
 - e. Attendance data that can be accessed by employees also includes data about leave, permissions and alpha carried out by the employee.
- 5. Payroll
 - a. HR admins can do calculations and make employee salary slips through payroll.
 - b. To payroll, HR admins need to log in to the system first.
 - c. After the login is successfully done, then the HR admin can choose the payroll menu.
 - d. If you want to make a payroll calculation, the HR admin can enter the next stage from the payroll menu, namely the calculation.
 - e. In this stage, the system will calculate the salary of each employee, the calculation involves the amount of basic salary, bonuses, benefits, and deductions from each employee. In addition, the presence of employees will also affect the calculation of payroll that will be received by employees.
 - f. After the calculation process is completed, the payroll data will be displayed. If the payroll data is deemed appropriate, then the HR admin can ask the board of directors for approval regarding the payroll scheme.
 - g. The Board of Directors will be notified if they receive a request for payroll approval.
 - h. The Board of Directors may approve or reject the payroll scheme proposed by the HR admin.
 - i. If the payroll scheme is approved, then the salary slip data of each employee will be generated and employees can already see their salary slip.

Based on the description of the previous five procedures and activities, a Use Case Diagram can be formed and an activity diagram that shows the interaction between the procedure and the actors involved as shown in Figure 2. The depiction is intended to describe the processes and relationships that are related between actors, activities, and procedures within the proposed system.

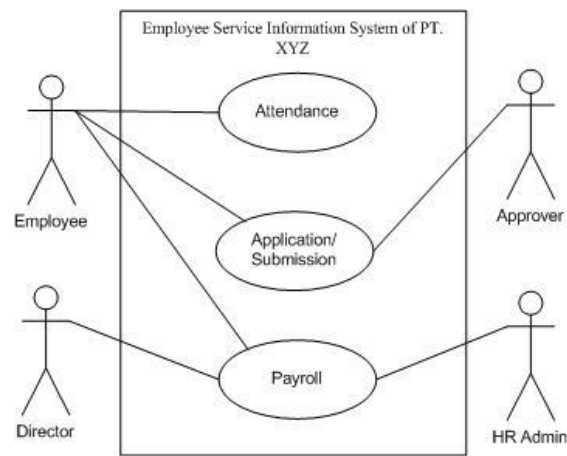


Figure 2. Use Case Diagram ESS PT. Pilar Timur Teknologi

3.2. An User Interface

There are basically many interfaces displayed on this information system application. The display is divided into two categories, namely the input display and the output display. Each input display shows what attributes each user must enter, whether in text, choice, or image and document formats. Likewise, the output display is a display that shows various types of information in the form of text, calculations, images/graphs, and documents. The author identifies the appearance that is the main point of the procedure described in Figure 2, namely by displaying the image represented in the display of Figure 3 (a-d) which consists of the appearance of the user dashboard interface, attendance, leave application, and payroll calculation information. The user dashboard display starts from logging in for employees, HR admins, and approvers as automatic access rights limiters divided into several roles. The user dashboard display displays application menus according to the access rights of each user. For example, employees display a menu of attendance information (including overtime), submissions, and access payroll information. Then there is a menu display of leave applications, the display serves to apply for employee leave. The data that has been inputted will be saved to be part of the employee's attendance record. Meanwhile, the payroll calculation information display displays the salary calculation obtained by calculating attendance based on the employee's working days and hours.

For the network itself, it uses a star topology as shown in Figure 4. The topology was chosen because it focuses on centralized data access and each client can directly access data on the server using 1 unit of Switch Hub 8 port 10/100mbps.

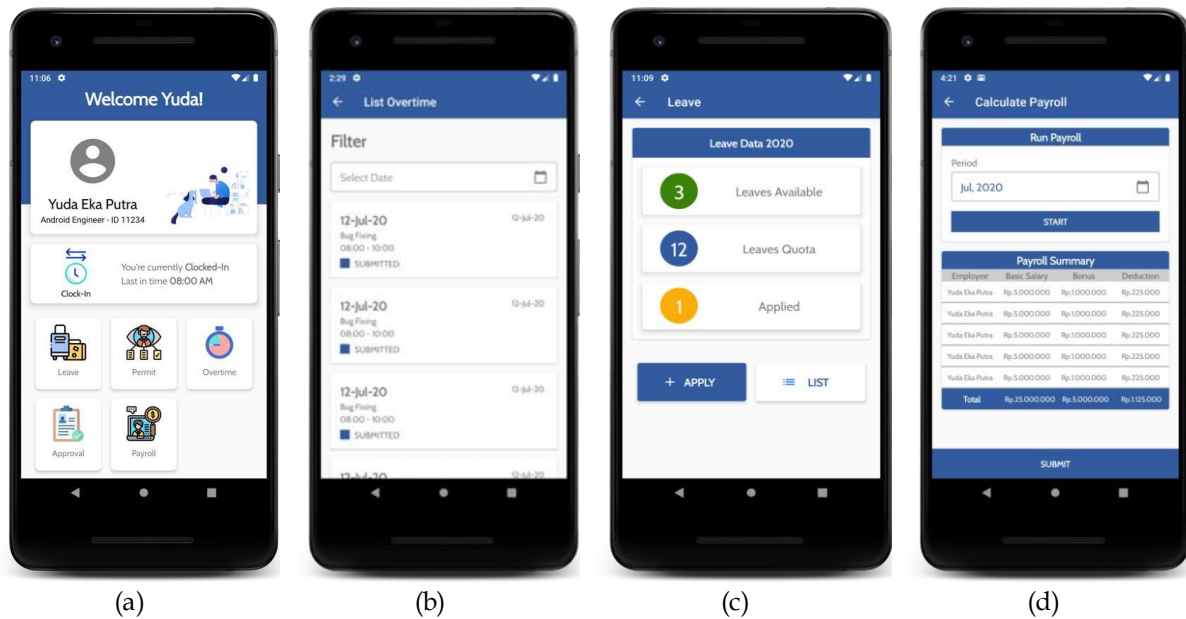


Figure 3. User interface for (a) Dashboard User, (b) Attendance - including overtime, (c) Leave Application Menu, and (d) Payroll Calculation Information

3.3. For Hardware dan Network

For hardware, it is distinguished based on server and client needs. For minimum server specifications, namely: (1) A minimum Intel Core i3 processor with 2 Cores or AMD that uses 2 Cores with a clock of 2 GHz, (2) Uses at least 2 GB of RAM, (3) There is a hard drive storage capacity with a minimum space of 500 GB, and (4) a standard monitor, mouse, and keyboard. While the minimum client specifications, namely: (1) Using a minimum Processor Dual Core 1.2Ghz (faster is better), (2) Using at least 2 GB of RAM, (3) Using a camera with a resolution of at least 3.0 MP, (4) A minimum storage capacity of 4 GB, and (5) Having Wi-Fi or 4G access to connect to network services. These needs will affect the performance of how the system will respond to each of its inputs and outputs.

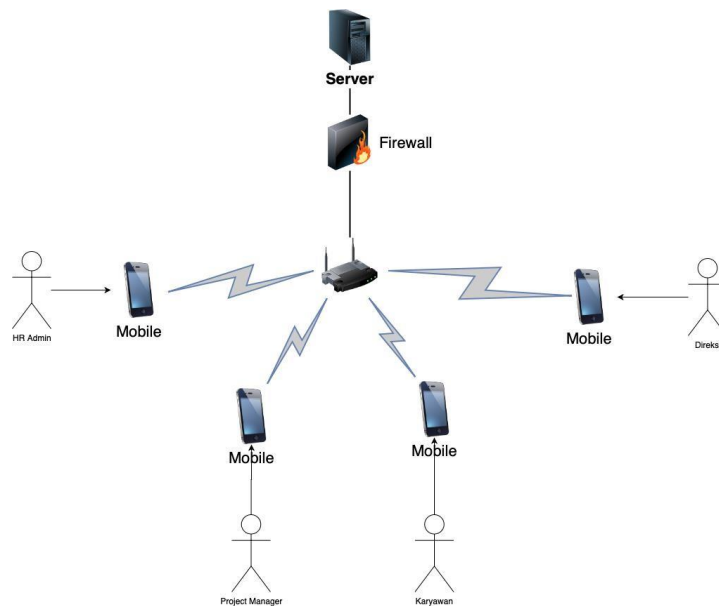


Figure 4. Computer Network Scheme ESS PT. Pilar Timur Teknologi.

3.4. For Testing and Implementation

Input-output testing using the black-box method aims to guarantee quality or find gaps and shortcomings in a system or software under development. In addition, the purpose of the test is to make sure all the functions inside the system or software are running properly [15]. The authors set the test class as presented in Table 1. Each test is declared successful based on each of its classes and is acceptable to each user. The completed testing is the basis for the use of ESS information systems in the object of study. Users use the built application and feel the benefits to realize the company's commitment to improving the quality of employee service.

Table 1. Testing Classes

Test Items	Test Items	Types of Testing
Login	Account Verification	Blackbox
Application for Leave / Permit / Leave	Add Submission	Blackbox
	Edit Submission	Blackbox
	Cancel Pengajuan	Blackbox
	Approve Application	Blackbox
Approval	Decline Application	Blackbox
	View Application	Blackbox
	Clock-in	Blackbox
Attendance	Clock-out	Blackbox
	View Salary Data	Blackbox
Payroll	Payroll Calculation	Blackbox
	Apply Payroll	Blackbox

4. Conclusion

Construction of an Employee Self Service (ESS) information system at PT. Pilar Timur Teknologi can improve the quality of employee service. In addition, it can slowly accustom employees to adapt to a more disciplined tradition of work. In addition, the construction of a

mobile-based ESS information system can minimize errors and omissions that occur in payroll calculations.

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