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IMPLEMENTATION OF WEB-BASED GUEST BOOK INFORMATION SYSTEM USING AGILE METHOD AT PT. SYNTAX CORPORATION INDONESIA

Aldo Hermaya Aditiya Nur Karsa, Marsani Asfi, Suwandi
Universitas Catur Insan Cendekia Cirebon, Indonesia
Email: aldohermayaaditia@gmail.com, Marsani.asfi@gmail.com, suwandi@cic.ac.id

ABSTRACT

The Guest Book Management Information System (SIPBT) plays a crucial role in digitalizing and enhancing the efficiency of guest recording processes. Implementing a web-based guest book system using Agile methods has proven effective in overcoming manual challenges and improving administrative processes. This study demonstrates the successful application of Agile methods in managing guest book systems. By utilizing a web-based system built with PHP, HTML, and the Laravel framework, the research achieved its goals effectively. The system provides administrators with easy management and monitoring of guest data, including a WhatsApp notification feature for efficient communication. The system also includes a user-friendly interface and webcam photo capture for easy guest identification, enhancing guest monitoring and search efficiency.

KEYWORDS *Guest Book Management Information System, Web-Based; Agile Method; Efficiency; Laravel; Php; Whatsapp Notification.*

INTRODUCTION

The Guest Book Management Information System (SIPBT) is an important application in many organizations, including companies, educational institutions, and government agencies. The main function of SIPBT is to record information about guests who come to a place, such as name, address, purpose of visit, arrival time, and so on. (Prasetyo, 2019) With the development of information technology and the need for organizations to manage guest data more efficiently, many organizations are starting to consider implementing web-based SIPBT using Agile methods.

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The use of Agile methods in the development of web-based guestbook management information systems becomes relevant because this method emphasizes strong collaboration between developers and stakeholders. Agile promotes iterative and incremental development, allowing for more flexible changes according to the evolving needs of users (Nova, Widodo, & Warsito, 2022).

The web-based Guest Book Management Information System is an important step in digitizing the process of recording visits and interactions with guests in various types of organizations, such as offices, educational institutions, restaurants, hotels, or other public places. According to Prastowo, et al. (Prastowo, Danianti, & Pramuntadi, 2023) The Agile method serves as a flexible and user-focused approach to software development, it has become an increasingly popular choice in the web-based application development process.

Agile methods are known for their ability to accommodate changing needs better than traditional development methods. However, in the case of guest book management, organizational needs and regulations related to guest data management may change at any time. Therefore, there needs to be a good understanding of how Agile can be applied flexibly in the face of such changes without disrupting the smooth running of operations (Suci, Prasetyo, & Fitriana, 2021).

The management of guest data contains sensitive information, such as personal and contact data. Data security and compliance with privacy regulations such as GDPR (General Data Protection Regulation) are important issues in the implementation of this system (Alasi, 2018). Agile needs to be implemented with strict security practices in mind to protect guest data.

Agile actively encourages user engagement during the development process. However, in guestbook management situations, users can have varying levels of engagement, from end-users to administrators. It is important to ensure that all stakeholders are engaged and engaged effectively in the Agile process.

Organizations may have used other systems related to visitor management or security systems (Suci et al., 2021). Therefore, in implementing a web-based guest book management information system, it is necessary to consider good integration with existing systems to avoid conflicts and data differences.

Agile processes drive iterative testing to ensure software quality (Nova et al., 2022). However, in the context of guest book management, testing should also cover situations involving the security and privacy of guest data. It demands a careful approach in testing and validation.

The Agile method is widely used in research in various fields, such as in research conducted by Ifan Mahendra et al., (2018) has produced a quality credit application information system in a short time (Bahtiar & Mulwinda, 2016). Another research in a different field is using the agile method, conducted by Moh. Roqiz Bahtiar, et al. have resulted in the implementation of the development of the notification feature and it runs functionally (Mahendra & Yanto, 2018).

The guest book application is a way to obtain information about guests who have visited PT. Syntax Corporation Indonesia West Java Province. The process of recording information in the guest book is still done manually, causing

confusion in the search for information and even searching for information takes a long time.

This has an impact on the performance of PT. Syntax Corporation Indonesia, West Java Province in particular, this is ineffective. Recording guest information makes it impossible for officers to collect information on anyone who is visited by guests because the data collection of this information is still stored in the books and it will most likely take a very long time to find guest information to solve this problem (Chotijah, 2021). A guest book application is needed that can help in managing guests and taking care of PT. Syntax Corporation Indonesia West Java Province, so that the process of picking up guests becomes more effective and efficient (Ihksan & Abdillah, 2022). For this reason, the compiler is interested in conducting research with the title "Implementation of Web-Based Guest Book Information System Using Agile Methods at PT. Syntax Corporation Indonesia".

RESEARCH METHOD

1. Research Materials and Tools

a) Research Materials

The research material in this study is the mapping of entities involved in the Guest Book Management Information System (SIPBT) including the following :

1) Administrative Staff
   The Administrative Staff here has the task of managing guest register data and accessing the system dashboard.
2) Administration Manager
   The administration manager here has access to the overall guest register data menu and manages the master data.
3) The leadership of PT. Syntax Corporation Indonesia
   The leaders here have access to the report menu to monitor the activities of guests who come to PT Syntax Corporation Indonesia.

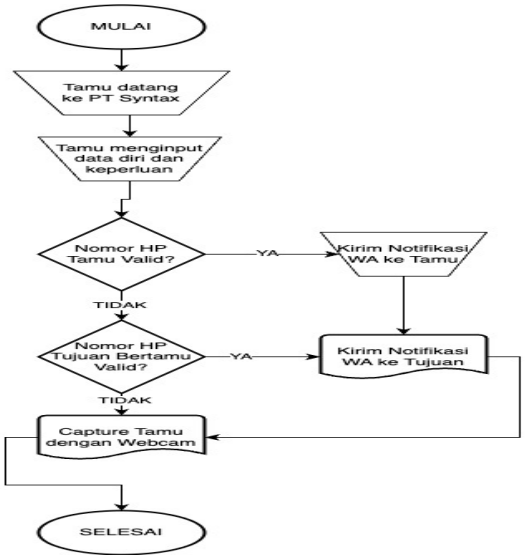

Figure 1. Flowchart a system that works

Image Caption 1 :

The process above describes the stages of the initial guest coming to PT Syntax Corporation, then entering personal data and their needs, then the system will *capture* the image of the guest with a webcam, then the data will be sent to the system and stored in the database. If the cellphone number on the guest is valid, a wa notification will be sent to the guest as well as to the person to whom the guest will be directed will be sent a WhatsApp notification.

b) Research Tools

Table 1. Research Tools

No	Types of Research Tools	Information
1	Laptop	Lenovo – 0INT2V58
2	OS	Windows 11 Home Single Language 64 -Bit (10.0, Build 22621)
3	Processor	Intel ® Core™ i3-10110u CPU @ 2.10GHz (4 CPUs), ~2.6Ghz
4	Memory	12GB RAM
5	Text Editor	Visual Studio Code
6	Software Mockup	Whimsical

2. Research Procedure

The SDLC (Software Development Life Cycle) *method* is the process of creating and modifying systems as well as models and methodologies used to develop software engineering systems. The *SDLC (Software Development Life Cycle)* method is here to help you in product development (Sinaga & Ruliansyah, 2022). *The SDLC (Software Development Life Cycle)* method has many types, including *Waterfall, Prototype, Agile* and *Fountain*. What the author used in this study is *the SDLC method (Software Development Life Cycle)* Agile. Figure 2 below is an overview of the Software Development cycle.

Figure 2. *SDLC* in software development
(source: www.dicoding.com/blog/metode-sdlc)

In Figure 2.2, the software development cycle is illustrated using the Agile *SDLC* method. This process consists of six initial steps starting with the planning stage, followed by program analysis and making mock-ups and system design as a guide. The development of the system then begins based on the mock-up design, and after that, the testing stage is carried out by experts appropriate to the field. Then the maintenance stage is carried out after the release and testing of the product.

Thus, the Agile *SDLC* method is a relevant cornerstone in this research, helping software developers to face the challenges of producing products that are not only timely but also responsive to user needs and feedback. For more details, the stages of the agile method itself can be illustrated in the following figure 3 :

Figure 3 Agile development method cycle

(Sumber : https://it.telkomuniversity.ac.id/agile-adalah-solusi-pengembangan-software-mutakhir/)

Agile is a set of techniques and mappings in software development whose application works iteratively (iteratively). Because of this system you can build a *software* in a gradual way according to the figure 2.3 above. This *Agile Development system* is also commonly referred to as *a framework* of *software*. Agile system is the main pattern of a *software* that is then managed in an interactive system.

In practice this gives room when you want to add features, change features, improve new features or uses in a *software* that has been built before. Because by adding *Agile* you can form *software* that suits your needs. This makes a *software* that you can easily customize according to your needs. *Agile* is a solution for an application or *software* in today's digital era. At one time, a form of *software* is as needed. Until then users realize they need even more complete features.

RESULT AND DISCUSSION

A. System Analysis

1. Example Case/Manual Calculation of Algorithm

In this study, there was no manual calculation because the system did not calculate the data, only recording incoming guests.

2. Agile Method Process

Figure 4 Agile Method Process

Agile is a software development methodology based on the principle of work system development that requires rapid adaptation. Agile requires us to always be ready for changes that will occur, and be flexible when facing a problem. Figure 4 explains the stages using the agila method. There are 6 stages or processes used, namely:

1) Requirement

At this stage, the development team together with stakeholders defines the project objectives and draws up a general plan for development.

The analysis process involves identifying, understanding, and determining customer needs.

2) Design

At this stage, the team designs a solution based on the needs that have been identified. Design includes aspects such as system architecture, user interface, and data structure.

3) Implementation/Implementation

This stage involves developing the actual software based on the design that has been created. Work is done in short iterations, called sprints, with an emphasis on adding value to each iteration.

4) Testing

The testing process is carried out continuously throughout the development cycle. Each iteration is tested to ensure that the changes implemented do not hit the existing functionality.

5) Launch

Product launches can be done after successful testing and the product is considered ready.

6) Therapy

The maintenance phase involves maintaining and fixing bugs, security updates, and fixing functionality after the product is launched.

3. Requirement

In accordance with the method used in the development of this application, the initial stage required is to identify the problem and describe

the needs. The identification of the problem has been described in the previous chapter I. The mixing needs of the Guest E-Book application are divided into 2, namely Functional Needs and Non-Functional Needs.

1) Functional Needs

The functional needs or main needs of the Guest Book application include; Login, Logout, Master Data Management (User, Need, Division, Meet People), and Guest Registration Feature.

2) Non-Functional Needs

While the Non-Functional Needs are; Print Report.

4. Planning

The design in this study uses a Structural Approach which includes flowchart design, database design, ERD, DFD level 0-3 and GUI design.

a) Flowchart Design

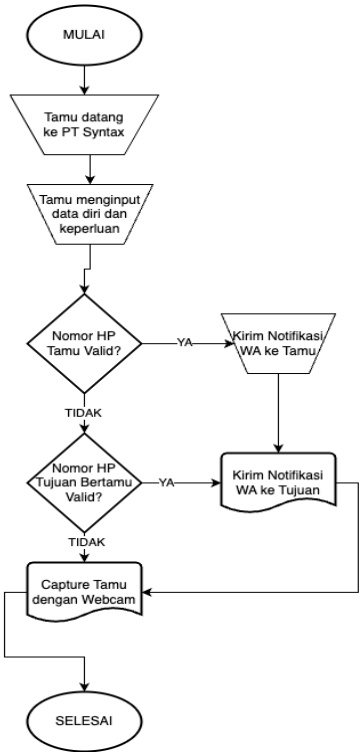

Figure 5 Flowchart App

The process or flowchart in figure 5 describes the stages of the initial guest coming to PT Syntax Corporation, then input personal data and their needs, then the system will capture the image of the guest with a webcam, then the data will be sent to the system and stored in the database. If the cellphone number on the guest is valid, a wa notification will be sent to the guest as well as to the person to whom the guest will be directed will be sent a WhatsApp notification.

b) Database Design

The database design on this guest book electronic system will use a MySQL database.

1) User Table Structure

Table 2 Users Table Structure

Table Name : *users*
Key *Field* : *id*

No.	Field Name	*Type*	*Size*	Information
1	id*	Bigint	8	*Primary key*
2	Name	Varchar	100	Account name
3	Username	Varchar	100	*Account username*
4	Email	Varchar	125	Account email
5	Password	Varchar	200	Account password
6	No_hp	Varchar	25	User's cellphone number
7	Role	Varchar	50	Roles on the account
8	Perusahaan_id	Bigint	8	Foreign key for company table
9	Photo	Varchar	200	User photo address

The user table is used to store user account data on the guest e-book system.

2) Table Structure Meets

Table 3 Table Structure Meets

Table Name : meet
Key *Field* : *id*

No.	Field Name	*Type*	*Size*	Information
1	id*	Bigint	8	*Primary key*
2	Perusahaan_id	Bigint	8	*Foreign key for company table*
3	Name	Varchar	100	*Name of the person to be met*
4	field_id	Bigint	8	Foreign key for field table
5	Telp	Varchar	25	Phone number

The meeting table is used to store data on the people that guests will meet.

3) Division Table Structure

Table 4
Division Table Structure

Table Name : divisi
Key *Field* : id

No.	Field Name	*Type*	*Size*	Information
1	id*	Bigint	8	*Primary key*
2	Company_id	Bigint	8	*Foreign key for company table*
3	Name	Varchar	100	*Division name*

Division tables are used to store division data within the Company

4) Structure of the Requirements Table

Table 5
Structure of the Requirements Table

Table Name : Needs
Key *Field* : *id*

No.	Field Name	*Type*	*Size*	Information
1	id*	Bigint	8	*Primary key*
2	Company_id	Bigint	8	*Foreign key for company table*
3	Information	Varchar	100	Description of requirements

The requirements table is used to store the requirements data in the Company.

5) Company Table Structure

Table 6
Company Table Structure

Table Name : company
Key *Field* : *id*

No.	Field Name	*Type*	*Size*	Information
1	id*	Bigint	8	*Primary key*
2	Nama_perusahaan	Varchar	100	*Company name*

The company table is used to store the Company data.

6) Guest Table Structure

Table 7
Guest Table Structure

Table Name : register_tamu
Key *Field* : *id*

No.	Field Name	*Type*	*Size*	Information
1	*id**	Bigint	8	*Primary key*
2	Name	Varchar	100	Guest Name
3	Telp	Varchar	20	Guest phone number
4	Asal_agency	Varchar	100	Origin of guest agencies
5	Kind_kelamin	Varchar	10	Guest gender
6	Address	Varchar	100	Guest address
7	Capture	Varchar	200	Path the webcam result image
8	Perusahaan_id	Bigint	11	*Foreign key* to company table
9	Meet_id	Bigint	11	*Foreign key* to table meets
10	Needs_id	Bigint	11	*Foreign key* to the requirements table
11	User_id	Bigint	11	*Foreign key* ke tabel users
12	Divisi_id	Bigint	11	*Foreign key to the division table*
13	No_ktp	Varchar	16	Guest ID number

The guest table is used to store guest data.

B. *Entity Relationship Diagram (ERD)*

ERD On this system can be seen in the following figure 7 :

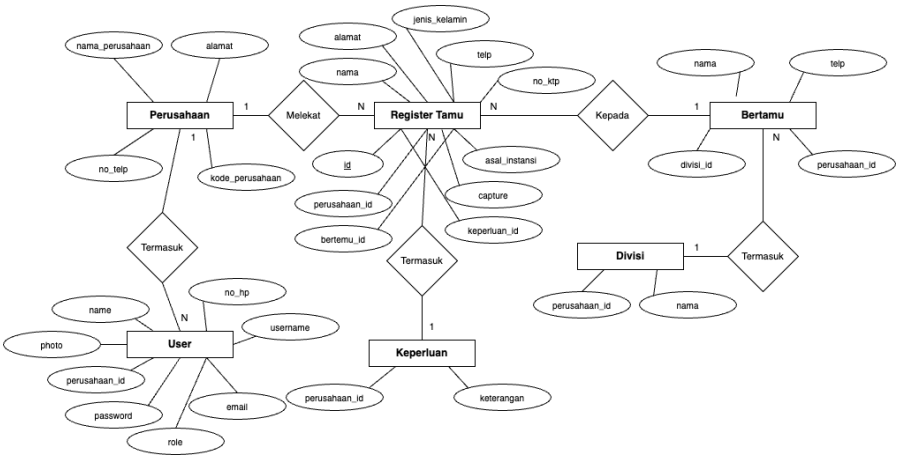

Figure 6
Entity Relationship Diagram (ERD)

C. DFD

1. DFD Level 0

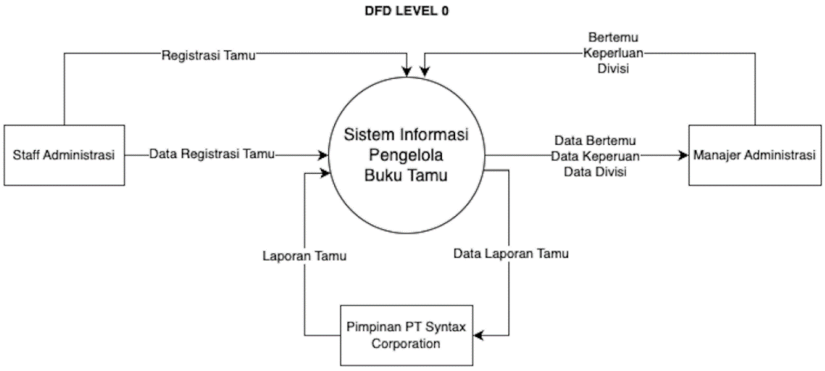

Figure 7
DFD Level 0

Figure 4.8 is DFD Level 0 which describes the overall system flow starting from the flow of administrative staff, administrative managers and leaders. Administrative staff have access to manage guest registration, administrative managers have access to manage master data meetings, requirements and fields and leaders have access to guest book reports.

2. DFD Level 1

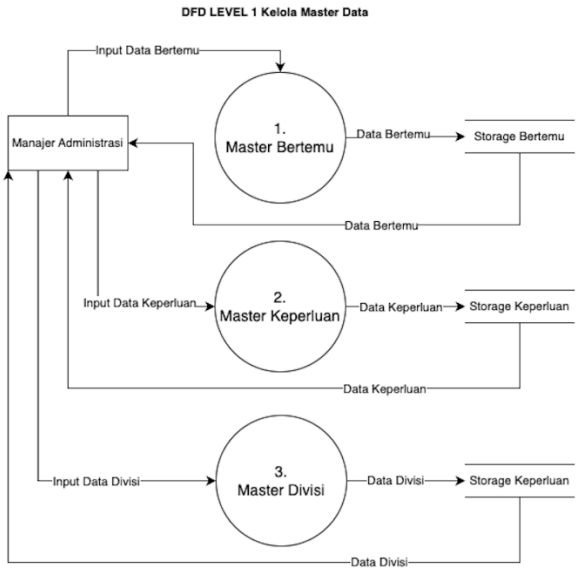

Figure 8
DFD Level 1

In figure 4.9 is DFD Level 1 which explains the system flow in the master data management section by the Administration Manager which includes the management of the master data meeting (the person to whom the guest is directed), requirements and fields.

3. DFD Level 2

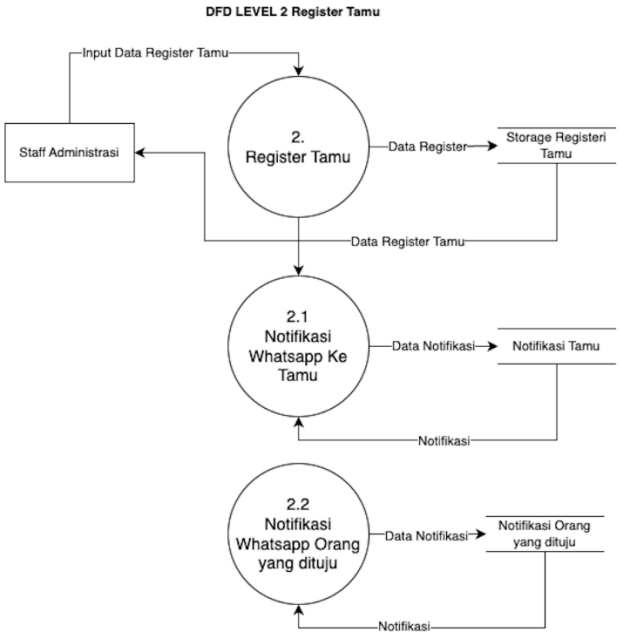

Figure 9

DFD Level 2

In figure 10 is DFD Level 2 which explains the system flow in the guest registration process by administrative staff, where every guest who comes will be stored in the guest registration storage, then a whatsapp notification will be sent to the guest and the intended person.

4. DFD Level 3

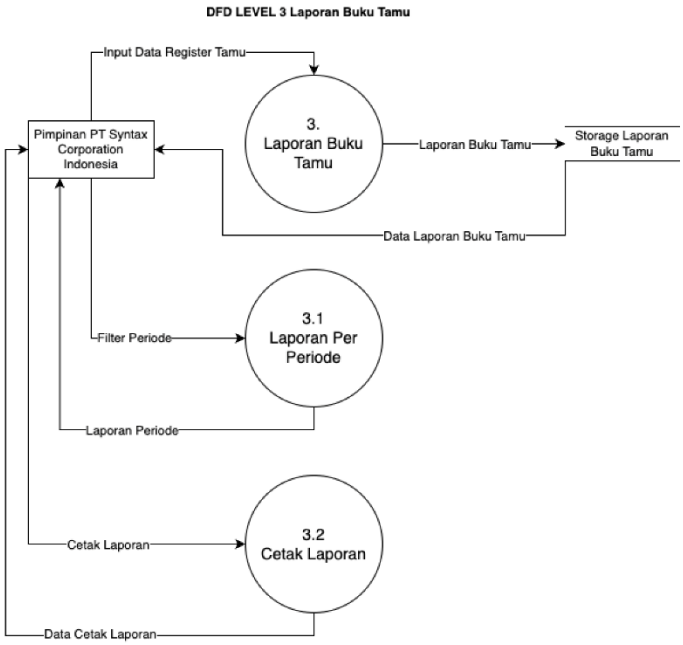

Figure 10
DFD Level 3

Figure 10 is DFD Level 2 which describes the reporting process carried out by the leadership of PT Syntax Corporation, where the leadership can view the report in its entirety and periodically, and can also be printed in PDF form.

D. GUI Design

GUI design is a staged process of determining the interface description of how the system will interact with its external entities in the application. In this Guest E-Book Application, the author made the following GUI design :

1) Login Display

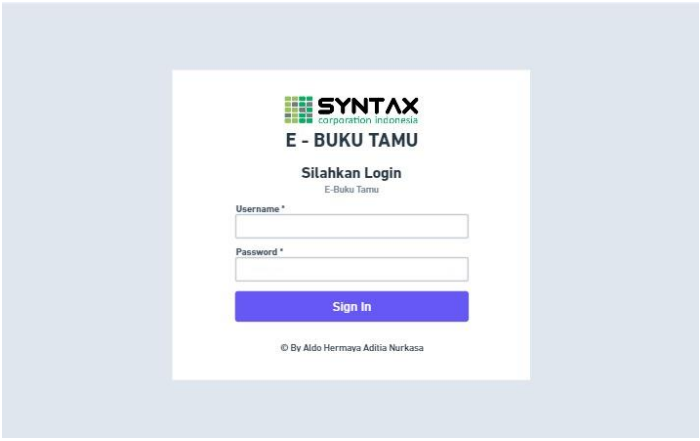

Figure 11
Login Display

Figure 11 is the GUI design of the login page display. This is the first page when opening the app. The design of this page contains a login *form* containing *a username and password* as well as a button for *login* which will later enter the application system.

2) Dashboard Display

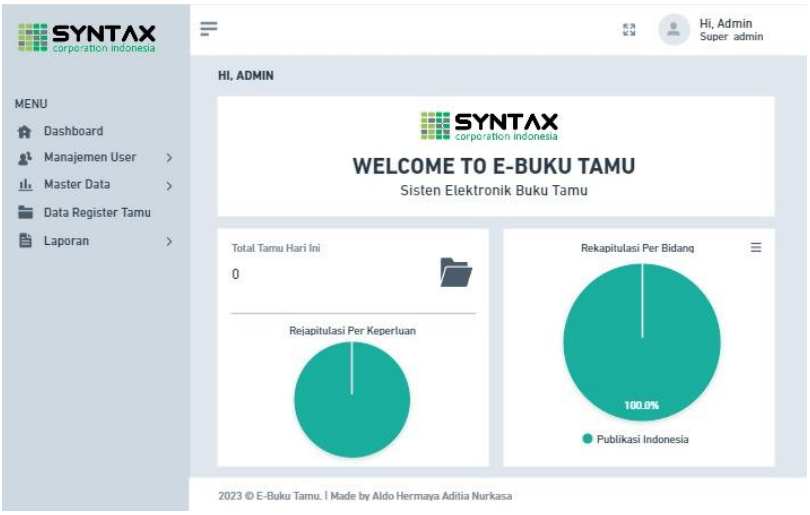

Figure 12
Dashboard Display

Figure 12 is the GUI design of the dashboard page display. The dashboard page is the main page after a successful login activity. All data information - data and features can be accessed from the dashboard. This page contains a description of *the* logged in *user* and the number of guest recapitulation (graph).

3) User *Management View*

a) LIST *USER*

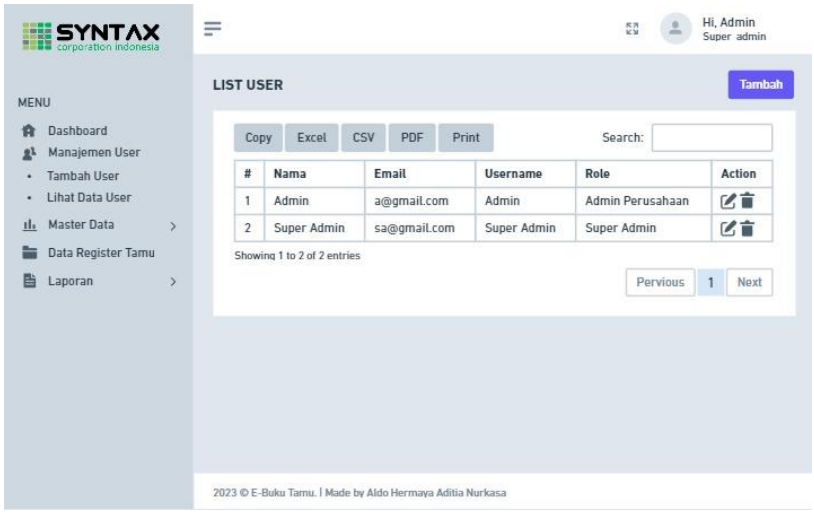

Figure 13
User List View

Figure 13 is the GUI design of the user list page display. The list user page is a page that displays a table of *user* data contained in the database.

b) ADD *USER*

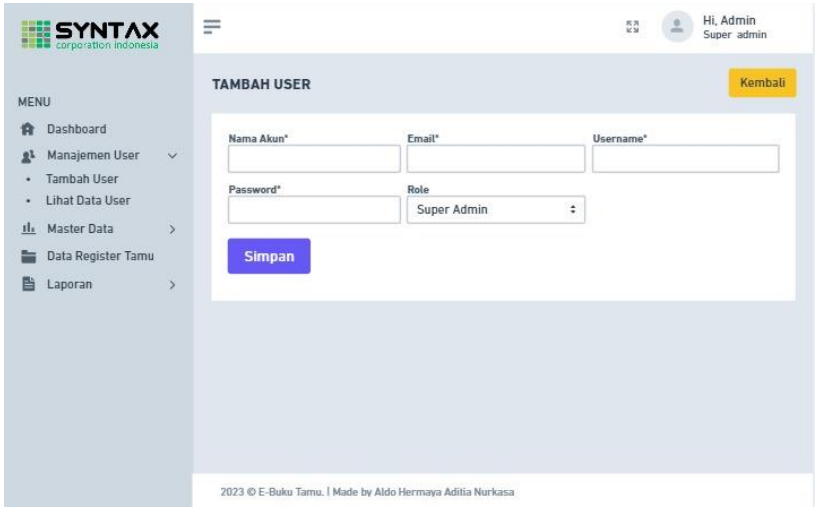

Figure 14
Add *User View*

Figure 14 is the GUI design of the user interface page. The add user page is a page that displays an input form to add *user data*.

c) EDIT *USER*

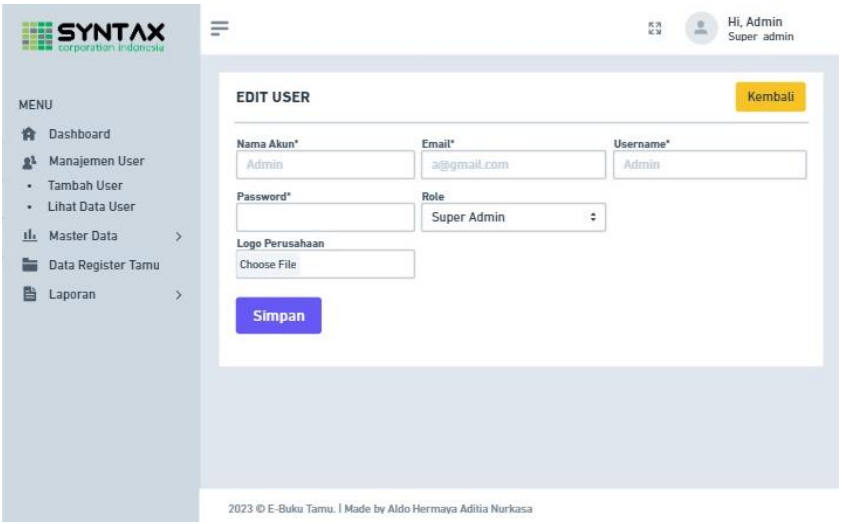

Figure 15
Edit User View

Figure 15 is the GUI design of the user edit page display. The edit user page is a page that displays an input form to change *the user*'s data if there is an error.

4) Company Data Master View

a) COMPANY LIST

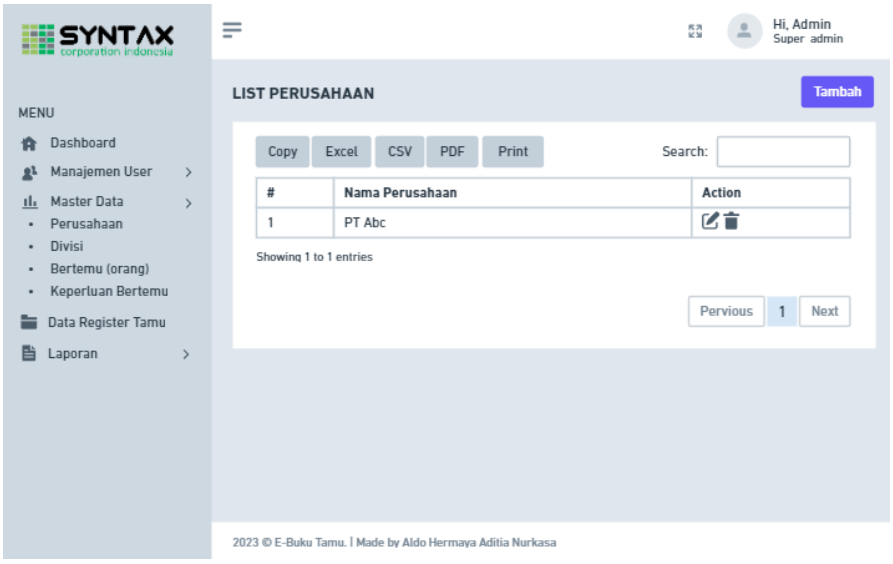

Figure 16
Company List View

Figure 16 is a GUI design of the company's list page display. The company list page is a page that displays a table of company data contained in the database.

b) ADD COMPANY

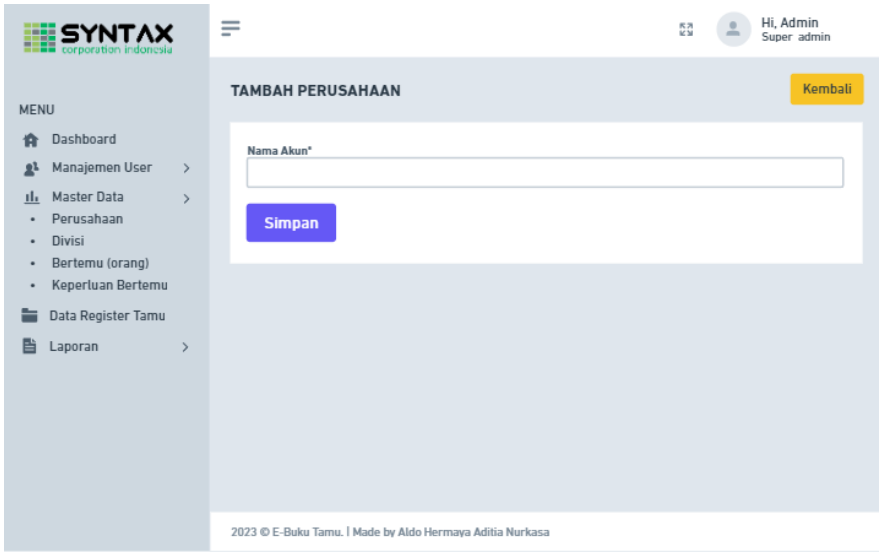

Figure 17
Company Add View

Figure 17 is a GUI design of the company's add-on page view. The add company page is a page that displays an input form to add company data.

c) COMPANY EDIT

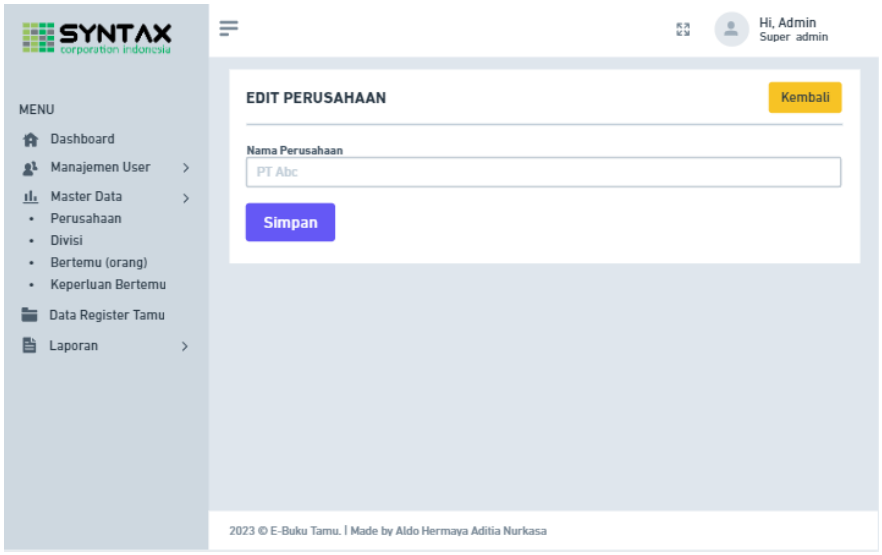

Figure 18
Company Edit View

Figure 18 is the GUI design of the company's edit page display. The company edit page is a page that displays an input form to change the company's data if there are any errors.

5) Division Master Data Display

a) DIVIDED LISTS

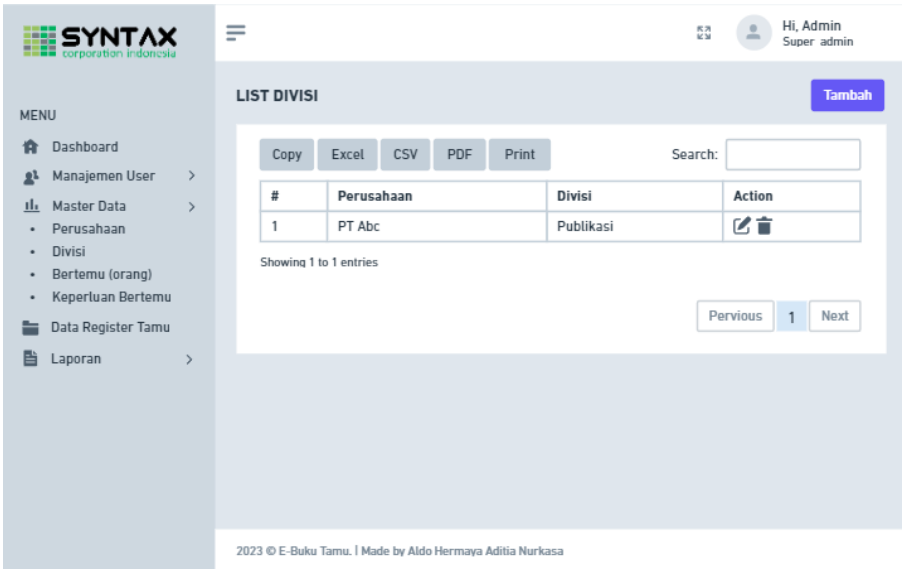

Figure 19
Division List View

Figure 19 is a GUI design for the division list page display. The division list page is a page that displays a table of division data contained in the database.

b) ADD DIVISIONS

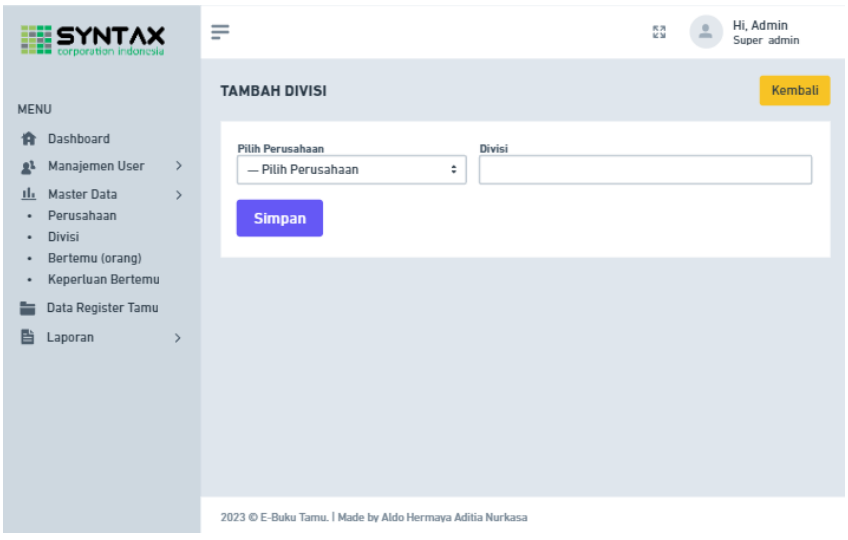

Figure 20
View Add Division

Figure 20 is a GUI design for the add-on page view. The add division page is a page that displays an input form to add division data.

c) EDIT DIVISIONS

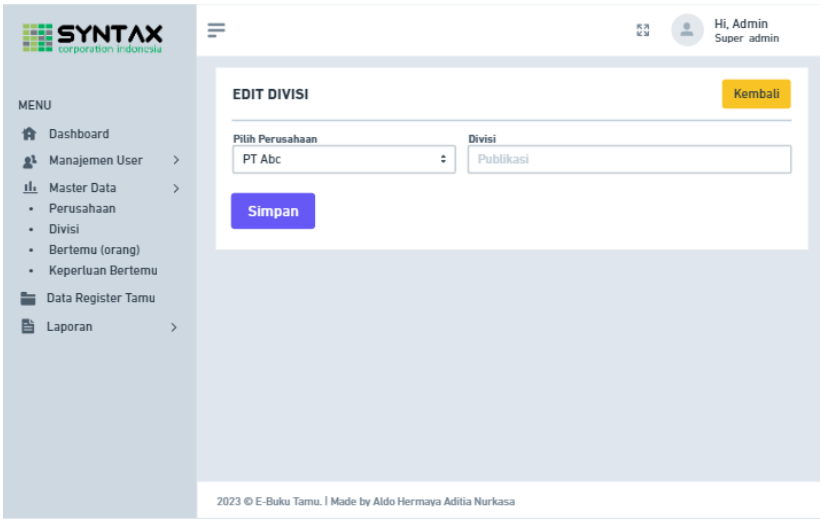

Figure 21
Division Edit View

Figure 21 is a GUI design of the division edit page display. The edit division page is a page that displays an input form to change the division data in case of errors.

6) Master Data Meeting View (People)

a) LIST OF MEETINGS (PEOPLE)

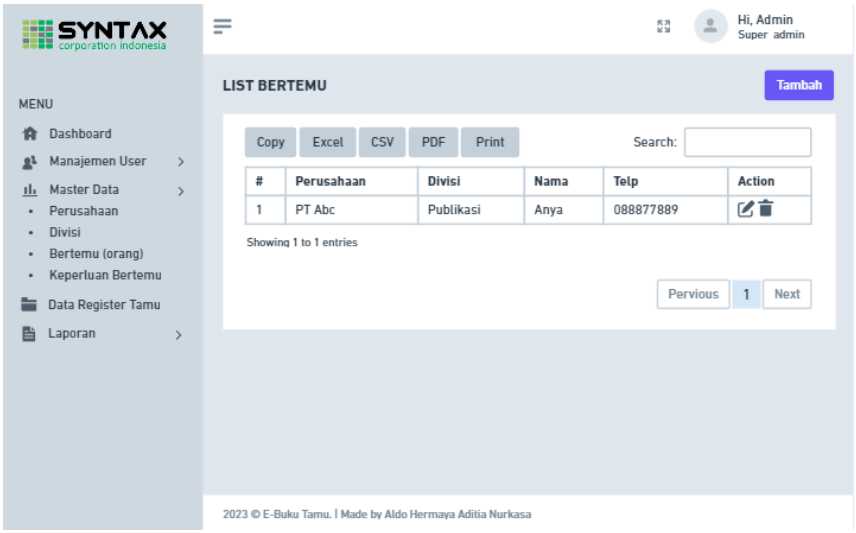

Figure 22
Meeting List View (People)

Figure 22 is the GUI design of the list page view. The meeting list page is a page that displays a table of meeting data contained in the database.

b) ADD MEET (PERSON)

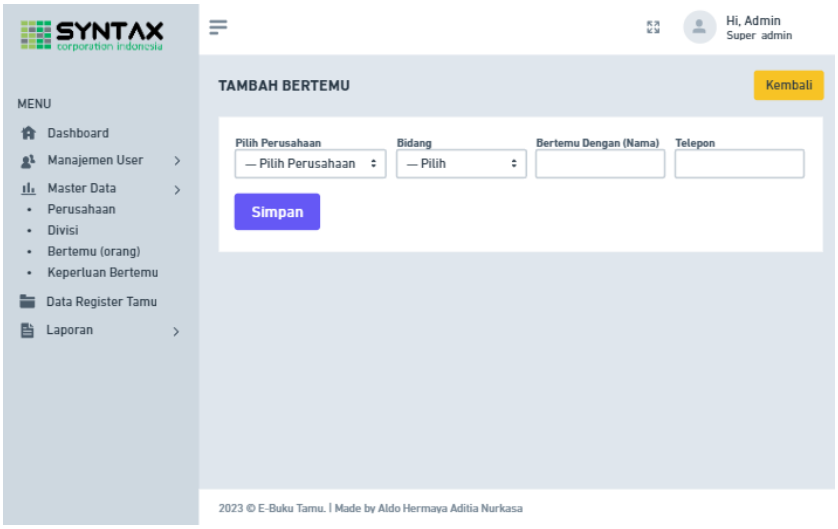

Figure 23
Meet More View (People)

Figure 23 is the GUI design of the page view add-on. The add meet page is a page that displays an input form to add meet data.

c) EDIT MEET (PERSON)

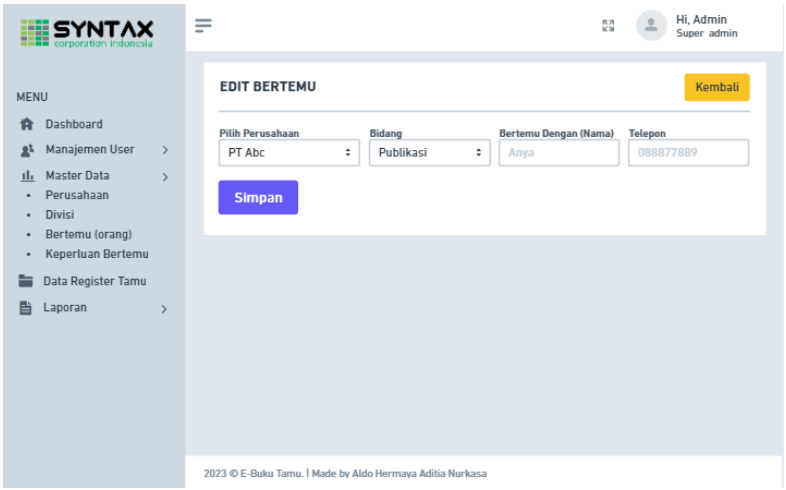

Figure 24
Edit View Meet (People)

Figure 24 is the GUI design of the interface interface of the edit meet. The edit meet page is a page that displays an input form to change the meet data if there are any errors.

7) Requirement Master Data Display

a) LIST REQUIREMENTS

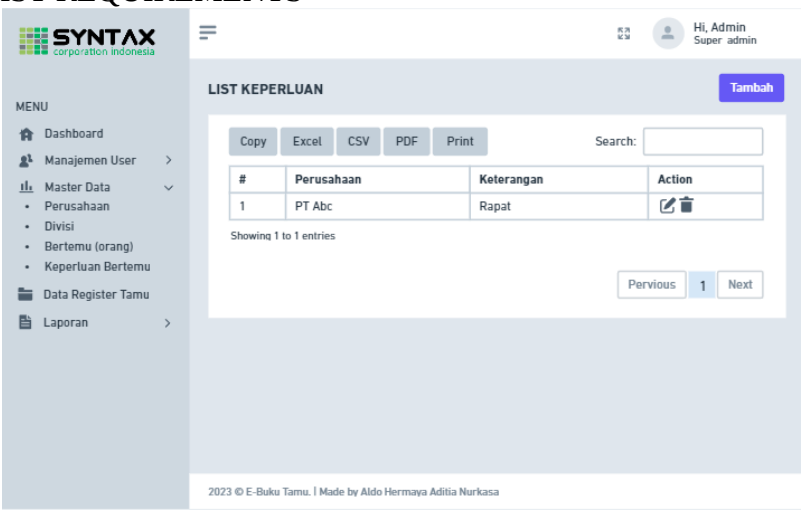

Figure 25
Display of the Requirement List

Figure 25 is a GUI design for the list of requirements page display. The requirement list page is a page that displays a table of requirements data contained in the database.

b) ADD REQUIREMENTS

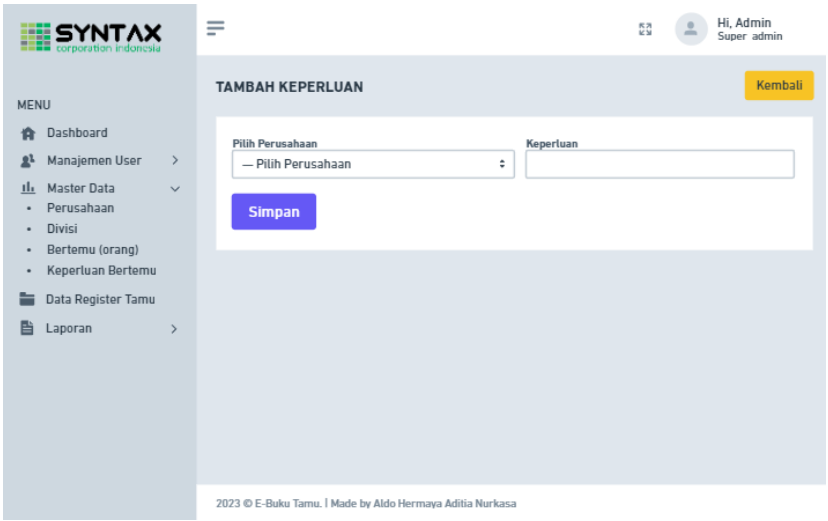

Figure 26
Add Needs View

Figure 26 is the design of the GUI of the page view. The Add Requirements page is a page that displays an input form to add requirements data.

c) EDIT REQUIREMENTS

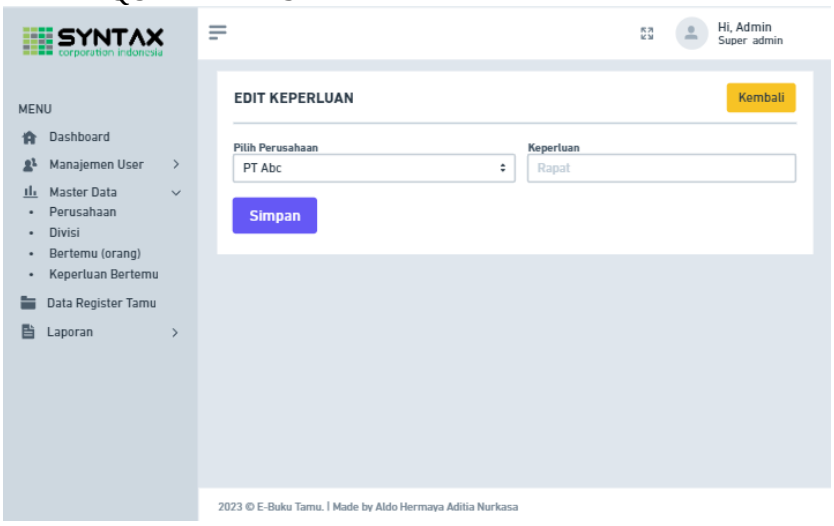

Figure 27
Edit Requirement View

Figure 27 is a GUI design of the purpose edit page display. The edit requirements page is a page that displays an input form to change the requirements data if there are errors.

8) Profile View

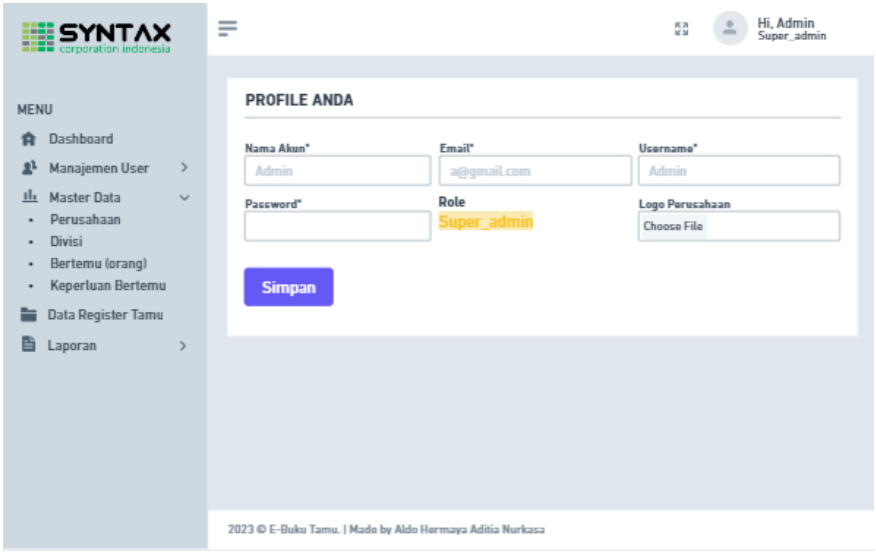

Figure 28
Profile View

Figure 28 is the GUI design of the profile page display. A page that displays an input form to change the profile data of the logged-in user.

9) Guest Register Data Display

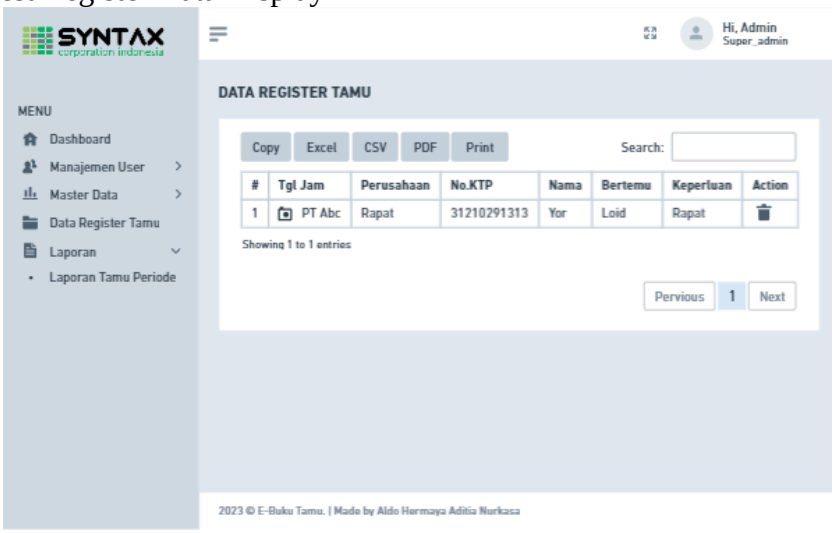

Figure 29
Guest Register View

Figure 29 is a GUI design for the list of requirements *page display*. The requirement list page is a page that displays a table of requirements data contained in the database.

10) Report Data View

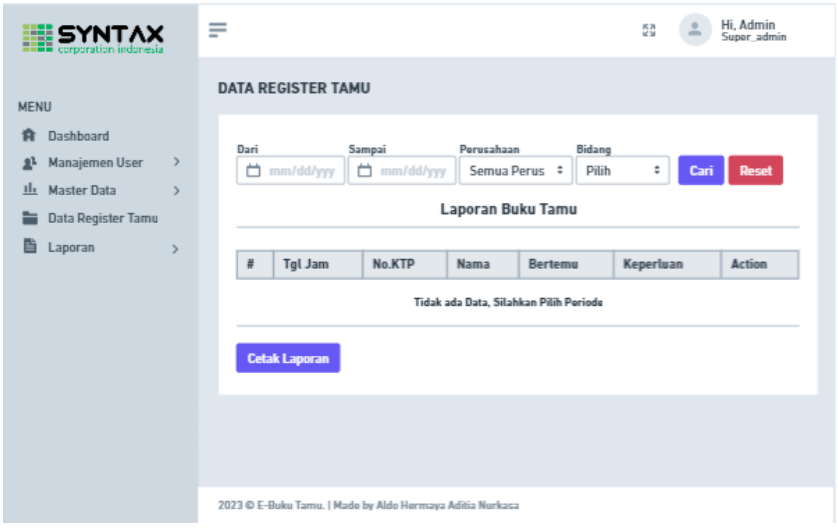

Figure 30
Report Data View

Figure 30 is the GUI design of the report data page display. This page is a page that displays a table of report data according to the date of the company and the selected field.

11) Guest Book Page View

Figure 31
Guest Book Page View

The image above is a GUI design for the display of the guest book page. This page is a page that displays the input form and *realtime* camera for guest data collection.

12) Program Test Results

The results of the program test are the results of the testing stage that is carried out to ensure that the system or program functions properly and properly. At this stage, tests were carried out on the E-Website Application - Website-Based Guest Book. This test is carried out by the black-box testing method.

With the results of this test, it can be concluded that the Website-Based Guest Book Application has passed the testing stage well and obtained a 100% success rate on each of its functions. The application of *the black-box* testing method provides confidence that the system can operate according to the user's needs.

CONCLUSION

Based on the results of the collection of needs, design, implementation, and testing of this website-based E-Guest Book Application, the following conclusions can be drawn: 1) This application has successfully made a positive contribution to digitizing and improving the efficiency of the guest registration process at PT. Syntax Corporation Indonesia. The use of web-based guest books with *Agile methods* has helped overcome the constraints of manual processes involving handwritten guest books. 2) The results of the study show that the application of *the Agile* method in managing guest books is the right and effective choice. This can be seen from the results that have succeeded in achieving the

goal well researched. In the application, the use of a website-based system built with *PHP, HTML* programming languages and the Laravel framework is very appropriate because it can produce a good application in accordance with the previously planned plan. 3) This system provides convenience for admin users in managing and monitoring guest data, the WhatsApp notification feature provides additional administrative convenience for admin users to provide information to guests and parties to be met. This increases the involvement of admins in running the guest management process. Guests are also provided with convenience with an easy-to-understand display and equipped with taking photos using *a webcam*. This greatly affects the process of searching and monitoring guests, as it will become more efficient and structured.

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