

Implementing Mail Administration Using the CodeIgniter Framework

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Abstract — Administration is the activity of systematically managing and recording data information to provide various information and make it easier to retrieve it either partially or completely. The administration of mailing at SMK Negeri 1 Glagah is still conventional by recording incoming and outgoing mail using a book and storing the mail in an uncertain places. Some of the problems that can be solved with information technology, one of which is the storage of incoming and outgoing mail at SMK Negeri 1 Glagah. With a mail administration application that uses the CodeIgniter Framework and MySQL database, teachers who being admins or operators can directly enter incoming and outgoing mail data in the application, and they can directly distribute the mail to the receiver person through the application. Teacher who receive the mail will get a notification on the application if there is a new mail coming in. With the Mail Administration Application, staff and school principals can find out the existing mail data easily and computerized with accurate and archived data. The results of the questionnaire recapitulation can be concluded that the overall application quality level is in Good criteria, with a percentage of 84.33%.

Keywords — CodeIgniter, letter, mail, mysql, QR code

I. INTRODUCTION

SMK Negeri 1 Glagah is a state vocational high school in Banyuwangi Regency directed by the principal and aided by the Deputy Principal, Head of Expertise Program, Teacher Council, and TU Staff. Software Engineering, Multimedia, Computer Network Engineering, Office, Accounting, Marketing, Accommodation & Hospitality, Visual Communication Design (DKV), and Dance are among the seven majors offered at SMK Negeri 1 Glagah.

Letters are a vital means of communication in an organization [1]. Every incoming and outgoing letter received and transmitted by an agency, not only as a method of contact but also as valid documentation. As a result, adequate administration, letter archive storage, and documentation are required [2]. The growing number of incoming and outgoing letters from year to year necessitates increased management of incoming and outgoing letters, despite the fact that the correspondence system's process is still not computerized and there is no application that supports the processing of incoming and outgoing letters [3]. Because it is not yet computerized and there are no applications that support the process of incoming and outgoing letters at SMK Negeri 1 Glagah, the data search process, data recapitulation, report generation, and data processing are inefficient because they take a long time, resulting in inefficient work [4].

As a result, a more organized mailing system is necessary to make it easier to collect letter numbers, speed up mail processing, data recapitulation, report generating, and data search.

Based on the description of the problem and its possibilities, the author wishes to use the information gained and produce something beneficial. The author can construct a web-based mail administration program with a very supporting server and network [5]. This program is designed to assist users in swiftly archiving, reporting, and sending outgoing letters.

II. METHOD

A. System Design Methodology

The author's system design technique is one of the Agile methodologies, namely eXtreme Programmings (XP) [6]. By considering the processing time constraint, this strategy is a viable way for the early development of an application.

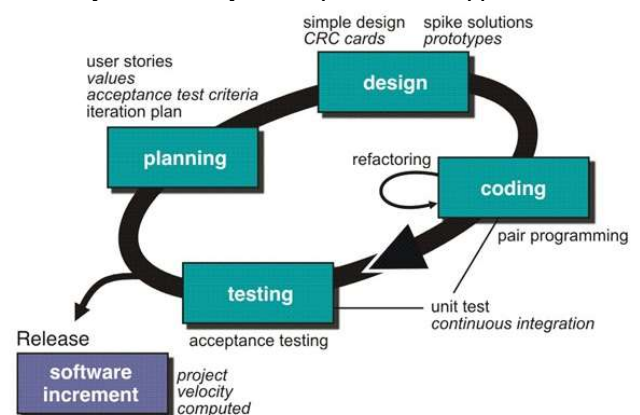


Figure 1. eXtreme Programming (XP) method

The XP approach was designed to produce high-quality, more productive software [6]. XP also tries to cut expenses during software development modifications by utilizing short software development cycles (stages). XP considers software changes to be normal and unavoidable during the development process [7]. Fig. 1 depicts the XP method's structure. Here's how it works:

1. Planning / Planning
This stage begins with understanding the application's context, defining the output, the features that exist in the application, the purpose of the application being created, determining the duration and cost of application development, and examining the flow of the application development process [8].
2. Design / Design
This stage involves creating application designs, such as databases, use cases, activity diagrams, and application mockups [9].
3. Coding / Writing Program Code
Making applications based on previous planning and design. This exercise will result in a fully functional application. This exercise makes use of the PHP programming language and the Code Igniter framework. Bootstrap and CSS are used for display design.
4. Testing / Trial and Testing
This stage focuses on testing the program's functionalities by incorporating potential users so that there are no problems (errors) and the application generated is useable [10]. The black box testing approach is used at this level.

B. System Analysis and Design

1. System Analysis Running

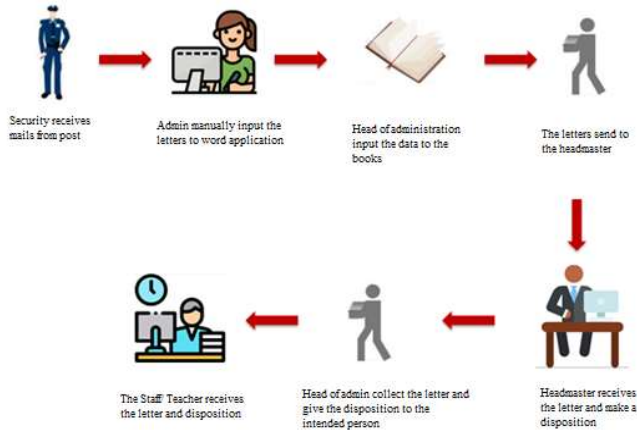


Figure 2. Incoming mail system running

According to Fig. 2, the usual practice is that the security guard gets the admission letter and subsequently gives it to the head of school administration. The head of administration receives a letter and registers it, after which it is presented to the principal by presenting a disposition sheet. When the principal has received the incoming letter and completed the disposition sheet, the disposition sheet is given to the

principal's designated recipient (teacher/employee). A disposition letter is given to the assigned employees.

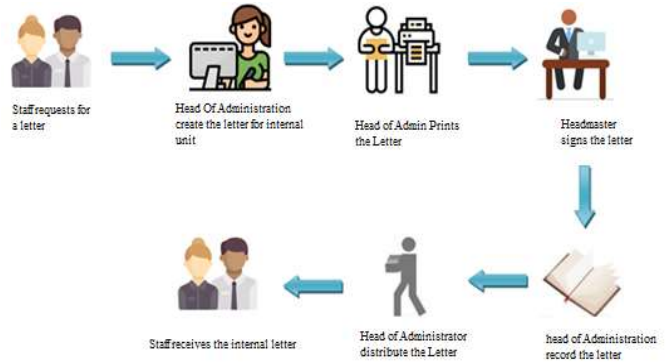


Figure 3. Outgoing mail system running

In Fig. 3, it can be seen that the typical method is that the teacher/employee sends a letter to the TU's head, who then writes a letter. Following that, the TU's president requested the principal's signature. The TU's head records the outgoing letters and then distributes them to the teacher/employee or the appropriate agency.

2. System analysis proposed

Fig. 4 depicts the running system on this incoming mail page, specifically when the TU receives a letter, the operator scans it, and the operator or admin inputs the receiving mail data into the program. Incoming letters are sent to the principal via the application and are also received by the principle via the application. The principal drafts and sends a disposition letter to the assigned teacher/employee.

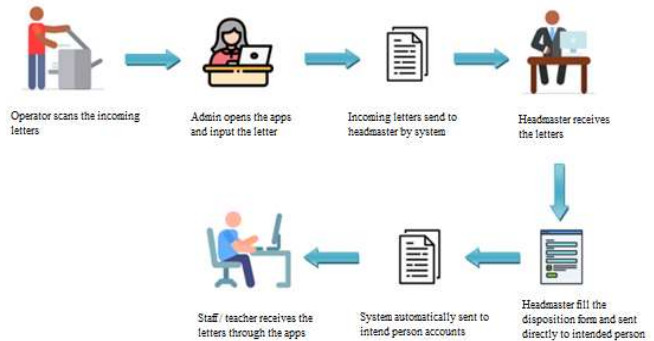


Figure 4. Proposed mailing system

Fig. 5 depicts the operating system on this outgoing mail page; the system runs when the teacher/employee asks an outgoing letter from the admin, and the admin then produces a letter in the program. The letter is printed by the operator or administrator, and the departing letter is approved by the principal. After receiving approval, the operator scans the outgoing mail and inputs the outgoing mail data into the program. The teacher/employee will then receive the letter in the application and will be able to print the letter in the application.

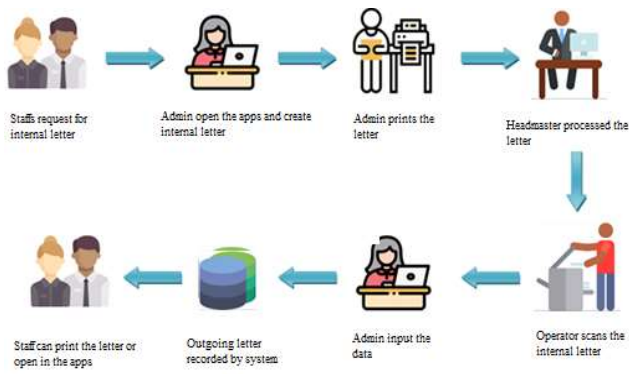


Figure 5. Proposed outgoing mail system

C. System planning

1. Use Case Diagrams

The image below depicts a system use case diagram for a mail administration application:

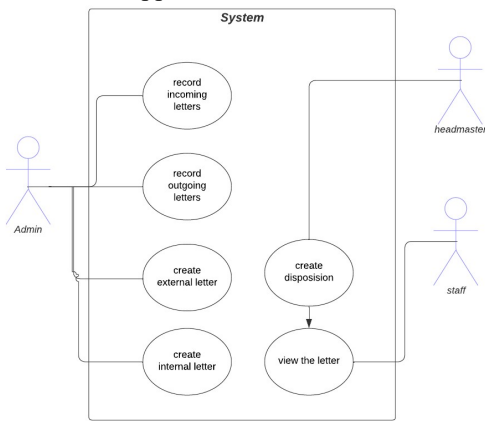


Figure 6. Use case diagrams

2. Entity Relationship Diagram

The following is an image of the system's entity relationship diagram for mailing administration applications:

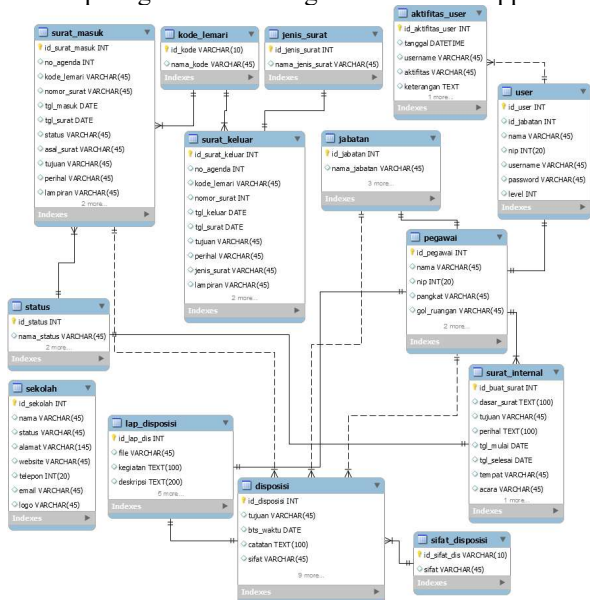


Figure 7. Entity Relationship Diagram

III. RESULTS AND DISCUSSION

A. Results

The Mailing Administration Program is a web application that oversees the archiving of incoming and outgoing letters, as well as the distribution of disposal letters and the creation of one of SMK Negeri 1 Glagah's internal letters. Internal letter distribution and numbering are still done manually in the SMK Negeri 1 Glagah setting. Observations in SMK acquired data that the distribution of disposal letters was less successful because it took a long time, and the letter numbering was also less effective because there were the same number of letters as other outgoing letters.

The author finds that combining computer-based media and a mail management application with a CI framework, composing mail delivery storage may be done more efficiently. It also supports a government-designed administrative structure in the field of technological education 4.0. This program stores an archive of incoming and outgoing letters, internal letters, and disposition letters entered by the operator or administrator, as well as recapitulation and notification of fresh mail. The results and explanations for the web-based mail administration application with the CI framework are as follows:

1) Login Page:

The login page is a page for confirming the access rights of each person who enters. In this example, users such as administrators, operators, school principals, and staff/teachers at SMK N 1 Glagah can login to run the application system based on their access permissions. The user validation procedure is carried out by inspecting the existing user's e-mail and password in the database. View of the login Fig. 8 depicts the application.



Figure 8. Login page

Information:

1. E-mail address field
The mail address field is a form that the user must fill up with their e-mail address. Email is utilized in line with each user's access privileges.
 2. Password fields
The password field is a form that the user must fill up with input password. The password used by the user is the same as the one established by the user.
 3. Login button
If the user has completed the login data fields, the user will be processed to enter the application system.
- 2) Admin Page:
The admin page will provide menus that the teacher/staff may use as needed. Menu dashboard, receiving mail, outgoing

mail, reports, system administration, user management, my profile, and logout are all available. Fig. 9 depicts an admin page view.

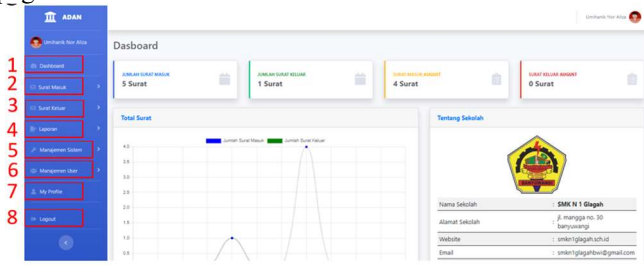


Figure 9. Admin page

Explanation:

1. Dashboard menu

The dashboard option displays the total number of incoming and outgoing letters each month, graphs of total incoming and outgoing letters, and school profiles.

2. Incoming mail menu

The incoming mail menu offers a submenu that provides incoming mail archives and disposition reports. Fig. 10 depicts an incoming mail submenu display.

- Sub menu archive incoming mail
The submenu Incoming mail archive comprises incoming mail data entered by the administrator or operator as shown in Fig. 11.



Figure 10. Incoming mail sub menu

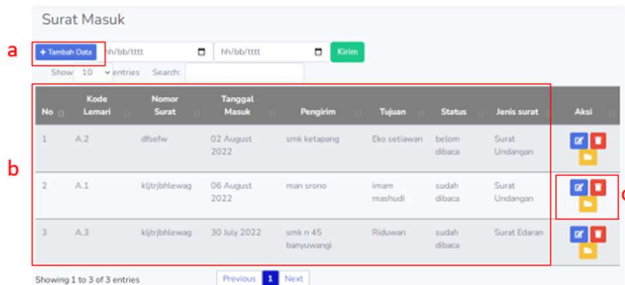


Figure 11. Incoming mail archive sub menu page

Information :

a. Add data button

The incoming mail archive form is shown by clicking the add data button.

b. Incoming mail

Incoming mail data is mail that has been entered by the administrator or operator.

c. Action

Actions are tasks that may be completed by administrators or operators. The yellow knob is used to see the information of receiving mail, the blue

knob is used to alter data, and the delete button is used to erase data.

• Disposition report sub menu

The disposition report sub menu is a menu that contains the instructor user's incoming mail data as shown in Fig. 12.

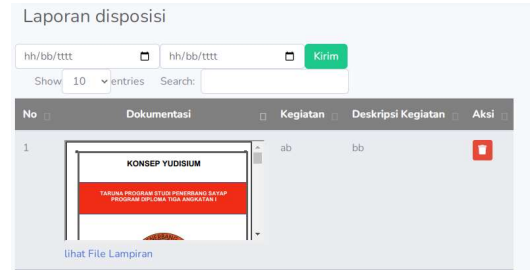


Figure 12. Disposition report sub menu page

3. Outgoing mail menu

Outgoing mail menu is a menu that has submenus for outgoing mail archives and internal mail. Fig. 13 shows an example of an outgoing mail submenu display.

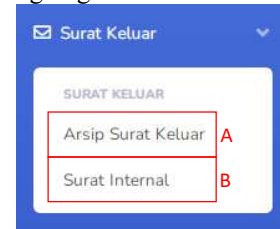


Figure 13. Outgoing mail sub menu

• Sub menu archive outgoing mail

The submenu Outgoing Mail Archive contains outgoing mail data entered by the administrator or operator as shown in Fig. 14.

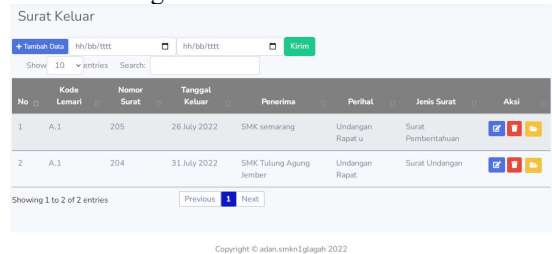


Figure 14. Outgoing mail archive sub menu page

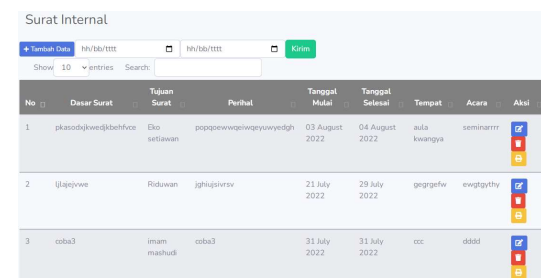


Figure 15. Internal mail sub menu page

• Internal mail sub menu

Internal sub menus include internal mail data entered by the administrator or operator. In this data, the internal

letter is an assignment letter that will be issued to instructors nominated by the principal to complete invitations from other schools or institutions. As in Fig. 15.

4. Report Menu

The report menu offers a submenu that includes receiving and outgoing mail. Fig. 16 shows a view of the report's submenu.

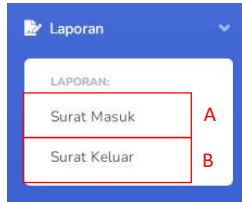


Figure 16. Report sub menu

Information :

a. Incoming mail sub menu

The incoming mail submenu displays all incoming mail data. Using the filters indicated in Fig. 17, users may pick the day, month, and year to be presented.



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Figure 17. Incoming mail report sub menu page

b. Outgoing mail sub menu

The outgoing mail submenu displays all outgoing mail data. Using the filters indicated in Fig. 18, users may pick the day, month, and year that will be presented.



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Figure 18. Outgoing mail report sub menu page

5. System management

The System Management menu offers a submenu with information about the school and clothing code data. Figure 19 shows a representation of the system management submenu.

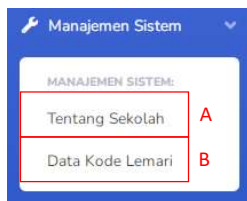


Figure 19. System management sub menu

• Sub menu about school

The school submenu provides profile information from the SMK N 1 Glagah school. On the Fig. 20 page, users may quickly alter school data based on the most recent school modifications.

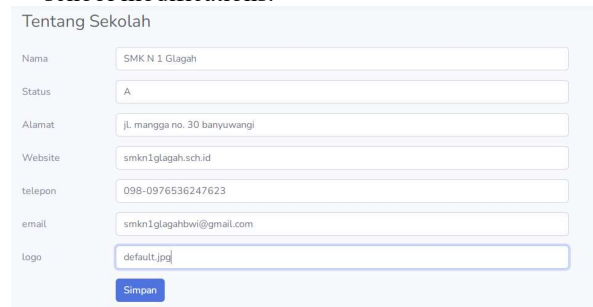


Figure 20. Sub menu page about school

• Cabinet code data sub menu

The cabinet code data sub menu displays the wardrobe code data for arriving and outgoing mail at the school. On this page, the user may enter the wardrobe code data for all of the school's cabinets. Fig. 21 shows the data page for the clothing code.

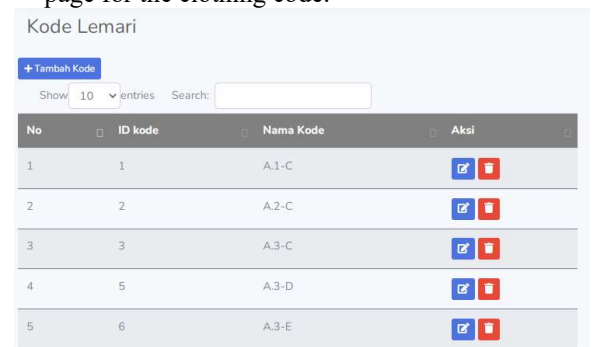


Figure 21. Wardrobe code sub menu page

6. User management

The User Management menu has submenus that contain user data and user actions. Fig. 22 shows a submenu of the user management menu.

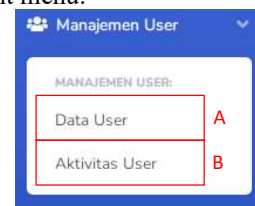


Figure 22. User management sub menu

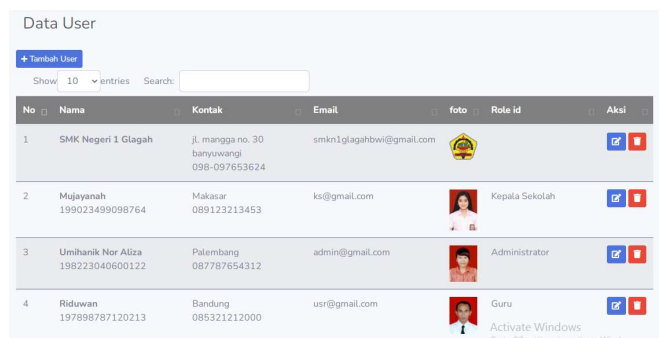


Figure 23. User data sub menu page

- **User data sub menu**
This is a submenu that provides user and employee data at SMK N 1 Glagah. On this page, the administrator or operator can add employee data and establish employee users, as well as amend and delete employee data for employees who are no longer employed at SMK N 1 Glagah. Fig. 23 shows a screenshot of the user data page.

- **User activity sub menu**
A user management submenu that displays existing user activity data is the user activity submenu. This page monitors users when they add, alter, or remove mail or other data to ensure that they do not overlap and that no data is added, changed, or deleted twice. Fig. 24 shows a screenshot of the user activity page.

No	Waktu	User	Keterangan
1	2022-07-16 05:14:10	Umihanik Nor Aliza	memasukkan surat masuk nomor :1314444
1	2022-07-16 05:15:09	Umihanik Nor Aliza	memasukkan surat masuk nomor :kijrjblewag
1	2022-07-16 12:24:34	Umihanik Nor Aliza	memasukkan surat masuk nomor :jwefhiewgo4e
1	2022-07-16 12:25:20	Umihanik Nor Aliza	memasukkan surat masuk nomor :jwefhiewgo4e
1	2022-07-16 12:27:40	Umihanik Nor Aliza	mempersiapkan surat keluar nomor :90809
1	2022-07-16 12:39:13	Umihanik Nor Aliza	memasukkan surat masuk nomor :kijrjblewag
1	2022-08-02 07:35:29	Umihanik Nor Aliza	memasukkan surat masuk nomor :pwkpewjctfhrvlgjg

Figure 24. User activity sub menu page

7. Menu my profile

My profile menu is a menu that displays user and employee data based on the current user, as well as pages based on the application's user level. Figure 25 shows a screenshot of my profile page.

My Profile

Umihanik Nor Aliza
198223040600122
Palembang
087787654312
admin@gmail.com
since 2022-07-25 06:20:20

Kirim

Figure 25. My profile page

8. Logout

Logout is a menu that allows the user to quit the program.

3) Operator Page:

An operator page is a page at the operator level. The operator level assists administrators in inputting data for incoming and outgoing letters, creating internal letters, monitoring disposition reports, and creating overall reports based on data on the day, month, and year of incoming and outgoing letters. The operator page has the same choices as the admin page, including the incoming mail, outgoing mail, reports, and my profile. Fig. 26 depicts the appearance of the principal's page. The menus on the operator page are essentially the same as those on the admin page. The only difference between the two is that the operator page lacks a system management menu and a user management menu.

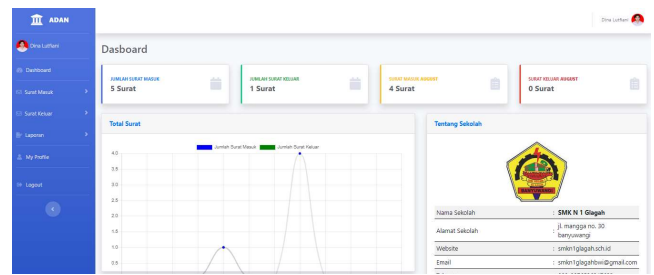


Figure 26. Operator page

4) Principal's Page:

The principal's page will display menus that only the principal may access. Incoming mail, outgoing mail, reports, my profile, and logout are all available through the menu. When the user arrives at the principal's user page. Fig. 27 depicts the appearance of the principal's page.

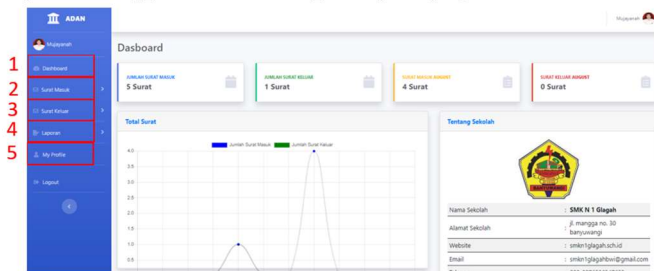


Figure 27. Principal's page

Explanation :

1. Dashboard menu

The dashboard option displays the total number of incoming and outgoing letters each month, graphs of total incoming and outgoing letters, and school profiles.

2. Incoming mail menu

The incoming mail menu offers a submenu that provides incoming mail archives and disposition reports. Fig. 28 shows an example of an incoming mail submenu display.

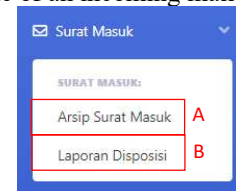


Figure 28. Incoming mail sub menu

- **Sub menu archive incoming mail**

The submenu Incoming mail archive comprises incoming mail data entered by the administrator or operator as shown in Fig. 29.

No	Kode Lembar	Nomor Surat	Tanggal Masuk	Pengirim	Tujuan	Status	Jenis surat	Aksi
1	A.3-D	422/590/SHK/02.1/2022	14 August 2022	smk 100 ketapang	Eko setiawan	Sudah Dibaca	Surat Pembentahaan	
2	A.2-C	007/PemdaBW/2022	20 August 2022	Pertamina Banyuwangi	Eko setiawan	Sudah Dibaca	Surat Undangan	
3	A.3	007/PemdaBW/2022	03 August 2022	Pemda Banyuwangi	SMK Negeri 1 Glagah	Sudah Dibaca	Surat Pembentahaan	

Figure 29. Incoming mail sub menu page

The look on this page is the same as on the admin page, except that the principal cannot add or amend letters on this page. The principal just watches what letters arrive and reads the substance of the letters.

- Disposition report sub menu
The disposition report sub menu is a menu that contains the instructor user's incoming mail data. This page is identical to the administrator and operator pages.

3. Outgoing mail menu

The outgoing mail menu has a submenu that covers outgoing mail archives and internal mail. Fig.30 depicts a submenu display of outgoing mail.

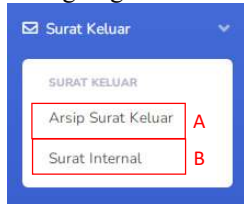


Figure 30. Outgoing mail sub menu

- Sub menu archive outgoing mail
The submenu Outgoing Mail Archive contains outgoing mail data entered by the administrator or operator. The principal can only monitor current letters on this page. Fig. 31 depicts the submenu page for the outgoing mail archive.

Surat Keluar

No	Kode Lemari	Nomor Surat	Tanggal Keluar	Penerima	Perihal	Jenis Surat	Aksi
1	A.1-C	30/SMK.GLHW/2022	13 August 2022	PLN Surabaya	Pembentahan Sosialisasi Perombaan Robot	Surat Undangan	[Icon]
2	A.3	28/SMK.GLHW/2022	20 August 2022	PLN Surabaya	Undangan Peresmian Gedung Praktek	Surat Undangan	[Icon]
3	A.2	28/SMK.GLHW/2022hh	10 May 2022	PLN Rogojampi bbb	Pembentahan Sosialisasi Perombaan Robot bbb	Surat Pembentahan	[Icon]

Figure 31. Outgoing mail sub menu page

- Internal mail sub menu
Internal sub menus include internal mail data entered by the administrator or operator.

Surat Internal

No	Dasar Surat	Tujuan Surat	Perihal	Tanggal Mulai	Tanggal Selesai	Tempat	Acara	Aksi
1	permemdikbud	Eko setiawan	tugas negara	15 August 2022	19 August 2022	Poltepel Surabaya	Workshop Pelatihan IT	[Icon]
2	permemdikbud	imam mashudi	Delegasi	10 August 2022	10 August 2022	Poltepel Surabaya	Workshop Pelatihan IT	[Icon]
3	permemdikbud	Ahmad Jauudin	Delegasi	10 August 2022	10 August 2022	Poltepel Surabaya	Workshop Pelatihan IT	[Icon]

Figure 32. Internal mail sub menu page

Fig. 32 depicts an internal mail sub menu display that is identical to the internal mail sub menu page seen on the admin and operator pages, with the exception that the principal can only monitor these letters.

4. Report menu

The report menu offers a submenu that includes receiving and outgoing mail. Fig. 33 shows a representation of the report's submenu.



Figure 33. Report sub menu page

Fig. 33 depicts the report menu, which has two submenus, namely the receiving mail submenu and the outgoing mail

submenu. The submenu displays all incoming and outgoing mail data entered by the administrator or operator. The sub menu page is the same as the admin and operator pages; the principal can print all letter data or filter by day, month, and year. The following is a Fig. 34, pages of receiving mail reports and Fig. 35, pages of outbound mail reports.

Laporan Surat masuk

Masukkan Tanggal Awal dan Akhir

hh/bb/tttt hh/bb/tttt Kirim

Carit Save to PDF

No	Nomor Surat	Tanggal Masuk	Pengirim	Tanggal Surat	Jenis surat	Lampiran
1	422/590/SMK.02.1/2022	14 August 2022	smk 100 ketapang	14 August 2022	Surat Pembentahan	file Surat
2	007/PemdaBW/2022	20 August 2022	Pertamina Banyuwangi	20 August 2022	Surat Undangan	file Surat
3	007/PemdaBW/2022	03 August 2022	Pemda Banyuwangi	03 August 2022	Surat Pembentahan	file Surat
4	001333	03 May 2022	SMK NU Sudirman	03 May 2022	Surat Undangan	file Surat

Figure 34. Incoming mail report sub menu page

Laporan Surat Keluar

Masukkan Tanggal Awal dan Akhir

hh/bb/tttt hh/bb/tttt Kirim

Carit Save to PDF

No	Nomor Surat	Tanggal Keluar	Penerima	Tanggal Surat	Jenis surat	Lampiran
1	30/SMK.GLHW/2022	13 August 2022	PLN Surabaya	13 August 2022	Surat Undangan	file Surat
2	29/SMK.GLHW/2022	20 August 2022	PLN Surabaya	20 August 2022	Surat Undangan	file Surat
3	28/SMK.GLHW/2022hh	10 May 2022	PLN Rogojampi bbb	10 May 2022	Surat Pembentahan	file Surat

Figure 35. Outgoing mail report sub menu page

5. Menu my profile

My profile menu is a menu that displays user and employee data based on the current user, as well as pages based on the application's user level.

5) Employee Page:

Employee pages will provide options that may be completed by the teacher/staff. The menu has the following items: menu incoming disposition, internal mail, report form, my profile, and logout. The initial display once the user accesses the employee user page is the application user's my profile. Fig. 36 depicts the appearance of the user's page.

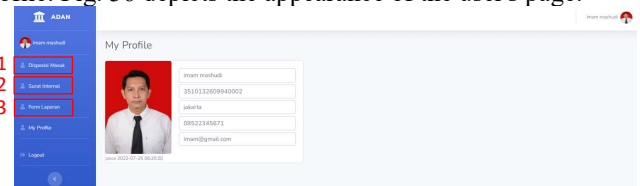


Figure 36. Employee user page

Explanation :

1. Incoming disposition menu

The incoming disposition menu is a menu that presents incoming mail data to workers. Incoming letter addressed from the administration to the designated employee per the principal's direction. Fig. 37 depicts how the login disposition page appears.

Disposisi Masuk

hh/bb/tttt hh/bb/tttt Kirim

Show 10 entries Search:

No	Kode Lemari	Nomor Surat	Tanggal Masuk	Pengirim	Tujuan	Status	Jenis surat	Aksi
1	A.1	kljtrjhbhwag	06 August 2022	man srono	imam mashudi	sudah dibaca	Surat Undangan	[Icon]

Showing 1 to 1 of 1 entries Previous 1 Next

Figure 37. Entry disposition page

The page displays the user's mail data, and there is a yellow button action that displays a picture of the letter received by the user. The state of the letter may change once the user touches the yellow button, allowing the admin, operator, or principal to determine if the letter has been read by the user.

2. Internal mail menu

The internal mail menu is a menu that displays internal mail data entered by the administrator. By hitting the yellow button on this page, instructor level users can print a letter of assignment that is displayed to the user. Fig. 38 depicts how the login disposition page appears.



Figure 38. Internal mail page

3. Report form menu

The report form menu displays report data completed by workers who completed the duties assigned to them by the principal in line with the assignment letter acquired. Fig. 39 depicts the disposition report page in its entirety.

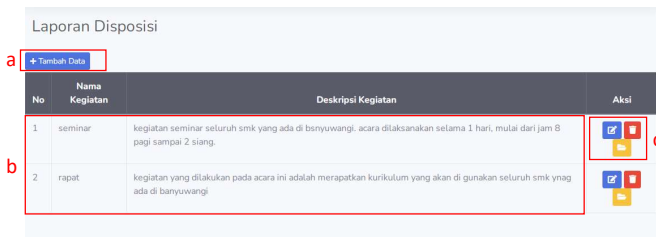


Figure 39. Disposition report form page

Explanation :

a. Add data

The disposition report form is shown by clicking the contribute data button. In this form, the user enters the name of the activity, as well as a brief description and visual data of the actions performed.

b. Disposition report data

Disposition report data is activity report data that the teaching user has entered.

c. Action

Actions are things that the user can do. The yellow knob is used to display a detailed image of the report activity, the blue knob is used to edit data, and the delete button is used to erase data.

6) Add Incoming Mail Page:

The Add Incoming Mail page offers a form where administrators or operators can enter incoming mail information. In Fig. 40, you can see the Add Incoming Mail screen.

Information :

1. Wardrobe code can add cabinet code data for incoming mail placement.

2. Mail number can input the letter number found on the received letter.
3. The arriving date might include the date that the incoming letter was received.
4. The letter's date can be combined with the letter's implementation date.
5. The letter's sender might include his or her name.
6. Subject is allowed to add subject.
7. The received mail type can be added to the mail type.
8. The description can provide a quick summary of the letter's contents.
9. The objective of the disposition might include the employee's name who will receive the letter.
10. Attachments might include attachments or the original letter.

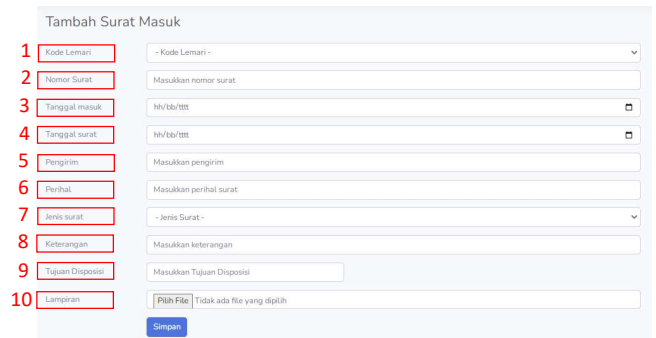


Figure 40. Add login form page

7) Add Outgoing Mail Page:

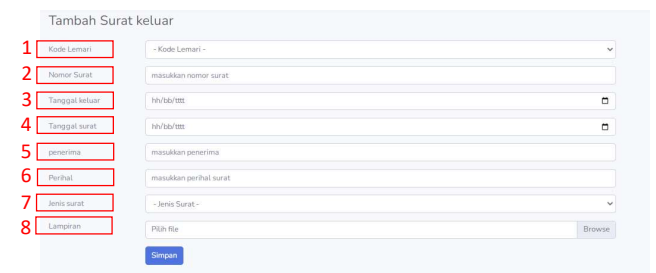


Figure 41. Add outgoing mail form page

Fig. 41 depicts the Add Outgoing Mail page, which includes a form where administrators or operators may enter information about outgoing mail. Fig. 41 is described in the following way:

1. Cabinet code data can be included for outgoing mail placement.
2. Mail number Enter the letter number from the incoming letter.
3. The incoming date can be combined with the incoming mail date.
4. The letter's date can be combined with the letter's implementation date.
5. The receiver might include the letter's recipient's name.
6. Subject is allowed to add subject.
7. Outgoing mail type can be added to the mail type.

8. Attachments might include attachments or the original letter.

3. The activity description might include a brief overview of the event's contents.

8) *Add Internal Mail Page:*

The add internal mail page offers a form where administrators or operators can enter internal mail information. Fig. 42 shows the addition of internal mail on the next page.

Information :

1. The letter number in this letter numbering matches to the outgoing mail data number entered by the administrator or operator.
2. Internal mail creation date can be included to the mail date.
3. Letter base can be used to add the letter's basis.
4. The letter's objective can include one or more names of personnel who will carry out internal letters.
5. A subject can be added to the letter.
6. Start date might include the start date of the action to be performed.
7. End date might include the completion date of the activity.
8. Time can be used to add time or hours of activities to be completed.
9. A place of activity can be added to a location.
10. Events can include the name of the event that will be conducted.

B. *Discussion*

Mail administration application is an application for storing and distributing incoming and outgoing mail, complete with automated internal letter numbering and the principal's signature using a QR Code. The PHP programming language is used to create the application, CSS Bootstrap is used to display it, and MySQL is used to keep data. Making apps with the Codeigniter Framework to organise the code. The website's design employs Bootstrap CSS to generate a responsive and appealing presentation. The application's appearance may be adjusted to fit the size of the laptop version. The application page has been shared. Admin pages, operators, principals, and employees/teachers are created. The admin and operator sections are where you enter data for receiving and outgoing mail, as well as composing internal letters.

1) *Connection To MySQL Database:*

The connection procedure with Mysql database from the existing configuration in the database config file by altering a database file on folder application config database.php to access the local server and afterwards connect with database. Previously [11], Apache capabilities that serve to create pages for the proper website to the user depending on the line code provided and Mysql as the database server application required to be activated. Then, navigate to <http://localhost/phpmyadmin/> and create a database with the name "adaan." Mysql is used to connect to a local database host, which is 192.168.1.3 or localhost [5]. Connecting to the tour database through mysql port 3306. By default, the login and password for MySQL are root and empty. The following is the source code for connecting to the database:

Figure 42. Form pages add internal mail data

9) *Add Disposition Report Page:*

The Add Disposition Report page offers a form where the teaching user may enter disposition report information. The form page for adding a disposition report is shown in Fig. 43.

Figure 43. Add disposition report form page

Information:

1. Photographs of instructor activities performed at the event can be included in the documentation.
2. The event name might include the name of the event/activity attended.

```
<?php
defined('BASEPATH') or exit('No direct script access allowed');
$active_group = 'default';
$query_builder = TRUE;

$db['default'] = array(
'dsn' => '',
'hostname' => 'localhost',
'username' => 'root',
'password' => '',
'database' => 'adaan',
'dbdriver' => 'mysqli',
'dbprefix' => '',
'pconnect' => FALSE,
'db_debug' => (ENVIRONMENT !== 'production'),
'cache_on' => FALSE,
'cachedir' => '',
'char_set' => 'utf8',
'dbcollat' => 'utf8_general_ci',
'swap_pre' => '',
'encrypt' => FALSE,
'compress' => FALSE,
'stricton' => FALSE,
'failover' => array(),
'save_queries' => TRUE
);
```

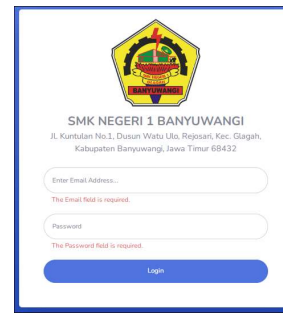


Figure 45. Login failed test

2) Application Testing:

Application testing is a crucial stage in the development of an application [11]. This test is performed to check the quality of software. The black box approach is used for this exam. This strategy focuses on testing to determine whether the application meets the requirements given in the specifications. This test is carried out by executing the program and seeing if the outcomes match the expected procedure [12-15].

1. Login test

Login is required since later, the access permissions of each user are varied based on the system rules that have been established. Using method Fig. 44 shows how to enter your email address and password.

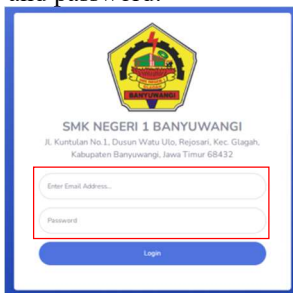


Figure 44. Login test

When a user enters an erroneous email address or password, an error message is shown. However, if successful, it will display the page application based on the user's access privileges. The login test incorrectly referred to Fig. 45.

2. Test Adding Incoming Mail

Admin and operators can add incoming mail by going to the incoming mail menu and then adding data. The page will then look like Fig. 46, with columns that must be filled out based on the incoming letter.

Figure 46. Add entry form

If you successfully enter the incoming mail data, there will be new data and a description of the successful addition with the status unread on the mail list Enter. As seen in Fig. 47.

No	Kode Lemari	Nomor Surat	Tanggal Masuk	Pengirim	Tujuan	Status	Jenis surat	Aksi
1	A.3	422/571 /SMK.02.1/2022	08 August 2022	SMK N 2 Ketapang	Imam masuk	belum dibaca	Surat Undangan	[Icons]
2	A.2	dhuhw	02 August 2022	smk ketapang	Eko setiawan	belum dibaca	Surat Undangan	[Icons]

Figure 47. Incoming mail test

3. Test Adding Outgoing Mail

Admins and operators can add outgoing mail by navigating to the outgoing mail menu and then adding data. The page will then look like Fig. 48, with columns that must be filled out according to the incoming letter. If you successfully input the mail data out, there will be new data and information on the mail list out indicating that the addition was successful as shown in Fig. 49.

Figure 48. Form add outgoing letter

No	Dasar Surat	Tujuan Surat	Perihal	Tanggal Mulai	Tanggal Selesai	Tempat	Acara	Aksi
1	Surat dari Dinas Pendidikan Provinsi Jawa Timur Nomor : 005/7644/ 101.3/ 2019 tanggal 12 Desember 2019, Kepala SMK Negeri 1 Gilaoh	imam masduki	undangan	10 August 2022	11 August 2022	Gedung Sabha Nugraha Dinas Pendidikan Prov Jawa Timur Tahun 2020	Validasi Naskah Soal LKS SMK Tingkat Provinsi	[Print] [Delete] [Edit]
2	pkasockjowedkbehfca	Eko setiawan	popqewwqewqewqewywdgh	03 August 2022	04 August 2022	aula kwangya	seminarr	[Print] [Delete] [Edit]

Figure 51. Internal mail test

No	Kode Lemari	Nomor Surat	Tanggal Keluar	Penerima	Perihal	Jenis Surat	Aksi
1	A.3	207	11 August 2022	SMK 20 Madura	undangan olimpiade	Surat Undangan	[Print] [Delete] [Edit]
2	A.2	206	13 August 2022	SMK N 300 Jember	undangan olimpiade	Surat Undangan	[Print] [Delete] [Edit]
3	A.1	205	26 July 2022	SMK semarang	Undangan Rapat u	Surat Pembentahaan	[Print] [Delete] [Edit]

Figure 49. Outgoing mail test

4. Test Adding Internal Mail

Administrators and operators can add internal mail by navigating to the outgoing mail menu and adding data. The page will then look like Fig. 50, with fields that must be filled out according to the internal letter. If you successfully enter the mail data internal, there will be new data and a description of the successful addition to the mail list internal as shown in Fig. 51. A pdf letter will appear if the yellow action button is touched. The selected letter data may be printed by pressing the print button as shown in Fig. 52. There is a QR Code on the principal's signature, indicating that the letter has been checked and authorized as a letter issued by the principle. Fig. 53 shows the results of scanning a QR code. Fig. 53 illustrates the data address of the letter as well as how it appears.

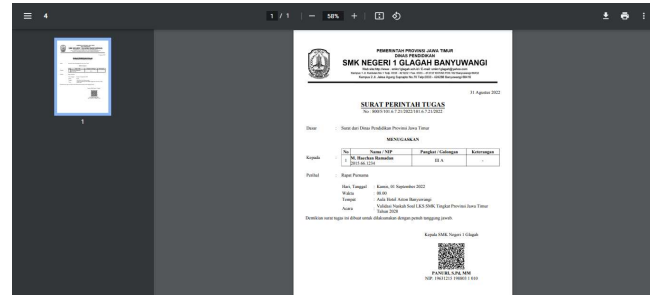


Figure 52. Internal mail print display

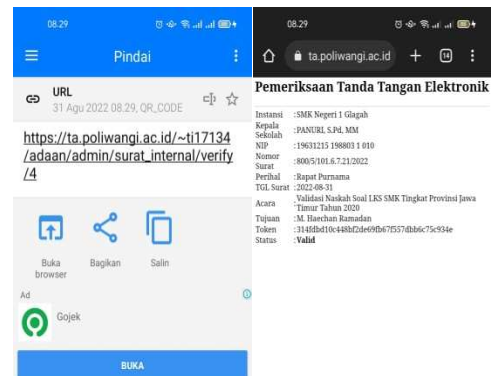


Figure 53. QR code scan result

Figure 50. Add internal mail form

5. Test Adding disposition report

The teacher can add the disposition report by selecting Add Data from the report form menu. The page will then look like Fig. 54, with columns that must be filled out according to the disposition report form.

Figure 54. Add disposition report form

If you successfully submitted the data on the disposition report form, new data and a description of the successful addition will appear on the list of letters internally as shown in Fig. 55.



Figure 55. Disposition report testing

6. Test Printing Mail Report By Date

There is a menu of incoming and outgoing mail reports in the mail administration program, which can assist users in sorting incoming or outgoing mail that has been disseminated and preserved. The user may also select whatever day, month, and year they want to show and print. Fig. 56 shows how to enter a date, month, and year.



Figure 56. Mail date filter

When the search button is pushed, the data will be displayed based on the day and month selected, as shown in Fig. 57.



Figure 57. Date filter results on incoming mail data



Figure 58. Date filter results on outgoing mail data

When the print button is pushed, the selected data may be printed, as shown in Fig. 59 for arriving mail and Fig. 60 for sending letters.



Figure 59. Print incoming mail report



Figure 60. Print out mail report

3) *Questionnaire conclusion Hasil:*

1. Recapitulation of Questionnaire Results

Some people are tested in order to determine the written outcomes of the application. Conclusions can be derived from some of the questions posed in the form of percentage reports created from respondents' replies on the questionnaire sheet. Table 1 shows the weights assigned to each answer condition.

TABLE I
WEIGHING THE ANSWER CRITERIA

Answer Criteria	Weight
Completely agree (CA)	5
Agree (A)	4
Indecisive (I)	3
Disagree (D)	2
Vehemently disagree (VD)	1

Table 2 displays the results of the responses of the respondents, a total of ten people.

a. Functionality

TABLE II
RECAPITULATION OF THE FUNCTIONALITY QUESTIONNAIRE RESULTS

No	Question	Answer				
		CA	A	I	D	VD
1	Is the application for handling disposition letters, in general, adequate for the needs?	21	9	0	0	0
2	Is the data generated by the program, correct?	2	27	1	0	0
3	Does the program perform its intended function?	2	28	0	0	0
4	Does the program provide enough user security?	15	15	0	0	0

b. Reliability

TABLE III
RECAPITULATION OF THE RELIABILITY QUESTIONNAIRE RESULTS

No	Question	Answer				
		CA	A	I	D	VD
1	Is the application's error rate low?	3	27	0	0	0
2	Can the program still function properly if data entry errors occur?	2	27	1	0	0
3	Is the application's language already appropriate?	3	27	0	0	0
4	Does the app display error warnings to the user?	2	28	0	0	0

c. Usability

TABLE IV
RECAPITULATION OF THE USABILITY QUESTIONNAIRE RESULTS

No	Question	Answer				
		CA	A	I	D	VD
1	It doesn't take long to figure out how the software works?	2	28	0	0	0
2	Is it simple to interpret the application's output?	2	28	0	0	0
3	Is the application's documentation and usage instructions clear?	2	28	0	0	0
4	Can application users readily utilize it?	3	27	0	0	0
5	Is the information offered simple to grasp?	3	27	0	0	0
6	Is the program using the correct view?	1	29	0	0	0

d. Efficiency

TABLE V
RECAPITULATION OF THE EFFICIENCY QUESTIONNAIRE RESULTS

No	Question	Answer				
		CA	A	I	D	VD
1	Does it make the application's disposition distribution procedure easier?	24	6	0	0	0
2	Is the disposition distribution procedure speedier now that the application has been used?	2	28	0	0	0
3	Is the application useful for delivering information about letters and dispositions?	3	27	0	0	0

2. ISO quality-aspect-based calculations

a. Functionality

Aspects of Functionality include the capacity of software to offer functions as needed when employed in specified situations. % Actual Score = actual score / ideal score multiplied by 100% = 169/200 multiplied by 100% = 84.5% (**Excellent criterion**). Based on the comments in the table above, it is clear that Mail Administration App offers good functionality in terms of its functions. The percentage of answers as high as 84.5%, which meets the good standard.

TABLE VI
ASPECT OF FUNCTIONALITY

Answer Criteria	Weight	Functionality	Total
Completely agree (CA)	5	3	15
Agree (A)	4	7	28
Indecisive (I)	3	0	0
Disagree (D)	2	0	0
Vehemently disagree (VD)	1	0	0
Number of Respondents		10	10
Actual Score		43	42
Ideal Score		50	50

	Question to-	Question to-				Total
		1	2	3	4	
Completely agree (CA)	5	1	2	2	5	50
Agree (A)	4	9	7	8	5	116
Indecisive (I)	3	0	1	0	0	3
Disagree (D)	2	0	0	0	0	0
Vehemently disagree (VD)	1	0	0	0	0	0
Number of Respondents		10	10	10	10	
Actual Score		41	41	42	45	169
Ideal Score		50	50	50	50	200

b. Reliability

The capacity of software to sustain a given degree of performance when employed under specified situations is an aspect of reliability.

TABLE VII
ASPECT OF RELIABILITY

Answer Criteria	Weight	Reliability				Total
		Question to-				
		5	6	7	8	
Completely agree (CA)	5	3	2	3	2	50
Agree (A)	4	7	7	7	8	116
Indecisive (I)	3	0	1	0	0	3
Disagree (D)	2	0	0	0	0	0
Vehemently disagree (VD)	1	0	0	0	0	0
Number of Respondents		10	10	10	10	
Actual Score		43	41	43	42	169
Ideal Score		50	50	50	50	200

% Actual Score = actual score / ideal score multiplied by 100% = 169/200 multiplied by 100% = 84.5% (**Excellent criterion**). Based on the table and calculations above, it can be stated that the application's reliability level is Good, with a percentage of 84.5%.

c. Usability

The Usability Aspect is used to assess how easy it is to use a system's display interface and to encourage ease of use throughout the display process. % Actual Score = actual score / ideal score multiplied by 100% = 253/300 multiplied by 100% = 84.33% (**Excellent criterion**). Based on the calculations above, it is possible to infer that the degree of Usability of Disposition Letter Archive Management Application is Good, with a percentage of 84.33%.

TABLE VIII
ASPECT OF USABILITY

Answer Criteria	Weight	Usability				Total
		Question to-				
Completely agree (CA)	5	3	2	3	2	50
Agree (A)	4	7	7	7	8	116
Indecisive (I)	3	0	1	0	0	3
Disagree (D)	2	0	0	0	0	0
Vehemently disagree (VD)	1	0	0	0	0	0
Number of Respondents		10	10	10	10	
Actual Score		43	41	43	42	169
Ideal Score		50	50	50	50	200

		9	10	11	12	13	14	
Completely agree (CA)	5	2	2	2	3	3	1	65
Agree (A)	4	8	8	8	7	7	9	188
Indecisive (I)	3	0	0	0	0	0	0	0
Disagree (D)	2	0	0	0	0	0	0	0
Vehemently disagree (VD)	1	0	0	0	0	0	0	0
Number of Respondents		10	10	10	10	10	10	
Actual Score		42	42	42	43	43	41	253
Ideal Score		50	50	50	50	50	50	300

d. Efficiency

The efficiency element of software refers to its capacity to provide adequate performance in relation to the quantity of resources available at the time of the circumstance.

TABLE IX
ASPECT OF EFFICIENCY

Answer Criteria	Weight	Efficiency			Total
		Question to-			
		15	16	17	
Completely agree (CA)	5	4	2	3	45
Agree (A)	4	6	8	7	84
Indecisive (I)	3	0	0	0	0
Disagree (D)	2	0	0	0	0
Vehemently disagree (VD)	1	0	0	0	0
Number of Respondents		10	10	10	
Actual Score		44	42	43	129
Ideal Score		50	50	50	150

% Actual Score = actual score / ideal score multiplied by 100% = 129/150 multiplied by 100% = 86% (**Excellent Criteria**). Based on the calculations above, it is possible to infer that the degree of Efficiency of Mailing Administration Application is Good, with a percentage of 86%.

3. Level of Overall Software Quality

Based on the questionnaire data analysis, the following recapitulation of quality test findings based on four factors of quality device software

TABLE IX
LEVEL OF OVERALL SOFTWARE QUALITY

Aspect	Actual Score	Ideal Score	% Actual Score	Criteria
Functionality	169	200	84.5%	Well
Reliability	169	200	84.5%	Well
Usability	253	300	84.33%	Well
Efficiency	129	150	86%	Well
Total	720	850	84.83%	Well

Based on the data in the table above, it is possible to infer that the overall level of quality is Good, with a percentage of 84%. The greatest quality attribute is efficiency, which has a score of 86%, followed by functionality and dependability,

which has a percentage of 84%, and usability, which has a percentage of 84.33%.

IV. CONCLUSION

Based on the previous discussion regarding the use of administrative correspondence, it is possible to deduce that mail administration programs built with the Codeigniter framework can function well at SMK N 1 Glagah. All incoming mail data, outgoing mail data, and internal mail data are all saved in the server database, therefore the data that appears is dynamic. This enables administrators and operators to handle existing email archives. The application's system can generate reports fast and precisely in response to application users' requests. The system can handle current letters, such as incoming and outgoing letters, as well as print the whole data of incoming and outgoing letters based on the specified day, month, and year. The system may generate an internal letter with automated numbering and a QR Code signature.

REFERENCES

- [1] Solehatin dan H. Fatmawati, "Sistem Administrasi Surat Masuk dan Surat Keluar STIKOM PGRI Banyuwangi," *TEKNOMATIKA*, pp. 79-90, 2018.
- [2] H. T. Sitohang, "Sistem Informasi Pengagendaaan Surat Berbasis Web Pada Pengadilan Tinggi Medan," *Journal Of Informatic Pelita Nusantara*, pp. 6-9, 2018.
- [3] I. Setyawantoro, Sutradara, *Sistem informasi Administrasi surat masuk dan surat keluar*. [Film]. 2018.
- [4] M. E. P. Rijaludin, W. Witanti dan A. Hadiana, "Sistem Informasi Administrasi Persuratan Terintegrasi Jurusan Informatika dan Fakultas MIPA Universitas Jenderal Achmad Yani," *Jurnal MNEMONIC*, pp. 25-30, 2018.
- [5] E. Y. Putri, S. M. Elis Hernawati dan S. M. Dahliar Ananda, "Aplikasi Pengarsipan Surat Masuk dan Surat Keluar Berbasis Web di Dinas Koperasi dan Usaha Kecil di Provinsi Jawa Barat," *e-Proceeding of Applied Science*, pp. 1064-1082, 2019.
- [6] I. Nabila, A. Pratondo dan S. K. Sari, "Aplikasi Pengarsipan Surat Masuk Dan Surat Keluar Berbasis Web Studi Kasus Badan Kesatuan Bangsa Dan Politik Provinsi Jawa Barat Web Based Application For Archiving Incoming And Outcoming Letters Case Study National Unit And Politic West Java Province," *e-Proceeding of Applied Science*, pp. 2042-2050, 2019.
- [7] Q. Maghfiroh, "Aplikasi Pengelolaan Arsip Surat Disposisi Berbasis Web di Politeknik Negeri Banyuwangi, Banyuwangi: Politeknik Negeri Banyuwangi, 2019.
- [8] M. Junus, "Sistem Informasi Pengolahan Surat Masuk dan Surat Keluar Jurusan Teknik Elektro Politeknik Negeri Malang Berbasis Web Melalui Jaringan Intranet POLINEMA," *Jurnal ELTEK*, pp. 18-32, 2018.

- [9] R. Gunawan, A. M. Yusuf dan L. Nopitasari, "Rancang Bangun Sistem Presensi Mahasiswa Dengan Menggunakan Qr Code Berbasis Android," *Jurnal Ilmiah Elektronika Dan Komputer*, pp. 47-58, 2021.
- [10] J. A. Prasetyo, A. E. Rakhmania dan D. Priskilia, "Laravel-Based Web Application for Alumni Books," *Jurnal Jartel*, pp. 276-280, 2022.
- [11] J. A. Prasetyo, G. H. Wibowo, M. F. A. Haris, D. S. Suwardiyanto Dan A. W. Febrian, "Implementasi Sistem Rekomendasi Bidang Studi Dan Pekerjaan Berbasis Riasec Test Di Smk Ihya Ulumuddin Banyuwangi," *Jurnal Terapan Abdimas*, Pp. 25-32, 2022.
- [12] J. A. Prasetyo, M. D. Ayatullah, G. H. Wibowo dan I. W. Suardinata, "Implementasi Tracer Study Berbasis Web Robot Telegram Di Smkn Ihya Ulumuddin Banyuwangi," *Jurnal Terapan Abdimas*, pp. 180-187, 2022.
- [13] I. N. A. F. Setiawan, "Pengembangan Sistem Tracer Study Berbasis Web Pada STMIK STIKOM Indonesia," *Jurnal Ilmu Komputer dan Sains Terapan*, pp. 118-126, 2015.
- [14] Sucipto, "Improving The Performance of Alumni Achievement Assessment by Integrating Website-Based Tracer Study Information Systems and Telegram API," *Jurnal UNDIP-teknik*, pp. 72-77, 2020.
- [15] Moh.Furqon, "Sistem Informasi Administrasi Tracer Study dan Kepuasan Stakeholders Alumni STT Nurul Jadid Berbasis WebSistem Informasi Administrasi Tracer Study dan Kepuasan Stakeholders Alumni STT Nurul Jadid Berbasis Web," *JURNAL IPTEK*, 2015.