

## *Optimizing company performance with a web-based office administration system at PT. Perkebunan Nusantara*

**Harsyatria Fitrio**

Magister Management, Faculty of Economics and Business, Universitas Airlangga

Email: [harsyatria.fitrio-2020@feb.unair.ac.id](mailto:harsyatria.fitrio-2020@feb.unair.ac.id)

**Abstract:** *In the era of globalization as it is today, the development of industry has entered the era of industrial revolution 4.0, meaning 4.0 itself is the industrial revolution has reached the 4th wave of the development of the previous industrial revolution. After the Covid 19 pandemic VUCA phenomenon (Volatility, Uncertainty, Complexity, Ambiguity) became a scourge for companies that are not ready in the face of business dynamics at this time, the industrial revolution 4.0 itself triggered the occurrence of Quantum Leap where almost all companies are forced to change business processes from initially information technology systems / manuals to be spurred to develop IOT (Internet Of Thing) (Sheridan, 2005).based information technology systems PT. Perkebunan Nusantara as one of the State-Owned Enterprises (SOEs) optimizing their Company Value Chain by developed information systems on web-based Office administration through the OA Application (Office Automation). The design of OA itself aims to make the company's performance in this case office administration more efficient, agile and flexible because it makes more easier to be accessed by all users of the application, made it easier to convey Information both top down in the form of company policy instructions and bottom up such as licensing process etc. This Information System design replaces the archive system and administration of the correspondence that is still done manually, as well as an effort in improving the Company's Competitive Advantages.*

**Keywords:** *Industrial revolution 4.0, company value chain, information technology systems, competitive advantage, web based.*

**Abstrak:** Pada era globalisasi seperti saat ini, perkembangan industri telah memasuki era revolusi industri 4.0, yang berarti revolusi industri telah mencapai gelombang ke-4 dari perkembangan revolusi industri sebelumnya. Setelah pandemi Covid-19, fenomena VUCA (Volatility, Uncertainty, Complexity, Ambiguity) menjadi momok bagi perusahaan yang tidak siap menghadapi dinamika bisnis saat ini. Revolusi industri 4.0 sendiri memicu terjadinya Quantum Leap di mana hampir semua perusahaan dipaksa untuk mengubah proses bisnis mereka dari yang awalnya sistem teknologi informasi/manual menjadi terdorong untuk mengembangkan sistem teknologi informasi berbasis IOT (Internet of Things) (Sheridan, 2005). PT. Perkebunan Nusantara sebagai salah satu Badan Usaha Milik Negara (BUMN) mengoptimalkan Rantai Nilai Perusahaan mereka dengan mengembangkan sistem informasi pada administrasi perkantoran berbasis web melalui Aplikasi OA (Office Automation). Desain OA ini sendiri bertujuan untuk membuat kinerja perusahaan, dalam hal ini administrasi perkantoran, menjadi lebih efisien, gesit, dan fleksibel karena lebih mudah diakses oleh semua pengguna aplikasi. Hal ini memudahkan dalam menyampaikan informasi baik dari atas ke bawah dalam bentuk instruksi kebijakan perusahaan maupun dari bawah ke atas seperti proses perizinan, dll. Desain Sistem Informasi ini

menggantikan sistem arsip dan administrasi korespondensi yang masih dilakukan secara manual, serta merupakan upaya dalam meningkatkan Keunggulan Kompetitif Perusahaan.

**Kata Kunci:** Revolusi industri 4.0, rantai nilai perusahaan, sistem teknologi informasi, keunggulan kompetitif, berbasis web.

## Introduction

The rapid development of information technology at this time required government or private agencies to modernize their management, such as the use of information technology to archive letters. Institutions and private institutions are closely associated with communications in the performance of their activities. Meanwhile, based on PER-07/MBU/10/2019 on theuraturates in the Ministry of State Own Enterprise, The Official Text is a general reference that needs to be spelled out into operational / technical instructions and its application is adjusted to the characteristics of the Ministry of SOEs (State-Owned Enterprises) (Elkington et al., 2017 dan BUMN, 2021). Therefore, there are always many parties involved in managing letters. Communication activities are certainly particularly interesting because the content of a letter to a private institution or organization is a means of achieving the purpose of that institution or organization, and therefore the need to manage the letter Letters managed by an agency are usually divided into two parts: incoming letters and outgoing letters. The rapid process of information exchange can help smooth administrative activities within an organization both private and government, especially administrative activities related to correspondence activities (Arribe et al., 2024). In processing incoming mail data and outgoing mail at PT. Perkebunan Nusantara still has several issue among them, in recording incoming letter data and exit letters must still be recorded and booked in the manufacture of incoming and outgoing letters. This results in the information being presented late. In addition, the data process is still manual and has not used an application program. Thus, it is necessary to deploy an office administration system that can be automatically and integrated in all parts and work units at PT. Perkebunan Nusantara.

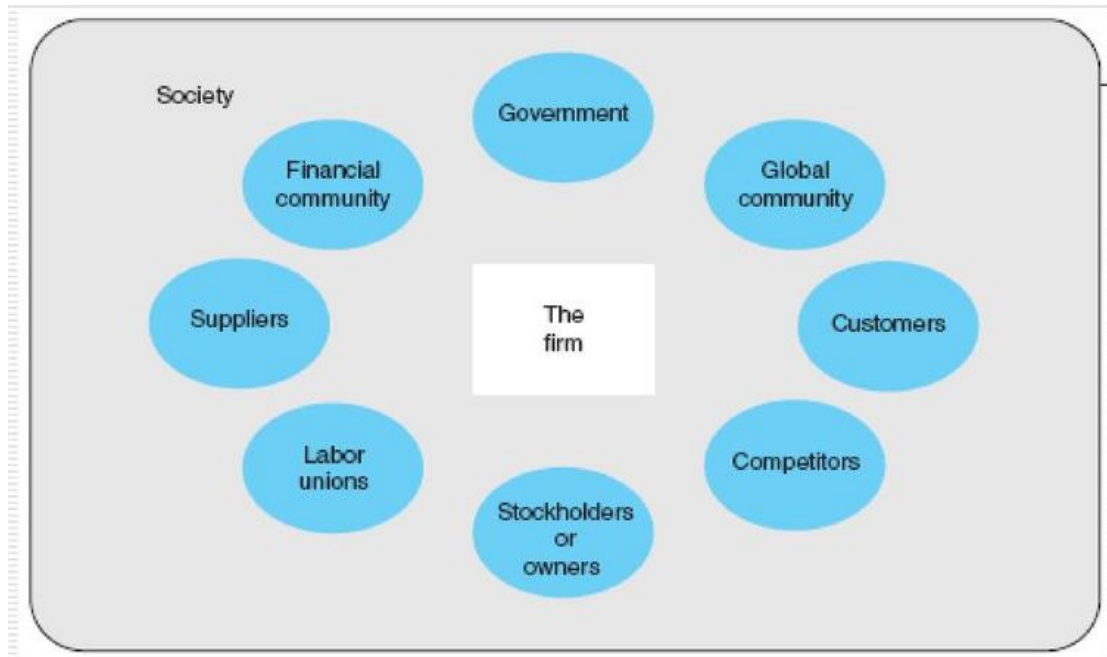
## Literature review

### System and information system

A system is a network of interconnected procedures, coming together to perform an activity or to accomplish a particular goal. While a procedure is the exact sequence of instructional stages that describe what to do, who (who) does it, when (when) is done and how (how) to do it.

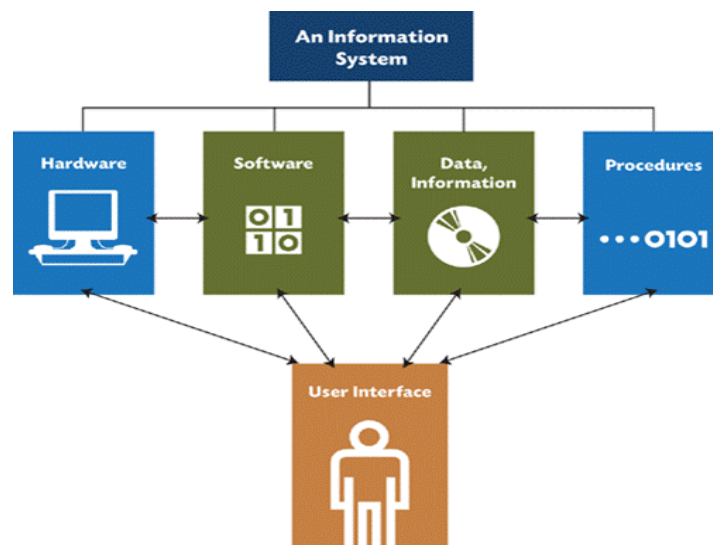
The basis of the emergence of the era of the industrial revolution 4.0 can be seen from the change in the way people work due to the large role of the internet in automation or digitalization in various sectors of life. Almost all sectors of human life use the internet in the Firm Environment found Environmental Resource Flows as in the 2.1 figure there are 8 dimensions, where each dimension develops digitally into an Internet-based platform or Internet Of Things (IOT). Examples such as in dimensions, Financial Community has e-finance, Suppliers have e-Procurement, Labor Union has E-Learning etc. Especially in the dimension of Government that has e-Government where there is an

information system developed for office administration of correspondence activities that are identical to E- Office or Office Automation (OA) (Rainer et al., 2020):



**Figure 1.** Environmental Resource Flow

Information is part linked to different additives that's paintings collectively to collect, process, store, and distribute data to help in decision-making, coordination, control, analysis, and visualization inside an organization. It's. From this theory, we will finish that the data is the end result of processing the facts right into a layout this is extra beneficial to the recipient of the facts, explaining the real event. Information may be used as a supply of knowledge as shown at figure 2. All these components are related to each other, therefore if the data is wrong, then the results of the information are wrong.



**Figure 2.** Information System Component

## Basic Concept of Correspondence

### Understanding of Letters

Below are expressed diverse reviews approximately the which means of letters, namely: "A letter is a device to deliver statistics or announcement in writing to different parties, both on its personal behalf, the placement held from organization". A letter is a written conversation device for conveying statistics or statements from one celebration to some other celebration. While within side the e-e book Task and Development Secretary the letter is a conversation device that comes from one celebration addressed to the alternative celebration to deliver warka (Pratama, 2022).

### Understanding of Letters

In the Modern Business Correspondence book is: "The letter serves as a written communication tool to convey messages or information from one party to another. Therefore, the letter also serves to reflect the image or authority of the sender (Pratama, 2022).

In the business world of government services, letters can be used as follows:

- a) Authentic evidence and have legal power, such as letters of agreement, receipts, proof of receipts, invoices, and others.
- b) References in planning or following up on an activity. Archived letters are the source of data needed in the further solving and follow-up of an activity or program of a business entity or individual.
- c) Security guarantees, such as permit mail.
- d) Reminder tools, by opening archives, forgotten past data or information can be viewed and reviewed.
- e) Tools to know the constraints of time, distance etc.
- f) Promotional tools (advertisements) for the sender, especially in Business Correspondence.

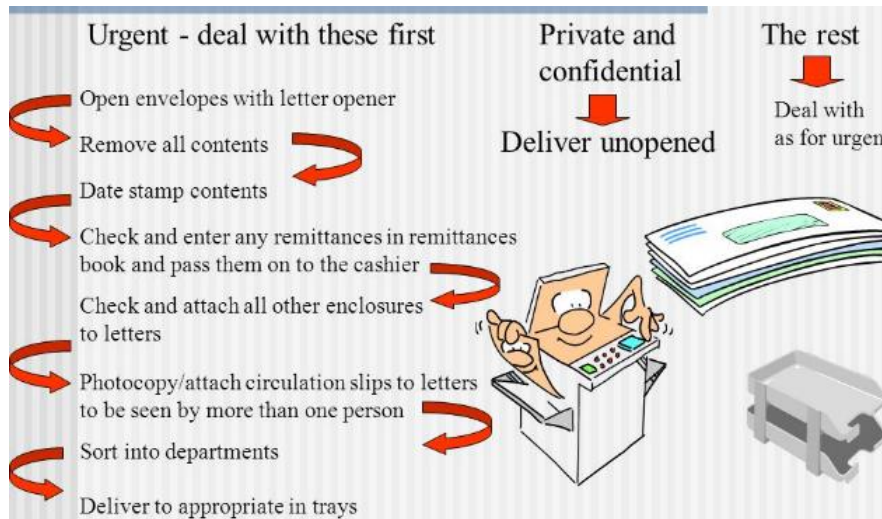
### Incoming Letters

In the book of the basics of Business Administration "Incoming letter is a means of written communication received in other agencies or from individuals. It can also be given the understanding that incoming letters are all types of letters received in other agencies as well as from individuals, both received from couriers (senders of letters) using the sender's book (expedition book)". By a company or agency within each working day and handled by a secretary (Sedarmayanti, 2015).

### Incoming Mail Handling Process

The understanding of the Incoming Mail Handling process is the stages or steps that must be passed in an effort to achieve a goal. The stages or steps are one with each other related to each other, so it is a series" In every organization both private and government relationships by letter with other parties is the most widely pursued path, the wider the

relationship with outside the organization, then letters and activities related to correspondence are increasingly dense. Letters need to be managed properly, starting from taking care of, organizing and controlling the letter. Therefore, the section governing the entry of the letter should be scrutinised, in particular to ascertain whether the letter is actually addressed to the company. The process of handling incoming letters by using the Agenda Book in the Business Basics book. The stages can be seen in figure 3.



**Figure 3.** Processing Incoming Email

## Out going mail

Understanding the Out Going Mail is all official writings or official news sent to internal organizations and organizational units in one corporate environment and outside the corporate environment (external organization) both government and private agencies ". From the above literature so the Outgoing letter is a letter issued by an agency or company to the diamond or other company, made by the secretary with the orders of the superior (Sedarmayanti, 2015).



**Figure 4.** Out Going Mail Procedure

## Agenda book

Agenda books or a type of notebook used to record or register all letters (letters received or incoming letters) and letters to be sent (exit letters) by an agency or organization. More simply is a note of the letter "received and which will be sent to be forwarded or to be kept as an archive. In general, agenda books are divided into 2, namely: 1). Agenda books enter. 2) The agenda book is out.

## Digital signiture

### The legal basis of electronic signatures

Law No. 11 of 2008 on Information and Electronic Transactions (ITE Law) (Arianto et al., 2020) provides a legal foundation for the use and utilization of information technology and electronic transactions in Indonesia. Additionally, Government Regulation No. 82 of 2012 Article 52 Paragraphs 1 and 2 on the Implementation of Electronic Transaction Systems (Makarim and Kom, 2020) further regulates the procedures and responsibilities in the implementation of electronic transaction systems. Together, these regulations create a clear and firm framework to support the development of secure and reliable electronic transactions in Indonesia.

### Understanding digital signatures

According to Law No. 19 of 2016 Article 1 Paragraph 5-12, on Electronic Information and Transactions: "Electronic Signature is a signature consisting of Electronic Information attached, associated or related to other Electronic Information used as a means of verification and authentication." (Lubis, 2021). The Valid Terms of Electronic Signature are as follows:

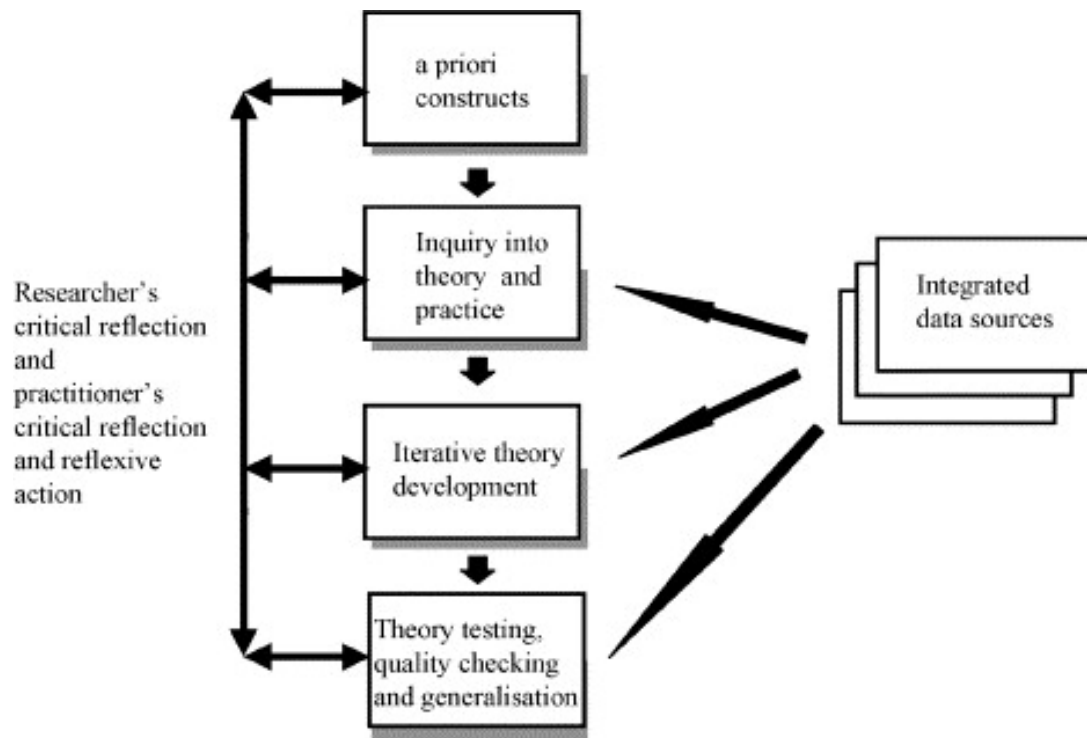
- a) The data creation is privacy and is known only to the owner of the signature.
- b) When creating a signature, only the original owner has the power to use it
- c) All changes about the electronic information that have to do with the signature can be known
- d) To have a specific way of proving that the signature owner has given valid consent regarding certain electronic information.

## Methodology

The research method used is the grounded research method. Grounded research is a fact-based method that uses comparative analysis, grounded research can also be called a reflexive and open approach, where data collection, development of theoretical concepts and literature review take place in a continuous cycle process.

This method aims for empirical generalizations, establishing concepts, proving theories, developing theories, collecting and analyzing data at the same time. Data is the source of theory or in other words theory based on data. In order to obtain supporting data in the creation of an application of the express system at PT Perkebunan Nusantara.

Research uses several methods of data collection, namely: Library Study Method, Observation Method and field study, and Interview Method (Denzin, 2023).



**Figure 5.** Grounded Research Procedure

## **Result and discussion**

### Running system analysis

#### Profile of PT. Perkebunan Nusantara

PT Perkebunan Nusantara or better known as PTPN is one of the State-Owned Enterprises (SOEs) engaged in the field of national agribusiness based on sugarcane and tobacco. PT Perkebunan Nusantara was established based on PP RI No.15 dated February 14, 1996 until now. PTPN is located at Jl. Jembatan Merah No. 3-11, Surabaya, East Java, Indonesia (zip code 60175) while the representative office is located in Taman Gandaria Valey Housing, Block F 12A Kebayoran Lama, South Jakarta (PTPN, 2021).

The company's system is very simple. Recording and storing of data is done manually, i.e. by handwriting. "Agendaris" / Administrator controls all mail processes, be it the incoming letter process or the exit letter process. There are three main tasks of processing incoming mail, namely the administrator doing the recording of the letter, delivering the letter after the disposition process is completed. If indeed the letters require a disposition process or convey a letter directly that does not require the disposition process of the letter to the work unit or someone who is the purpose of the letter.



Figure 6. PTPN Profile

## Running System Business Rules

The system's business rules run in correspondence on PT. Perkebunan Nusantara is as follows:

1. Entry letter process
  - a. Letters received by the general section will be included and written in the list of incoming letters.
  - b. The letter that has been written information, then done filling out the disposition sheet
  - c. After the disposition sheet is filled the letter is submitted to the secretary for examination
  - d. Letters that have been examined by the secretary will be returned to the general section, then the general section will record incoming letter data, fill out the incoming mail agenda and make an incoming letter report.
  - e. Then the letter will be submitted to the employee concerned and the report of the entry letter will be submitted to the archive section.

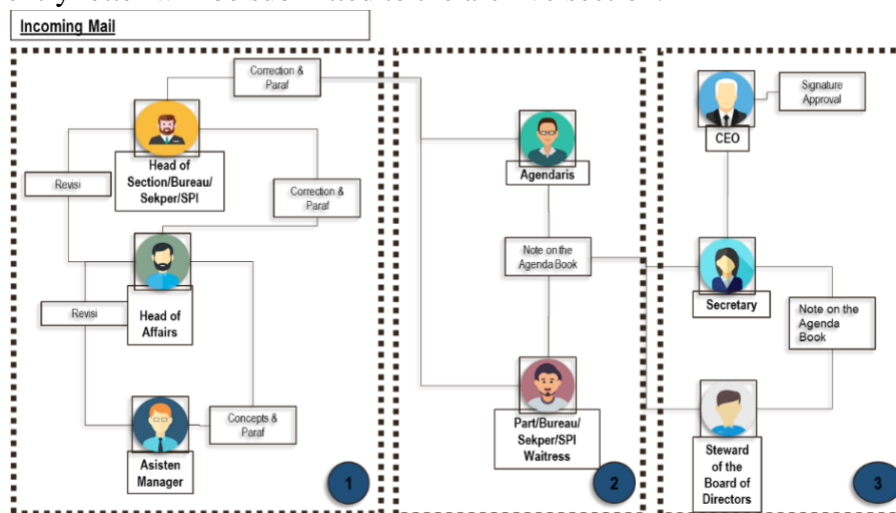
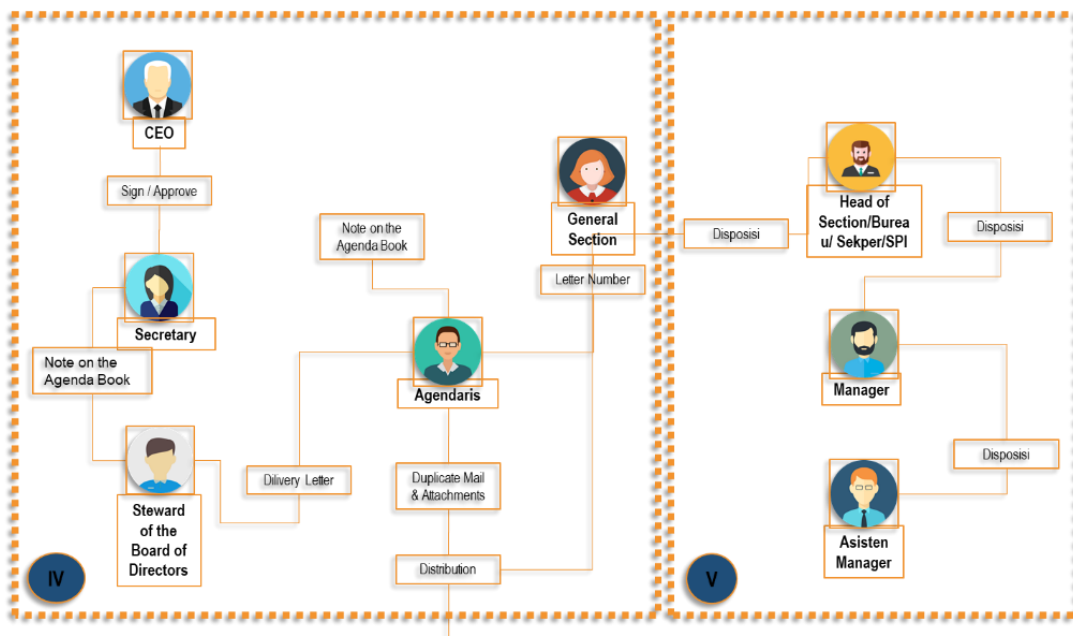


Figure 7. Entry letter business process



2. Out going letter process
  - a. Letter data from employees will be submitted to the general section and then the letter will be made.
  - b. Then the letter will be submitted to the secretary and will be examined for the ACC. If the letter is not appropriate then the letter will be returned to the employee concerned.
  - c. If the letter passes ACC the letter will be immediately given to the chairman to be done ACC back
  - d. If the letter is not appropriate then the letter will be returned to the employee concerned.
  - e. If the letter is viable then the letter will be immediately signed by the head of the general subsection. The signed letter will be submitted back to the general section and will be stamped immediately and then made a report.



**Figure 8.** Out going letter business process

## Decomposition of Running System Functions

Decomposition of system functions runs for the process of data collection of letters on PT. Perkebunan Nusantara can be broken down with Flow Map. Flow Map is a diagram that shows the flow of data in the form of form forms or information in the form of documentation that flows or circulates in a system. This diagram serves to find out the relationship between entities through the flow of existing documents to all documents originating from the structure until the document is received by the recipient of the document (Winarno dan Zaki, 2014).

## System database analysis

### Runs ERD (Entity Relationship Diagram)

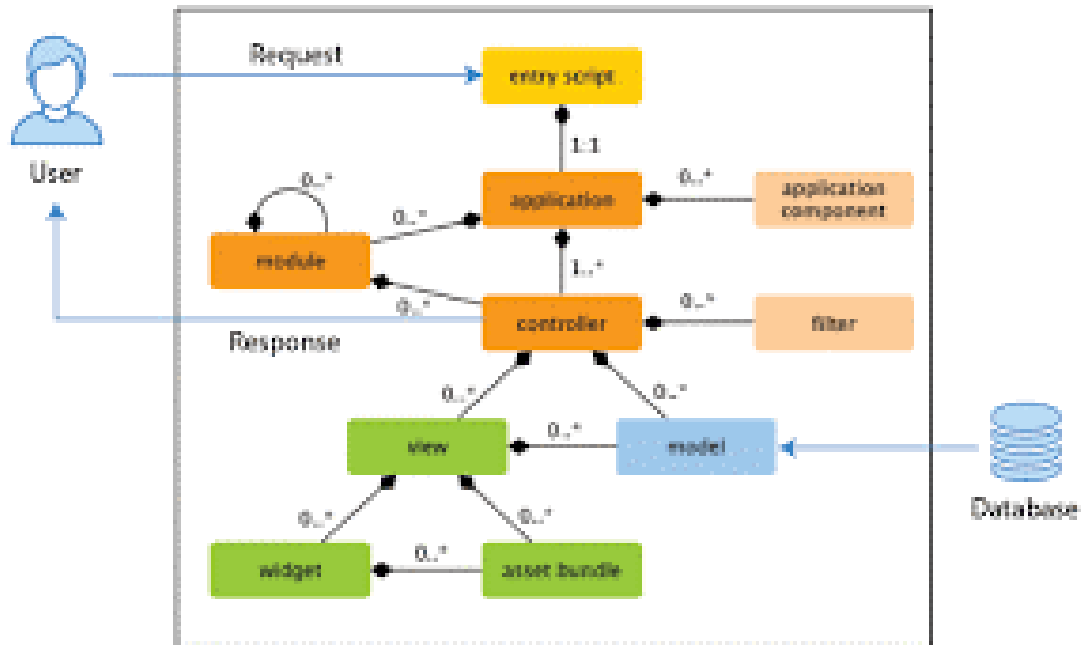


Figure 9. Entity relationship diagram system running

## Problem Analysis

From the results of the research that the author did, the author can analyze the problems in the correspondence system at PT. Perkebunan Nusantara are:

1. The system that is running on the processing of incoming and outgoing mail has not been well coordinated because the implementation and equipment used is still manual so there are archives that are difficult to find and there is no thorough report.
2. In the process of recording incoming and outgoing letters so that there are no delays in making incoming and outgoing letter reports.
3. Lack of human resources that understand the correspondence system so that it becomes a cause has not been created a web-based express system.
4. Distribution of letters is carried out manually so as to slow down the work of recording.

## Alternative Problem Solving

From the conclusion of the problem that the author took, the author made an alternative solution to the problem, including:

1. Design of the application of the coordination system at PT. Perkebunan Nusantara are computerized so that information can be generated quickly, precisely and accurately.

2. Recording incoming mail, outgoing mail is done with the computer system and the archive storage is stored to the computer hard drive and in the file recap every month.
3. Design a database for correspondence system applications so that data storage does not use paper media anymore but in the form of hard disks or other electronic storage media.
4. From the data on the computer, it is easy to search for correspondence data and create monthly reports.

## Proposed system draft

### Proposed system business rules

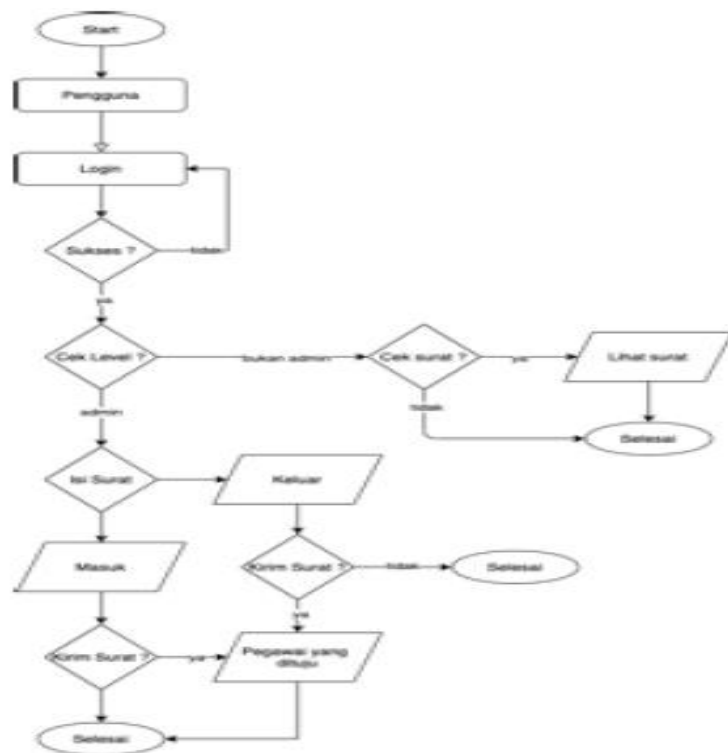
The proposed system business rules aim to result in the design of computer-based incoming and outgoing mail information systems. The design of the process that is made does not undergo many changes from incoming mail and outgoing mail information systems that are still manual to computer-based information systems. The design of this process includes flow maps, contextual diagrams, data flow diagrams, and data dictionaries that can explain the flow of data processed to produce the desired information. System business rules proposed to PT. Perkebunan Nusantara is as follows:

1. Incoming Mail Process
    - a. Incoming letter received by the general section
    - b. The administrator will enter the mail data received on the incoming mail form
    - c. After that will be done the process of printing the incoming letter form and disposition
    - d. Then the secretary will check the form of the entry letter and the disposition form of the letter will be submitted to the company leadership and the chairman will give a disposition.
    - e. Then the administrator will enter the disposition data of the letter in accordance with the leadership's order.
  2. On Going Mail Process
    - a. Letter data from employees will be submitted to the general section and then the letter will be made.
    - b. Then the letter will be submitted to the secretary and will be examined for the ACC. If the letter is not appropriate then the letter will be returned to the employee concerned.
    - c. If the letter passes ACC the letter will be immediately given to the chairman to be done ACC back
    - d. If the letter is not appropriate then the letter will be returned to the employee concerned.
    - e. If the letter is viable then the letter will be immediately signed by the head of the general subsection. The signed letter will be submitted back to the general section, the information will be entered on the form suit out and will be stamped immediately and then made a report and the letter immediately sent
    - f. Incoming and outgoing letter reports will be printed based on the contents of the incoming and outgoing letter form and then the report will be stored to the leader.
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3. The mail search process is done by entering mail data in the mail search form. This form consists of two options. First the incoming letter form and the outgoing mail form. Mail searches are conducted based on predefined keywords
4. Analysis of Hardware Needs  
The hardware specifications needed to run the application system are: a). RAM 1 GB, b) MONITOR LCD 17 INCI, c) PROCESSOR CORE I3,d) HD 160 GB
5. Software Needs Analysis  
Software consists of an operating system, a programming language application program and a browser. The software needed to operate this application is:  
Minimal Windows Operational System 8, Mozilla Fire fox 3.5 Google Chrome, Appserv  
Macromedia Dreamweaver 8

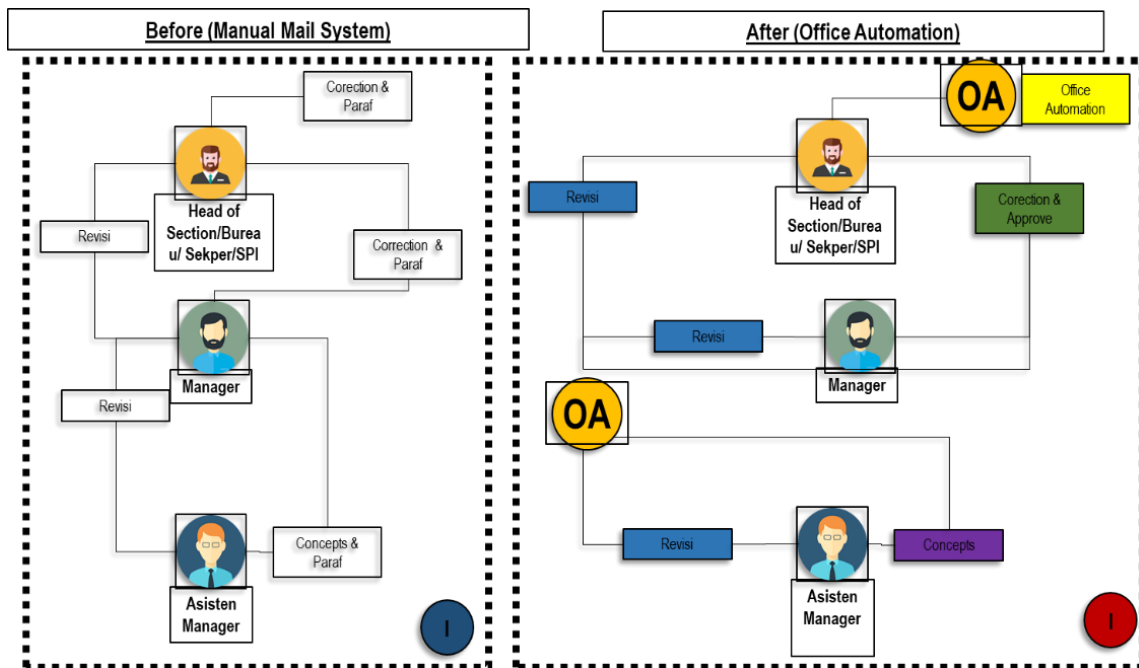
## Decomposition of Proposed System Functions

Decomposition of system functions proposed for the process of data collection of letters on PT. Perkebunan Nusantara can be deciphered with Flow Map. Flow Map is a diagram that shows the flow of data in the form of form forms or information in the form of documentation that flows or circulates in a system. This diagram serves to determine the relationship between entities through the flow of existing documents to all documents originating from the structure until the document is received by the recipient of the document (Kartikasari, 2021). Decomposition of system functions proposed for the process of data collection of letters on PT. Perkebunan Nusantara can be described with flowchart charts and flowcharts as follows:

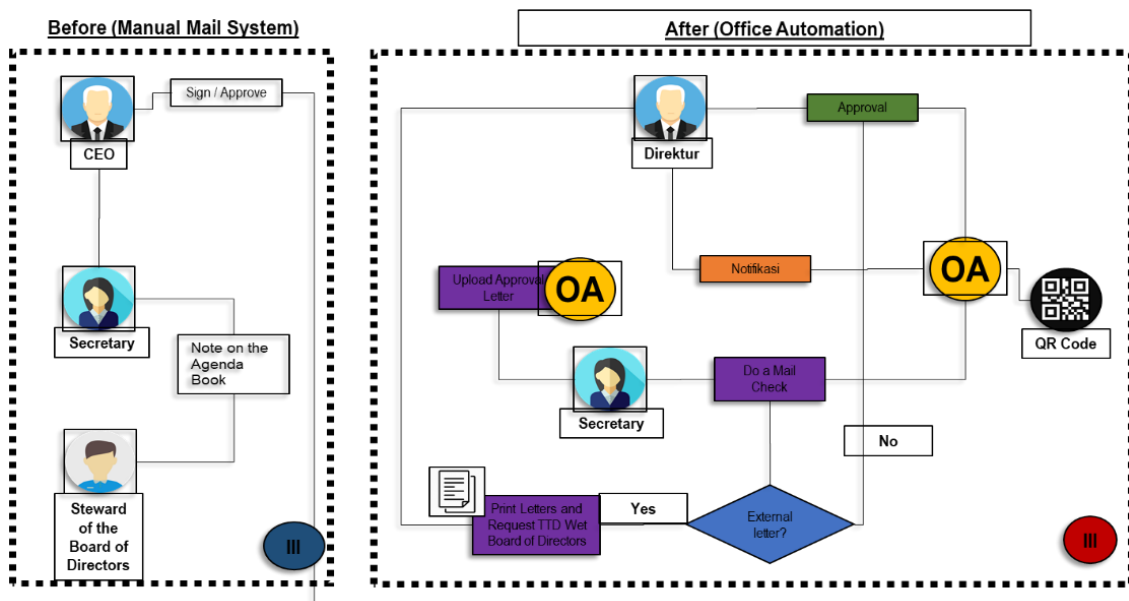


**Figure 10.** Proposed System Function Decomposition Chart

Proposed system structured chart shown by business process:



**Figure 11.** Incoming mail process from bottom organisation



**Figure 12.** Incoming mail process to the top organisation

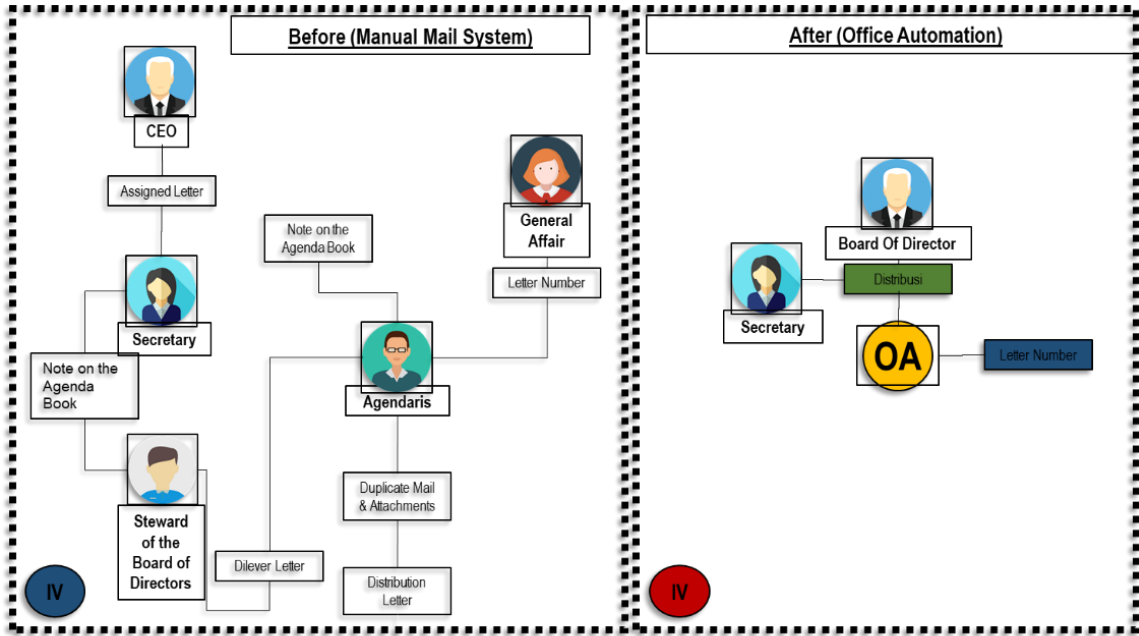


Figure 13. Outgoing mail process from top organisation

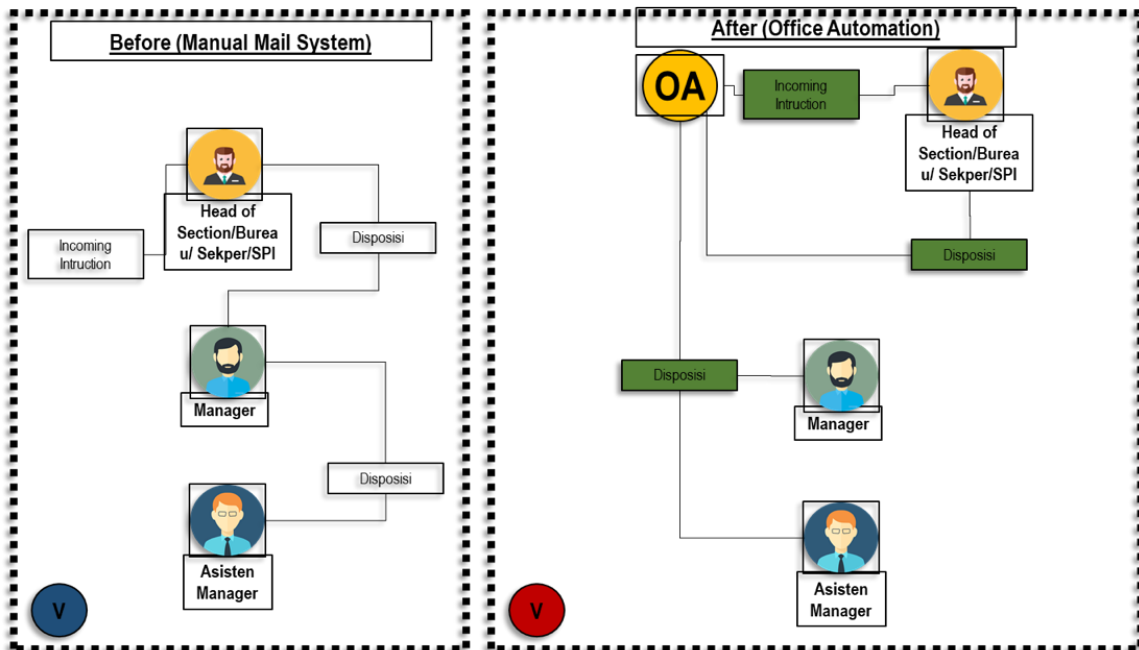


Figure 14. Outgoing mail process to bottom organisation

Screen Design, Data Input Form Design and Login Display Output Form Design.

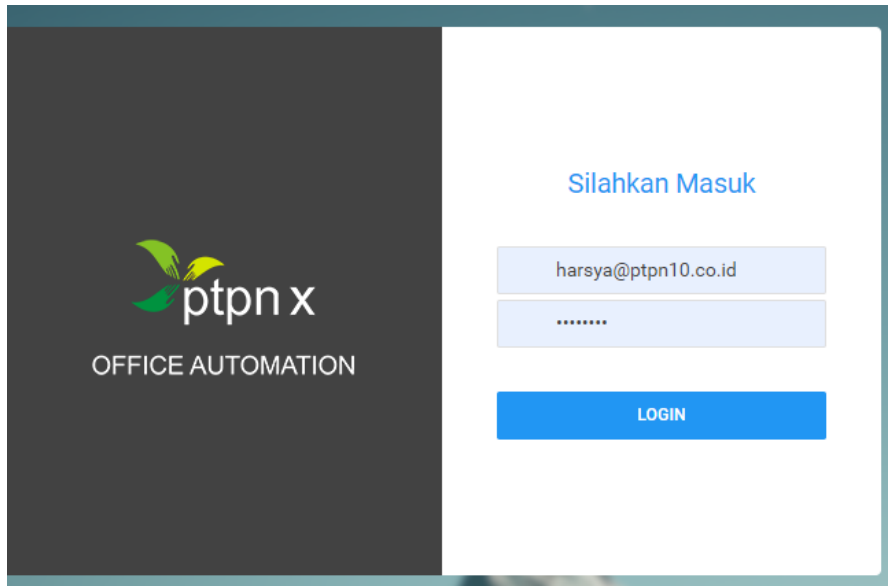


Figure 15. Login view

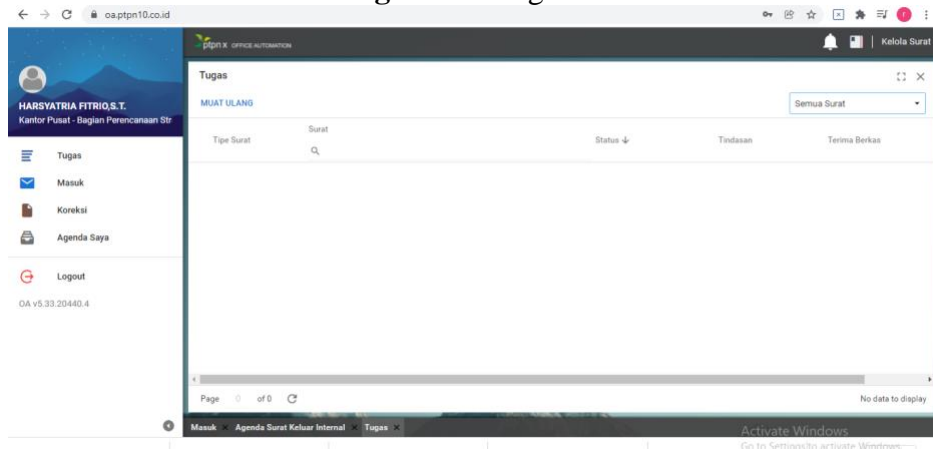


Figure 16. Incoming mail form view

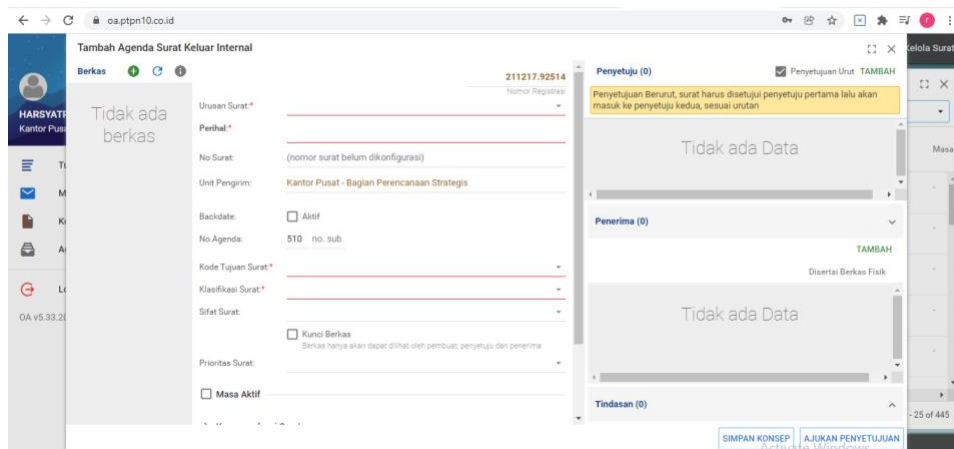
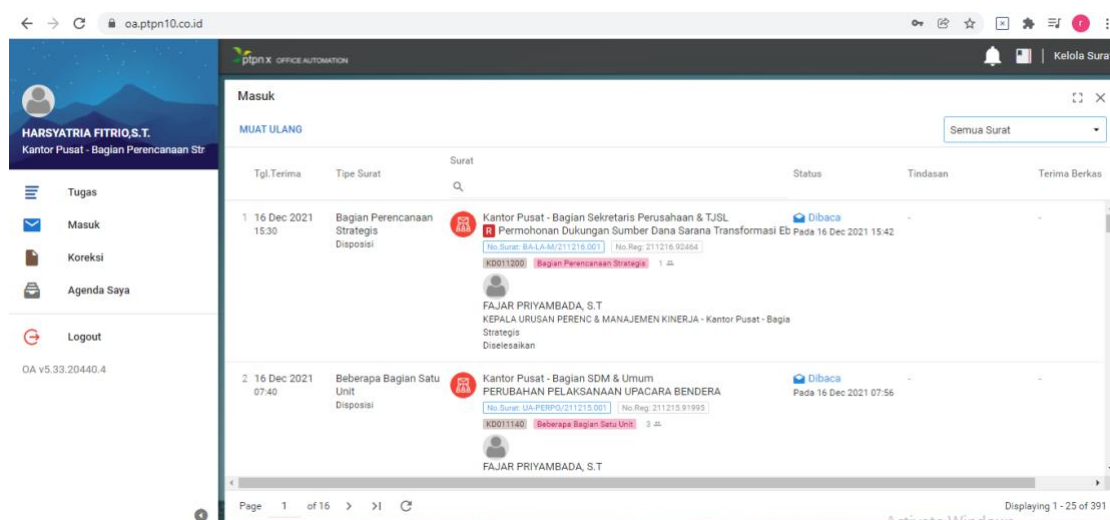


Figure 17. Out going mail form view

## Save Data Screen View



**Figure 18.** Save incoming mail data view

## Conclusion

With the introduction of a web-based totally specific software on PT. Perkebunan Nusantara, all mail administration associated with the processing of records on statistics on PT. Perkebunan Nusantara uses web-based Correspondence application. on this software, the administrator can deal with the paintings of the correspondence brief and efficiently and may be up to date without difficulty. And with this software is predicted to facilitate the sports or activation of the paintings of directors and personnel of PT. Nusantara plantations that require tempo and determination of statistics. The tempo and accuracy of these layout consequences additionally calls for active participation from device users, especially the sphere of implementers who deal with without delay the system designed.

After studying the cutting-edge processing machine of incoming and outgoing mail information, there are barriers that motive problems withinside the technique of processing incoming and outgoing mail information which have been visible before. In this case, you could draw conclusions as follow:

1. Processing incoming and outgoing mail data so far has not been effective and efficient. In making a report there is an error and takes a long time.
2. From the research conducted it turns out that in carrying out incoming and outgoing letters is still not well structured.
3. By using the design of web-based express applications process data accurately and in a timely manner and produce incoming letter reports and outgoing letter reports.

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