

Development of a Local Area Network-Based Filing System for Outgoing and Incoming Letters in the General Service of the Samboja Sub-District

Afrah Dewi Fortuna


Software Engineering Technology,
Agricultural Polytechnic of
Samarinda, 75131, Indonesia
dwiaftah1705@gmail.com

Asep Nurhuda *

Software Engineering Technology,
Agricultural Polytechnic of
Samarinda, 75131, Indonesia,
acep.noor@gmail.com
*Corresponding author

Yulianto

Software Engineering Technology,
Agricultural Polytechnic of
Samarinda, 75131, Indonesia
yulianto@politanisamarinda.ac.id

 Submitted: 2023-02-19; Accepted: 2023-03-05; Published: 2023-05-25

Abstract—Archives are defined as a place to store important records or documents. Archives are generally written documents in any environment that have historical value or an obligation to keep them. Archiving and recording of letters are still done manually which makes finding documents difficult and time-consuming. Therefore, it is necessary to design an application to assist the head of the study program in finding incoming and outgoing mail reports. The Samboja sub-district office has difficulty managing the filing of incoming and outgoing letters. Work at the sub-district office is work that involves a lot of data or information that must be recorded or processed regularly so that everything related to the data or information has a certain use or value so that the archive is needed to facilitate the search process. By storing this data or information, a record is obtained which is called an archive. It can be said that the current filing system is less efficient and effective because incoming mail and outgoing mail data often do not match the incoming mail and outgoing mail data, and all processes are still carried out manually.

Index Terms— System, Archiving, Letters, Samboja Sub-district Office, information.

I. INTRODUCTION

Archiving administration and mail management are very important activities, because with good mail management you can maintain the integrity of the information from a letter or a letter, even though the information is not very useful when the letter is received by the agency/institution/organization, but with good mail management, then the information available in a letter will be stored properly, therefore administration or filing of letters must be done so that the letter is maintained (Hendawan and Ulum, 2017). Letters are a tool used as a vital liaison medium for dealing with parties outside the institution and within the institution (Yulisman et al., 2020).

Archival management is basically an activity aimed at managing all the documents that exist in an organization or agency that can be used to support the organization's activities in achieving its goals (Mutmainnah et al, 2020). Basically, archives are recordings of activities or events in various forms and media in accordance with the development of information and communication technology made and accepted by state institutions, local governments, educational institutions, companies, political organizations, community organizations and individuals in the implementation of social, national, and international life and state (Hunaifi et al., 2019).

Samboja Sub-district Office is a government agency, having its address at Jalan Balikpapan-Handil, Kampung Lama Village, Samboja Sub-district, Kutai Kartanegara Regency. The Samboja sub-district office has the management of community data when managing important documents such as the management of marriage licenses, business licenses, heir certificates, SKCK, and others do archives where the letters are still stored manually in paper form so that in storing the letter data it is certainly not efficient.

For that we need a computerized system that can overcome the obstacles and problems that exist in the office. So that the letters will not be lost and easy to find through the computer system. The archiving system built will help the public service division manage mail archive data. The system is built based on Local Area Network (LAN). Remembering it is difficult and slow internet network at the Samboja Sub-district Office. LAN itself is a computer network that covers the local area (Wess et al, 2013). The advantages of this system can be accessed by service operators and administrators in one Samboja sub-district office network without using the internet network.

II. LITERATURE REVIEW

Research conducted by Gayatri et al. (2021) entitled "Information System for Data Collection and Archiving of Integrated Administration Service Files in Sumbawa

District with the Waterfall Method". The Sumbawa sub-district office is one of the government offices that handles part of the affairs of regional autonomy and carries out general government tasks. In carrying out general government tasks such as recording and archiving files at the Sumbawa sub-district office, it is still recorded in a ledger which is still difficult for staff in the sub-district integrated administration service or commonly known as "PATEN" and it is feared that it will pose a considerable risk to damage and data loss. The purpose of the research is to design and build an Information System for Data Collection and File Archiving for the District Integrated Administration Service (PATEN) in Sumbawa District with the Waterfall Method by Presman. This information system was successfully designed and built using the programming language PHP, HTML, CSS, CodeIgniter Framework, MySQL Database, Sublime-Text Text Editor, and using the Waterfall software development method. The result of the research is a Web-Based Information System for Data Collection and Archiving of Sub-District Administrative Services (PATEN) in Sumbawa District which can manage data effectively and efficiently so as to make reporting easier.

Furthermore, the research conducted by (Prasetyo and Sasongko, 2021) entitled "Web-Based Mail Filing Information System at the Social Service for Women's Empowerment and Child Protection in Blora Regency". The Social Service for Women's Empowerment and Child Protection is an element of implementing government affairs which is under the authority of the Region with the task of assisting in the social sector. The social services carried out by the P3A Social Service are closely related to the management of letter data, which is commonly referred to as a letter archive. However, the letter archives are still manually recorded using handwriting. Therefore, a Web-Based Mail Filing Information System was created which is designed to make it easier to find, manage, and report incoming mail, outgoing mail, and business travel letters. The design of this system uses the Waterfall model with a website-based Object-Oriented Analysis and Design (OOAD) approach, with the PHP programming language, Laravel Framework version 8.0, and MySQL. The system that has completed the development stage is tested, so that the system can be declared to have met the agreed specifications and the system has been successfully.

Research conducted by (Pangestu et al, 2021) entitled "Design and Implementation of Web-Based Health Service Applications in Public Health Centers Using the Laravel Framework". Since the Covid-19 pandemic hit Indonesia, the Mulyaharja Public Health Center has been one of the front lines in providing public health services by complying with health protocols that require the public not to congregate or gather in public places that are prone to being exposed to the Covid-19 virus. With the design and implementation of this Laravel framework-based health-center for health service website, it can help Mulyaharja health-center in providing health services such as providing online health examination

services, providing examination queue numbers, and easier data collection or archiving of health service data. In the design and implementation of this health service website using the laravel framework where laravel is a free web-based open-source PHP framework that is easy to develop. In testing the health service web application, the results of testing on satisfaction and experience consist of 2 tests, the first is user satisfaction testing, namely health workers using a questionnaire as a forum to collect this information and the average result is 4.71% of 17 respondents with a total of 14 questions and testing the quality of the website system using the Google Lighthouse website testing tools using 4 test parameters with the average test results on the Performance parameter score 97.7, Accessibility score 75.1, Best Practice score 93, SEO score 82.

Research conducted by (Yulisman et al, 2020) entitled "Web-Based Application for Archiving Incoming and Outgoing Letters at SMP Negeri 32 Pekanbaru". Archiving incoming and outgoing letters is a very important thing in an organization, especially for institutions such as SMP Negeri 32 Pekanbaru. Archiving letters at SMP Negeri 32 Pekanbaru is still done by writing incoming and outgoing letters in the agenda book and storing letters in the filing cabinet, making it difficult to find old mail archives and often losing letters. The purpose of this study is to find the right solution so that the archiving of incoming and outgoing letters at SMP Negeri 32 Pekanbaru is more effective and efficient by creating an application for archiving incoming and outgoing letters. The method used in this research is the system development model method, namely the Waterfall model. The application design and analysis model use the UML model which is an object-oriented language or OOP (Object Oriented Programming). Making and developing applications using static programming languages, namely PHP and MySQL as application databases. The results of the research on making incoming and outgoing mail filing applications are very helpful and make it easier for SMP Negeri 32 Pekanbaru in archiving incoming and outgoing letters, especially the Administration (School Administration) section because the filing of letters is already stored in the database. The conclusion is that the application is very easy and helps in archiving incoming mail and this letter is evident from user ratings of the application with a value of 92% more effective and efficient.

The last research was conducted by (Sinta Maria and Grasela, 2021) entitled "Information System for Data Archiving Administration Services in Informatics Management Study Program Amik Mahaputra Riau". AMIK Mahaputra Riau At this time the process of archiving administrative service data in Study Programs, in the form of archived correspondence such as, decision letters (SK), structural positions, learning program units (SAP), lecture contracts, certificates, exam questions, test scores, trial requirements, internship reports, and KRS filings are still ineffective because some of the data is still being processed using Microsoft Excel and at the time of submission of teaching and learning process materials

such as SAP data (Learning Events Unit) and lecture contracts, the data collection is still in paper form as proof of handover from the lecturer. To overcome these problems, therefore the author wants to create a web-based application system, because with this system it is hoped that it can help the AMIK Mahaputra Riau campus, especially study programs in the data archiving process in the form of lecturer and student data, the data search process and at the time of processing information delivery.

While in this study the system was built for archiving public services in Samboja Sub-district. This system will also change the management of public service administration in Samboja sub-district to be computerized with a LAN-based system. Remembering it is difficult and slow internet network at the Samboja Sub-district Office. LAN. The advantages of this system can be accessed by service operators and administrators in one Samboja sub-district office network without using the internet network.

The system was built using the waterfall system development method, starting from analysis, design, to testing. Meanwhile, testing the system that was built using the usability testing method, tested the success of using this system in Samboja Sub-district.

A. Digital Archiving

Digital archives are records created or stored in electronic form, either analog or digital. Meanwhile, physical archives are usually in the form of paper that has been printed from electronic data or written manually. The process of converting archives to paper sheets or physically into electronic data can also be done and is called archive digitization. Digital archives are now much more in demand, especially during the convenience of today's technology. Archives in digital form are considered more efficient than physical archives. This archive is also less risky and damaged, in contrast to physical archives (Pratiwi, 2017).

B. Mail Archive

Mail Archive is a process and a way in which information in the form of documents is stored securely for a certain period of time determined by law. Documents can be archived in a variety of formats and across multiple devices. Even if a document is inactive, it can be reactivated (Pancaningsih, 2016); (Sugiarto, 2018).

C. Public Service

Service is an effort to serve the needs of others by obtaining rewards (money) or services. Service is the process of meeting needs through the activities of other people directly. These needs include physical needs, social needs, and psychological needs. Service is an action taken to meet the needs of others (consumers, customers, guests, clients, patients, passengers, and others). Whose level of satisfaction can only be felt by the person serving or being served. Employee service behavior is an individual action (employee) to meet the

needs of others (guests or consumers). Optimal service will provide satisfaction to the other person. The benchmark of good service through meeting the needs and desires of guests. Assessment of service quality is determined by guests as users of these services (Rahmadana et al, 2020).

D. Database

Database or database is a collection of data that are interconnected with one another, stored on computer hardware, and used by software to manipulate it. The data needs to be stored in the database for the purpose of providing further information. Creating databases and tables using MySQL. While the design of the database design that describes the relationship between tables and their relationships uses an Entity Relationship Diagram (ERD) (Indrajani, 2015).

E. Visual Basic .NET

Visual Basic .NET (VB.NET) is Microsoft's object-oriented programming language. This programming language has evolved from Visual Basic 6 (VB6) to meet the increasing need for easy web services and web development (Smith, 2017).

F. Local Area Networks (LANs)

Local Area Network commonly abbreviated as LAN is a computer network whose network only covers a small area, such as campus computer networks, buildings, offices, in homes, schools or smaller ones. Currently, most LANs based on IEEE 802.3 Ethernet technology use switch devices, which have data transfer rates of 10, 100, or 1000 Mbit/s. In addition to Ethernet technology, currently 802.11b technology (or so-called Wi-fi) is also often used to form LANs. Places that provide a LAN connection with Wi-fi technology are usually called hotspots (Irawati et al, 2018). On a LAN, each node or computer has its own computing power, in contrast to the concept of a terminal dump. These resources can be data or devices such as printers. On a LAN, user can also communicate with other users using the appropriate application (Syafrazil, 2020).

G. Network Topology

Computer network topology is a method or method used to connect one computer to another. The structure or network used to connect one computer to another can be wired or wireless (without cables). Computer network topology serves to find out how each computer or host in a computer network can communicate with each other. The following describes the types of network topologies (Syafrazil, 2020).

H. Unified Modeling Language

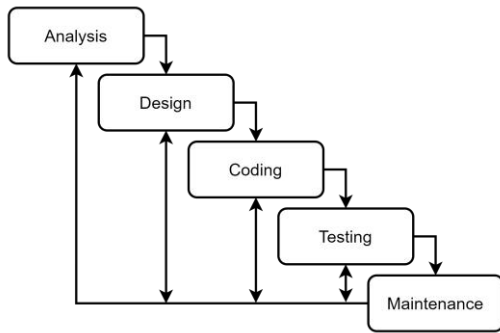
Unified Modeling Language (UML) is a standard language that is widely used in the industrial world to define requirements, create analysis and design, and describe architecture in object-oriented programming. UML emerged because of the need for visual modeling to specify, describe, build, and document software systems.

UML is a visual language for modeling and communicating about a system using diagrams and supporting text (Dathan, & Ramnath, 2015).

III. RESEARCH METHODOLOGY

A. Research Procedure

The research method used is the waterfall model. The research method is the steps that will be taken by the author to make it easier to conduct research can be seen in picture 1.



Picture 1. Waterfall Model

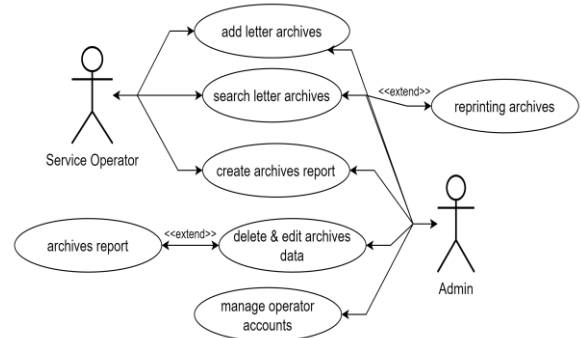
Description:

1. Analysis
Needs Analysis, collecting complete requirements and then analyzing and defining the needs that must be met by the program to be built. This phase must be done completely to produce a complete design. In this research, the analysis was carried out by conducting interviews and direct observations to the Public Service Division of Samboja sub-district. The results of the analysis will be described in the form of use case diagrams, activity diagrams, class diagrams and server diagrams.
2. Design
System Design, namely the design is done after the complete needs are collected. The design stages carried out are designing databases, network topologies, and application interfaces,
3. Coding
Implementation or coding, the program design is translated into codes using a predetermined programming language. In this study the coding will be carried out with the VB.Net 2012 application and SQL Server connection, as well as installing the application to the server and client.
4. Testing
Testing, unification of program units and then tested as a whole (system testing). The tests that will be carried out in this study use the usability testing method.
5. Maintenance
Maintenance, operating the program in its environment and carrying out maintenance, such as adjustments or changes due to adaptation to the actual situation. However, this research is limited not to the maintenance stage.

B. Design

1. Use Case Diagram

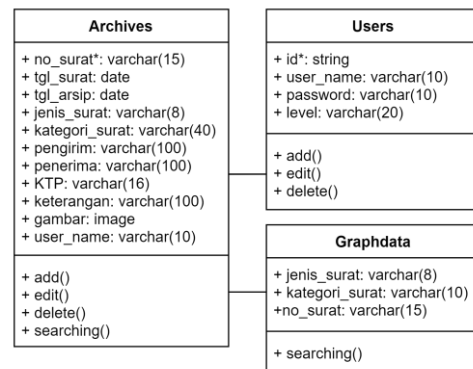
general service operators and admins or system administrators. General service operators can archive incoming and outgoing mail, but cannot delete or modify archived mail, because that is the authority of the system administrator. Operators can also search for the required archives and print reports of incoming and outgoing mail recaps. Meanwhile, the admin can perform all the services performed by the operator in full, including adding new operators and new admins. As shown in picture 2.



Picture 2. Use Case Diagram

2. Class Diagram

User classes, archives, and graph data. Users function to perform operator and admin data processing functions. The archive functions to perform the function of processing incoming and outgoing mail archive data. While the data graph serves as a function that can be called to display reporting data, as shown in picture 3.



Picture 3. Class Diagram

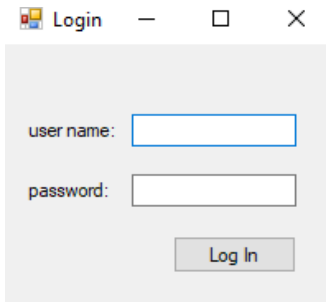
IV. RESULT AND DISCUSSION

The Samboja Sub-district Office is a government agency, having its address at Jalan Balikpapan-Handil, Kampung Lama Village, Samboja sub-district, Kutai Kartanegara Regency. The Samboja sub-district office has the management of community data when managing important documents such as the management of marriage licenses, business licenses, heir certificates, SKCK, and others. The archiving system built will help the public service division manage mail archive data. The system is built based on Local Area Network (LAN). The

advantages of the system can be accessed by service operators and administrators in one Samboja sub-district office network. The implementation stages of system development are carried out starting from the implementation stage of the database (database), GUI application to the implementation of the network system.

A. Login Page

Users can login as admin or operator depending on the type of account level registered in the system. If the operator forgets the password or username, you can contact the admin. Login page can be seen in picture 4.



Picture 4. Login Page

B. Menu Form

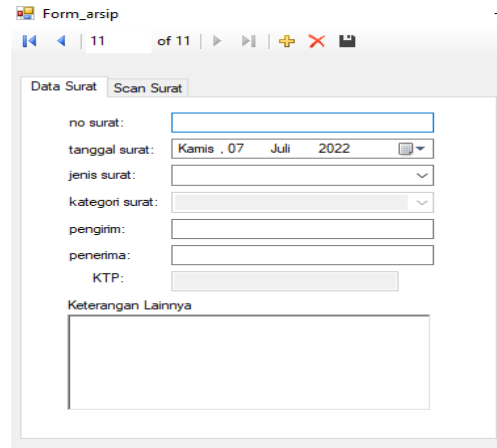
The main menu interface design. There are four services in the main menu, namely archiving services, archive search, reporting, and user data management. Special user data management can only be accessed by admin. The menu form can be seen in picture 5.



Picture 5. Menu Form

C. Archive Data Form

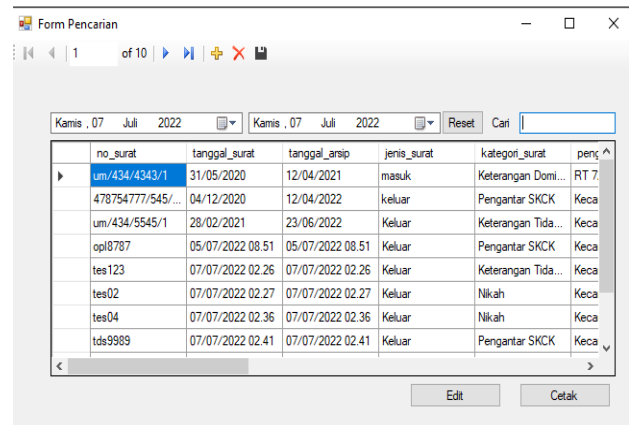
The graphic menu page displays a layout for the user, where the user can see the percentage of the district's industrial data. the graphic page can be seen in there are several text fields and drop downs for mail archiving information. Incoming and outgoing mail can be archived digitally in this form. In this form, the operator can also scan an image of the physical evidence of the letter that you want to archive. The archive data form can be seen in picture 6.



Picture 6. Archive Data Form

D. Archive Search Form

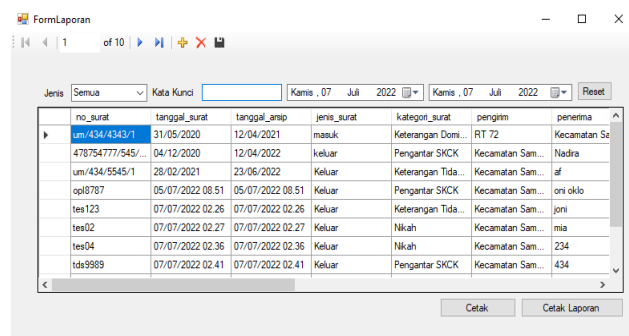
Operators can search by keyword or letter category. The operator can also print the required mail archive. The edit and delete buttons will only appear if logged in as admin. This button is used to change data or delete incorrect data. The archive search form can be seen in picture 7.



Picture 7. Archive Search Form

E. Archive Report Form

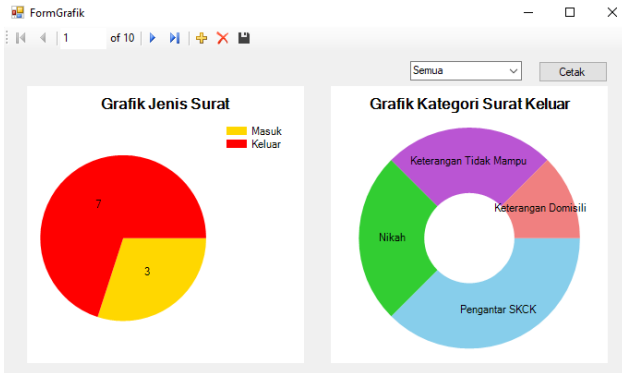
Reports can be printed as needed based on the time period of months or years, can also be based on categories and types. Operators and admins can also print reports in graphical form. The archive report form can be seen in picture 8.



Picture 8. Archive Report Form

F. Chart Form

Form displays a pie chart of the types and categories of mail that have been archived. The user can view the pie chart for each year by selecting on the year menu. Users can also print these two pie charts as reports. The graphic form can be seen in picture 9.



Picture 9. Chart Form

G. Archive Report

The output of the recap of the letter archive report. The letter archive displays several records that have come needed by the leadership. Archive reports can display reports on certain types of letters and at certain time frames. Reports can also display the search results of the keywords required by the user. The archive report is validated or signed by the village head. The archive report can be seen in picture 10.

The screenshot shows a document header for 'PEMERINTAH KOTA KABUPATEN KUTAI KARTANEGARA, KECAMATAN SAMBOJA, DESA BUKIT RAYA'. Below the header is a table titled 'LAPORAN ARSIP SURAT' with columns for 'No. Surat', 'Tanggal Surat', 'Jenis Surat', 'Kategori Surat', 'Pengirim', and 'Penerima'. The table contains several rows of data.

Picture 10. Archive Report

H. User Data Management Form

This form can only be accessed by administrators. Admins can add, delete, change access rights from other admins or operators. Admins can also change the login information of other users. The user data management form can be seen in picture 11.

The screenshot shows a window titled 'Form Administrator' with a search bar 'Cari User' and a table of users. The table has columns for 'user_name', 'password', and 'level'. Below the table are buttons for 'Tambah', 'Simpan', and 'Hapus'.

user_name	password	level
riko	123	administrator
dodol	123	operator
eny	4343	administrator

Picture 11. User Data Management Form

I. Testing

Usability testing is a live test of an application in an environment that cannot be controlled by the developer. The trial was conducted in the form of a simple questionnaire filled out by employees of the Public Service Division of the Samboja Sub-district Office.

In this study, the trial was conducted on 3 civil servants and 2 honorarium employees, where 10 questions were presented that referred to the filing application system. Questionnaire questions are made as simple as possible so that ordinary people can also fill them in. These questions are formulated according to the design standards of the system development described in Table 1.

Table 1. Testing Result

Statement	Answer				Σ
	SD	D	A	SA	
Attractive app display design		1	4		5
The application can be opened and accessed easily			5		5
Features The main display menu is easy to understand		2	3		5
Filing data for incoming/outgoing letters can be done easily		1	3	1	5
Scan images/ documents can run well			4	1	5
The letter search system can display the expected files			5		5
The reporting system can display information as expected			1	4	5
User account management runs well			2	3	5
The network connection between application operators can run smoothly			3	2	5
The application can run lightly and quickly			5		5
TOTAL		4	35	11	50

Description: SD (Strongly disagree), D (disagree), A (agree), SA (Strongly agree)

V. CONCLUSION

Based on the results and discussion in this study, it can be concluded that the public service administration management system in the Samboja sub-district has been successfully built into a computerized system with a LAN-based system. This system helps facilitate the general service division in making letters quickly and effectively and makes it easier to archive letters. Moreover, the development of the filing system is carried out with the stages of developing the waterfall system, starting from analysis, and design, to testing. Furthermore, the star topology sharing arrangement has been successfully carried out in the sub-district office LAN network so that services can be carried out by several service operators in an integrated system, and the results of testing the system built with the usability testing method yielded a percentage value of 71.33% which stated that this application was well received.

REFERENCES

- Dathan, B., & Ramnath, S. (2015). The Unified Modelling Language. In *Object-Oriented Analysis, Design and Implementation* (pp. 427-453). Springer, Cham.
- Gayatri, N. A., Ismiyarti, W., & Khair, S. (2021). Sistem Informasi Pendataan dan Pengarsipan Berkas Pelayanan Administrasi Terpadu Kecamatan (Paten) di Kecamatan Sumbawa dengan Metode Waterfall. *Jurnal Informatika Teknologi Dan Sains*, 3(1), 301-307.
- Hendrawan, M. R., & Ulum, M. C. (2017). *Pengantar Kearsipan: dari isu kebijakan ke manajemen*. Universitas Brawijaya Press.
- Hunaifi, N., Hikmah, A. B., & Nurhasan, A. (2019). Perancangan Sistem Informasi Pengarsipan Dan Permohonan Surat Online "Sipadu" Di Tingkat Kecamatan Berbasis Web. *JUST IT: Jurnal Sistem Informasi, Teknologi Informasi Dan Komputer*, 10(1), 40-51.
- Indrajani, (2015). *Database Design*. Elex Media Komputindo.
- Irawati, I. D., Yovita, L. V., & Wibowo, T. A. (2018). *Jaringan Komputer dan Data Lanjut*. Deepublish.
- Mutmainnah, S., Siregar, E., Sitanggang, G., & Tanjung, E. (2020). *Manajemen Arsip Perguruan Tinggi*. Yayasan Kita Menulis.
- Pancaningsih, S. (2016). *Manajemen Kearsipan*. Orbith: Majalah Ilmiah Pengembangan Rekayasa dan Sosial, 12(3).
- Pangestu, P. H., Tulloh, R., & Adiati, R. (2021). Perancangan Dan Implementasi Aplikasi Pelayanan Kesehatan Puskesmas Berbasis Web Menggunakan Framework Laravel (studi Kasus Puskesmas Mulyaharja). *eProceedings of Applied Science*, 7(5).
- Prasetyo, S. D. P., & Sasongko, P. S. (2021). Sistem Informasi Pengarsipan Surat Berbasis Web Di Dinas Sosial Pemberdayaan Perempuan Dan Perlindungan Anak Kabupaten Blora. *Prosiding SNST Fakultas Teknik*, 1(1).
- Pratiwi, T. (2017). *Konsep Pengelolaan Arsip Elektronik*. Al Maktabah, 2(2).
- Rahmadana, M. F., Mawati, A. T., Siagian, N., Perangin-angin, M. A., Refelino, J., Tojiri, M. Y., ... & Bahri, S. (2020). *Pelayanan Publik*. Yayasan Kita Menulis.
- Sinta Maria, G. (2020). Sistem Informasi Pengarsipan Data Layanan Administrasi di Prodi Manajemen Informatika Amik Mahaputra Riau. *Jurnal Intra Tech*, 4(1), 53-66.
- Smith, J. A. (2017). *Microsoft Visual Basic Programs to Accompany Programming Logic and Design*. Cengage Learning.
- Sugiaro, A. (2018). *Manajemen kearsipan modern*. Gava Media
- Syafrizal, M. (2020). *Pengantar jaringan komputer*. Penerbit Andi..
- Syafrizal, M. (2020). *Pengantar jaringan komputer*. Penerbit Andi.
- Wess, J., Dean, T., & Andrews, J. (2013). *Network+ Guide to network 7th*. *Boston Comptia*.
- Yulisman, Y., Wahyuni, R., & Irawan, Y. (2020). Aplikasi Pengarsipan Surat Masuk dan Surat Keluar Berbasis Web pada SMP Negeri 32 Pekanbaru. *Jurnal Teknologi Sistem Informasi dan Aplikasi*, 3(4), 252-264