

Development of Microsoft Access-Based Electronic Records Management Information System (E-Archives) in Postgraduate

Yohana Endang Trirahayu[✉], Sri Sumartiningsih, Wendro Laksito

Universitas Negeri Semarang, Indonesia

Article Info

Article History:

Received August 8, 2023

Accepted October 29, 2022

Published December 23, 2022

Keywords:

design, information systems, e-archives, Microsoft Access

Abstract

application design, testing and implementation. The results of this research are application program design, and applications that have been designed can be used as an alternative to solving problems in Postgraduate. The use of a design system based on Microsoft Access is expected to help the office administration section to be able to manage records effectively and efficiently by using electronic media in managing records, the benefits of speed and convenience will be obtained.

[✉] Correspondence address:

Kampus Unnes Jl. Kelud Utara III Semarang 50237, Indonesia

E-mail: yohana@mail.unnes.ac.id

INTRODUCTION

1.1 Background Problem

The progress of information technology is currently growing rapidly, and has a major influence on various aspects of life, starting from the social strata, both individuals, organizations and other agencies who are also moved to move forward and use it.

In Postgraduate, the filing information system in the office can be said to be inefficient because there are still many applications of archiving information systems that are still conventional, namely storage in filing cabinets, and recording to books so that the accuracy can still be said to be poor. In terms of space, it requires adequate space for equipment such as filing cabinets, space and filing shelves. Meanwhile, in terms of time, the search for documents was less tidy. In terms of cost, the need for care and maintenance of archive storage.

The larger and more diverse the data or information collected in the corporate environment, the better management of this information is required. Likewise with information about archives in an office, it is necessary to have records management so that existing records can be managed properly. Archive management at the Postgraduate Program at Semarang State University can still be said to be not optimal, due to weak human resources, knowledge of archive handling, technology, or lack of awareness of the importance of archives.

Therefore, researchers want to provide a solution for the Postgraduate in the form of developing a digital archive system that can overcome problems regarding archive management. Benefits in the application of information technology in archives management, namely the density factor of archive storage can be efficiency in the use of office space, ease of access and finding when needed, proper document security according to the interests and elasticity of the filing system designed with consideration of the expansion of storage systems at present and in the future. will come. The

application system that will be created temporarily can be applied to the general administration section of the Postgraduate by using database testing using Microsoft Access.

The use of Microsoft Access is based on the various advantages it has which is also because it is a program for designing databases with access-based archiving system stages that can create a system for developing applications precisely, in a sophisticated way, and offers various conveniences such as creating forms, creating reports, data management, data filtering and others.

With the development of this system, it is hoped that archive management will not only be stored, but will also regulate storage procedures. Making it easier to re-invention can improve the previous system so that it can improve work and make it easier for STSF to complete its work so that it is more effective and efficient. So in preparing this research proposal the author chose the title "Development of Microsoft Access-Based Electronic Records Management Information Systems (E-Archives) in Postgraduate"

1.2 Problem Formulation

Based on the background that has been described, the formulation of the problem in this study is:

1. How is the concept of processing the filing system applied by the UNNES Postgraduate?
2. What are the problems faced by Postgraduate UNNES in implementing archival information systems?
3. How to design an electronic archive management information system (e-archive) for Microsoft Access-based dynamic archives?

1.3 Research Objectives

Based on the background and formulation of the problems that have been described, the objectives of this research are:

1. Knowing the description of the concept of managing the filing system applied by the UNNES Postgraduate.
2. Knowing the problems faced by Postgraduate UNNES in implementing companies in implementing archival information systems.
3. Developing an electronic records management information system (e-archives) at UNNES Postgraduate from a conventional system to a digital system based on Microsoft Access.

1.4 Research Contribution

The results of this study are expected to contribute to:

1. Institutional development, namely contributing to administrative management, increasing managers' insights about Microsoft Access-based electronic archive management.
2. Institutional needs in an effort to improve service quality during the Covid-19 pandemic
3. Can more quickly find the archives needed by the system

LITERATURE REVIEW

2.1 Relevant Prior Research

Research related to the topic of Development of Microsoft Access-Based Electronic Records Management Information Systems (E-Archives) has been carried out by several researchers, including Ghazi & Irfan (2018); Aryani et al. (2019); Fitriya (2019); Iswandi et al., (2019); And Rahmatullah et al. (2019).

Ghazi & Irfan (2018) in his research entitled "Development of a WEB-Based Archive Management Information System and Letter Disposition at BPN Kota Padang". This study designed an information system for archive management and disposition management using a web-based prototyping method with the PHP

(PHP Hypertext Preprocessor) programming language based on the codeigniter framework, JavaScript, JQuery. While the database used is MYSQL. The system design involves Use Cases, Activity Diagrams, Context Diagrams, Flowmaps, Sequence Diagrams and ERD. This system also uses aliases in addressing by applying htaccess to the actual address file as one of its security systems. This information system involves five users, namely admin, head of affairs, head of office, head of section, and messenger. These five levels of registered users have personal accounts to be able to enter the system such as username and password with MD5 encryption. Because it is web-based, this filing application has the ability to be accessed anywhere, the Head of Affairs can manage user logins so that they can add, edit, delete and save incoming and outgoing mail, can search incoming and outgoing mail based on sender and subject, search results can be ordered according to the letter ID or date of the letter, and can print reports. The results obtained from the implementation of this letter filing application are to make it easier for Administrative officers to manage the filing of letters that used to be manual and are now computerized, as well as greatly assisting employees in storing letters at the Padang City BPN.

Aryani's research (2019) entitled "Implementation of Records Management Information Systems at the Faculty of Science and Technology, University of Jambi". This study describes the Faculty of Science and Technology, University of Jambi as an institution engaged in education, currently using computer technology in document management. However, this technology has not been used optimally. This can be seen from the method of storing faculty

document archives which is still done manually by education staff. At the Faculty of Science and Technology, documents are stored in filing cabinets and/or in computer folders which are separated by type of document. As a result, there are obstacles in accessing documents, where educational staff must first dismantle the archive folder to find the documents needed. In addition, archival documents in the form of paper accumulate in the room, which will eventually require a lot of space. To overcome this problem, the solution taken is to develop a web-based records management information system. This archive management information system was developed using the Laravel framework with the software development life cycle (SDLC) development method. The results obtained from this system development activity are an archive management information system for the Faculty of Science and Technology which can be accessed at <https://arsip.fst.unja.ac.id> for direct use in data or document storage, and can increase effectiveness in document processing. To overcome this problem, the solution taken is to develop a web-based records management information system. This archive management information system was developed using the Laravel framework with the software development life cycle (SDLC) development method. The results obtained from this system development activity are an archive management information system for the Faculty of Science and Technology which can be accessed at <https://arsip.fst.unja.ac.id> for direct use in data or document storage, and can increase effectiveness in document processing. To overcome this problem, the solution taken is to develop a web-based records management information system. This archive management

information system was developed using the Laravel framework with the software development life cycle (SDLC) development method. The results obtained from this system development activity are an archive management information system for the Faculty of Science and Technology which can be accessed at <https://arsip.fst.unja.ac.id> for direct use in data or document storage, and can increase effectiveness in document processing. This archive management information system was developed using the Laravel framework with the software development life cycle (SDLC) development method. The results obtained from this system development activity are an archive management information system for the Faculty of Science and Technology which can be accessed at <https://arsip.fst.unja.ac.id> for direct use in data or document storage, and can increase effectiveness in document processing. This archive management information system was developed using the Laravel framework with the software development life cycle (SDLC) development method. The results obtained from this system development activity are an archive management information system for the Faculty of Science and Technology which can be accessed at <https://arsip.fst.unja.ac.id> for direct use in data or document storage, and can increase effectiveness in document processing.

Subsequent research conducted by Fitriya (2019) with the research title "Shrinkage as One of the Functions of Archive Management at the Semarang Religious Training Center". This research was conducted to describe the process of depreciating inactive archives and identify the obstacles faced by the Administrative Section at the Semarang Religious Education and Training Center. The research method used is qualitative,

in which the researcher is directly involved as a research instrument. In this study, the method used is qualitative. One characteristic of the qualitative method is that the researcher is directly involved as a research instrument. Observation, interviews and documentation are the data collection techniques used. From the results of the research that has been done, it is found that archive depreciation activities are carried out in the Archives Unit (Administrative Section) with 3 stages, namely the transfer of archives, submission and destruction. The obstacles faced are the lack of facilities and infrastructure, lack of support from leaders and lack of human resource capabilities.

Iswandi et al., (2019) conducted a study entitled "Archive Management System at MTS Aulia Cendikia Palembang". This research examines electronic archives that require a technology that can store records, such as computers and applications to manage them. Electronic archives emerged as a manifestation of the development of information technology and the answer to the importance of managing records in an institution, be it government agencies, education, libraries, companies, etc. The purpose of this research is to find out how archives are managed, archive storage media, and how to retrieve archives at MTS Aulia Cendikia. The research method used is descriptive qualitative research method. Data collection techniques were carried out by direct observation and interviews with archive managers at MTS Aulia Cendikia. The results obtained are that at MTS Aulia Cendikia it is still managed manually, where incoming and outgoing textual archives are stored on special shelves that are labeled with names to make it easier to retrieve archives. Electronic archives in the form of student data,

stored in the EMIS (Education Management Information System) application.

Rahmatullah et al. (2019) conducted a study entitled "Implementation of Web Push Notification on Archive Management Information Systems Using PUSHJS". The problem examined in this research is workers who sometimes do other work on the computer so that the archives are not controlled. The application of Web Push Notification can display website-based notifications even if you don't open the web browser directly or in a minimized condition. Web Push Notification is a notification mechanism using Javascript on a web browser. This feature is available in the HTML5 Push API by using a Push Service or Messaging server which sends notifications to a subscribed web browser without opening the website so that it can broadcast messages and the HTML5 Notification API does not require a Push Service or Messaging server but must open the website, but it is not yet supported all web browsers so that this paper discusses the Implementation of Web Push Notification on an archive management information system using PushJS, the development method used is Rational Unified Process (RUP). Notification technology that is suitable for web-based records management information systems is the HTML5 Notification API because it will not send the same notification to all users. However there is no behind the scenes process so it won't run automatically, this problem is solved by using AJAX by taking JSON and then running it repeatedly on a web browser and minimizing clashes between web push notification scripts in multi tab windows or web browser windows. The test results show that the application of Web Push Notification technology in the Archive Management Information System

can assist users in managing large number of archives and the use of AJAX affects the speed of web access.

Several studies that have been carried out by previous researchers can be concluded that electronic archives are needed by the world of offices. The amount of work sometimes makes archive storage not stored properly. There needs to be good archive management so that no data is lost. Research related to Microsoft access-based electronic archives has not been carried out at the UNNES Postgraduate Program.

2.2 Theoretical Basis

System Definition

In general, the system can be defined into 2 senses, namely systems that emphasize procedures and systems that emphasize components or elements. System is a general system has several components that are interconnected and work together to achieve a goal.

Definition of Information

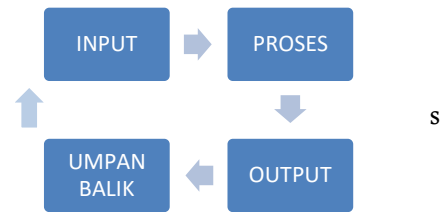
Data is material or raw material that does not have meaning or does not have a direct effect on the user so that it needs to be processed to produce something more meaningful.

Information is the result of processing data obtained from each element of the system that has been processed into a form that is easier for recipients to understand and can be in the form of facts, a useful value.

Information Cycle

Data that is still in the form of raw materials if it is not processed then the data will not be useful. Data can be useful and produce

information if it is processed through a model. The model used to process the data is called the data processing model or better known as the data processing cycle(Kristanto, 2008).



Definition of Information Systems

The information system is a system that exists within an organization that meets the needs of daily transaction processing, supports managerial operations and strategic activities from an organization and certain external parties with the necessary reports.(Zakiyudin, 2012).

Information System Components

In an information system, there are components such as:

- Hardware includes physical devices such as computers and printers.
- Software (software) or program, which is a set of instructions that enable hardware to be able to process data.
- Database, is a collection of tables, relationships and others related to data storage.
- Procedure, is a set of rules that are used to realize data processing and generate the desired output.
- Personnel or people, are all parties who are responsible for the development of information systems,
- Computer network and data communication is a connecting system that

allows resources to be shared or accessed by a number of users.

Definitions of Archives and Archives

The term archive or in Dutch is called archief, in English it is called archive which comes from the Greek, namely "arche" which means beginning. Then from the word "arche" developed into the word "ta archia" which means notes. Sutarto inside John (2006) said archives as a collection of documents that have certain uses, are stored systematically, and can be found again quickly. GR Terry in Yohannes (2006) archiving is placing papers in proper storage according to predetermined rules in such a way that any paper if needed can be found easily and quickly.

Archive Types

Archive forms vary and several types of archives can be distinguished, namely:

Archives by value or use:

1. Archives are valuable information
2. Records of administrative value
3. Archives are of historical value

Archive by function:

1. Dynamic archives are archives that are used directly in the activities of the archive

creator and are stored for a certain period of time.

2. Static archives are archives that are no longer used directly in daily office activities.

Purpose of Archive Storage

Archive storage purposes (Haryadi, 2009) is as a center of memory and information if

files are required as information; provide data to employees who need data regarding the results of activities and work in the past; provide vital information, in accordance with statutory provisions.

Electronic Archives

Electronic filing systems basically have the same concept as conventional filing techniques. If the conventional filing has a cabinet that physically functions to store important documents owned by the company, then the electronic filing system has a virtual cabinet which contains virtual folders or folders. Furthermore, the folder will contain archive sheets that have been converted into image files (*.bmp, jpg, etc.) or documents (*.doc, txt, etc.).

Table 1.

Component	Conventional Archives	Electronic Archives
Cabinet	In the form of shelves or filing cabinets that are made physically	In the form of a virtual cabinet created with a database
Folder	In the form of a physical folder to store archive sheets	In the form of a virtual folder or folder to store document files
files	Hard copy letters	Sheets of letters that have been transferred into image/text files

Computer-based electronic archives have several conveniences, including:

1. Easy to operate
2. Interesting view
3. Document search facility
4. Recording of the physical location of documents
5. Picture and sound facilities
6. Have accuracy in data security
7. File condition report
8. Connected to a computer network

Benefits of Electronic Records Management

Some of the benefits of using an electronic management system that encourage most organizations to implement electronic records management include:

1. Quick to find and allows utilization of archives or documents without leaving the desk.
2. Indexing that is flexible and easy to modify based on the procedures developed will save effort, time and costs.
3. Search in full text, by searching files based on keywords or file names and finding them in the form of full text documents.
4. It is unlikely that the file will be lost, this is spread because we can only see it on the monitor screen or print it without being able to change it.
5. Facilitate accessibility and ensure accountability.
6. Archiving digitally, so that the risk of damage to paper documents or blurring due to age can be minimized because they are stored digitally

7. Easier, faster and more accountable supervisory management towards good governance

8. It's easy to recover data, by backing up data onto a compatible storage media.

Microsoft Office Access

Microsoft Office Access is a relational data-based processing program (a collection of information that is interconnected and has a specific purpose), which is sophisticated with existing ease of use such as data management, form creation, report generation, and full support for processing various types of databases with operation within Open Database Connectivity (ODBC) and ActiveX Data Objects (ADO) technology that makes Microsoft Office Access the "default" database in Windows operating systems.

In that file all objects associated with the database, including all tables are stored. The following features are included in Ms-Access, namely:

a. Table

Tables are a set of places to place, store, and modify data in an Access database.

b. Queries

Queries are commands to process data. MS Access is a database whose queries can be saved, so if you want to use it again you don't have to bother rebuilding it but you can run it right away.

c. Forms

Form is an interface or liaison between MS Access and its use. The purpose of this form is so that people who process data from MS Access do not need to enter the Ms database. Access, but only from the form created.

d. *Report*

Report is a facility for displaying data in the form of reports that are ready to be printed. With reports, information on the results of data processing through queries executed on forms can be displayed as well as possible and as informative as possible. Thus the value of the information can be more easily understood by others.

METHOD

3.1 Research Design

Design is used as planning, drawing and making sketches or arrangements of several

separate elements into a unified whole and functioning properly and correctly. Which aims to explain how the process of a filing system input is processed in the information system to find out the flow of data flowing in Microsoft Access.

3.2 Types and Sources of Data

The type and research approach used is descriptive qualitative research. Qualitative descriptive which reveals events or facts, circumstances, phenomena, variables and circumstances that occur during research by presenting what actually happened.

Table 2. Table of Research Stages

No	Research Stages	Implementation Description
1	Potential and Problems	A preliminary study was conducted to collect information about the condition of records management at the UNNES Postgraduate Program.
2	Data collection	Data was collected through document studies, observations, questionnaires and interviews related to records management at the UNNES Postgraduate Program.
3	Data analysis	After the data collection stage, data analysis was carried out
4	Conclude	The results of data analysis are then used as a reference for follow-up efforts on problems

3.3 Data Collection Techniques

To obtain the necessary data to answer the research problems, data were collected using questionnaires and interviews.

3.3.1 Interview

In this study, interviews were conducted with several postgraduate staff at Semarang State University.

3.3.2 Questionnaire

Sugiyono (2014)said: "The questionnaire is a data collection technique that is carried out by

giving a set of questions or written statements to the respondent to answer."

In this study used data collection techniques by utilizing the questionnaire method and then selected statements. The instrument in this study was formed by a checklist or a selection of data called the Likert Scale. The use of a Likert scale allows the variables to be measured to be translated into variable indicators (Sugiyono 2012:93).

From that it was concluded that each alternative for positive statements in analyzing

data derived from questionnaires ranked 1 to 4 is as follows:

- (1) "Strongly Agree" indicates the highest gradation is worth 4
- (2) "Agree" shows a lower rating than the word "Very" added, given a value of 3.
- (3) "Disagree" because it is under "Agree" and so on, is given a value of 2.
- (4) "Strongly Disagree", indicating the lowest gradation, is given a value of 1.

The following is a lattice of aspects of the research questionnaire distributed to users.

Table 3. Questionnaire aspect grid for users

Research Variables	Indicator	No. Instrument Items
Practicality	Substance	1,2,3,4,5,6
	Appearance	7,8,9,10,11,12
	Benefit	13,14,15,16,17,18
effectiveness	Compliance with rules	1,2,3,4,5,6
	Accurate storage and delivery of information	7,8,9,10,11,12
	Processing time	13,14,15,16,17,18

3.4 Data Analysis Methods

After obtaining the data from the results of the questionnaire that was distributed to the respondents, data analysis was carried out to find out how practical and effective the system was. The data will be analyzed with a percentage descriptive system. The data analysis procedure is as follows:

1. Check the completeness of the answers to the questionnaire that the respondent has filled out
2. Classify the answers to each question by giving a score according to a predetermined weight.
3. Create data tabulation.

4. Calculating the percentage of each category with the formula:

$$\% = \frac{n}{N} \times 100\%$$

Information:

% = category percentage

n = total score for each indicator N = maximum total score

5. From the percentages obtained, they are then displayed in a table to determine the categories of "Very Good", "Good", "Not Good", and "Very Bad" in tabular form, it is necessary to determine the maximum value, minimum value, and the interval. By adapting the percentage formula, it can determine the minimum index value and

maximum index. Meanwhile, to determine the length of the interval, according to Sugiyono (2012) the length of the interval can be found by means of the range (largest data – smallest data) divided by the number of interval classes.

3.5 System Development Method

The method for developing an electronic records management information system based

on Microsoft Access at UNNES Postgraduate uses the waterfall model. The waterfall design model is a design model that uses a systematic and sequential approach to software development, starting from the analysis of user requirements specifications, planning, modeling, construction, and delivery of software to users (deployments)(Pressman, 2010: 46-47). The flow of implementing the waterfall model can be seen in Figure 1.

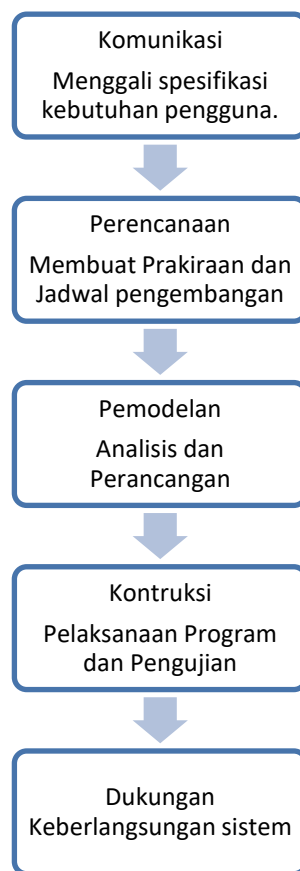


Figure 1. Waterfall Model Product Design Flowchart

Figure 1 is the work procedure used in making the system. Starting from planning, program design, program details, program quality testing, if appropriate then the procedure continues with trials, if not then returns to

planning, after the system quality is declared appropriate and trials are carried out, after that the program is evaluated.

RESULTS AND DISCUSSION

Problem identification is the first step in data description, by identifying problems that occur in the UNNES Postgraduate in the filing system, which aims to find and identify any problems that occur in the archive administration section. The following are the results of the data used by researchers to identify problems.

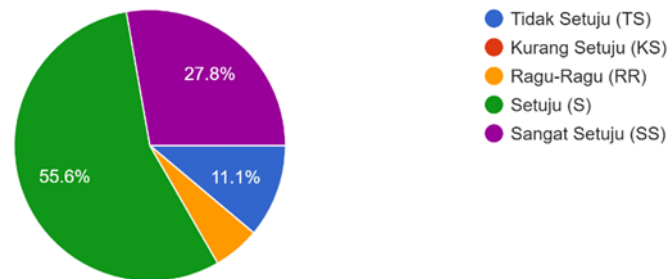
4.1 Processing of the filing system implemented by the UNNES Postgraduate

The concept of managing archival information systems that are currently running at the UNNES Postgraduate, in management of archives still uses conventional dynamic archives.

Archive Setup

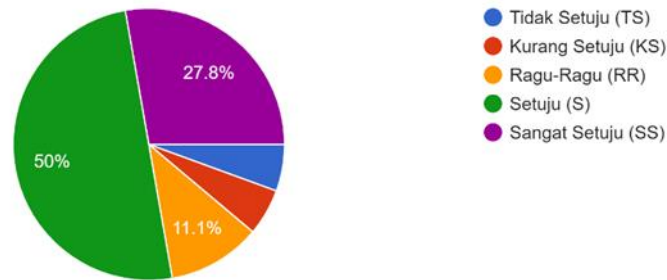
Apakah sistem penyimpanan arsip yang digunakan oleh Pascasarjana UNNES adalah sistem abjad?

18 responses



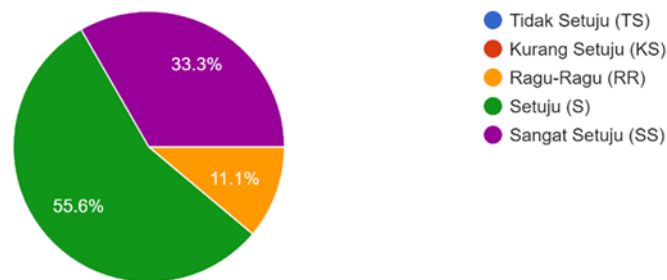
Apakah penyimpanan arsip oleh petugas arsip menggunakan sistem pokok surat (perihal)?

18 responses



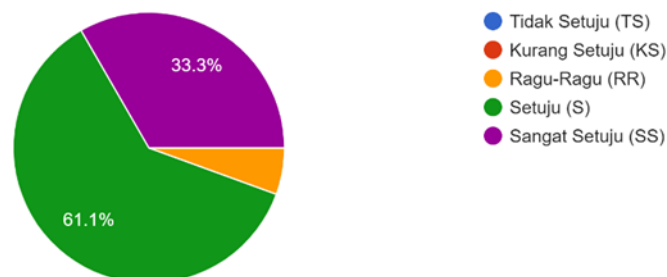
Apakah penyimpanan arsip menggunakan sistem tanggal (Kronologis) yaitu sistem pencatatan dengan surat keluar dan surat masuk sesuai apabila diterapkan di Pascasarjana UNNES?

18 responses



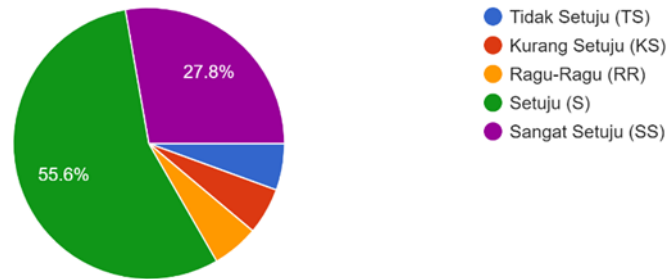
Apakah penyimpanan arsip menggunakan kode penyimpanan arsip dapat digunakan oleh petugas arsip pada Pascasarjana UNNES?

18 responses



Penyimpanan arsip pada Pascasarjana UNNES menggunakan kode nomor sebagai kode penyimpanan?

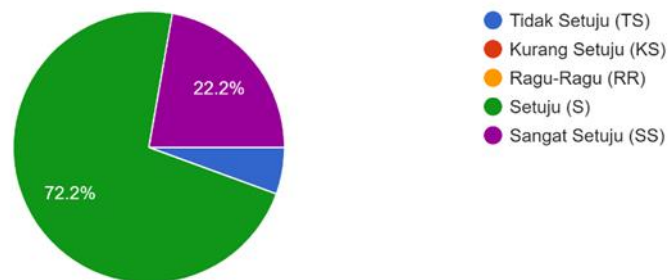
18 responses



pen

Petugas Arsip Pascasarjana UNNES dalam penyimpanan arsip berdasarkan subkoordinator kerja?

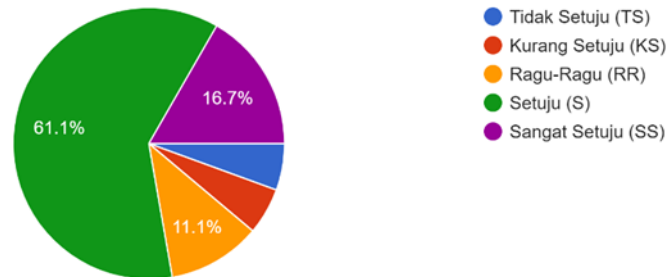
18 responses



Placement

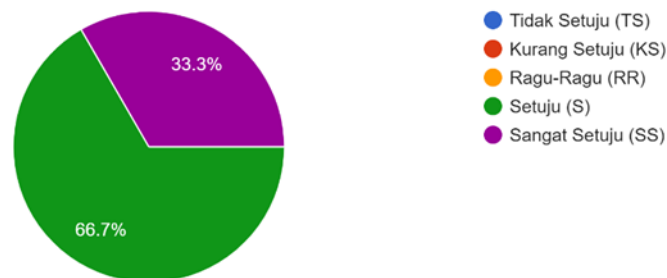
Apakah Pascasarjana UNNES sudah mempunyai sarana penempatan/penyimpanan arsip yang memadai?

18 responses



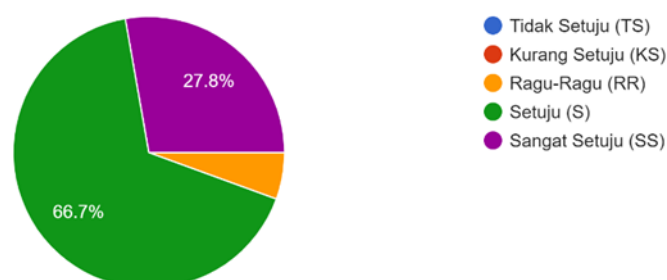
Dalam penempatan surat, apakah petugas arsip Pascasarjana UNNES sudah sesuai dengan SOP yang telah ditentukan?

18 responses



Petugas Pascasarjana UNNES dalam penempatan arsip sudah teratat rapi baik surat maupun nonsurat?

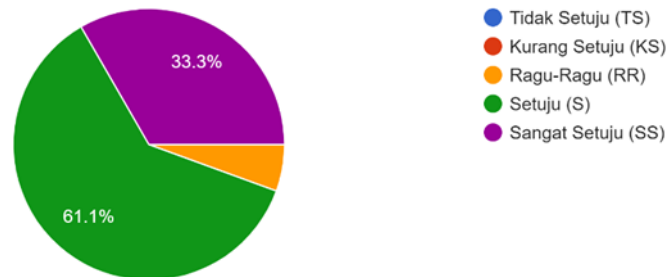
18 responses



Rediscovery

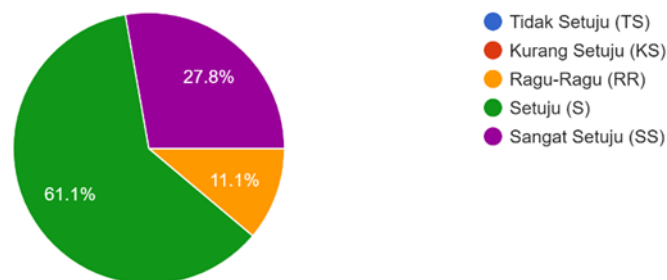
Penemuan kembali arsip dapat dilakukan dengan cepat dan tepat dengan pola klasifikasi di Pascasarjana UNNES?

18 responses



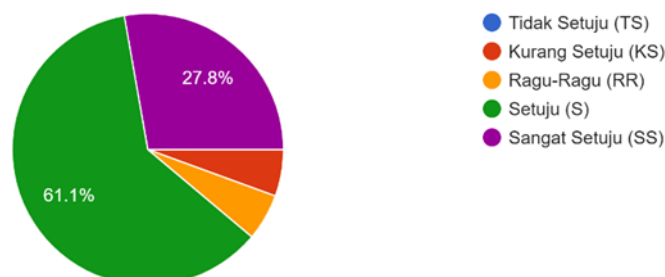
Penemuan kembali arsip dapat dilakukan dengan cepat dan tepat dengan kode dinas Pascasarjana UNNES?

18 responses



Penemuan kembali arsip dapat dilakukan dengan cepat dan tepat dengan indeks di Pascasarjana UNNES?

18 responses



CONCLUSION

At the end of this research, the researcher will put forward some conclusions and suggestions based on the findings of the research results and the descriptions in the previous chapters regarding the problem being studied by archives.

Researchers want to know the effectiveness of employee performance in the use of electronic information management systems (E-ARSIP) based on Microsoft Access in Postgraduate

Fulfillment of satisfaction that arises because of several needs that have been achieved by the users of the system.

Through the system it is very helpful in accelerating the search for archives needed by users quickly and accurately.

Based on the research results obtained from the data in the field, basically this research went well. The researcher wants to put forward some suggestions that hopefully will be useful for progress, while the suggestions that the researcher proposes are as follows:

System users use it more often for the smooth performance of each user

It should be easier to use the system so that for the advancement of digital archives.

REFERENCES

- Aryani, R., Suratno, T., Mauladi, M., & Utomo, PEP (2019). Implementation of Records Management Information System at the Faculty of Science and Technology, University of Jambi. *Sisfo Media Scientific Journal*, 13(2), 146.
- Fitriyah, RN (2019). Depreciation as One of the Functions of Archive Management at the Semarang Religious Education and Training Center. *Efficiency - Administrative Studies*, 16(2), 76–87.
- Ghozi, M., & Irfan, D. (2018). Development of WEB-Based Archive Management and Letter Disposition Information Systems at BPN Padang City. *Votenka: Vocational Journal of Electronics and Informatics Engineering*, 6(2).
- Haryadi, H. (2009). *Office Administration For Managers & Staff*. Visimedia.
- Iswandi, N., Nazifah, NA, Khotimah, H., Anggraini, M., & Okshi, J. (2019). Archive Management System at MTS Aulia Cendikia Palembang. *Diplomatics: Applied Archival Journal*, 2(2), 65.
- Kristanto, A. (2008). *Design of Information Systems and Applications*. Gava Media.
- Pressman, R. . (2010). *Software Engineering : a practitioner's approach*.
- Rahmatulloh, A., Rachman, AN, & Anwar, F. (2019). Implementation of Web Push Notification on Records Management Information System Using PUSHJS. *Journal of Information Technology and Computer Science*, 6(3), 327.
- Sugiyono. (2014). *Educational Research Methods Quantitative, Qualitative, and R&D Approaches*. Alfabet.
- Yohannes, S. (2006). *Records Management*. Dioma.
- Zakiyudin, A. (2012). *Management Information Systems (2nd ed.)*. Media Discourse Partners.