

DECISION SUPPORT SYSTEM FOR HANDLING INCOMING AND OUTGOING MAIL: TO FACILITATE ARCHIVES RETRIEVAL

Farika Nikmah

Politeknik Negeri Malang
INDONESIA
farika.nikmah@polinema.ac.id

Joni Dwi Pribadi

Politeknik Negeri Malang
INDONESIA
joni.dwi@polinema.ac.id

Erlangga Andi Sukma

Politeknik Negeri Malang
INDONESIA
Erlangga.andi@polinema.ac.id

Evi Suwarni

Politeknik Negeri Malang
INDONESIA
evisuwarni@polinema.ac.id

Ilmarta Azmi

Politeknik Negeri Malang
INDONESIA
ilmartaazmi@gmail.com

ABSTRACT

Mail handling is an activity that must be carried out by organizations engaged in any field, whether it is a profit or non-profit institution. There are two types of mail managed, incoming and outgoing mail. The management of the two types of letters must consider the retrieval activity, because it measures work effectiveness. This type of research is action research, by testing it on school institution administrators in Indonesia. Furthermore, to measure its acceptability, it is done with TAM. Mail handling is offered with optimization in Microsoft Access, for reasons of low cost and easy operation. The results show that all administrators feel helped by the presence of Microsoft Access for mail handling, and most importantly when they need the letter in the future it can be easily and quickly found. Very helpful for retrieval activities and found it very spot on. It is concluded that the optimization of Microsoft Access in mail handling can support decision support system activities. Accurate retrieval helps in making quick and appropriate decisions, because nowadays the speed of response and problem solving is an indicator of the health of an institution.

Keywords: Decision support system, mail handling, incoming mail, outgoing mail, archives retrieval.

INTRODUCTION

In recent years, archive applications have been developed in a mature and varied manner. Archival applications penetrate in all areas of life. In China, "Shenzhen Archives Bureau Mobile Portal", is an archive application system that makes it easy for citizens to search for information, service guides, online services, interactive communication and cultural archiving (Li & Li, 2019). Then came the WASP (Web Archiving and Search Personalized) application which was developed as a fully functional prototype on a personal web archive and search system, which is open source that can be utilized by everyone (Kiesel et al., 2018), and the presence of other archival applications. There is a lot that can be improved with archive automation. Creation, storage, retrieval, preservation and publication techniques. In this study, the focus is on archive retrieval. A clear understanding of what users are looking for is fundamental to the development of archive retrieval functions (Costa & Silva, 2009). Then how to find it, using the word catch or using a date range is also a determinant for the next development step. This is for the purpose of archive retrieval, is to find documents quickly and precisely. Archival retrieval systems are important, given that organizations manage a large number of documents with multiple uses. The complexity of the

organization affects the number of documents that are managed. Of course, almost all organizations have considered automation for document management. The consideration is because it is more effective and efficient. Nowadays the role of automation is getting bigger in everyday life. Online shopping, banking transactions, planning trips, education, managing documents can all be done automatically. Thus, if the document is still stored manually, it becomes irrelevant to the times. Will be easily lost, damaged, messy, and take up space. As a result, it is difficult to find it again or it will not even be found. This is a strong reason to manage documents automatically by using an application.

Handling of mail for archive retrieval is done by optimizing the role of microsoft access so as to make effective decisions on complex problems by simplifying and speeding up the decision-making process by breaking the problem into its parts, arranging the parts or variables in a hierarchical order (Purba, 2021).

LITERATURE REVIEW

Mail Handling

Mail handling is an activity from receiving and recording incoming or outgoing letters to forwarding and archiving (Janssen, 2017). Handling letter must be careful in recording because if there is something wrong in the recording it will affect the information needed at any time. Handling mail as a series of activities from receiving letters, recording, drafting, numbering, classifying, to forwarding and filing.

Now, more than ever, organizations place a high value on ensuring their mail processes are compliant. This involves complying with regulations regarding the handling of data that often contains personal information. Certain regulations cause mail handling to be more secure. Document integrity is very important to maintain confidentiality. Different types of document integrity depend on the level of security required. There are, however, some basics that need to be addressed to gain integrity throughout the mail handling process (Male et al., 2016). One of the most important things that need to be understood is the ability to compose letters by grouping, classifying, determining retention schedules, finding back correctly and quickly.

Archives Retrieval

Retrieval is the science of searching for documents, for information within documents, and for metadata about documents (El-Bakry et al., 2010). Automated searches are used to reduce so-called "information overload". Examples, such as those used in libraries, provide search access for visitors to access books, journals, and other documents. Retrieval can either occur by the user knowing exactly where the information is, or by looking for it. The search may be direct or indirect, depending on whether the user is familiar with what they want or is just looking for a perfunctory search. When unsure of what they are looking for, they may miss something useful information or get distracted and lost in the depths of information. This is where search engines come in handy as mediators between users and information. The retrieval system is based in large part on the algorithm model of taking estimates of the relevance of documents to a given query is the basis for ranking documents (Jaspal, Ogier, & Boursier, 2010).

If we are developing an archive application, one of the things that must be considered is retrieval (Krolli & Tractinsky, 2006). In the past, retrieval was not standardized, based solely on the like-

and-seeking of the archiver. Now, anyone who becomes an archivist must follow every procedure in document storage for the purpose of quick and accurate retrieval. Storing archives in stages, such as the arrangement of the data base there is a folder that is a collection of files and the file itself is the document.

Decision Support System with optimization of Microsoft Access

Ms Access is a database management tool that allows one to have command of the data collected properly (Ojango, 2018). This program allows one to retrieve, sequence, summarize and report results quickly and effectively. It can combine data from various files through relationship creation, and can make data entry more efficient and accurate (Bhermana & Susilawati, 2020). Microsoft Access can design and process various types of data into one. Database can be interpreted that a collection of data archives in the form of tables and complements each other so that it can be known about the desired information. The advantages of Microsoft Access are: (1) file-based so it is more portable; (b) manipulating tables and data is very easy to do; (c) support SQL; and (d) support relational database (Ganchev & Kutseva, 2017).

Ms. Access is the easiest to use relational database software available to people, part of Microsoft Office (Coronel & Morris, 2017). It is very easy to learn, create, use and manage the databases created with it. Over the last few years there has been an increasing popularity of this software in modern office areas (Lewenstein et al., 2014).

METHODOLOGY

A quantitative approach is used and data collection using a questionnaire. The sample in this The research used action research is research on things that happen in the community or target group and the results can be directly applied to the community. This action research is carried out to provide a good essence to the community or organization so that it can improve quality. In this study using the Kemmis and McTagart model (Al-Obaydi et al., 2021), where the stages of this theory are: planning, implementation and observation, then reflection. This stage is repeated until the goal is reached.

Action research methods can be characterized as a process in which participants analyze their own using various research approaches. Usually, it's predicated with the following assumptions (Al-Obaydi et al., 2021): (1) Problem determination; (2) Find ways to improve paths: (3) Collaboration: (4) Consider sharing is an important aspect for development. The data analysis method in this study uses a description that which can be seen from the results of the questionnaires given to respondents with TAM theory as based. Thus, with the questionnaire can answer the objectives of this research.

RESULTS AND DISCUSSION

Flowchart Design

At this design stage, it contains the design of the management of incoming and outgoing mail using Microsoft Access. At the time of designing it contains a rough description of the content and flow of the management application so that it can facilitate the implementation of the application creation action. After knowing the content that will be used, then the required database can be identified, including tables, forms, and reports (figure 1 and 2).

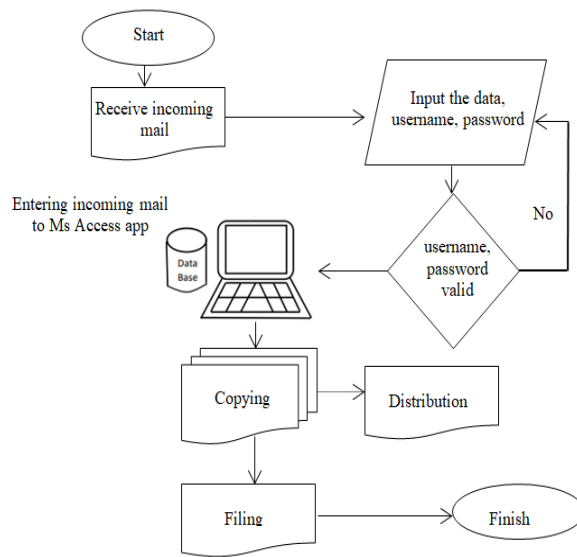


Figure 1: Incoming mail handling design

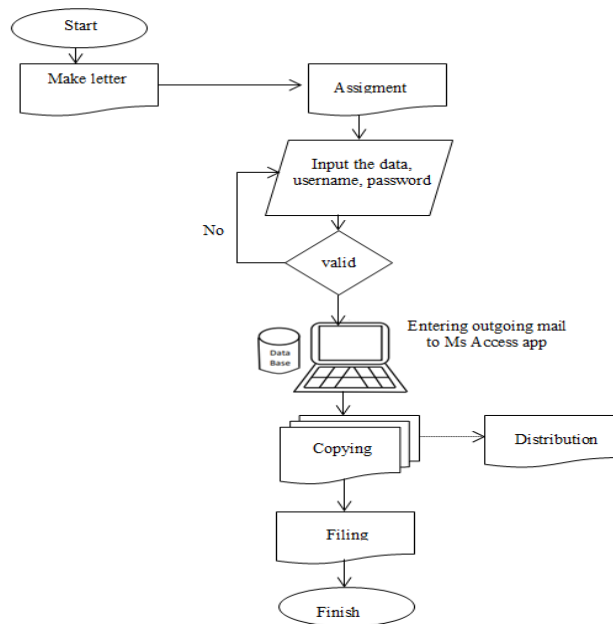


Figure 2: Outgoing mail handling design

Table Design

Table 1: Table of login

Name of field	Type of data	Summary
Username	Short text	Primary key
Password	Short text	-
Name	Short text	-

Table 2: Table of incoming mail

No	Name of field	Type of data	Summary
1	Number	Auto number	-
2	Received time	Date/time	-
3	Origin of letter	Short text	-
4	Letter code	Number	-
5	Letter number	Short text	Primary key
6	Letter date	Date/time	-
7	Regarding	Short text	-
8	Letter to	Short text	-
9	Letter receiver	Short text	-
10	File scan	Attachment	-

Table 3: Table of outgoing mail

No	Name of field	Type of data	Summary
1	Number	Auto number	-
2	Letter code	Number	-
3	Letter date	Date/time	-
4	Letter to	Short text	-
5	Letter number	Short text	Primary key
6	Regarding	Short text	-
7	File	Attachment	-

The next step is to take action from the table that has been inputted. Actions related to the realization or actual production of a rough design. The action activity produces a view or design of the main page. This main page is in Indonesian, according to the benefits of the application at this time for several schools in Indonesia.

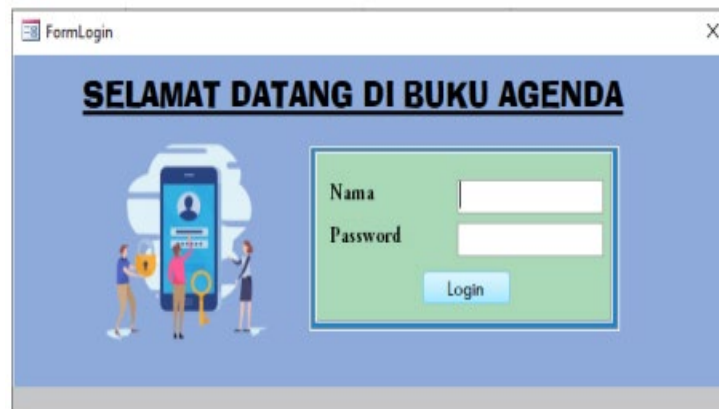
**Figure 3: Table design**



Figure 4: The main page design

Based on the main page, then structuring the management of incoming and outgoing mail so that later it will be easier for retrieval. Fast and accurate retrieval activities have a positive impact on the accuracy of decision making.

Incoming mail

Making the incoming mail table aims to input the data that will be recorded in the application. The first thing to do is to create an incoming mail table. This table aims to record the data that has been entered. Making table can be done by selecting create > table design. Then the incoming mail table is changed into a query that has a relationship with the registration form. In this query make 3 of them an applied query, a delete query, and a table query. To query applied and delete it by creating > query design. After making a query. The table that has been created is changed to form the form by selecting create > form wizard. The result of this form wizard is still a plain form containing the selected field names. The results of the form wizard can be designed in the design section with add the required color, image, or component such as a button orders and sub-forms for incoming mail which aims to find out the was recorded on that day. the display for the main page incoming mail, is:

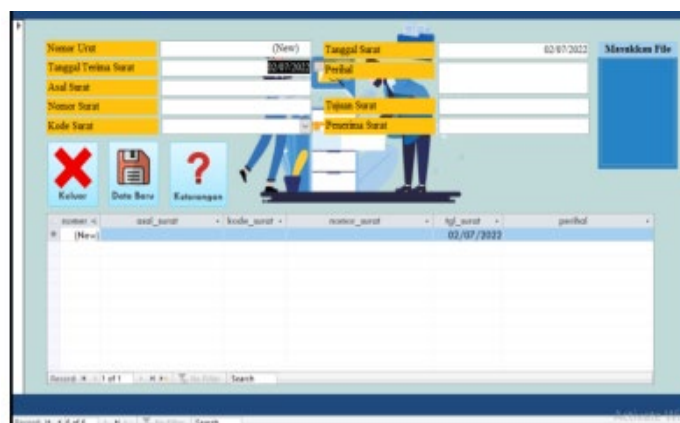


Figure 5: Incoming mail form design

Outgoing mail

Outgoing mail form is used to record the inputted data and stored in Microsoft Access. Making this outgoing mail form is the same as incoming mail, the only difference being the field. The first step is to create a table, convert it into a form using the form wizard, and design it to make it look more attractive by providing colors, images, layouts, location, and buttons.

Then the table that has been created will be formed in quer. The outgoing mail form requires 3 queries: an applied query, a delete query, and an outgoing mail table query. To query applied by selecting create > query design. Meanwhile, the query table for outgoing mail can be done by creating > query wizard. After making a query, the table that has been created is formed into the form. This form is used to input data. The last step is the purpose of creating this system for document retrieval easily, quickly and precisely. The display results after giving images, colors, and command buttons, are:

Figure 6: Outgoing mail form design

Incoming and outgoing mail retrieval

Incoming mail search form is a form used to search for data incoming mail. In this search can be searched by letter number, date, subject, code, and purpose.

Figure 7: Incoming mail retrieval form design

Outgoing mail search form is a form used for outgoing mail retrieval more easily, quickly, and precisely. In this search, it can be searched by writing keywords both from the letter number, date, subject, purpose, and code.



The screenshot shows a web application window titled "Penarian Surat Keluar". The main heading is "Pencarian Data Keluar". Below the heading is a search bar labeled "Cari Kata Kunci". To the left of the search bar is an illustration of two people working at a desk. Below the search bar is a table with the following data:

Nomor Surat	Tanggal	Perihal	Tujuan	Kode
800/001/410.4.B/2	02/07/2022	Cuti Sakit	Dinas Pendidikan	800
420/002/410.4.B/2	02/07/2022	Surat Tugas Pembimbing	Dinas Pendidikan	420

At the bottom of the window, there is a status bar that reads "Record: 1 of 2" and "No Filter".

Figure 8: Outgoing mail retrieval form design

After this application was tested on several administrators at school institutions in Indonesia, then acceptance was tested with the Technology Acceptance Model (TAM). Using indicators of application usability, ease of use of applications, user attitudes, user attention, and sustainable of application, questionnaires were compiled and delivered to respondents who had conducted trials. In accordance with the application usability indicators, respondents answered that they were able to improve performance, reduce errors and damage, as well as assist in managing archives. Based on questions about ease of use, respondents answered that this application is easy to use and easy to understand. In accordance with user attitude indicators, respondents stated that this application did not take a long time because it did not confusing or very clear. The fourth indicator is user intensity, respondents said that this application is effective, efficient, and easy to archive. Lastly, related to the sustainability of the application, respondents said that this application can keep safety and long term. In conclusion, respondents agree with using Microsoft Access application for incoming mail and outgoing mail handling.

CONCLUSIONS

Utilization of technology, although simple, can help mail handling to be more effective and efficient. Optimizing Microsoft Access is one way, it does not require expensive costs, it only requires motivation and a desire to learn to adapt to the latest technology. The effort is only a little but produces great benefits in carrying out daily office activities. Retrieval activities, which must be fast and precise, will inevitably be answered by implementing effective and efficient mail handling. Decision-making can be quickly decided if retrieval activities can be carried out quickly and precisely.

REFERENCES

- Al-Obaydi, L. H., Nashruddin, Rahman, F., & Suherman, L. (2021). The Use of Action Research in EFL Socio-professional Context: Students-teachers' Perceptions. *ELS Journal on Interdisciplinary Studies in Humanities*, 4(2), 232-241.
- Bhermana, A., & Susilawati. (2020). Decision support system based on database system of genetic resources for Central Kalimantan local crops to develop ex situ and in situ conservation. *The 1st International Conference on Genetic Resources and Biotechnology* (pp. 1-7). Central Kalimantan, Indonesia: IOP Conf. Series: Earth and Environmental Science.
- Coronel, C., & Morris, S. (2017). *Database System: Design, Implementation, and Management* (Vol. www.cengagebrain.com). Boston: Cengage.

- Costa, M., & Silva, M. (2009). *Towards Information Retrieval Evaluation over Web Archives*. Lisboa, Portugal: Foundation for National Scientific Computing.
- El-Bakry, H. M., M. Riad, A., Atwan, A., & Mastorakis, N. (2010). A New Automated Information Retrieval System by using Intelligent Mobile Agent. *Recent Advances in Artificial Intelligence, Knowledge Engineering and Data Bases*, 339-351.
- Ganchev, D., & Kutseva, A. (2017). Application of Microsoft Access Relational Database for Pesticide Decision Taking and Selection. *MAYFEB Journal of Agricultural Science*, 4(1), 12-19.
- Janssen, C. (2017). Incoming Mail, Outgoing Mail and Copies of Letters in the Ur-Utu Archive. *Akkadica*, 1-36.
- Jaspal, K., Ogier, J.-M., & Boursier, P. (2010). *Automated scientific document retrieval*. Kuala Lumpur, Malaysia: Open University Malaysia.
- Kiesel, J., de Vries, A., Hagen, M., Stein, B., & Potthast, M. (2018). *WASP: Web Archiving and Search Personalized*. Weimer, Germany: DESIRES.
- Krolli, S. S., & Tractinsky, A. (2006). Archival Description, Information Retrieval, and the Construction of Thesauri in Israeli Archives. *Archival Science*, 67-107.
- Lewenstein, M., Munro, J., Raman, V., & Thankachan, S. (2014). Less space: Indexing for queries with wildcards. *Theoretical Computer Science*, 120-127.
- Li, D., & Li, L. (2019). Evaluation of Open Utilization of Digital Archives Information System. *International Conference on Precision Machining, Non-Traditional Machining and Intelligent Manufacturing. Volume 5*, pp. 376-379. Tianjin, China: Atlantis Highlights in Eng.
- Male, N., McManus, K., Theodorou, T., Wiggerink, J., & Young, B. (2016). *How to Ensure Your Organization's Mail Process is Compliant*. Chicago: NEOPOST: Send, Receive, Connect.
- Ojango. (2018). *A Basic introduction to Microsoft Access*. Njoro, Kenya: Department of Animal Sciences, Egerton University.
- Purba, J. M. (2021). Decision Support System for Determining Overtime Employees at PT. Mark Dynamics Indonesia, Tbk with Analytical Hierarchy Process Method. *International Journal of Basic and Applied Science*, 10(1), 16-23.