

Microsoft Access And VBA Integration For Digital Records Management: A Case Study Of Bumdes Sumber Sejahtera Pujon Kidul

Nunung Aliyati Fajer¹, Fahmi Muhammad Az Zuhri², Tri Istining Wardani³, Rena Feri Wijayanti⁴ and Lelly Nisah⁵

^{1,2,3,4}Lecturer, Business Administration Department, Politeknik Negeri Malang.

⁵Student, Business Administration Department, Politeknik Negeri Malang.

Corresponding author: nunung.aliyati@polinema.ac.id

Abstract

Digital archive management plays a role in supporting the administrative process and information availability in business organizations. This study aims to examine the integration of Microsoft Access and Visual Basic for Applications (VBA) in the management of digital archives in BUMDes Sumber Sejahtera Pujon Kidul. The research uses a case study approach with a descriptive-evaluative design. Data were obtained through observation of the archive management process and application testing using black-box testing. Microsoft Access was used to manage archive data, classification, and system settings, while Microsoft Word and VBA were used to generate outgoing letters based on predetermined templates. The test results showed that the application can support the management of incoming and outgoing letters, classification, storage, and retrieval of archives in a more structured manner. The integration of Microsoft Access and VBA also supports the uniformity of the process of making outgoing letters and organizing documents. The research concludes that the integration can support the management of digital archives and administrative processes in BUMDes Sumber Sejahtera Pujon Kidul.

Keywords: Digital Archives; Microsoft Access; VBA; Records Management; BUMDes.

INTRODUCTION

Digital transformation encourages organizations to change the way they create, store, use, and rediscover archives. Archives not only function as administrative documents, but also as evidence of activities and sources of information that support the



sustainability of the organization. Good archive management is needed so that information can be stored systematically, easily rediscovered, and supports organizational activities. In the context of business organizations, archive management is also related to the smooth administration process and the availability of information to support operational activities. This also applies to Village-Owned Enterprises (BUMDes) that produce various records of information in administrative and operational activities. Orderly management is one of the aspects that supports the accountability of BUMDes management (Amalia & Panduwinata, 2022).

The use of information systems in archive management has been applied to various organizations. Mursyidah et al. (2024) examined the application of dynamic archive information systems in supporting digital archive management, while Caroline et al. (2022) discussed the application of digital archives through dynamic archive information systems. Normah (2017) also developed an information system for archival administration management based on information and communication technology. The research shows that the use of information systems can support the storage, management, and retrieval of archives in a more structured manner.

Microsoft Access is one of the platforms used in the development of a digital archive management system. Dwiyantoro and Junandi (2021) developed a dynamic archive management information system based on Microsoft Access, while Amalia and Panduwinata (2022) examined the Microsoft Access-based e-Archive system in supporting archive rediscovery. The use of Microsoft Access is also applied to corporate archives management (Alisa Alaina et al., 2023; Amalia & Panduwinata, 2022). In addition to being a database, Microsoft Access can be combined with Visual Basic for Applications (VBA) to support the automation of administrative functions and document management. The integration allows data management and document creation processes to be tailored to the needs of the organization.

Although Microsoft Access and VBA have been used in several archive management studies, their applications have different focuses and characteristics. Some studies focus on archival storage and retrieval, while the use of VBA is used to support specific functions in the system. This study develops the integration of Microsoft Access and VBA in BUMDes Sumber Sejahtera Pujon Kidul by placing Microsoft Access as the main archive management system. Incoming mail is managed through Access, while outgoing mail information that has been created is then recorded and managed in Access to support retrieval. This approach is applied to BUMDes Sumber Sejahtera Pujon Kidul.

This study aims to examine the integration of Microsoft Access and VBA in the management of digital archives in BUMDes Sumber Sejahtera Pujon Kidul. The focus of the research includes the creation and management of outgoing letters, management of incoming letters, archive search, recapitulation of archive data, and testing of system



functions. The contribution of this research is the application of the integration of Microsoft Access as the main supporter of archive data management with Microsoft Word and VBA as a support for the creation of outgoing letters in the context of digital archive management in business organizations. The test results are used to identify the suitability of system functions with the needs of archive management and organizational administrative processes.

LITERATURE REVIEW

Electronic Archive Management

Electronic archive management includes activities from the time archives are created or received to use, stored, maintained, and depreciated. National Archives Regulation of the Republic of Indonesia Number 6 of 2021 concerning Electronic Archive Management places the creation, reception, use, storage, maintenance, transfer of media, shrinkage, preservation, access, and utilization as part of electronic archive management (ANRI, 2021b). In the context of correspondence, outgoing mail is an archive created by the organization, while incoming mail is an archive received by the organization. The implementation of electronic archive management requires structured information recording so that archives can be used and rediscovered when needed. Caroline et al. (2022) and Mursyidah et al. (2024) show the use of information systems in supporting dynamic digital archive management.

Information Systems in Archive Management

Archival information systems can be used to assist in the process of recording, storing, searching, and presenting archival information. This is in line with ANRI Regulation Number 4 of 2021 concerning Guidelines for the Implementation of Integrated Dynamic Archives Information Systems which provides guidelines for the implementation of information systems to support dynamic archive management (ANRI, 2021a). The use of information systems has also been applied in various archive management research. Normah (2017) discussed the use of information technology in the management of archive administration, while Caroline et al. (2022) examined the application of information systems in dynamic archive management. At the database application level, Dwiyanoro and Junandi (2021) howed that Microsoft Access can be used to build a dynamic archive management information system and support archive retrieval.

Microsoft Access and VBA in Archive Creation and Management

Microsoft Access has been used in various studies to support the management of electronic archives. In research conducted by Amalia and Panduwinata (2022) , Lestari et al. (2022) , and Alaina et al. (2023) it shows the use of Microsoft Access for the



management and rediscovery of archives in various organizational environments. Suryani and Afifah (2018) also developed the Microsoft Access application to help record incoming and outgoing letters. In this study, Microsoft Access is used as the main system for managing archive information, while Microsoft Word with VBA is used in the creation of outgoing letters. VBA supports automation in the mail drafting process, while mail information that has been created is subsequently recorded and managed through Access. Thus, the two applications have complementary functions in one digital archive management flow.

Digital Records Management and Administrative Processes

Digital archive management is not only related to the storage and retrieval of documents, but also supports the flow of information and the implementation of organizational activities. Ayo-Ogunlusi and Ologbosere (2025) show that digital records management is related to organizational performance through aspects of information flow, efficiency, and accountability. These findings show that digital records management can be seen as part of the information management process that supports the implementation of organizational activities.

In the context of administration, the implementation of an electronic-based archive management system can also affect organizational work processes. Afifah and Ismaya (2025) found that the implementation of an electronic-based administrative information system improves the efficiency of business processes and archive management, although there are still obstacles in document management and user adaptation. Thus, the use of technology in archive management needs to be directed not only to convert documents into digital formats, but also to support the administrative process and information management in a more structured manner.

Previous Research and Research Gap

Previous research shows that Microsoft Access has been used for archive management, recording incoming and outgoing letters, and supporting archive retrieval. Research on web-based information systems has also been extensively developed to support dynamic archive management. However, the application of each system has different contexts, functions, and organizational needs. This research develops an approach that integrates Microsoft Access as the main system for managing archive information with Microsoft Word and VBA in the creation of outgoing letters in the BUMDes environment. Management includes the creation of outgoing letters, receipt of incoming letters, recording archive information, reunions, and reporting. This approach is studied through a case study on BUMDes Sumber Sejahtera Pujon Kidul.



RESEARCH METHOD

This study uses a case study approach with a descriptive-evaluative design to examine the application of digital archive management and the integration of Microsoft Access with VBA in BUMDes Sumber Sejahtera Pujon Kidul. The descriptive component is used to identify the process and needs of archive management, while the evaluative component is used to test the functionality of the application through black-box testing. The research focuses on the management of incoming and outgoing letters, classification, storage, and retrieval of archives. Microsoft Access is used for archive and classification data management, while Microsoft Word and VBA are used for the creation of outgoing letters based on predetermined templates.

Research Design

The research is carried out through several stages, namely identification of archive management conditions, analysis of system needs, system design and implementation, and testing of system functions. These stages are used to describe the archive management process in running conditions and the application of digital systems developed based on organizational needs.

Research Location and Object

The research was carried out at BUMDes Sumber Sejahtera Pujon Kidul, Malang Regency. The object of the research is the management of digital dynamic archives, especially archives of incoming and outgoing letters using the File Management Application (AMB). AMB uses Microsoft Access as the main system to manage archive information, while Microsoft Word with VBA is used to support the process of creating outgoing letters.

Data Collection

Data was obtained through observation, interviews, and documentation. Observations were made on the process of managing incoming and outgoing letters and the use of the system in administrative activities. Interviews were conducted with administrative managers to obtain information about the needs of archive and system management. Documentation was used to obtain letter data, classification structures, metadata, and documents related to archive management.

System Development

The development of the system is carried out based on the results of the identification of archive management needs in BUMDes. The stages include designing data structures, creating databases and features in Microsoft Access, developing



outgoing mail documents using Microsoft Word and VBA, data integration, and improving functions based on test results. Microsoft Access is used as the main system for recording, storing, searching, and recapitulating archive information. Inbound mail is registered through Access, while outgoing mail is created using Microsoft Word with VBA support. The outgoing mail information that has been created is then recorded in Access to support archive management.

System Architecture

The system architecture consists of two main flows. In incoming mail, the archive is received and then registered and managed through Microsoft Access. In outgoing mail, the mail is created through Microsoft Word with VBA support, and then the archive information is recorded and managed in Microsoft Access. In simple terms, system integration can be described as follows:

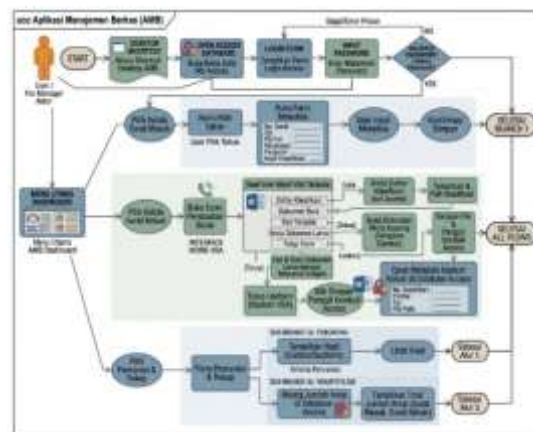


Figure 1: Design a file management application system

System Testing

System testing is conducted using black-box testing to check system functionality based on predefined usage scenarios. Testing includes 5 modules with a total of 33 test scenarios. Each scenario is tested based on expected inputs and outputs to determine if the system functions are performing as needed. The test results are used to identify functions that are running according to the scenario and functions that still need improvement. The tests are focused on the archive management functions that are already available and do not include reporting features that are still in the development stage.

RESULTS AND DISCUSSION

This section presents the results of the implementation of the digital archive management system at BUMDes Sumber Sejahtera Pujon Kidul and its discussion. The results presented include the conditions of archive management, the implementation of Microsoft Access and VBA in the management of incoming and outgoing letters, the process of finding archives, and the results of testing system functions. The system display is included in the relevant section to show the form of implementation and flow of archive management directly.

Existing Records Management

Prior to the implementation of the digital archive management system, BUMDes Sumber Sejahtera Pujon Kidul still managed the mail archive manually in physical form. Archives of incoming and outgoing letters are stored in the form of paper documents and grouped mainly by year. Archives that have been grouped are then stored and stacked in storage cabinets. In these conditions, there is no electronic system used to record and manage archive information in a structured manner.



Figure 2: Figure (a) and (b) are the conditions of the physical archive before digital

These storage conditions cause information about archives to not be managed in one database, so the recording and reunion process still depends on physical documents stored in the closet. Based on these conditions, the main needs identified include recording incoming and outgoing mail information, more structured archival grouping, electronic storage of archive information, and ease of retrieving archives. These needs are the basis for the implementation of Microsoft Access as the main system for managing archive information and Microsoft Word with VBA to support the creation of outgoing letters.

Implementation of Digital Records Management System

Based on the needs that have been identified, a File Management Application (AMB) is implemented to support the management of digital archives at BUMDes Sumber Sejahtera Pujon Kidul. AMB uses Microsoft Access as the main system to manage incoming and outgoing mail information, as well as providing search and recapitulation functions for archive data. Meanwhile, Microsoft Word with VBA support is used to help the process of creating outgoing letters. Here's what the AMB dashboard looks like.



Figure 3: AMB dashboard page

1. Incoming Records Management

Incoming mail management is done through Microsoft Access. Each received mail is recorded into a database with the necessary information, such as mail number, letter date, letter origin, subject, classification, and storage information. This recording makes mail information stored in a structured manner and can be used for the reunion process.



Figure 4: Inbound Mail Management view in Microsoft Access

Figure 4 shows the display of incoming mail management used to enter and manage archive information. The data that has been recorded is then stored in the database so that it does not rely solely on physical documents as a source of archival information.

2. Outgoing Records Creation and Management

Outgoing letters are archives created by BUMDes in the implementation of administrative activities. In the system implemented, the process of creating

outgoing letters is supported by Microsoft Word with VBA. VBA is used to help the process of compiling letters through existing templates and support the formation of new letter templates according to the needs of the organization. In addition to supporting the formation of templates, the system also applies classification for outgoing letters. Classification is used as part of the identification and management of archives from the creation stage. Thus, the process of creating letters not only produces letter documents, but is also accompanied by the information needed for subsequent archive management.



Figure 5: Outgoing Letter Creation Using Microsoft Word and VBA

Figure 5 a&b shows the process of creating outgoing letters using Microsoft Word with VBA support. Users can select or use available templates, fill in mail information, and create new templates if there is a need for mail types that are not yet available. In this process, VBA also supports the application of outgoing mail classification according to the needs of the organization. After the letter is created, the outgoing mail document is stored in the D directory that has been designated as the location where the document is stored.



Figure 6: Outgoing Mail Document Storage in :D Directory

Figure 6 shows the storage location of outgoing mail documents that have been created through Microsoft Word and VBA. Documents are stored in a structured manner in the D directory so that they can be reused when needed. With these function sharing, Microsoft Word and VBA support the outgoing mail creation

process, while Microsoft Access is used for the management of archive functions available in File Management Applications (AMB).

3. Records Retrieval

Microsoft Access is also used to support the process of retrieving archives. Archive information that has been recorded in the database can be used as a basis for searching based on available metadata, such as mail number, date, letter origin, subject or classification.



Figure 7. Archive rediscovery view in Microsoft Access

The application of rediscovery based on information that has been recorded in the database, helps users find archival information without having to search directly on a stack of physical documents.

4. Records Recapitulation

In addition to being used for recording and searching archives, the File Management Application (AMB) also provides a recapitulation feature for incoming and outgoing mail data. This feature is used to display archive data that has been stored in the system so that users can view and recapitulate archive information based on available data.



Figure 8a. AMB search and recapitulation view



Figure 8b. Search and recapitulation view of AMB outgoing mail

Figures 8a and 8b show the appearance of the recapitulation feature in the File Management Application (AMB). The recapitulation is carried out based on the information that has been recorded in the system so that the data of incoming and outgoing letters can be displayed in a structured manner. This feature complements the recording and search function by providing a summary of the archival data that has been managed.

Integration of Microsoft Access and VBA

The integration of Microsoft Access and VBA in File Management Applications is implemented by dividing the functions of the two applications according to the needs of archive management. Microsoft Word with VBA support is used at the stage of creating outgoing mails, including the use of mail templates and the implementation of predefined classifications. The classification and setting data used in the process are managed through Microsoft Access. After the outgoing mail is created, the document file is not stored in Microsoft Access, but is stored in the D directory as a digital archive storage location. The file is then organized using the subject system. Thus, Microsoft Access functions on the side of classification and configuration data management, Microsoft Word and VBA support document creation, while the D directory serves as a storage medium for outgoing mail files.

The division of functions forms a workflow that connects the process of creating, managing data, and storing archives. This approach allows BUMDes to take advantage of available and familiar applications, with each component used according to the needs of digital archive management.

System Testing Results

The system test was carried out using the black-box testing method to determine whether the available functions have run according to the needs and usage scenarios

that have been determined. The test is focused on the archive management functions that have been implemented, including recording and managing incoming letters, creating and managing outgoing letters, and the archive retrieval process. Tests were carried out on 5 modules with a total of 33 test scenarios. Each scenario was tested based on the inputs provided and the expected outputs. The test results were used to identify functions that have run as needed and functions that still need improvement. The following is a summary of the test results of the five main components of AMB presented in Table 1 and 2.

Table 1: Summary of Black-Box Testing Results for the AMB Application.

No	Main AMB Component	Function	Technology	Test Result
1	Login & Dashboard	User authentication and access to the main AMB features	Microsoft Access	Passed, with an issue related to form resizing
2	Incoming Letters	Registration, validation, storage, management, and printing of incoming letters	Microsoft Access	Passed
3	Outgoing Letters	Letter creation, automatic numbering, template management, and document storage	Microsoft Word + VBA	Passed, with an issue in data synchronization with Access
4	Search & Recapitulation	Archive search, data editing/deletion, period filtering, recapitulation, and data export	Microsoft Access	Passed
5	Integration & Storage	Access–Word VBA integration and database/document access through Virtual Drive D:	Access + Word VBA + Virtual Drive	Partially passed; outgoing letter number synchronization and Drive D: error handling require

				further improvement
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Table 2: Results of blackbox testing of digital archive management system.

Components	Total TC	Valid	Invalid	Pass Rate
Login & Navigation	7	6	1	85,7%
Incoming letter	6	6	0	100%
Outgoing letter	7	6	1	85,7%
Unit report	2	2	0	100%
Search & Recapitulation	7	7	0	100%
Integrasi VBA & Drive	4	2	2	50%
Total	33	29	4	87,9%

The test results show the state of the system function based on each scenario that has been defined. Scenarios that produce outputs as expected are declared successful, while functions that produce outputs that do not meet are used as the basis for performing system improvements. With this approach, testing is used not only to see if the system is runnable, but also to ensure that each function implemented can be used as per the needs of archive management.

Based on the test results, the tested functions have produced outputs as expected, including the reporting function. These results show that the system can carry out the functions of managing incoming letters, creating and managing outgoing letters, searching and recapitulation in accordance with the test scenarios that have been set. Thus, based on the results of black-box testing, the system is feasible to be used to support the management of digital archives at BUMDes Sumber Sejahtera Pujon Kidul.

DISCUSSION

The results of the implementation show that the integration of Microsoft Access and VBA can support the management of digital archives in BUMDes Sumber Sejahtera Pujon Kidul. Microsoft Access is used as the main system of AMB to manage incoming mail, outgoing mail, search, and recapitulation of archive data, while Microsoft Word with VBA support is used in the creation of outgoing mail, including the use and formation of templates and the application of classification.

The application has similarities with the research of Suryani and Afifah (2018) which uses Microsoft Access to support the recording and retrieval of incoming and outgoing letters. Research by Lestari et al. (2022) , Amalia and Panduwinata (2022) , and Dwiyanoro and Junandi (2021) also shows the use of Microsoft Access in archive management. This study applies a different approach to its workflow by integrating

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Microsoft Word and VBA at the outgoing letter creation stage, while Microsoft Access is placed as the main system for managing archival information.

The implementation of the system provides electronic management of archive information that was not previously available in BUMDes. The results of black-box testing show that the functions of managing incoming letters, creating and managing outgoing letters, as well as reunion and recapitulation can run according to the established test scenario. This research is still limited to the management of incoming and outgoing letters in one organization. Further development may include other types of archives as well as testing the use of the system over a longer period.

From a management perspective, the integration of Microsoft Access and VBA not only functions as a technical solution for storing and producing documents, but also supports the improvement of administrative processes. The integration provides a more structured mechanism in the management of classification information and the creation of outgoing letters. This condition can help improve the consistency of the archive management process and reduce administrative work that is carried out repeatedly. The application of digital archive management also shows that archives have a role in supporting the management of organizational information. Archival data that is structured makes it easier for officers to search and rediscover information when needed. In the context of BUMDes Sumber Sejahtera Pujon Kidul, the integration not only supports document management, but also helps the availability of information for administrative and operational activities of the organization.

CONCLUSION

This study shows that the integration of Microsoft Access and Visual Basic for Applications (VBA) can support digital records management at BUMDes Sumber Sejahtera Pujon Kidul. The integration supports records data management, classification, storage, retrieval, and outgoing letter creation through Microsoft Word and VBA. The black-box testing results indicate that the tested features functioned as designed, including incoming and outgoing correspondence management, classification, storage, and records retrieval. These findings support the research objective of examining the use of integrated technologies to provide a more structured approach to digital records management and administrative processes. The study contributes a practical approach to integrating Microsoft Access and VBA for records management in a business organization with relatively simple technological requirements. However, the study is limited to functional testing and has not quantitatively measured changes in efficiency or user satisfaction. Future research can conduct user-based evaluation and develop additional features, particularly reporting and broader information management functions.



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