

PAPER • OPEN ACCESS

Analysis of digitizing archive applications to reduce paper usage

To cite this article: D D Bhakti *et al* 2021 *IOP Conf. Ser.: Mater. Sci. Eng.* **1098** 032026

View the [article online](#) for updates and enhancements.

You may also like

- [Experiment on interfacial tension measurement of oil from Fang oilfield with alkaline flooding](#)

K Maneeintr, T Meekoch and T Boonpramote

- [The damping effect Analysis of viscous damper in eccentric concrete frame structure](#)

Zhou Fang, Qiuyue Zhang, Chongge Wang et al.

- [Analysis of Running Stability and Tire Wear of Monorail Vehicles](#)

LU Chong, Bo Dong and Yu Cao



PRIME
PACIFIC RIM MEETING
ON ELECTROCHEMICAL
AND SOLID STATE SCIENCE

HONOLULU, HI
Oct 6–11, 2024

Abstract submission deadline:
April 12, 2024

Learn more and submit!

Joint Meeting of

The Electrochemical Society
•
The Electrochemical Society of Japan
•
Korea Electrochemical Society

The banner features a collage of three photographs: a woman in a black jacket speaking into a microphone, a group of people at a conference, and a woman pointing at a poster on a display board.

Analysis of digitizing archive applications to reduce paper usage

D D Bhakti^{1,*}, N A Hamdani², I Deni¹, G A F Maulani² and I S Sugiarti¹

¹Department of Information System, Institut Pendidikan Indonesia, Jl. Pahlawan No.32, Garut 44151, Indonesia

²Universitas Garut, Jl. Raya Samarang No.52A, Garut, Indonesia

*demmy@institutpendidikan.ac.id

Abstract. Various data and information in the form of documents will accompany every activity in an institution. The existence of a reliable management to create, store, record, distribute, and maintain documents is needed to generate dynamic information traffic. In addition, the application of document processing can reduce the use of paper in every activity of an institution which will indirectly reduce excessive forest exploitation. The purpose of this research is to analyse digitizing archive application as an integrated archive management application to reduce the use of paper in every activity of an institution. Qualitative descriptive methods was used as a research methodology. The result of this study based of the analysis of the digitizing archive application that has been done in terms of data and procedures can be concluded that digitizing archive application can reduce the use of paper as a document in various institutional activities.

1. Introduction

Global warming occurs due to the dense greenhouse gases in the earth's atmosphere which produce excess carbon. Forests have an important role to play in reducing greenhouse gas emissions and reducing climate change. Changes in mean climate and climate extremes such as drought, storms, cyclones and wildfires can occur which are fundamentally very dangerous and affect human life. Along with the increasingly of population and diverse human activities, resulting in excessive forest exploitation. Human activities may determine harmful and irreversible environmental impacts, and it carries the notion of environmental limits [1].

Paper is a medium for conveying information as well as a communicating tool used by the community, printing an archives uses enormous paper and in turn wastes huge natural resources which are needed to produce the paper [2]. Forest Ethics notes that the use of wood as a raw material for paper reaches a percentage of 40% of the wood industry as a whole. every hour the world loses 1732.5 hectares of forest because it is cut down to become paper raw material [3].

Indonesia is one of the countries that have the largest forests in the world, therefore this country is relied upon as one of the lungs of the world to prevent global warming. Currently paper consumption in the world is estimated at 490 million tons (2nd international symposium on resources Efficiency in Pulp and Paper Technology), the realization of paper production in Indonesia is 7.98 million tons / year. With this production capability, Indonesia is ranked 6th for the world's largest paper producer.



The excessive use of paper behaviour, helps the rate of forest reduction or deforestation. even large-scale also contributes to the destruction of Indonesia's forests.

At present many ways have been done to reduce the cutting down of trees as raw material for paper, such as by recycling paper. Recycling is the process of turning used materials into new materials with the aim of preventing the presence of waste that can actually be useful, reducing the use of new raw materials, reducing energy use, reducing pollution, land damage, and greenhouse gas emissions when compared to the process of making new goods. But there are still a few problem in the recycling process such as tensile strength, bursting strength, and apparent density of the pulps decreased with recycling [4]. Apart from that, the increase in online media is not too hindering the development of the paper industry. One of the other things we can do to reduce paper usage in daily life is to use various applications as a medium for storing and delivering information. Information technology provides new media to disseminate information, namely digital media [5]. as we know various data and information in the form of documents paper will accompany every activity in an institution. College is one of the many institutions that use paper in various document archive activities.

The purpose of this research is to design a document digitization application as the used of information and communication technology (ICT) that can take an important part [6] to reduce the use of paper in college institution.

2. Methods

This article used qualitative descriptive methods as research methodology. The descriptive method of research is fact-finding with interpretation [7]. The purpose of this article is to reveal events or facts, phenomena, variables and circumstances that occur when the research of the digitizing archive application to reduce paper usage in college institution. The data concerned with the current situation, attitudes and views will be interpreted and described. The research activity includes collecting data, analysing data, interpreting data, and finally formulating a conclusion that refers to the analysis of the data and procedures.

3. Result and discussion

College archives were formed to save important archives relating to evidence of intellectual status and development of potentials that gave birth to innovations and other intellectual works related to the function of colleges as research, education and community service institutions [8]. The role of the archive is to assist college in knowing carefully every policy and activity that has and will be carried out.

3.1. Data analysis

The archives contained in college are quite diverse based on various college resources, as shown in Table I.

Table 1. The identification of resource and college archive type.

Resources	Archives
College student	Intracurricular
	Extracurricular
Lecturer	Educational
	Research
	Community service
Educational staff	Human resource
	Performance
Revenue	Estimation
	Realization
Expense	Estimation
	Realization

In general, college archives consist of dynamic archives and static archives. Dynamic archives are archives that are used directly in planning, implementing, and administering college administration. Dynamic archives can be divided into 2 (two) types, namely active and inactive archive [9]. Active archive is a dynamic archive that is created continuously and is used as a work file. Inactive archive are dynamic files that are rarely used or use frequencies for their use.

Table 2. Table of college dynamic archive.

Resource	Archive
academic document	Student master book, student attendance list, exam attendance list, exam report, lecturer attendance list, etc.
Administration document	Staffing documents, financial documents, equipment documents, etc.
College student and alumni documents	Alumni books, extracurricular activities, etc.

While static archives are records that are not used directly in planning, implementing and administering in general, or are not used directly in administering college administration.

Table 3. Table of college static archive.

Static archive
Activity Report
Work meeting minutes.
Leadership meeting minutes
Minutes of senate meetings, staff, and lecturers
Final project, thesis, thesis, dissertation
Research results
Incoming mail
Outgoing mail

3.2. Analysis of digitizing procedures

The computer's ability to store, retrieve and manipulate large amounts of data rapidly and cheaply has led to its wide spread use in managing many clerical, accounting and service documentation functions in organizations [10]. As an institution that has a strategic function, college need reliable document management. Reliable management has the ability to store and maintain the balance of document

creation, document traffic, recording, forwarding, distribution, usage, storage and maintenance. Various activities that require accuracy, are handled by technology. Technology can also make space requirements narrowed, place efficiency. Similarly, Information Technology is still believed to be able to play a role in simplifying the work. With the digitizing archive application, abundant documents are classified as needed and stored as digital files as illustrated in Figure 1.

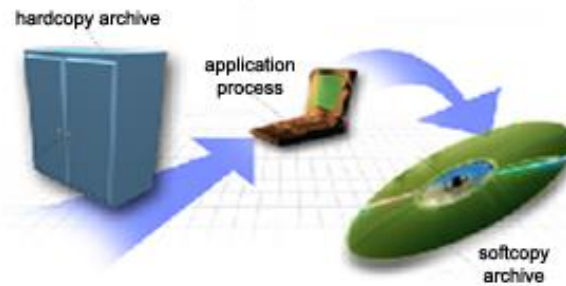


Figure 1. Illustration of digitizing from hardcopy to softcopy.

With information technology that is growing rapidly, data processing can be done with a very large capacity, both the ability to collect and speed of processing, as well as the diversity of forms of information produced. Another advantage is the ease in rediscovering and presenting it, both to be seen visually and the need for propagation to be distributed. A reliable application will help store it in a database. The diversity of types of information recorded in documents will be classified and categorized as needed so that they will be stored regularly in a database.

With the application, all data that has been arranged according to these needs can be displayed again according to the original. Even with the intelligence of the application, the document as a source of information will increasingly show its usefulness in the presence of graphics. Graphs can visually depict the diversity of information from documents. Various categories and classifications of documents needed will appear and can be based on time.

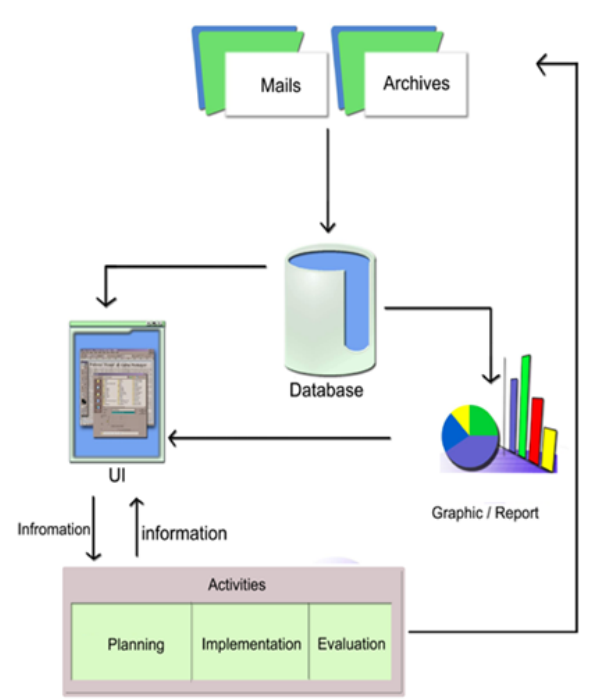


Figure 2. The global process of digitizing archive application.

Globally the process that occurs in the archive digitization application is where all documents, archives, incoming letters, and outgoing letters will be stored in the application database which will then be displayed again as information material that can be used in various university activities, both in planning, implementation, and evaluation material in the form of reports or graphs as shown in Figure 2.

Archive digitization applications must have the ability to store various types of documents originating in text or image files or hard copy documents. If the document is in the form of a file (soft copy), then digitization can be done immediately by inputting the document data according to the attributes requested by the application. Archives in the form of hardcopy will go through a process of digitization by scanning in advance so that it becomes a softcopy file in the form of image files or document files. After the document appears in the application, then the input process begins. The digitization process can be seen in Figure 3.

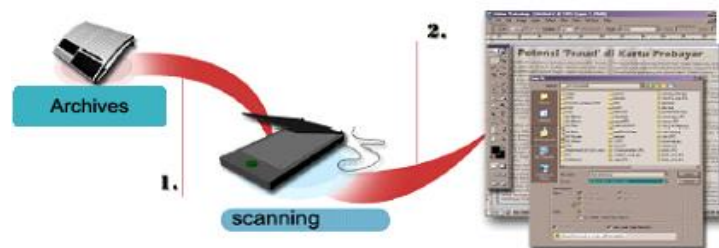


Figure 3. Digitizing process.

3.3. Analysis of paper and archive use procedures

Archive digitization application is an integrated client server application, so that all archives that have been digitalized can be seen and used by all application users depending on the access rights granted to each user. All computers are integrated via network and each can access the system. Network energy saving can be done by reducing the operation time of PAs, shrinking the working bandwidth, or even shutting down the RBS site [11]. Each user is given different authority according to their level of authority. Each user is set access rights to the module in the application, whether he has the right to access all modules or only a few or one module. Then whether he has the right to input data or limited to reading the module. All the modules in the application are integrated so that the data inputted on one module will be a source of information for other modules as we can see in Figure 4.



Figure 4. Integrated module in digitizing archive application.

By granting user access rights, the doubling of paper for each document that is usually done can be minimized. Other than that, documents that have been digitalized can be recycled back into new paper so that they can be used for other documents. It will also help reduce the use of new paper for various other documents. Training and socialization to users are no less important aspects in the implementation of archive digitization applications. This needs to be done because technology will change the work culture. Implementation of the system requires effort from prospective users. All users must be made aware of how important the system is built and must be utilized as optimal as possible.

4. Conclusion

Based on the results of the analysis of the digitizing archive application that has been done in terms of data and procedures, digitizing archive applications can significantly reduce the use of paper in various college activities. Archive digitizing application as an integrated client server application can display and deliver all documents that have been digitalized to all users depending on the access rights granted to each user, so that the use of paper as a medium for delivering information can be minimized and the problem of document access security can be more guaranteed.

Acknowledgments

Authors would like to extend gratitude to Dr. Nizar Alam Hamdani as The Rector of Indonesia Institute of Education for all the support and motivation given to the researchers.

References

- [1] Vezzoli C, Ceschin F, Osanjo L, M'Rithaa M K, Moalosi R., Nakazibwe V and Carel Diehl J 2018 *Designing Sustainable Energy for All: Sustainable Product-Service System Design Applied to Distributed Renewable Energy* Springer Nature
- [2] Agarwal S, Basu K and Nath A 2013 Green Computing and Green Technology based teaching learning and administration in Higher Education Institutions *International Journal of Advanced Computer Research* **3**(3) 295
- [3] Earth Works Group 1990 *The Recycler's Handbook* (US: EarthWorks Press)
- [4] Casey J P 1981 *Pulp and Paper* 2nd Ed. (New York: International Publisher)
- [5] Bhakti D D, Rahadian D, Sidiq P and Nugraha Y 2019 Study of Ruangguru application based on human computer interaction principles and paradigm *Journal of Physics: Conference Series* **1402**(7) 077023
- [6] Dick M and Naumann S 2010 Enhancing Software Engineering Processes towards Sustainable Software Product Design *EnviroInfo* 706-715
- [7] Whitney F 1960 *The element of Research* (New York: Prentice-Hall, Inc.)
- [8] Healy S. 2010. ISO 15489 records management: its development and significance *Records Management Journal*.
- [9] Bhakti D D 2017 Sistem Informasi pengelolaan arsip perguruan tinggi *Journal Teknologi Pembelajaran* **2**(2)
- [10] Lama V, Sharma S K, Goyal N and Singh M 2014 Going green: computing for a sustainable future for economy, environment and eco-friendly technology *International Journal of Advanced Research in Computer Science and Software Engineering* **4**(6) 970-975
- [11] Chen T, Yang Y, Zhang H., Kim H and Horneman K. 2011 Network energy saving technologies for green wireless access networks *IEEE Wireless Communications* **18**(5) 30-38