



Article

Digital Archive System Development in Improving Public Services Using Extreme Programming

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A B S T R A C T

The process of filing a letter is usually done by recording it in an archive book, then the letter is stored in a place or filing cabinet that has been provided. This is considered not optimal, in providing correspondence services that are needed by the community. Due to the limited staff working in the village office, the process takes a long time. This research discussed how to create and design digital archive applications and correspondence starting from data collection methods (interviews, observations and documentation) using extreme programming development methods, system design using UML with Usecase Diagram design model, and CRC Card. In this study, the TRITAM model is used which is a modification of the TAM model. The TRITAM model uses 4 variables, namely Trust and Risk variables and two variables taken from the TAM model, namely Perception of Useful and Perception of Ease of Use. The results of model testing that have been carried out involving 16 respondents showed results of 82.56% with good criteria. The test results show good results for prototype users for a mail filing system.

I. INTRODUCTION

In the current era of globalization, the need for information is getting higher and growing rapidly, computers are one of the technologies that are very widely used and utilized, be it government agencies or private agencies. With current technological developments, information systems have become tools that can assist human work activities by using computer devices and internet networks. Every human resource is

required to keep updated with technological developments. The application of technology that is clearly seen in an institution or institution including in the field of information, the greater and diverse data or information collected in an institution or institution, demanding good treatment in information management.

Archives are one of the sources of information that have an important function to support the process of administrative and management activities of an agency. All

activities carried out by the agency, be it proposals, correspondence or other documents will become archives. The recorded information is evidence and documentation or memory for the relevant agency, one of which is in filing correspondence.

Letter is one of the means or media in writing used by humans to communicate. Letters are divided into two groups, namely personal letters and official letters, which are meant by personal letters, which are letters addressed from someone to others and are unofficial while those meant by official letters are letters addressed from an agency or company to other agencies and are official, in the manufacture of official letters usually use letterhead and listed letter numbers, this is, and usually a stamp is used to be more official. Some of the determinants of information quality are accuracy, punctuality, relevance and ease of making a letter.

Document archiving is done manually using a filing book, and archival documents are stored in a closet or filing place. Manual archiving of documents may still be usable if the amount of data is still small, but archival documents will continue to multiply with increasing time due to the increasing complexity of the activities and functions of the agency. In the process of searching, storage, and processing manual archives still require time, and more energy. Likewise, the public service process, especially in the manufacture of correspondence, is considered not optimal. This is caused by several factors, including the work on the letter archive is still recorded manually. Because the work of recording archives is still in the form of manual recording, the limited number of staff working in the village office results in a long time in the correspondence service process. So a digital archive information system is needed so that services to the public can increase.

II. LITERATURES REVIEW

Document archiving is done manually using a filing book, and archival documents are stored in a closet or filing place. Archiving such documents is inefficient and can cause many problems. This system is expected to help the work of the Dayah Tuha village office in terms of archive management [1].

This research aims to develop a web-based SIMARS-Plus application that can be used in the five tribal offices of DKI Jakarta province. While the benefits obtained from the results of this study are the creation of consolidated archival data which is a combination of archival data from the head office and the five tribal offices of the DKI Jakarta provincial disputes office. The application development approach uses Extreme Programming (XP) which can speed up the development process on projects with flexible functional needs. As for the programming framework using Single Page Application (SPA) as a lightweight framework and suitable for use in processing the quantity of archive metadata and large archive image files [2].

Letters are one of several important communication media in an agency, company and organization, which is used as a communication tool with other parties. Anything related to official organizational activities always uses letters. The Village Office is a government agency tasked with carrying out government authority. However, most village offices still have problems in archiving letters, including: a filing system that is still recorded manually, making disposition goals through a complicated mechanism that takes a long time, and security problems in archiving such as letter loss. So, it is necessary to develop a digital archive information system for archiving letters that can perform fast and precise storage and search. Because, information systems are able to speed up the process and simplify human work [3].

To carry out system development requires a method, or what is known as the system development method. One of the popular

system development methods is Extreme Programming (XP). XP has the advantage of having the ability to improve projects through communication, simplification, providing feedback, giving respect and accepting user input [4]. This method always maintains relationships with customers through good communication with developers [5]. Developers will always try to build systems according to needs. So, developers are open to feedback to test the system from an early age. Development will provide the system to the customer from the start of development and document any changes. Therefore, the XP method requires a solid team. This is because XP dares to listen to customers and respond to changes in every user's requirements [6]. In this study, a digital filing system will be developed to facilitate mail management and mail storage at the Village Office by using the Extreme Programming (XP) system development.

III. FRAMEWORK

Framework research stages in digital archive management information systems for community service built on images figure 1.

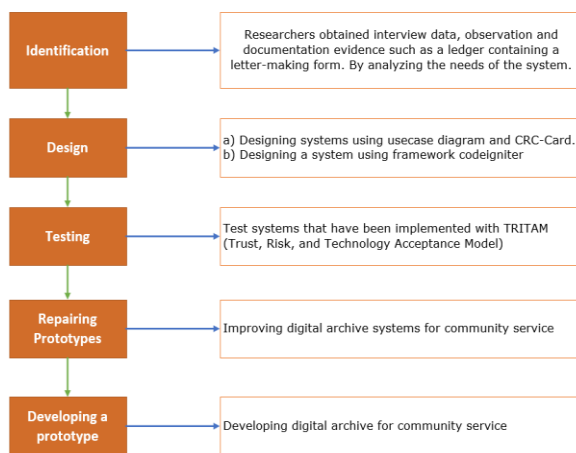


Figure 1. Framework Research Stage

IV. METHODS

The framework for the design of a structured research flow is conveyed through pictures which are the stages in the research carried out. The stages of research must be structured and planned so that research can

run well [7]. In order to develop a digital archive system, prior to conducting research, a research framework is prepared in advance. The research framework can be seen in Figure 2.

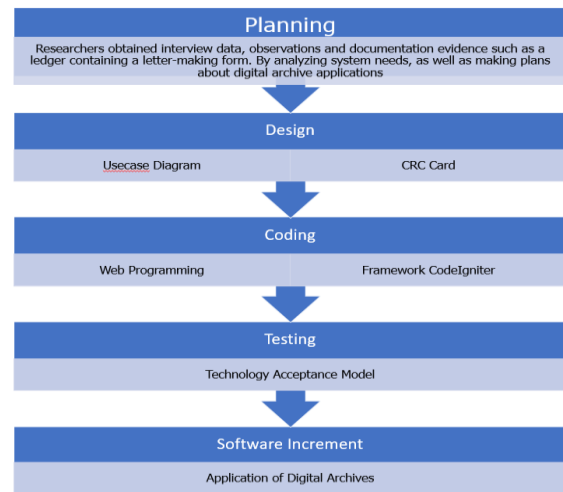


Figure 2. Framework

1. Problem : Document archiving is done manually using a filing book, and archival documents are stored in a closet or filing place. Manual archiving of documents may still be usable if the amount of data is still small, but archival documents will continue to multiply with increasing time due to the increasing complexity of the activities and functions of the agency. In the process of searching, storage, and processing manual archives still require time, and more energy. Likewise, in the process of community service, especially in the manufacture of correspondence is still less than optimal, due to the limitations of staff who work in the village office so that the length in the correspondence service process is recorded in the making of letters still recorded in each letter form.
2. Planning : make planning about the digital filing system in improving service to the community and assisting the village in documenting all the letters that have been issued to be better.
3. Design : create a design using UML with usecase diagrams as an overview of the system to be developed, as well as a

CRC Card to describe what classes will be used along with the required functionality and their relationship to other classes.

4. Coding : Good performance of the application created. CodeIgniter is so fast that it may even be the fastest framework available today. CodeIgniter is very understanding about the development of various libraries today. CodeIgniter therefore provides convenience to be integrated with the libraries available today [8] [9].

5. Testing : System testing is done to ensure quality and also to be aware of the weaknesses of the system [10]. This stage aims to conduct testing in order to ensure that the system developed is free from errors and in accordance with the needs of the requirements that have been set.

The model used in this study is the basic model of Lui and Jamieson's [11], research using the TRITAM concept which is a modification of the TAM model, adding trust and risk factors in the TAM model.

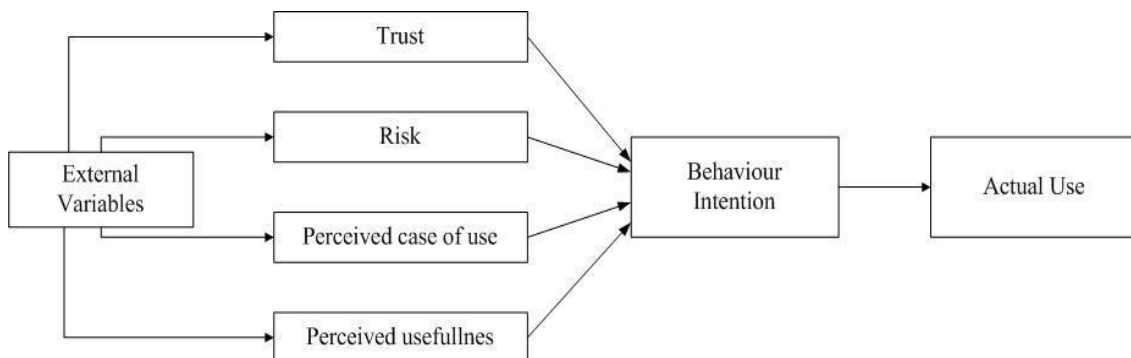


Figure 3. TRITAM Framework

V. RESULT

Result of the digital archive system program, by providing an example of menu display, Implementation can be said as a coding stage where the analysis and design that was previously made is coded through a programming language to become an application program, so that it will be known whether the system that will be made can really meet the desired goals.

Use case diagram is a diagram that provides an overview of the relationship between actors or system users [12]. The Use case diagram can be seen in the figure 4.

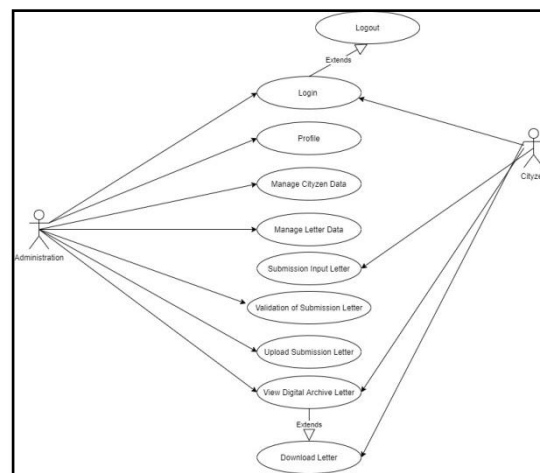


Figure 4. Usecase Diagram

In the design of a software, one of the most important stages is to create a CRC Card. CRC Card is useful for describing what classes will be used along with the required functionality and their relationship with other classes [13]. Class Diagrams are not much

different from CRC Cards, it's just that there are more detailed explanations such as data types and encapsulation of functions and attributes of a class in a class diagram. CRC Card in digital archive application is resident CRC Card, CRC Card letter type, CRC Card Submission Letter, CRC Card validation data submission, CRC Card upload letter.

Citizen	
Responsibilities Save data citizen Update data citizen Delete data citizen Search data citizen	Collaborators Submission Input Letter Upload Submission Letter
Attribute Family Card Number Population Master Number Name Religion Address Place of Birth Date of Birth Gender Blood Type Marital Status Work	

Figure 5. CRC Card Citizen

CRC Card Citizen has attribute Family Card Number, Population Master Number, Name, Religion, Address, Place of Birth, Date of Birth, Gender, Blood Type, Marital Status, Work, has responsibilities Save data citizen, Update data citizen, Delete data citizen, Search data citizen, and has collaborator Submission Input Letter, Upload Submission Letter.

Type of Letter	
Responsibilities Save data letter Update data letter Delete data letter Search data letter	Collaborators Submission Input Letter
Attribute Code Letter Name Letter	

Figure 6. CRC Card Type of Letter

CRC Card Type of Letter has attribute code letter, name letter, and has collaborator Submission Input Letter.

Submission Input Letter	
Responsibilities Input Data Letter	Collaborators Cityzen Type of Letter Upload Submission Letter
Attribute Date Population Master Number Code Letter Letter Needs	

Figure 7. CRC Card Submission Input Letter

CRC Card Submission Input Letter has attribute Date, Population Master Number, Code Letter, Letter Needs, and has collaborator Citizen, Type of Letter, and Upload Submission Letter.

Upload Submission Letter	
Responsibilities Upload Letter	Collaborators Submission Input Letter
Attribute Number of Letter Date Population Master Number Code Letter Letter Needs	

Figure 8. CRC Card Upload Submission Letter

CRC Card Upload Submission Letter has attribute Number of Letter, Date, Population Master Number, Code Letter, Letter Needs, and has collaborator Citizen, Type of Letter, and Submission Input Letter.

After the design is done, then the system is developed based on the website. To access the system begins with the login menu. The login menu is the initial screen to enter the system, where the admin is required to enter a username and password. After the user has successfully logged in, the user will enter the main menu. The main menu is a display that displays the initial view of the admin for managing the digital archive system. The main menu display can be seen in Figure 9.

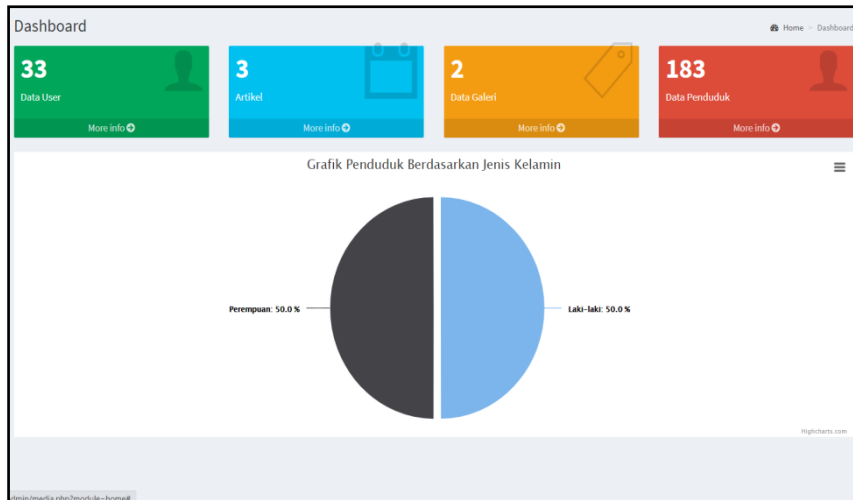


Figure 9. Interface Dashboard

After that, the admin can manage population data which is used to view population data. Admin can manage population data on this menu. Then to apply for a letter, the general public can send the requirements needed to apply for a letter to the system. Then the

admin will manage the mail data. Letters that can be managed include certificate of incapacity, certificate of domicile, certificate of not having PBB and business certificate. The interface for submitting a domicile certificate can be seen in Figure 10.

No	No Registrasi	Tanggal Pengajuan	NIK	Nama Lengkap	Tempat, Tanggal Lahir	Upload KTP	Upload KK	Status	Aksi	Delete
1	DM202107020004	02 Juli 2021	1801044202970005	FITRANI	Padmosari, 1997-02-02			Menunggu		
2	DM202107020003	02 Juli 2021	1801041007950005	ENDRI KURNIAWAN	Branti, 1995-07-10			Menunggu		
3	DM202107020002	02 Juli 2021	1801041903550001	TUGIRAN	Yogyakarta, 1955-03-19			Menunggu		
4	DM202107020001	02 Juli 2021	1801041606630003	NASIB	Jawa Tengah, 1963-06-16			Menunggu		

Figure 10. Interface Submission Letter

After the admin has made the letters needed by the community, the system will automatically archive the letters that have been issued by the village office.

Furthermore, the public can check in the system and can download and print the finished letter. Figure 11 below is a letter print display.


SURAT KETERANGAN USAHA	
Nomor: /SKU/HDY/VII.01.12.2019/III/2021	
Yang bertanda tangan di bawah ini Sekretaris Desa Haduyang Kecamatan Natar Kabupaten Lampung Selatan Menerangkan dengan sebenarnya bahwa:	
Nama	:Dewit Safitri
Jenis Kelamin	:perempuan
Tempat Tanggal Lahir	:gumarang, 1989-05-15
Agama	:islam
Pekerjaan	:mengurus rumah tangga
Benar nama tersebut diatas merupakan warga Perumdam IV Blok C/2 Desa Haduyang Kec.Natar Kabupaten Lampung Selatan dan benar mempunyai usaha :	
Usaha Paksiain Jadi (1)	
Demikian surat keterangan Usaha ini kami buat dengan sebenarnya dan dapat dipergunakan dengan sebagaimana mestinya.	
Dikeuarkan di : Bandar Lampung Pada Tanggal : 22 Mei 2021 Kepala Desa Haduyang	
	
RIBUT SUBROTO NIP.196510101985021001	

Figure 11.Submission Letter Output

Letter Data Output is the output of the system for use by the user, where the letter can be downloaded by the user. This letter can be used by the user who has sent the letter to print the letter.

VI. DISCUSSION

Testing the acceptance of technology from the prototype with the TRITAM model will display the results of Trust, Risk, Perception of Useful, Perception of Ease of Use. The TRITAM approach used is the model developed by Lui and Jemison[11], which modifies the TAM model by adding Trust and Risk variables and only uses two TAM variables, namely Perception of Useful and Perception of Ease of Use. This variable was chosen because Trust and Risk have a major influence on a person's interest in using a technology, while the TAM variable only uses two variables, namely Perception of Useful and Perception of Ease of Use, which are considered sufficient to assess someone's acceptance and willingness to use new technology[11]. This test uses a questionnaire filled out by 16 respondents with details of 4 officers and 12 samples of system users. The questionnaire was prepared using the Likert scale with answers 5 = Strongly Agree, 4 =

Agree, 3 = Neutral, 2 = Disagree, 1 = Strongly Disagree. The number of questions for the variables measured based on the TRITAM model are: the Trust variable as many as 5 questions, the Risk variable as many as 5 questions, the Beneficial Perception variable as many as 6 questions and the Perception of Ease of Use of the variable as many as 6 questions. The results of respondents' answers are then measured by the following formula:

$$\%Total\ Score = \frac{Actual\ Score}{Ideal\ Score} \times 100\ %$$

The actual score is the total value of the respondents' answers (5 = Strongly Agree, 4 = Agree, 3 = Neutral, 2 = Disagree, 1 = Strongly Disagree). While the Ideal Score is the maximum number of answers from respondents. For example, if the best answer has a score of 5, the number of respondents

is 16 and the number of questions is 4 questions, then the Ideal Score is 240. The results of the Actual Score are then converted into the following values: Very Good = 80-100; Good = 60-79; Not Good 0-

59. Based on the test results obtained from the questionnaire, the results of the test recapitulation with the TRITAM model are presented in table 1.

Table 1. System Test Results Using TRITAM Model

Criteria	Actual Score	Ideal Score	% Total Score	Kriteria
<i>Trust</i>	187	240	77,92	Good
<i>Risk</i>	182	240	75,83	Good
<i>Perceived Useful</i>	431	480	89,79	Very Good
<i>Perceived Easy of Use</i>	389	480	81,04	Very Good
Total	1189	1440	82,56	Very Good

Based on the results of processing respondent response data as many as 16 respondents based on 4 criteria TRITAM model then obtained trust results of 77.92%, risk by 75.83%, perceived useful by 89.79%, perceived easy of use by 81.04%. Of the overall TRITAM model criteria for technology acceptance, the result is good at 82.56%.

VII. CONCLUSION

The letter filing system for community service that is built makes it easier for the community to make correspondence that can be done anytime and anywhere with the link that has been provided by the Village Office. The benefits of the system that is built can make it easier for people to know village information and carry out the process of administration of letters quickly and precisely without having to waste time to come and queue. The mail filing system is built by

applying the Extreme Programming (XP) method, where this approach is able to make system development more practical and simple without compromising its main function. TRITAM test results that have been conducted involving 16 respondents showed results of 82.56% with good criteria. From the results of these tests showed good results for prototype users for the mail filing system.

VIII. ACKNOWLEDGEMENT

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