

# Saving the Nusantara's Ulama Scientific Treasures with Digitization

Nur Fauzan Ahmad<sup>1\*</sup> and Ilham Ibnul Hakim<sup>2</sup>

<sup>1</sup>Faculty of Humanities, Diponegoro University, Semarang 50274, Indonesia

**Abstract:** This study aims to preserve and save the scientific treasures of the scholars of the archipelago in the form of coastal ancient manuscripts at the Jami' Lasem Mosque Library, Rembang. The condition of the ancient manuscripts is now damaged, weathered due to age. If not saved immediately, the contents of the manuscript will be damaged and unreadable. Though the contents are very useful for today's life. The effort that needs to be done is to digitize the manuscript, while the original manuscript can be preserved by means of preservation. Digitization is not only to preserve the contents of the manuscript but also to maintain health and the environment. We managed to digitize four of the 14 manuscripts in the Lasem Mosque library. The potential of ancient manuscripts in Lasem still needs to be traced again considering that Lasem is an old city where an old pesantren was founded in Java.

## 1. Introduction

Pondok Pesantren is a traditional Islamic education institution as a center for Islamic learning and the dissemination of Islamic knowledge in Indonesia, where Islamic knowledge is formally taught and Islamic values are practiced every day. Their role as Islamic learning institutions and centers for the spread of Islamic teachings in Indonesia can be seen clearly from their texts.

In pesantren, the text of Islamic boarding schools is often called "Kitab Kuning" which contains Islamic sciences, used for teaching Islam, such as *Tafsir Jalalayn*, *Fathul Mu'in*, *Fathul Wahab*, *Kitab Taqrib*, *Kitab Sittin Mas'ala* etc [1]. However, the marginal record makes the pesantren's manuscript completely different from the original book. The students when studying give small notes under the word or on the edge of the book. This is an important resource for examining the efforts of Indonesian ulemas to translate Islam into the local context. This scholarly manuscript provides academic evidence of how Islam interacts with local and Indonesian culture. However, the importance of the pesantren book in reconstructing the Islamic view of the Indonesian world is neglected and has not been appreciated. This old pesantren manuscript will revise the understanding of Islamic intellectual heritage and assist efforts to reconstruct the history of Islamic intellectual dynamics in Indonesia in the 18th-21st century period [2].

The thoughts of many scholars are written in handwritten manuscripts or manuscripts. This manuscript is evidence of literacy activities that have been carried out in the past. Manuscripts contain potential that can express historical values, thoughts, culture and views of life, local wisdom of past ancestors. The ancient manuscripts are still traditional media in the form of paper, daluwang, lontar, and bark. Along with the passage of time and the tropical climate in the archipelago, many of these manuscripts have been damaged. Manuscripts are very vulnerable to humidity in the air and water, rodents, carelessness in storage, natural disasters, fires, theft including buying and selling manuscripts [3] [4].

Isi Manuscripts containing local wisdom must be saved, because they are old and in a state of concern, damage, destruction, or even loss. Manuscripts are handwritten notes written by someone on paper, leaves, bark, bamboo, bones, which are at least 50 years old and contain many things, including local wisdom [5]. There are still many manuscripts by scholars in the archipelago that are neglected. As a result, many ancient texts that have historical and scientific value become dirty, damaged, porous, unreadable, weathered and even lost. due to lack of proper treatment and other natural causes. Even if they are in good condition, they usually separate from their original parts when they are bonded.

Of course, this is a big loss. To save it, it is necessary to make efforts to digitize the manuscript by photographing it from analog format to digital form [5] so that the information in the manuscript is not lost along with the physically damaged manuscript. Digitization of manuscripts is the process of converting various information, news, or news from analog format to digital format so that it is easier to produce, store, manage, and distribute [6]. Digital information can be presented in the form of text, numbers, photos, audio and visuals. Manuscripts which

\*Correspondence [fazwan.268@gmail.com](mailto:fazwan.268@gmail.com)

are cultural objects that are protected considering they are over 50 years old and written on paper, stone, and metal are vulnerable to damage and destruction. In fact, some texts have been lost due to natural disasters, such as the tsunami, so they need to be digitized [7].

Ancient manuscripts are handwritten results that contain information about national culture that has important value for national culture, history, and science. Manuscripts or manuscripts in the past are now objects of cultural heritage which are regulated in Law Number 11 of 2010 concerning Cultural Conservation. Manuscripts are said to be a form of cultural heritage, this is explained through Law Number 11 of 2010 concerning Cultural Conservation, Chapter III Article 5 which explains the criteria for cultural heritage, including those aged 50 (fifty) years or more; represents the shortest style period of 50 (fifty) years; has a special meaning for history, science, education, religion, and/or culture; and have cultural values for strengthening the nation's personality [8]

Pests in museums/libraries can cause serious damage to valuable library materials. Pests can be a variety of insects. Research at the Manuscript Library of the Egyptian Coptic Museum has captured 60% of the 1,047 specimens belonging to nine insect pest species under six families and five orders in the museum were found specimens of *Monomorium pharaonic*, *Ochetellus glaber*, *Thermobia domestica*, *Gibbium psylloides*, *Anthrenus verbasci*, *Periplaneta Americana*, *Losioderma serricorne*, *Liposcelis bostrychophilla*, *Attegenus fasciatus*[9]

Apart from being dusty and dirty, old, weathered manuscripts are a pleasant place for insects, rats, and other pests and are not impossible to become a breeding ground for disease. Mainly cough caused by book dirt dust [10] [11][12]. As reported by Bolourchi (2003), a doctor in chemical engineering who observed the health conditions of librarians working in public libraries stated that there were abnormal health conditions among these librarians, namely they had lung cancer, attacks of heart, facial skin damage, and respiratory tract disorders [13] [14]. Therefore, digitizing the ancient texts will not only maintain health but also protect the environment.

Therefore, efforts are needed to maintain the condition of the manuscript to be urgent so that the manuscript remains safe, its information content is maintained. This effort can be done in traditional or modern ways. Each has advantages and disadvantages. In this modern era, efforts to save this information can be done by transferring digital media which converts analog media into digital form [15] Digitization helps preserve the physical form of the manuscript and saves the information content so that it lasts a long time.

The benefits of digitization are protecting and representing original sources, making it easier and saving in storage, simplifying management and speeding up the retrieval process, facilitating information dissemination/dissemination, being more interactive (multimedia content), facilitating copying and backing up [16]. Digitization also has benefits For companies, such as efficiency, namely the ability to penetrate space and time barriers that often hinder work, digital manuscripts can be accessed online from wherever and whenever the archive is needed, (2) create a comprehensive digitalization system, (3) digitization can form a culture of mutual respect. Knowledge sharing between researchers and the community. With all the ease of access offered, digitization opens the door to sharing information and knowledge that will later be useful for the development of science, (4) making it easier for customer service officers to access manuscripts relevant to customer complaints (5) saving on paper purchases, rent and space. (6) provide flexibility for researchers in their work [17].

Before carrying out the digitization process, it is necessary to consider the basics of digitizing that must be known, as follows the ownership of the license (copyright) of the document/manuscript, the number of documents/manuscripts to be processed, the display of the resulting digital file, the quality of the expected results, the method and place of storing the catalog the resulting digital file information, and how to organize the workflow[18]

This study took the object in the Jami' Lasem Mosque Library, Rembang Regency. This library is integrated with the Jami' Lasem Mosque complex which has also been developed into a Museum as a Cultural Heritage. Currently, Lasem Mosque has a collection of 14 ancient manuscripts with various contents related to Islam. All manuscripts are just placed arbitrarily in a dusty wooden cabinet and without any preservatives. Their collections are more than 50 years old and some are even dated to 1700. Because of this, they are in a fragile and fragile condition and some of the manuscripts have been damaged so that they can no longer be read.

According to Abdul Hamid, Jami' Mosque librarian, the collection of ancient manuscripts was started since the establishment of the Jami' Lasem Mosque library in 2011. Meanwhile, receiving ancient manuscripts began in August 2016. The manuscripts came from the local community. Originally there is a person named Junaidi, the grandson of Shaykh KH Mustofa who is the father-in-law of the great Kyai Lasem Mbah Ma'shoem, who gave Abdullah Hamid a manuscript to be treated in the mosque library. He believes that the manuscript is one of the authentic scientific heritage that needs to be saved. Besides that, it is also for "ngalap berkah"/ "tabarrukan" by preserving the relics of the predecessors.

The existence of this collection of ancient manuscripts received a very good response from the mosque which then provided facilities and infrastructure in the form of a special room and cupboard for storing manuscripts, even though it was not representative. Likewise, the concern of the surrounding community has also grown as evidenced by several people being moved to donate their manuscripts which are relics of their ancestors to the mosque. However, there is still the potential for manuscripts that are owned by the community that have not been submitted

by the community. The hope is that the government's attention needs to be more concrete. Such as research, training and collection infrastructure.

According to Hamid, Lasem as an old city which is the center of Islam and many Islamic boarding schools, especially NU pesantren, is very likely to store many manuscripts created by the scholars of the past. However, there are still many who have the awareness to submit it to the mosque library for various reasons. There are also many clerics who are thought to have manuscripts, but are reluctant to tell [19]. Digitization efforts cannot be carried out easily, due to cultural differences that have them. This is almost the same as what was found in the village of V Legok Indramayu when the digitization effort was carried out. Therefore, intercultural communication is needed that is used in digitizing manuscripts using a cultural dimension approach so that digitization can be carried out [20].

This project was carried out at the Lasem Rembang Mosque, which houses manuscripts by Ulama Nusantara. The location was chosen because of the large number of manuscript collections and most of the collections were heavily damaged.

The purpose of this research is to preserve the intellectual heritage of Islam in Indonesia. The entire manuscript collection will be photographed with a digital camera and the digital reproduction will be stored in the Indonesian Departemen's Library Faculty of Humanities Diponegoro University and Jami' Lasem Mosque Library.

## **2. Research Method**

This study uses a qualitative research design with a case study approach, because the author wants to digitize manuscripts as an effort to preserve and save information at the Jami' Lasem Mosque Library. The subjects in this study were the collection of ancient manuscripts at the Jami' Lasem Mosque Library and those who were responsible, knew, and were directly involved in digitizing the manuscripts in the Jami' Lasem Mosque Library, Rembang. The object of research used by researchers are all manuscripts in the Jami' Lasem Mosque Library, Rembang. The informants used as research samples were the staff of the Jami' Lasem Mosque Library in Rembang and the Mosque's Takmir Management.

Data was collected by observation, interviews and documentation studies, as well as observations in the form of direct shooting in the field. Research results from observations and interviews are supported by documentation. The data that has been collected through data collection techniques is then processed by researchers. Qualitative data processing steps are indicated by three paths, namely data reduction, data presentation, and conclusion drawing.

## **3. Digitization Process at Jami' Lasem Mosque Library**

So far, there has never been a digitization of the manuscript. This is the first time. The digitization activity was carried out due to the condition of the manuscript which was already fragile, so it was necessary to preserve the original source and save the information contained. The objectives to be achieved from the manuscript digitization process carried out at the Lasem Mosque Library are to preserve the physical manuscripts, save the contents of the manuscripts, and facilitate access to the younger generation. The purpose of the digitization process is expected to be able to bring benefits to the manuscripts in the Jami' Lasem Mosque. The expected benefits are not only for the library, but also for visitors. The benefits that can be felt by the process of digitizing manuscripts at the Jami' Mosque Library include:

The digitization process can be carried out on various forms of collections, one of which is in the form of manuscripts. Manuscripts can be digitized using equipment such as scanners or digital cameras.

### **3.1 Pre-Digitization Stage**

The equipment needed to carry out the digitization process consists of hardware and software equipment. Hardware and software equipment requires good specifications and quality so that later it can minimize the constraints that exist on the equipment. The hardware equipment used to digitize the manuscript at the Radya Pustaka Museum includes a laptop, a Canon EOS 7D camera, 2 panel lights on the table, a printer, and a desk. While the software used is the default software from the Canon EOS 7D camera called the EOS Utility System. Due to a technical malfunction, the photo shoot was finally done using a camera from a cellphone with 15 mega pixels.

The next step before digitizing the manuscript is to determine or select the manuscript. Selecting manuscripts with conditions that are very vulnerable or very old, that will be prioritized for digitization.



Figure 1. Manuscript Observation Process



Figure 2. Preparation for digitization

After that, a codicological recording of the manuscript was carried out to help further researchers find out the details of the physical data of the manuscript such as size, material, the presence or absence of colophon etc.<sup>21</sup>

### 3.2 Stages of Taking Photos

The photo is taken in a 'bird eye' style or from above the object, on a flat and parallel plane. Efforts are made to provide an empty space (approximately a minimum distance of 2cm so that the border or edges of the script can be seen). The background on which the script is placed is black (to help with cropping and can be erased to be transparent). If the manuscript is still good, a photo session can be done 1 page per 1 page, if it is feared that it will damage the script, then take a photo shoot at once 2 pages side by side like in a book (right-left). We do not use zoom on the camera lens because it can damage image quality (unless we have a special zooming lens). Light used with balanced lighting, at least from 2 directions (right and left), if better. Suggested natural light from the sun plus lightning assistance from lamps. Colors can vary depending on many aspects, ranging from camera lenses, different screens used on cameras, cellphones, or laptops, etc.

### 3.3 Sorting Stage

After shooting, all photos are sorted into a special folder for easy search. Furthermore, duplicate photos that do not match are deleted. Then renamed if necessary to make it easier to sort the position / layout of the manuscript page.

### 3.4 Photo Editing

Photos can be cropped according to the desired position, Crop can be one page / two pages. The cropping position does not reach the border of the script, so it still shows the state of the border of the script. Furthermore, the background that was previously black is transparent, or remains black or changed to white. If there are photos that are not suitable for coloring, color adjustments can be made starting from contrast, brightness, temperature and others.

### 3.5 Export Edits

At this stage, efforts are made to maintain the size and quality of exports not less than 2/3 or about 60 percent of the raw material. The use of editing applications greatly affects the results of photo exports, should be used at a minimum. Photo processing application that can set the export format. Furthermore, the photo is exported to the PNG extension if you want to maintain the transparency of the photo. Or exported to JPG if the background is white or black, it can be in another format. But for convenience and standard JPG and PNG formats are the main choices. After that the photos are exported to a separate folder from the photo folder before editing (RAW/raw)

### 3.6 Final Result

The process can stop until the photo is edited and exported or continued into PDF, EXE, EPUB files and others. If you want to be able to access it with any device, the PDF form is the main thing because in one file you can store a full script with a general view. If you want it to be like a book that can be flipped over, you need an EPUB application and a photo of the manuscript should be made one page at a time (either directly or by editing). The use of EXE to be opened without the EPUB application, but specifically for WINDOWS devices



Picture 3 Sufism Manuscripts



Picture 4 Script of Burdah's Poetry

Doing the digitization process for one manuscript certainly has a different time range. Each manuscript has a different number of pages as well as the level of damage to the manuscript. Manuscripts with a small number of pages and the level of damage that is not severe will be digitized faster than manuscripts with a large number of pages and have been badly damaged. The process of digitizing manuscripts carried out in Indonesia cannot be ascertained the time range for each digitizing one manuscript.

The process of digitizing one manuscript can take 2-3 hours, one day, or 3 months. This is because it depends on the thickness and level of damage of a manuscript. The process of digitizing the manuscript has been carried out on June 7-8, 2022, only four manuscripts have been produced and will continue to run. The conditions of damage and the thickness of the different manuscripts made the technical implementers of digitization unable to target one manuscript, because the estimation of each manuscript would be different, so that only four manuscripts were digitized recently.

#### 4. Conclusion

There are only 14 collections of ancient manuscripts at the Jami' Lasem Mosque which contain Islamic religious texts such as the Qur'anic manuscripts, interpretations, fiqh books, Sufism books, prayers and poetry. The implementation of digitizing the manuscript collection of the Jami' Lasem Mosque in Rembang has only succeeded in digitizing 4 manuscripts. Digitization is very urgent because manuscript collections are fragile and damaged while storage is still careless and has not implemented the correct preservation rules. The potential of ancient manuscripts, especially those containing religion in the Lasem area, is quite large because Lasem is an old city where many old pesantren come from. It is estimated that there are still many manuscripts that are still stored in the community. Therefore, it is necessary to have a good and appropriate cultural approach and communication to the owner of the manuscript to let the manuscript be digitized.

The Jami' Lasem Mosque Library Management is expected to immediately complete the digitization of the manuscript. For physical manuscripts, proper storage should be carried out, namely by providing special boxes, placing collections in special cabinets, adding spices for preservatives, occasionally weeding and fumigation. The completion of this research was thanks to the help of the Research Fund of the Faculty of Cultural Sciences, Diponegoro University, Semarang, therefore the authors would like to thank the Dean of FIB Undip and the Takmir Management of the Jami' Baiturrahman Mosque, Lasem Rembang.

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