KnE Social Sciences

The Bandung Creative Movement 2023 – Enhancing Collaboration In Arts, Design And Craft For Sustainable Creative Industries: Technology and Art

KnE Publishing

Research Article

Digital Preservation of Javanese Manuscript: A Digital Asset Management Approach at Radya Pustaka Solo Museum

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Abstract.
Radya Pustaka Solo Museum is one of the places that preserves ancient manuscripts in Central Java, Indonesia. Besides functioning as a place to preserve ancient manuscripts, it is also a cultural research center and a vehicle for education. Furthermore, it serves as a historical tourist attraction. As one of the cultural development centers in Indonesia, the Radya Pustaka Solo Museum plays an important role in researching various heritage such as ancient manuscripts, statues, ancient books, and souvenir artifacts from abroad. This study attempts to discuss the framework of development for ancient manuscripts within the collection of the Radya Pustaka Solo Museum in the form of digitalization into the JPG format with the digital asset management system (DAMS) approach. This digitalization is crucial for the preservation of Indonesia's manuscript heritage.

Keywords: digitalization, manuscripts, cultural heritage, history

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Published: 10 January 2025

Publishing services provided by Knowledge E

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Selection and Peer-review under the responsibility of the BCM 2023: Technology and Art Conference Committee.

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1. Introduction

In the current era of digitalization, the preservation of cultural heritage artifacts such as ancient manuscripts have become a crucial endeavor in Central Java, Indonesia, as they maintain collective memory and remain an important factor in understanding the past. However, many ancient manuscripts are currently in a very worrying condition as most have been made fragile by time, termites, or improper maintenance. Therefore, it is very important to preserve these manuscripts [1].

One of the ways to preserve manuscripts is through digital preservation. The digitalization process requires hard devices, software, and storage media. Software includes Microsoft Windows XP Professional, Adobe Photoshop, Total Image Converter, and others. Meanwhile, storage media includes hard disk drives, magnetic tapes, optical

Figure 1: Museum Radya Pustaka. Source: personal documentation.

disks, and others. This would later be adjusted through the Digital Asset Management approach, which is a way to maintain manuscripts in digital files using a consistent directory structure and good file governance to make sure that files are not lost or accidentally changed [2].

In this study, the Radya Pustaka Solo Museum is the target of the authors' research. This is because the museum holds approximately 400 of Javanese manuscripts according to Museum Radya Pustaka staff ranging from the history of the palace, *wayang* stories, music, the Qur'an, historic agreements, and others. Most of the manuscripts are

around a century old or slightly older [3], but the condition is quite worrying if it is not handled correctly as the manuscripts will further rot and be damaged. For this reason, the museum is currently carrying out the process of manuscript digitalizing. The purpose of this study is to discuss the framework of the development of Radya Pustaka Solo Museum's manuscript collection digitalization effort using the digital asset management system (DAMS) approach. Basically, the use of Digital Management Assets is to manage and control the growth and use of digital materials that are increasing rapidly, especially those related to scientific papers and other library collections that can be transferred.

2. Methods and Equipment

This study uses a qualitative research method case study analysis method in an effort to explain the digitalization of the Radya Pustaka Solo Museum through the Digital Asset Management System approach. The Qualitative research method itself is a research method used to examine natural object conditions [4]. While the analysis method that the authors use is the case study analysis method because the author identifies a specific case related to the digitalization of ancient manuscripts in the Radya Pustaka Solo Museum. This is closely related to the case method itself as a study that wants to explore what information can ultimately be learned or drawn from a case [5].

The data collection method that the author uses is the method of observation and interview. In the observation process, the author visited the Radya Pustaka Museum directly and looked at the results of the digitalizing process of the manuscript at the museum. While the author's interview process is conducted by exploring information in depth by preparing a list of questions according to the topic of the problem. The author's interview took place with an educator at the museum.

The analysis method used by the author is a case study method. This method is carried out to achieve the understanding of a case by collecting data and taking the meaning of the data. Here the author collects data from observations and interviews and then concludes the data to obtain a deep understanding of the research that the author examines. The use of Digital Asset Management (DMA) plays an important role in managing and controlling the rapid growth and use of digital materials. Especially in the context of scientific writing and library collections, DMA enables the efficient collection, storage and distribution of digital materials. Through DMA, researchers and librarians can better manage and respond to changing technology, thereby optimizing data accessibility and security [7]. In addition, DMA also opens up opportunities to outsource

scientific papers and library collections, enabling more people to gain access to valuable information. As technology develops and copyright issues grow ever more complex, DMA is becoming an indispensable tool in achieving the responsible management and use of digital materials [7].

3. Results and Discussion

3.1. The Beginning of digitalization at the Radya Pustaka Solo Museum

The condition of the manuscript collection at the Radya Pustaka Surakarta Museum is quite apprehensive. According to Museum Radya Pustaka staff, about 60% of the manuscripts are in good condition and clearly legible, 10% suffered minor damage, as the cover and edges of the manuscripts have started to rot and tear into small pieces, 20% experienced severe damage which made the text illegible either in part or as a whole. This damage is caused by room humidity and insect attacks which make the text fade and crumble. Several manuscripts, such as copies of *Surat Manik Maya* and *Serat Babad Giyanti*, were badly damaged and could not be preserved. The oldest manuscript in the collection is *Serat Jayabaya Wangsulan* which cannot be read at all and has been destroyed [6].

Digitalization of manuscripts in the Radya Pustaka Solo Museum has been going on since 2010. But the process of making an English-speaking website to display collection only occurred during an MoU between the Radya Pustaka Museum and Sebelas Maret University Surakarta (UNS) in 2019. In the MoU, the UNS is willing to help create an English-language website with a caption as per the museum standards in the United Kingdom. This process is assisted by internships from UNS [3]. The process of digitalizing these ancient manuscripts itself was carried out by a technical implementing staff. But since the project began, only a small number of digitilazed manuscripts appeared on the museum's official website, still inaccessible to the general public [2].

3.2. The Process of Digitalizing Ancient Manuscripts in the Radya Pustaka Solo Museum

Even though there have been efforts to digitize, the system used at the Radya Pustaka Museum is still mostly manual. One example is the classification system for library

materials, including ancient manuscripts, which uses the Dewey Decimal Classification (DDC) method with group codes 000-900. However, this museum uses a special classification system created by Nancy K. Florida [6]. This system is intended so that Javanese manuscripts can be easily found and functions as a catalog. Unfortunately, the Florida's catalog is not yet available electronically, let alone online. Therefore, it is necessary to develop a digital catalog so that individuals interested in these ancient manuscripts can easily and quickly access these texts and obtain the information they need [7].

The digitalization process begins with the selection of which manuscripts by Museum Radya Pustaka staff. These manuscripts are usually digitilazed by internship students from the Department of Philology, Javanese Literature, Indonesian Literature, Arts, and Archaeology of Sebelas Maret University Surakarta (UNS). The condition of the manuscript is one of the main factors in this decision-making process. If the manuscript is damaged or torn in any manner, the manuscript would not be eligible for the digitalization process. This is important because the manuscripts in the Radya Pustaka Solo Museum would be approximately one century old on average [3]. The next stage is the provision of equipment needed during the digitalization process in the form of hardware and software. Hardware devices usually consist of computers, canon EOS 7 D cameras, panel lights, printers, and tables. While the software is the default of the Canon EOS 7 D camera and the EOS utility system. The availability of hardware and software devices is crucial because both objects support the success of the digitalization process [2].

Next is the photo shoot using a digital camera. After finishing the photo shoot, the camera shots will appear on the screen on the computer. Here the role of Microsoft Office Picture software is very helpful in improving the quality of the images. Then it was Corel Draw's turn to combine the transliteration of the manuscript with the images. After that, the final results are stored in a folder according to the script code. The results of this stage are usually in the form of JPG format images. A copy of the JPG manuscript is then put into a variety of storage medians on both CD-ROM and DVDs. Furthermore, some files may be stored on an external hard drive. Storage of files on a variety of media aims to minimize the loss of manuscripts. For example, if the manuscript is stored on CD-ROM and if one day the CD-ROM is damaged. Then at least the museum still has a copy of the manuscript in the form of DVDs or external hard drives. A copy of the JPG manuscript is then put into a variety of storage medians on both CD-ROM and DVDs. Furthermore, some files may be stored on an external hard drive. Storage of files on a variety of media aims to minimize the loss of manuscripts. For example, if the

manuscript is stored on CD-ROM and if one day the CD-ROM is damaged. Then at least the museum still has a copy of the manuscript in the form of DVDs or external hard drives [2].

Figure 2: Example of manuscript from the digitalization process at the Radya Pustaka Solo Museum. *The Pawukan Mawi Gambar* manuscript. Source: personal documentation.

There are various obstacles in this digitalization process, the first being the condition of the manuscripts. It is necessary to be patient and wise when treating these manuscripts. Even the smallest error can permanently damage the manuscripts. The second obstacle is the lack of technical personnel in the digitalization process of the manuscripts, the existing amount of technical personnel in this project is still minimal. This is inversely proportional to the number of manuscripts available in the museum, which reaches up to the hundreds. Lastly, the final obstacle that the Radya Pustaka Museum faces is that it does not have the proper tools to display the collection of manuscripts in a more modern way. Even on the official website, the content is still very lacking [3].

From the digital asset management system, the process of digitalizing ancient manuscripts carried out by the Radya Pustaka Museum has met the criteria where

the files from the digitalization process are stored in a consistent storage area. But in terms of broader asset management, Radya Pustaka Solo Museum has not developed. Even on the website of this museum, the information is still very minimal [1].

4. Conclusion

Based on the passages above, several conclusions can be obtained. First, the Radya Pustaka Solo Museum has carried out the process of digitalizing ancient manuscripts to save the nation's cultural heritage. However, the digitization process that they utilize is still in a very simple stage, using a camera and the default camera software application. Second, at a more advanced digitization stage, the Radya Pustaka Solo Museum will be limited to developing a website through the use of a foreign website, which makes it difficult for the general public to access the collection of ancient manuscripts owned by the Radya Pustaka Museum. Third, there are still many challenges in the process of digitalizing the manuscripts, such as the worrying condition of the manuscripts and a shortage of technically trained personnel. Finally, as seen from the Digital Asset Management System approach, the Radya Pustaka Museum has met the criteria for saving digital assets, namely in the form of consistently storing museum collection files properly. However, in a broader perspective, such as a database, the Radya Pustaka Solo Museum is still lacking in some respects. Therefore, it can be said that the digitization process at the Radya Pustaka Solo Museum is still in development because most of it is still very manual, even though there have been efforts to digitize it.

Conflict of Interest

The authors have no conflict of interest to declare.

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