

Design and Development of Information System for SMB II Museum Collection Management

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Abstract:

This paper discusses the design and development of an information System for museum collections management to improve its performance for preserving Palembang cultural artifacts stored in Sultan Mahmud Badaruddin II (SMB II) Museum. This developed information system effectiveness to manage the museum collections where the information can be saved and retrieved by user efficiently Therefore the information can be access and utilized for service quality improvement of the museum. Hopefully, it can protect, improve understanding, and dissemination of cultural heritage as the identity of the Palembang Society.

Keywords: — System Design and Development, Information System, e-Museum

I. INTRODUCTION

The diversity of cultural heritage and values of local wisdom that evolved from generation to generation is the wealth of a nation of Indonesia. Those values can be seen from the traditions of various tribes scattered in various provinces and cities in Indonesia. One of them is the city of Palembang. As a pluralistic nation, Indonesia is known as a multicultural society.

Multiculturalism diversity and cross-cultural issues have consequences which until now has not had a clear cultural identity [1]. Cultural identity often leads to tensions and conflicts between nations could result due to the lack of documentation and inventory of culture and art of effective especially for the city of Palembang.

Palembang is one of the historic city because Palembang is a city that became the center of Srivijaya kingdom. Its heyday peak under King Balaputera Gods, where Srivijaya controlled the Strait of Malacca, Sunda, Malacca peninsula in 78th Century [2][3][4]. The greatness of the kingdom of Srivijaya and Palembang Darussalam with cultural heritage and artistic diversity requires documentation and inventory for the preservation and recognition of ownership that is not recognized or taken by other nations in view of the extent the territory of the kingdom of Srivijaya in the past. For example, wearing culture Songket as a cloth in traditional events in Palembang. However, there is a uniqueness that characterizes Songket that need to be identified and documented its complete history as a cultural and artistic identity Palembang. The

uniqueness of the value of culture and art in the city of Palembang became one of the riches the identity of which is the pride and must be preserved.

Granting access rights and preservation of cultural heritage can be done through gathering information about cultural heritage objects stored in information systems such as library magazines, archive search aids, and lists of items in museums. The system cannot provide direct access. Local Study Center has improved understanding and dissemination [5] but still can't remove the geographical barrier.

At this time information technology propose information and contact exchanges for cultural heritage. Access is generally enabled for inventory created and managed by organizations. Few methods for Palembang culture information system have been proposed and discussed in [6][7], but much improvement is needed on its design and data validity. An improvement to the study will give benefits to the public that have been proven in many studies. For example, European has developed an advance System for Cultural heritage space identification [7] and gives advantages to the European citizen.

This study presents a method of managing the tangible cultural artifacts belongs to SMB II Museum collection by utilizing web-based applications. Internet search engines can give access to Web pages directly by providing hyperlinks to pages that contain words in the query, the objects in cultural heritage collections are not directly accessible, so that information systems have to deal with object representations, often in the form of object records.

A web-based information system was developed in this study for the purpose of SMB II collection management in order to improve the performance

and service quality of the museum. Cultural artifacts in this study are categorized into art, tools, cloth, and weapon and technology. Data collected by doing a literature review, interviews, and observations directly to SMB II Museum collections. The amount of data collected is more than 200 and will continue to grow.

II. LITERATUR REVIEW

In this section will discuss the study of literature based on cultural and historical heritage at the SMB II museum collections.

A. Definition of Cultural Heritage

Culture is a lifestyle that is developed and shared by a group of people and passed down from generation to generation. Culture consists of complex elements, including religious and political systems, customs, language, equipment, clothing, buildings, and works of art. Cultures can be viewed from different perspectives and at different levels.

There are also variants of definition among researchers and practitioners in various fields. Will establish a culture in which there are some elements are shared among the group. These elements can share experiences, shared history, common activities, common colleagues or managers and a place to share [8].

Cultural heritage is the legacy of physical artifacts and intangible attributes of a group or society that are inherited from past generations, maintained in the present and bestowed for the benefit of the future. Cultural heritage objects are usually curated by memory institutions, i.e. libraries, archives, and museums. For many centuries, cultural heritage institutions have spent their efforts on collecting and describing artifacts and social phenomena to preserve and give access to our

cultural heritage, and have dealt with problems of information storage and retrieval since their beginnings [9].

B. Palembang Cultural Heritage

Palembang is rich in culture began since the kingdom of Srivijaya in the 6th century. Diverse cultural elements in the form of art, cloth, tools, and technology, language, and so were growth in Palembang society [2][3]. But this time its existence began no longer identified and some have already become extinct. The public does not even know the existence of such objects as part of the culture of Palembang.

A place that stores and collects objects of the historical and cultural heritage of Palembang are the Museum of Sultan Mahmud Badaruddin II (SMB II). SMB II Museum collections are divided into components (paintings, works on paper, fashion, applied arts, musical instruments, etc.). Each components had its own staff with the curator at the top. They are responsible for everything related to this specific component such as; storage, loans, acquisitions, exhibitions, restoration, etc.



Fig. 1. SMB II Museum in 1947 as Dutch resident office

SMB II Museum is one of the cultural heritage that was once a Dutch resident office in Palembang (Fig.1) and currently functioned as a summer place to store objects of history since the time of work Sriwijaya (Fig.2).

Objects of cultural heritage currently its existence is protected by the government to maintain its sustainability so as not to become extinct. One of the cultural heritage whose existence is no longer is Kuto Gawang and left only its paintings (Fig.3) stored in the SMB II museum. It was the first palace of the Sultanate of Palembang. This palace destroyed by fire as a result of the Dutch attack.



Fig. 2. SMB II Museum in 2019 as a Historical Building in Palembang



Fig. 3. Kuto Gawang Castel Painting

Based on observations it is found that a lot of cultural heritage in Palembang is unknown by visitors to the museum. They do not even know the existence and history of these objects so they do not attempt to preserve it because don't know if they own it. Palembang culture riches of cultural articulation of Malay, Javanese, Chinese, Arabic, and Europe. So many similarities that need to be identified and documented the location of the differences and similarities that clear ownership of cultural identity as part of the National culture ownership.

III. SYSTEM DESIGN AND DEVELOPMENT

The proposed system is designed and developed as the following description

A. Information System for Cultural Heritage

The establishment and maintenance of a national inventory of cultural property has been mentioned in Article 5 of the 1970 UNESCO convention on how to prohibit and prevent illegal imports, exports and transfers of ownership of cultural property. The process of inventorying cultural heritage and how to make the inventory accessible to the public, so as to encourage creativity in the community and individuals [10].

Identifying the role of inventory is needed in management cultural artifacts, physical preservation of movable objects, historic buildings, archeological sites, protection, interpretation, and cultural landscape. Inventory has a significant place in all major international conventions related to heritage protection. There is a stock which is also recognized as the main weapon in the fight against the illegal trade of cultural objects [11].

Inventories are also recognized as a weapon in the fight against the illicit trade in cultural objects. Although documentation of the cultural heritage is

already carried out at local and national levels, the necessary to use information generated by documentation center is becoming international scale, responsive to global trends in economic activity, cultural awareness, and crime [12]. Now, with the possibilities that information technology offers for contact and information sharing, the benefits of creating cultural heritage information networks are clear: These include the enabling of common access to inventories created and managed by diverse organizations.

SMB II as part of the government institution that stores a collection of Palembang cultural artifacts needs a system to manage its collection to support its performance in public service and also for preserving Palembang cultural artifacts.

B. Development System

This study proposes a web-based system designed using some techniques and tools. Block diagram of the development system is illustrated as shown in Fig.4.



Fig. 4. Block Diagram System Development
This research started with a literature review for formulating a research question and identifying data. Next step is collecting the data and using it for system Development.

a. *Data Collection*

A Literature review by finding sources of literature that support the research. Source literature such as books of traditional culture in Palembang, published by the Department of Tourism and Culture of Palembang and journals about the culture associated with this research. Data were taken at the Museum of cultural objects SMB II. Interviews were conducted in order to get more information based on preliminary data results of the literature study and perform verification and validation of data.

This study has identified more than 200 cultural artifacts in the SMB II museum.

b. *Design System*

The process of identifying the specification of what features are required on a web application for the inventory of intangible cultural objects as well as the needs necessary for the development and application. Results of the needs analysis modeled the Use Case diagram as shown in Fig.5.

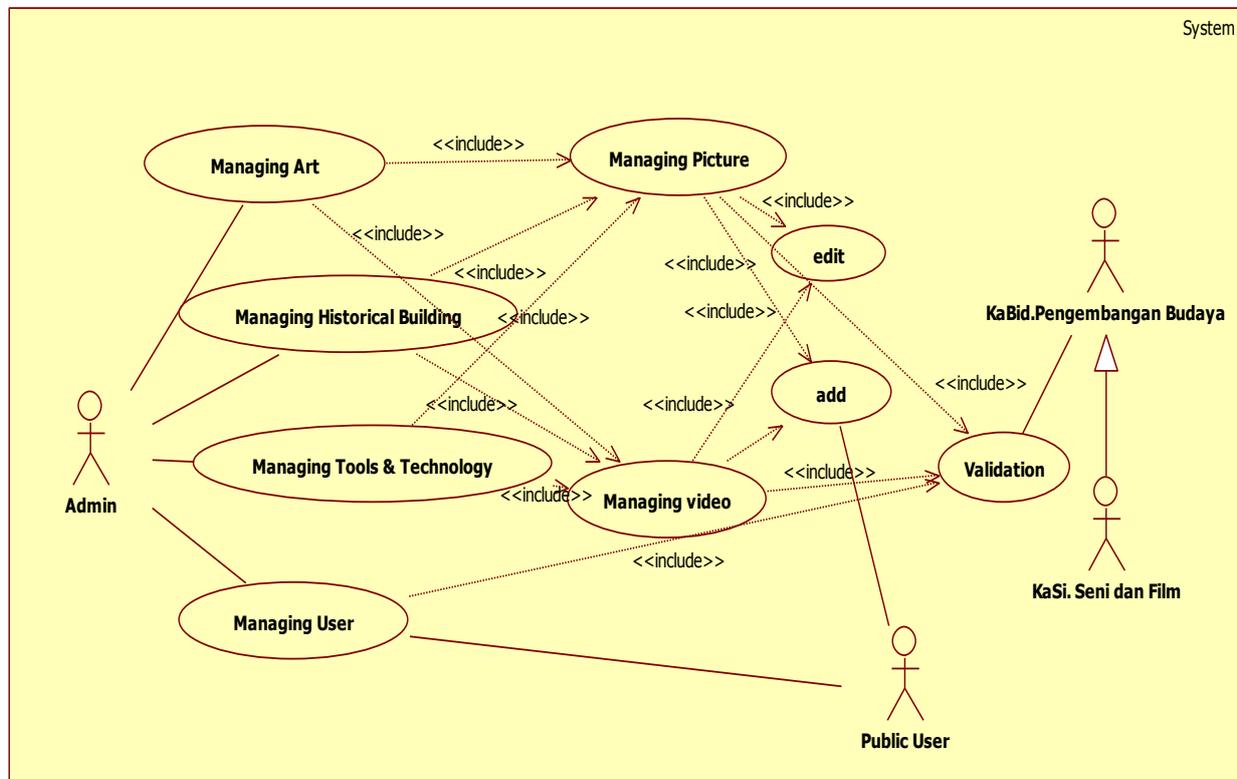


Fig. 5. Use Case Model of the Proposed System

From Fig. 5 the system is modeled for managing museum collection. It has four functionalities which can manage by the actor (admin) namely; managing art, managing historical building, managing tools & technology, and managing user. Each use case has

actor divided into three levels based on their responsibility and job description. In managing art, historical building, tools, and technology, admin can manage collection in the system by adding picture or video and edits if any changes.

This system was developed with the support of SMB II Museum, so it is designed to be used on an ongoing basis by the museum for museum service management quality improvement and preservation of the cultural artifacts. That is why, users of the system are divided into three levels, namely admin or operator, head of the Department of Culture (KaBid. Pengembangan Budaya and KaSi. Seni dan Film), and public user. Each level has different access rights to applications. The lowest level is the general user who can only see information about the collection of the museum. When data is uploaded, it requires approval or validation from the head of the department before appearing on web pages.

IV. IMPLEMENTATION RESULTS

The proposed information system for SMB II Museum collections management is implemented in PHP language and MySQL database Management system. The result of the web application is shown in Fig.6. as the home page of system, and Fig.7. as the collection page for manage museum art and other collection in SMB II.

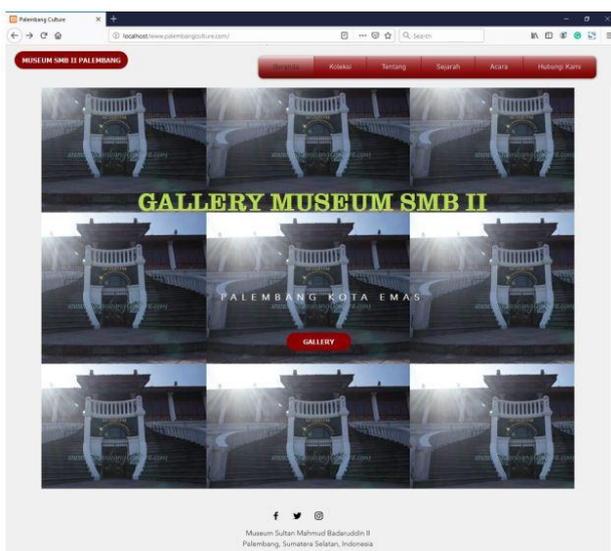


Fig. 6. Home page of the system

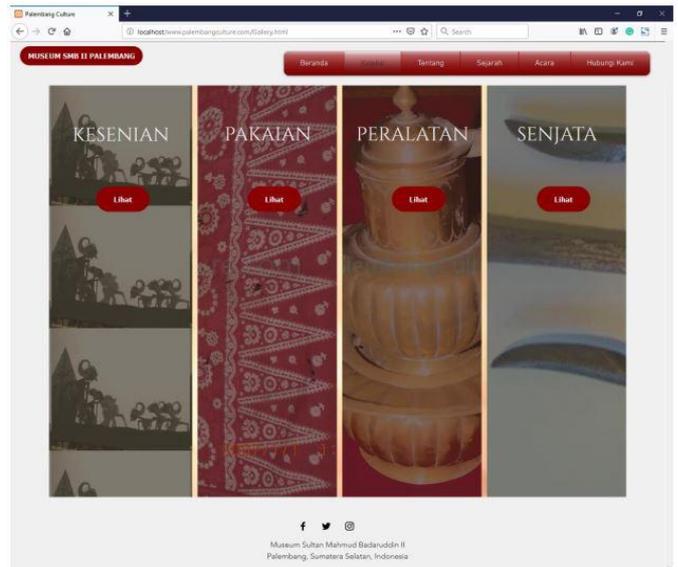


Fig. 7. Collection page of the system

Fig. 6 shows the Home Page screen of the web system developed in this study. Home Page shows information about the history of SMB II Building since it was a Dutch resident office until becoming a Museum that stores cultural artifacts of Palembang. Fig.7 shows Categorization of Museum collections, namely art (kesenian), Cloth (pakaian), Tools (peralatan), and Weapon (senjata). When the user clicks on the picture of the collection category then it will show detail collection of it and its description. The authorized user can add and update the information about the collection on this system, also can add videos or descriptions if needed. Through the system built, the SMB II museum can record information either in the form of documentation on prehistoric items or others in a more efficient, more detailed, and only shorter time in searching data compared to the manual process.

V. CONCLUSIONS

A web-based information system was developed in this study for the purpose of SMB II collection management in order to improve the performance and service quality of the museum. In this study,

Museum collections are categorized into art, tools, cloth, and weapon where the collection can be updated by the authorized person. Data collection is done by tracing the source of primary and secondary data obtained in the SMB II Museum and inventoried more than 200 cultural artifacts stored in the museum.

This information system effectiveness to manage the museum collections where the information can be saved and retrieved by user efficiently. It is expected to be a tool for preserving Palembang local culture and national cultural identity of Indonesia.

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