Implementation of the Digital Library at the Library of Universitas Pembangunan Nasional (UPN) Veteran East Java

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Abstract: Digital libraries have ease the process of information fulfilment for library users. Many college libraries have implemented digital libraries due to the demands of the external environment that has become aware of the advantages of internet. Digital libraries must be designed to me the user's needs. The purpose of this study was to determine the implementation of digital libraries in the library of Universitas Pembangunan Nasional Veteran in East Java. The research method used in this study is qualitative methods with a case study approach. The technique of data collection is observation and interviews with the head of the library and the manager of the digital library. The result of this study indicates that the implementation of the digital library in the library of Universitas Pembangunan Nasional Veteran East Java has been going well, considering the process of analysing the needs of users as well as fulfilling it. The library has developed a further plan, however it requires to be maximized by adding a media for interaction, for both the users and librarians. The requirements specification and selection process have been carried out by the library developer by determining the digital library user targets and supporting features for its users, as well as six ware standardization (software, hardware, NetWare, data ware, brain ware, and environment ware). For the running stage, data backups have been carried out, but the server still requires several repairs. Evaluation has been conducted once a year in order to determine what steps should be taken to develop the digital library better.

1 INTRODUCTION

The role of library in supporting the National Education System is regulated in Law No. 20 of 2003 concerning the National Education System, it is stated that the library is a centre for sources of information, science, technology, arts and culture (Subagyono et al. 2022). In addition, libraries as a part of the world community, also participate in building communities to provide information and communication, this includes technology-based information (Sunyowati et al. 2022). Whereas in the Law of the Republic of Indonesia Number 43 of 2007 concerning libraries, libraries are institutions that manage collections of written works, printed works, and/or record in a professional manner using a standard system to meet the needs of education, research, preservation, information and recreation of the users (Romadhona, Subagyono, et al. 2022).

In general, university libraries are libraries that are located and owned by a university. Every policy that will be constructed and applied by the library must be transparent to the university. University library is included in the scope of higher education (Muhammad, 2016).

Digital library is a storage for digital reference collections such as electronic journals and information databases (Romadhona, Kurniawan, et al. 2022). Digital library is a library that manages every or certain part of the substance from its collections in a computerized from, as an alternative or complement to conventional prints, in the form of micro-material, which files are currently dominated by library collections (Srirahayu et al., 2021). Thus, based on the above definition, digital libraries are similar to conventional libraries, with the advantage of a digital collection either partially or while as a complement to the conventional library itself. A digital library can be considered as successfully implemented when the sought information is fulfilled for the users, causing information seekers to be satisfied with the performance of the digital library (NoaToschev et al., 2017). Based on the explanation above, the writers are interested in

conducting a study on the implementation of the digital library of Universitas Pembangunan Nasional Veteran in East Java.

2 LITERATURE REVIEW

2.1 Construction of a Digital Library

The construction of a digital library cannot be separated from the desire to share (Suhariono et al. 2022). Library seeks to share information with the users. Therefore, the construction of a digital library needs to be adjusted with the conditions of the library. Ideally, before designing and applying new concepts, including digital libraries, what should be analysed first are the needs of the users (Romadhona 2022). This is done mainly to find out what kind information the users would like to seek when visiting a digital library (Hernoko et al. 2022)r. The results of the analysis will influence the design of digital libraries that will be implemented. Therefore, in its implementation, digital libraries should provide space that enables the users to share information, which can also relate to the feedback on developing digital libraries in the future (Tedd & Large, 2005).

The next step is planning. On this step, librarians plan the design of the digital library. The library should not only provide digital collections that can be accessed by users, but also needs to guarantee interaction in the library. Users who visit the digital library can interact with each other, including librarians. Interaction between users is realized through *tagging, review, comment*, *likes*. In addition, users can communicate through online forums that should be provided by the library, whereas interactions with librarians are realized through guest book facilities and *online chat* (Chandra, 2015). Aside from interacting, users can also act as digital collection producers. The procurement of digital collections does not only originate from the digitization process or from digital collections that have been owned by library or institution only. Library users can participate in providing digital information that is in accordance with the library's vision and mission. Users are given the authority to upload their digital collections. This is done, not only to facilitate the acquisition of digital collections, but also to anticipate certain conditions that cause digital collection owners unable to submit their collections to the library.

The next step is to determine *requirement specification*. One of the things that need to be done

at this step is to determine who will be the targeted users of the digital library. It is very important because each user will have different information needs. In addition, the *tools* what will be needed to operate the library will also have to be determined. Based on the plans written above, aside from the search menu and digital collection download, some *tools* such as registration, login, comments, suggestion, tagging, upload documents, download documents, and online forums need to be provided (Webster, 2006). To anticipate the presence of online users from other countries, it is necessary to provide language *tools* that can automatically translate Indonesian to English.

The next step is the selection process. What will be done in this step is to select the software application for digital libraries. The following are 10 questions that can be used as guidelines in the selection process. First, what software will be able to meet the desired needs. Second, how many desired requirements can be fulfilled by the product. Third, consider whether the standard used in the product is appropriate. Fourth, what *user interface* is provided and is easy to use and is available in several languages as needed, or whether the product can be developed based on the language needed. Fifth, whether the available features can be used for *searching* and *browsing* information contained in digital libraries. Sixth, consider the experience of other institutions that have used the product. Seventh, how is the reputation of the organization or institution that produces the product. Eighth, how is the reputation of local suppliers. Ninth, does *support* such as *training,* online help and such are available, and in what language. And finally, tenth, how are the implications in terms of legal aspects of the use of these products.

After considering several things above and determining which application to use, the next step is the installation process. This does not only stop when the digital library application has been successfully installed. An important process that cannot be forgotten is *training*. Librarians as managers of digital libraries need to be taught how to use and access digital library collections. The documentation process is also included in the installation stage. To anticipate the failure of the process in running a digital library, it is necessary to have a manual that also functions as a guide. Therefore, documentation about how the library is run should also be made. In addition, it is also necessary to pay attention to the issue of access rights and securities.

The next stage is *running*. The most important process at this step is to backup *files, databases, websites,* and *software* periodically. Some library managers often forget to backup which results in the loss of important data when there is a damage to the digital library. Therefore, a routine schedule should be determined for data backup on digital libraries. Besides the backup, software update also needs to be concerned. Some vendors, whether *freeware* tends to update the software which has been produced. Therefore, digital librarians need to know the time of any software update so that it can be applied to the digital library they manage (Martin & Shamari, 2014).

The last step is the evaluation process. This step is crucial in maintaining the stability of the digital library running. Some evaluation techniques can be carried out based on users' opinions or looking at the records of transactions carried out by the users (Mafar, 2012).

2.2 Digital Library Standards

The standard of digital library is generally similar to non-digital library standard, as stated in article 11 of Law No. 43 of 2007 concerning Library (collection standards, facilities and infrastructure standards, service standards, library staff standards, implementation standards, management standards), emphasizing on digital collection and services. The specific standard for this digital library is still not clearly define, therefore, special work meetings are needed to determine its standardization. Some standards that need attention are as follows:

1. Using the *six-ware* standard: *software*, *hardware*, *NetWare*, *data ware*, *brain ware*, and *environment ware.*
2. Digital collection standards include: the ratio between the number of digital collections and the number of potential users: 700/1000 = 70%, the ratio of digital text collections, digital image collections, digital sound collections, video collections, level of access to the total of digital collections and non-digital collections.
3. Standardization in collecting digital content, operated by the software directly from the compiler or the results scanning, this concerns the completeness and suitability of the contents.
4. Standardization of scanning process.
5. Standardization of initials from the organizational sub-unit and the initials of the collection type. Example: UPT1 = Technical Implementation Unit in East Kalimantan (*Unit Pelaksana Teknis*)
6. Digital file content standardisation (includes content and access rank). Example: complete file, but only the cover, foreword, publisher's description, table of contents, abstract, approval page, conclusion/suggestion, and bibliography can be accessed. It is necessary to provide the separated digital file for each chapter. This will facilitate the regulation of access rank and accelerate the access process.
7. Standardization of files, folders, and digital database naming. Example: D2009sby = Folder which contains chapters files of the 2009 Dissertation composed by Susilo Bambang Yudoyono.
8. Standardization the security of digital files.
   a. Adobe pdf document image cannot be copied or pasted.
   b. Security system on adobe pdf files: cannot be printed for certain pages or files, or can be printed with a low resolution, being secured by password, and identity watermark.
   c. Includes standardization for backup data.
9. Standardization of digital collection borrowing. The process of borrowing digital collections can be done for collections that have copyright such as books, with a maximum document security system, which can only be read and cannot be copied or edited, and after the borrowing period has passed the digital file will be self-destruct. The number of borrowers (equal to the number of copies for printed collections) can be arranged automatically, as well as the number of borrowers from the user profile.
10. Data exchange standard.

3 RESEARCH METHOD

This research uses qualitative methods with a case study approach. Case studies are specifically designed to study special cases in detail, the determinant of a case study is the desire of the writers to specifically research problems concerning a special case, taking into account the specific context of the existence of the case (Pendit, 2013). The location of this study is the library technical implementation unit of Universitas Pembangunan Nasional Veteran in East Java. The data is collected through observation and interviews with the head of the library and the manager of the digital library.

4 RESULTS AND DISCUSSION

4.1 Construction of a Digital Library

The planning for the construction of a digital library at Universitas Pembangunan Nasional Veteran East Java began with an analysis of the needs of users. The information needed by academicians is very diverse, this is due to the many faculties in Universitas Pembangunan Nasional Veteran East Java, causing the needs of the users to vary as well. The information needs go in accordance with the *tri dharma* of education, therefore, the library spread out forms on library users need for the academicians in the university first.

Next is the planning process. The library cooperates with the Informatics and technical implementation unit of Universitas Pembangunan Nasional Veteran, East Java, as the party that will construct digital library. However, there are several features that should be available and provided by digital libraries that have not been well planned. This includes the lack of concept on the media of interaction between users.

Following that is the process of determining the requirement specification. Users targeted by the Library and Informatics technical implementation units are the academicians. The academicians at the Universitas Pembangunan Nasional Veteran in East Java include students both freshmen and students who are in the final level, lecturers, and all staffs at Universitas Pembangunan Nasional Veteran, East Java. The technical implementation units determine the tools that will be used in the digital libraries, including the feature to display new books, frequently searched keywords, and downloadable information in the digital library.

The next step is the selection process. In this process the technical implementation units of Library and Informatics choose and select which software application can be used to build the digital library. The six-ware that will be used is then determined. The digital library software of Universitas Pembangunan Nasional Veteran East Java accommodates the automation of library collection, membership, service and administration. The digital library hardware of Universitas Pembangunan Nasional Veteran in East Java is based on a digital library design which includes computers and digital data processing tools, the processing capacity of digital collection files requires a large capacity of more than 1 terabyte. The NetWare of the digital library is a network device in the form of internet that can be used by the library users, while the digital library LAN network is to be used by the administrators. The digital library data ware is a set of data that forms various information groups that are ready to be accessed by the users. The brain ware of the digital library is a knowledge resource that exists in library staffs, both individually and collectively. The Library of Universitas Pembangunan Nasional Veteran in East Java human resources can operate computers and managing digital data, as well as the ability to manage digital libraries based on their respective tasks. The environment ware of the digital library covers the conditions of the place and the surrounding environment as well as the culture of employees and users; the digital libraries will be widely used electronically, therefore conducive environmental conditions are needed, both in terms of temperature, humidity, and other factors concerning the room. The digital library of Universitas Pembangunan Nasional Veteran in East Java is located on the 2nd floor, the library environment is quite safe from natural changes.

The development of the library system began in 199, the central library pioneered in cataloguing automation activities using the CDS-ISIS system. The development of collections and information technology needs to be handled by a more modern library management information system. Thus in 2003/2004 the library began using a new library system developed by the Telematics technical implementation unit and the library of Universitas Pembangunan Nasional Veteran East Java, known as SISKA (*Sistem Informasi Administrasi Perpustakaan*, Library Administration Information System) to replace the system that had been used previously. In 2004 the library used OPAC (Online Public Access Catalog) that can be accessed through the address http://siamik.UPNjatim.ac.id/siska/info.asp.

Since the 2004/2005 the library has developed an integrated computer system for circulation services, library members, visitor data, collections cataloguing, collection reports and loan reports. In June 2008 the library began to develop *Digital Repository* focused on digitizing collections of local content (academic work) as well as final assignments, theses, dissertations, research reports, seminar proceedings, and journals published by Universitas Pembangunan Nasional Veteran East Java and other works. The Digital Repository of Universitas Pembangunan Nasional Veteran East Java can be accessed through http://eprints.UPNjatim.ac.id/.

Figure 1: Implementation of the Digital Library of Universitas Pembangunan Nasional Veteran East Java.

The next is the running process, where the digital library of Universitas Pembangunan Nasional Veteran East Java regularly backups files, databases, websites, and software. However, the server that is used by the library can be considered as lacking. The server that is being used is not yet stable, causing the server to crash down several times. This greatly disrupts the performance of librarians to process library materials.

The last step is the evaluation process. Every year, the digital library of Universitas Pembangunan Nasional Veteran East Java conducts a good evaluation process on the number of digital library visitors, the total number digital library material that is accessed and the number of library material titles that are uploaded annually in digital libraries.

The digital library of Universitas Pembangunan Nasional Veteran East Java has implemented six-ware standardization. For software, the digital library uses software developed by the library in collaboration with the technical implementation informatics unit. For hardware, the server computers are in the technical implementation informatics unit that is still in the same building with the library, thus the management can be done on all floors in the library. For netware, the digital library uses the internet to access. Fot dataware, the digital library displays new collections data as well as digital library visitor data. For bainware, the digital library of Universitas Pembangunan Nasional Veteran East Java is run by the librarians who act as the administrator of the software.

Concerning the standard of digital collection, the ratio between the number of digital collections and the number of potential users in the digital library is 571/1360 = 38%, thus each digital collection owned by the digital library of Universitas Pembangunan Nasional Veteran East Java has an utilization ratio of 38% per one collection. This is still relatively low compared to the utilization ratio of digital collections owned by ITB's digital library which reaches 70%. This can be overcome if the library is able to convert their collections from physical to

digital forms and can be used by library users by going to the library.

On the standardization of digital content collection, the academicians who submit their final projects are required by the library to collect the file in the form of soft file so that the library will only have to upload it to the digital library without having to convert it from physical to digital form. This strategy is very efficient in processing library materials and can help improve the librarians' performance.

For standard of the security of digital files, the digital library secures their collection by only publishing library materials in the initial parts only, with access for contents available for librarians only.

The digital library of Universitas Pembangunan Nasional Veteran East Java is easier and faster in finding information that is needed and desired by the academicians, thus it saves more time and is more effective. Library users are not required to go to the library or any other places to access collections. The advantages of having collections stored in digital or electronic form is that the collections can be stored much longer than manual storage systems that tend to be influenced by many natural factors. Digital collections cannot be damaged or lost due to animal factors such as silver fish. These advantages are in line with those expressed by Harvey (1993) regarding the advantages of collections in digital format, including: (1) can be published quickly and distributed without deterioration of quality through electronic communication networks wherever the user is; (2) saving storage space; (3) can be stored in various forms of media and can be transferred from one storage media to another storage media; (4) offer a process of retrieval and access to information more quickly.

5 CONCLUSIONS

Based on the results of the research written above, it can be concluded that the implementation of the digital library in Universitas Pembangunan Nasional Veteran East Java has been running well. The library has analysed the needs of users and has proven that their services have met the needs of users. The library planning process must be reviewed because the digital library developer has not added a media for the users to interact with each other, both for fellow users and librarians. At the requirement specification process, the developer has been able to determine who are the target users of the digital library and the supporting features for the users. In

the selection process the developers have been able to determine which six-ware is suitable for use in the digital library of Universitas Pembangunan Nasional Veteran East Java. In the running stage the managers have not solved server problems that are often crashing down so that it interferes with the process of uploading library materials to digital libraries. The evaluation process is conducted once a year, where the purpose of this evaluation is to determine what steps should be taken to make the digital library better. However, from the process of standardizing digital libraries, the digital library of Universitas Pembangunan Nasional Veteran East Java, has not met the standards in borrowing collections and exchanging data. This is due to library not collaborating with other library outside of the university yet.

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