How to Build Digital Library in University

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How to Build Digital Library in University

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Abstract---Currently there is euphoria among college librarians. The trigger for the situation is related to the widespread development of digital-based library concepts. According to Oppenheim and Smithson a digital library is an information service where all information sources are available / processed in computers and the functions of acquisition / retrieval, storage, retrieval, access and display using digital technology. The problem in this study is how to build digital library management. This study aims to design digital-based library management. The result of this research that digital library programs have been made from the initial display into digital libraries to the process of borrowing books, but the appearance of digital libraries is still simple.

Keywords---Digital Library, Library Management.

I. Introduction

Currently there is euphoria among college librarians. The trigger for the situation is related to the widespread development of digital-based library concepts (Siswadi 2008). According to Oppenheim and Smithson digital libraries are information services where all information sources are available / processed in computers and functions of acquisition / retrieval, storage, retrieval, access and display using digital technology (Hartinah 2009).

The success of digital libraries is highly dependent on optimal and sustainable collaboration among users so as to create satisfaction among users, an in-depth assessment of user needs must be carried out before the digital library creation plan. There is a need for trained staff (librarians, operators, technicians / administrators). Digital libraries are economically more profitable than traditional libraries. Chapman and Kenney put forward four reasons: institutions can share digital collections, digital collections can reduce the need for printed materials at the local level, their use will increase electronic access, and the long-term value of digital collections will reduce costs associated with maintenance and delivery (Siregar& North , 2015).

Online journals are a separate phenomenon among the rapid development of current university libraries. The college library that used to be used to printed journals began to turn its attention to electronic journals. Some libraries like racing try to provide online journals as one type of digital collection. Some are still in the planning stage to provide online journals. Impressed the library imposes to provide online journals. Though not a little thought and costs that have been incurred for it (Siswadi 2008). The problem in this study is how to build digital library management in universities.

II. Literature Review

Digital Library

According to the Darmono Library in essence it is "a center for learning resources and a source of information for users. The library can also be interpreted as a collection of books or places where books are collected and organized as student learning media. " E - Library or digital library is a library that most of the collection or even the entire collection is in the form of digital that can be accessed using a computer. These collections can be grouped in various types such as books, pictures, magazines, newspapers, and even sounds. This grouping will of course make it easier for you when you are searching in this digital library or e-library.

The definition of a digital library based on the opinion of Ismail Fahmi (2004) is a system consisting of hardware and software, electronic collections, management staff, users, organizations, work mechanisms, and services by utilizing various types of information technology .

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Digital libraries indicate that the collection is digital and may not have a collection of prints. Digital libraries can be part of a library in general or stand alone. Digital libraries may be accessed via the internet (being a virtual library) or only available on local networks.

Library Performance

The National Accreditation Board - Higher Education details the assessment of the physical condition and services of higher education libraries through the following aspects (Hasanah, 2009), (BAN-PT, 2010), (Abadi & Widyarto,2018):

Space and Equipment

1. In this aspect, it is necessary to consider the following, namely the adequate size of the room, the condition of the room that meets safety requirements (fire extinguishers), health and comfort (temperature, lighting, air circulation), assistive equipment for visitors (photo-copy machines, tools book catalog finder), and discussion room for student groups.
2. Library materials consist of the availability of textbooks, availability of practicum / practice modules for diplomas, availability of dissertations / theses / thesis / final assignments, availability of popular scientific magazines, availability of DIKTI / LIPI accredited scientific journals, availability of international scientific journals, including e-journal , availability of seminar proceedings in the last 3 years, Student to book ratio, ratio of textbooks in the last 5 years to the total number of accredited and international books and journals subscribed to the last 5 years
3. The use of libraries for library services, library opening hours reaches 8-10 hours per day, accessibility of e-library services with libraries in faculties / study programs, number of visitors (physical visitors and virtual visitors) and inter-library services
4. Regular library maintenance (fumigation, cleanliness) consists of the availability of maintenance and implementation / realization of maintenance programs.
5. Budget, the university library budget is regulated in the Indonesian National Standard (SNI) document number 7330 of 2009 points 12. The arrangement consists of only one sentence, namely: "Library budget is at least 5% of the total university budget outside of employee expenditure."
6. Qualifications of Library Staff in the form of quantity and quality (Educational background)
7. Information system consists of internet network, internet access, student to computer terminal ratio, lecturer to terminal ratio and internet bandwidth ratio.

According to ISO 11620-1998, library performance indicators have 29 indicators, namely as follows: (International Organization for Standardization, 1998), (Sulistyo-Basuki, 2007), namely user satisfaction, target percentage of user population achieved (percentage of target population reached), cost per user (cost per user), visit to library per capita (Library visits per capita), cost of visiting the library (Cost per library visit), availability of title documents (Titles availability), availability of required title documents (Required titles), the percentage of document titles required in the collection, availability and availability of titles of required documents (Required extended availability titles), use of collections in the library per capita (In library use per capita), the level of document usage (document in use rate), the median time to return documents from collections is ordered p (median time of document retrieval from closed stacks), median time of document retrieval from open collections (median time of document retrieval from open stacks), collection change (Collection turnover), Loan per capita (loans per capita), Current documents borrowed per capita (Documents on loan per capita), per-loan cost (Cost per loan), loan per employee (loan per employee), loan speed between libraries (Speed of interlibrary lending), level of accuracy of the given answer (Correct answer fill rate) , the level of success of the search through the title catalog (Title catalog search success rate), the success rate of search through the subject catalog (Subject catalog search rate), availability of facilities (Facilities availability), Facilities use rate, seat occupancy rate (Seat occupancy rate), availability of automation systems (Automated systems availability), median time of procurement of documents (Median time of document t acquisition), median time of document processing, cost per title for cataloging (Cost per title cataloged).

While the parameters of the library class World Class University (WCU) are divided into 3 aspects, namely aspects of input, process and output. (Hasanah, 2009). In the input aspect there are indicators as follows:

1. Institution (Library) consists of becoming an active member of a collaborative network between libraries and PT libraries at regional and / or international levels and has collaboration with other WCU libraries

2. Staff, namely the number and qualifications, the ratio of librarians to the academic community and an active member of the national librarian professional organization, the Indonesian University Library Forum and / or international
3. Collections consist of providing 90% of library materials as a mandatory reference for the course, procurement of library materials for the current year is the last 5 years issue of 75%, library collections of more than 30% are published in the last 5 years, except classic books, save all works of academicians both published and unpublished (unpublished / gray literature such as: thesis, thesis, dissertation, research reports, papers, inaugural speeches, guides, modules, speech dies, dictates, artwork, institutional repository, have access -journal / database for various fields relevant to all fields of study and research fields in higher education, the ratio of the number of library material titles held per year compared to the number of academics (number of library material titles held per capita), ratio of the number of library material copies held annually compared to the number of civitas academics (number of copies of library materials held per capita), the ratio of the number of online databases that can be accessed per year compared to the field of study in higher education
4. The building and facilities consist of adequate and comfortable library area, have very complete and modern equipment, for collection purposes, the library has air humidity facilities with 60% humidity, for the convenience of visitors, the room temperature does not exceed 25oC, has facilities for disabled physically so that they can access all services provided, have rescue facilities and systems to deal with disasters, such as fire and floods, apply library automation systems integrated with other application systems in universities that are relevant for libraries, such as academic information systems, distance learning systems remote (e-learning), providing infrastructure to support library-based automation services such as network, WAN, internet connection, and bandwidth, providing adequate access facilities such as computers around the campus and the availability of OPAC on the web that is accessible without place and time constraints.
5. The budget is the library budget of 5% of the total university budget (University operational costs, excluding wages, salaries, physical investment), the average library budget for students, a minimum of Rp. 200,000, of which the larger amount is taken, the procurement budget and e-resources subscription is at least 50% of the total library budget.

In the process aspect there are indicators as follows:

1. Development of collections consists of the time needed (median) to carry out processing, starting from the material coming up to the availability in the collection ready to be borrowed and the time needed (median) to conduct the procurement, from the request until the material comes in the library.

2. Service is the time required for transactions consisting of circulation services, reference services, library lending services and document delivery services.

In the output aspect there are indicators as follows:

1. Development of collections consists of the number of library materials that can be held annually, the number of library materials that can be processed annually, the number of indexed journal articles per year, the number of internet sites that can be indexed annually.

2. Services consist of the number of circulation per capita transactions, library in use, number of library visitors per year, number of uses of electronic resources (page): monthly data provided by vendors, number of visitors to the library site (Unique visitors), number of search questions / referral services , the number of search questions / referral services answered, the number of participants attending the library event, the number of participants taking training in search and information usage, the total opening hours per week, total services per week, all statistics available in the library system in real time , library use: library opening hours 8:00 - 22:00 (working days), users: the average number of student visits per month is more than 30% of the student body, inter-library services: have international, national, regional, and local, e-library service: available e-library services for most b science field (study program / department / department), documentation of dissertation, thesis, thesis and final assignment of students.

Thus, based on the study of the theory above, the performance of the library can be divided into 3 aspects of performance, namely: aspects of input (input), aspects of the process (process), and aspects of output (output). Each

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aspect has performance indicators according to recommendations from the various standards above. Of the various library performance indicators above, the Head of the Library or library management can choose indicators that are in accordance with the conditions of the library in order to measure library performance. According to Sulistyo-Basuki, there are 6 criteria that need to be considered in determining indicators that are suitable for a library: (Sulistyo-Basuki, 2007), namely indicators should meet the information needs of the library, indicators should be valid (valid) and reliable (truly) measuring what you want to measure carefully, indicators should be practical, meaning easy and quick to work and effective in terms of costs, indicators should be able to provide a complete picture as a whole, indicators should be interpreted by library staff for further action, indicators should be comparable. Determination of performance indicators that are in accordance with the condition of the library can be metadata used in the development of a web-based integrated library information system as a means of evaluating library performance.

Information Systems

Information is very important in decision making. Information can be obtained from information systems (information systems). According to Robert A. Leitch and K. Roscoe Davis in book sources Jogiyanto, HM (2008) Information systems are defined as follows: "Information systems are a system within an organization that brings together daily transaction processing needs, supports operations, is managerial and strategic activities from an organization and provide certain outside parties with necessary reports ".

Principles of System Development

In carrying out the system development process, several principles must not be forgotten (Jogiyanto, 2008). The principles of system development are as follows: 1) The system developed is for management that is after the system has been developed, then the one who will use information from this system is management, so the system must be able to support the needs needed by management. 2) The system developed is a large capital investment, ie every capital investment must consider the following two things: a) All alternatives must be investigated; If the alternatives are ignored and have already invested funds into a particular investment project, then investors will lose the opportunity to invest their funds in other investments. Therefore, from several existing investment alternatives, it must be investigated to determine the best or the most profitable alternative. b) Good investment must be of value; Investment is said to be profitable if it is valuable, which means that the benefits or returns are greater than the cost to obtain it.

System Development

In developing this system the author uses structured analysis and design methodologies. The analytical methodology and structured design are the methodologies used in the analysis and design stages. This methodology is included in the Data Oriented Methodologies group which emphasizes the characteristics of the data to be processed, more specifically structured analysis and design methodologies fall into the category of Data Flow Oriented methodologies where the methodology is based on solving the system into modules based on the type of data elements and behavior the logic of the module in the system. With this methodology the system can logically be described logically and described logically from the data flow and the relationship between its functions in the modules in the system. One of the tools used in this methodology is data flow diagram (Jogiyanto, 2008).

III. Research Methods

Stage of Building a Library

In building a digital library at the Institute of Informatics and Darmajaya postgraduate schools using qualitative research methods with survey methods to obtain data and collect information by conducting several phases of the following steps, namely:

1. Needs Analysis

In determining the needs called needs analysis. Where a needs analysis is made because post-graduates do not yet have a library and students still buy books and search for their own articles. If the needs analysis has been carried out and the answer is positive, then the next step is to determine the goal. This goal must be based on the vision and mission of the library and its parent institutions. Each library has a different purpose, depending on the conditions of each library.

2. Feasibility Study

If the determination of needs and objectives has been done, the next step is to conduct a feasibility study, the assessment of which includes the following components:

a. Is technically feasible

This technical feasibility is a determining factor in building digital libraries because digital libraries require adequate infrastructure and personnel such as the existence of providers for internet, hardware (software), software (telephone), electricity, and no less important is the availability of energy technical who can operate it.

b. Is it economically profitable

Size used in calculating economic aspects does not have to be calculated from how much profit will be obtained, but the extent of the influence of the digital library that we will build on the effectiveness and efficiency of library services.

c. Is it socially acceptable

Before the digital library program is run, there should be a socialization program first. This social aspect analysis can also involve legal aspects. We must continue to uphold the law, especially concerning the Copyright Law. For example, we are not allowed to freely "scan" the books owned by the library, then we enter them in the database without permission from the owner of the copyright.

3. Choosing Software

Selection of software is only needed if we want to build a database for the benefit of digital libraries (as information providers), but if we only want to build digital libraries as consumers (utilizing existing digital libraries), software selection is not important. Criteria for selecting software for databases include:

a. Access Points

Good software is software that has many access points, at least the data that we have can be traced through the title, author, and subject or a combination of the three.

b. User Friendly

User friendly means that the software that should be chosen is software that is easy to use without requiring a long training time, once the computer is opened, users can interact easily and quickly even if it's only a short exercise.

c. Sustainability

Building a digital library means building for the long term. So that the investment invested is not wasted, it needs to be considered carefully about the sustainability of the software we buy. Preferably, buy software from professional institutions, not from individuals.

d. Price

Generally, we will face a dilemma in considering prices. Good software is usually relatively expensive, while cheap / free software usually doesn't satisfy our needs.

4. Implementation

In this stage, especially for database formation, we must have priority. This priority depends on each library. It is recommended to start the establishment of a database of local products, such as research results, community service results, theses, dissertations, theses, and scientific journals published by the institutions around us.

5. Evaluation

As with other library programs and activities, evaluations for the construction of digital libraries must always be carried out continuously in a certain period of time to determine whether the objectives we have planned have been achieved and whether the program can satisfy library users. We must always monitor the level of satisfaction of library users and the results of monitoring can be used as a basis for making decisions on whether digital library programs need to be continued, refined or canceled.

Following are the steps in designing digital library management:

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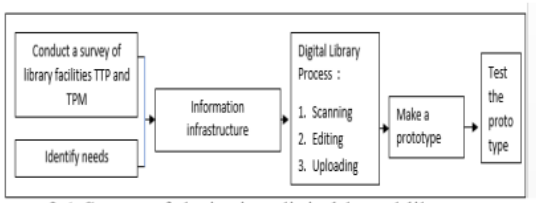

Figure 3.1 Stages of designing digital-based library management

Figure 3.1 shows the stages in designing a digital library, starting with surveying existing library facilities and identifying the needs to build a digital library information infrastructure to be built. The next process is digitizing the library, making prototypes and testing the digital library system prototype.

IV. Results And Discussion

Flowchart results

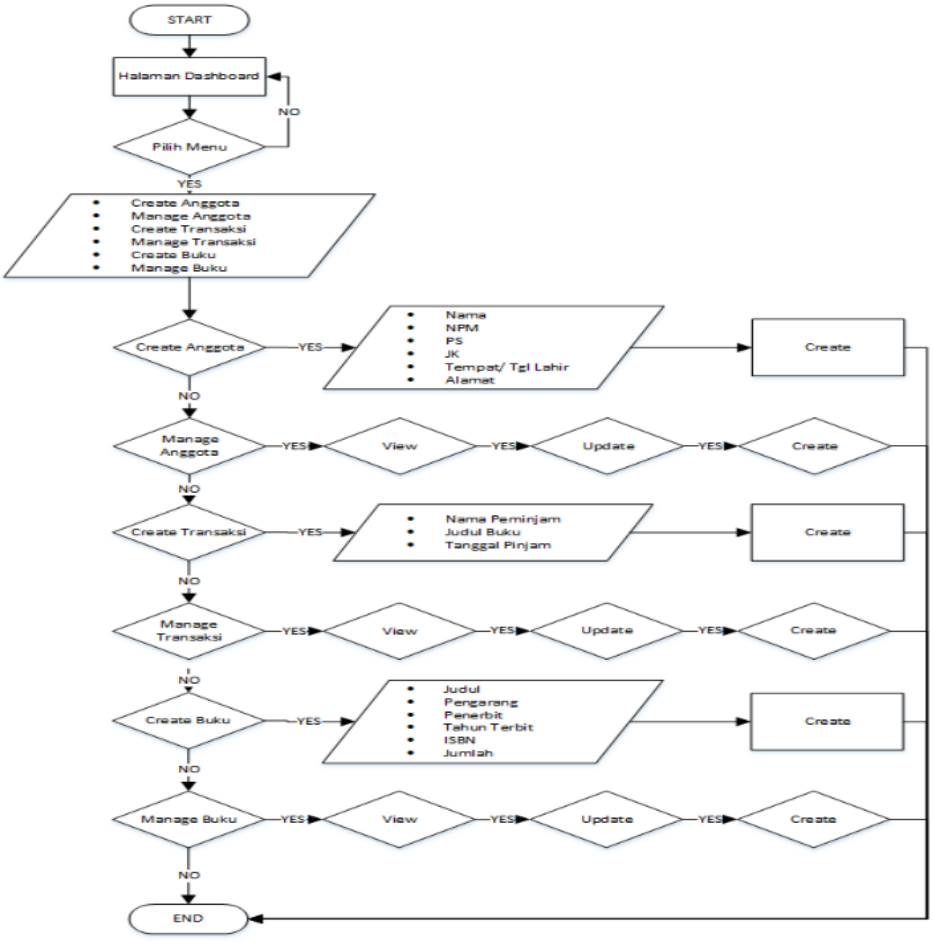

Figure 4. 1 Flowchart administration

Figure 4.1 shows the flow in the administrative process in a digital library, starting from the display of menu options on the dashboard page, namely registration for new members, borrowing books, uploading references and managing each type of process in the system.

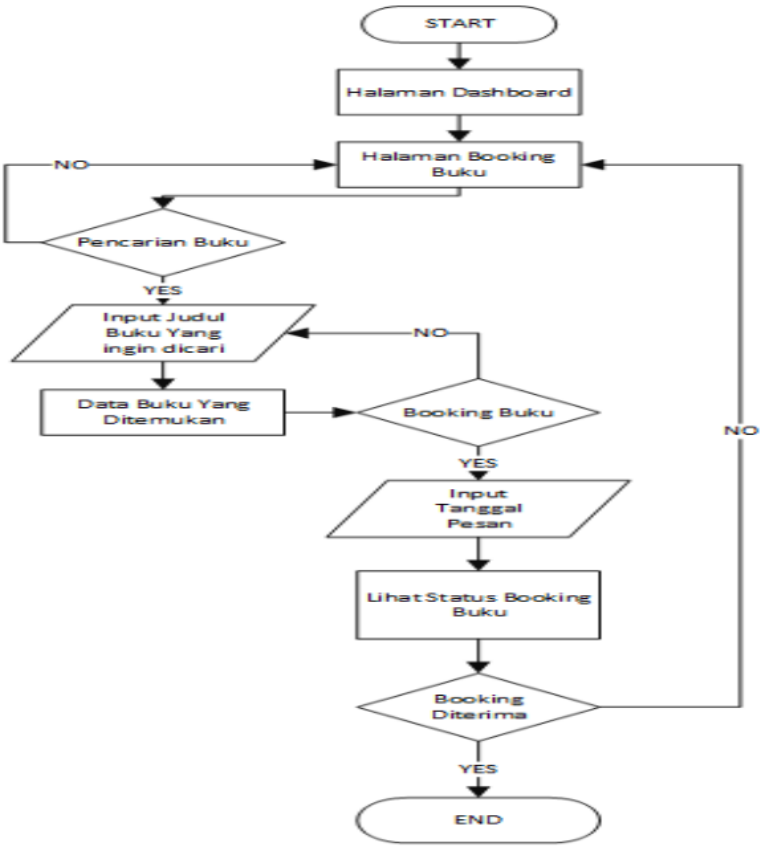

Figure 4.2 User Flowchart

Figure 4.2 user flowchart shows the flow of the process of borrowing books in a digital library conducted by registered library members.

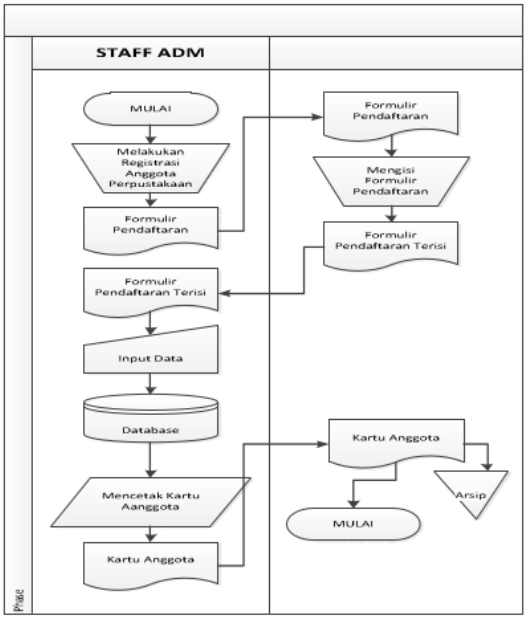

Figure 4.3 Flowchart system becomes a member of the library

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Figure 4.3 shows the flow of the registration process as a member of the digital library from the start of filling out the form to printing the member card.

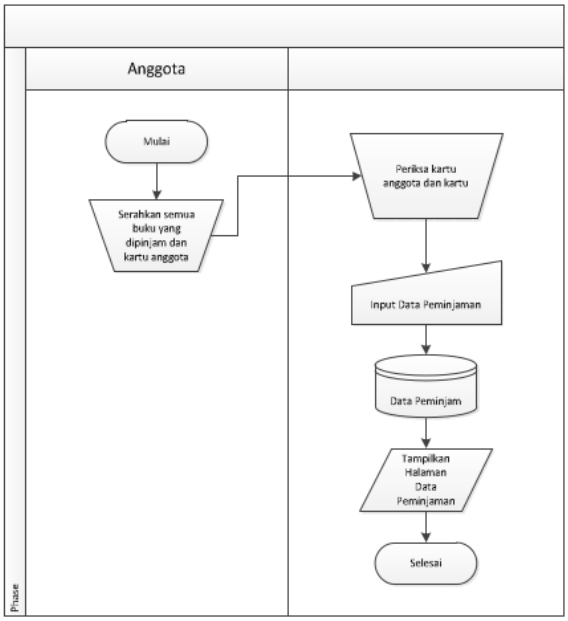

Figure 4.4 Flowchart for borrowing books

Figure 4.4 shows the process of borrowing books or references in a digital library. Borrowing data will be digitally recorded in the library system.

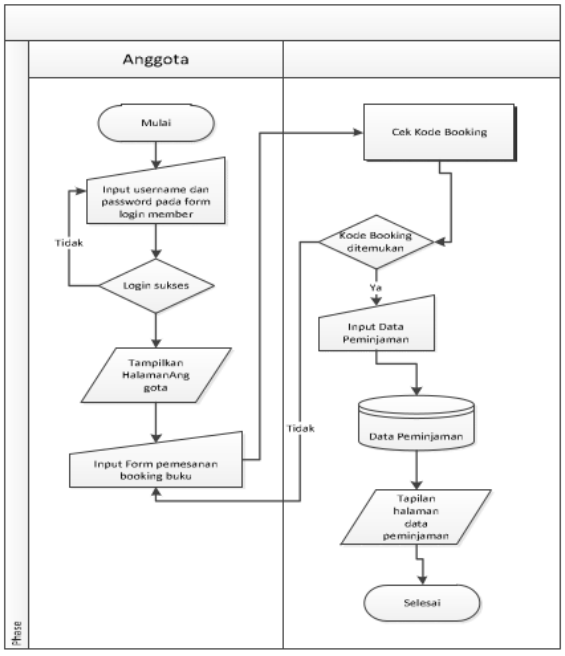

Figure 4.5 Flowchart of the book ordering system

Figure 4.5 illustrates the book ordering system online in a digital library. Books or references ordered by members will be prepared by administrative staff according to the date of collection based on the availability of materials.

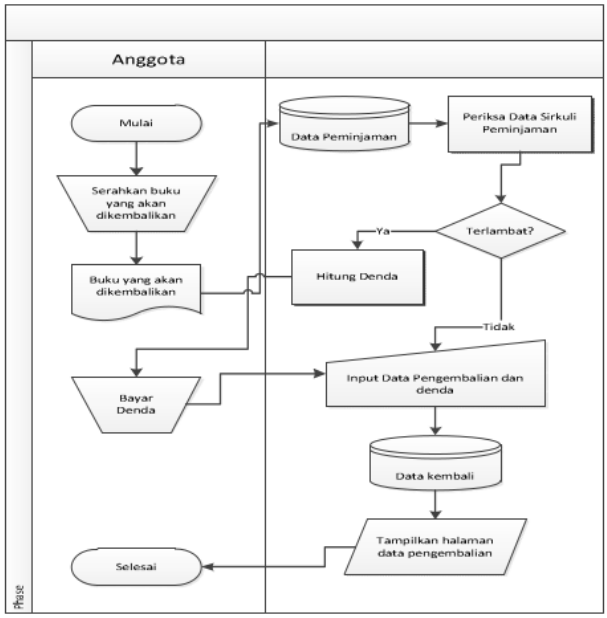

Figure 4.6 Flowchart of the book return system

Figure 4.6 describes the process of returning a borrowed book or reference to the library. In this process there is a system of fines if the return exceeds the specified time limit.

Discussion

In carrying out the system development process, several principles must not be forgotten. (Jogiyanto, 2008). The principles of system development are as follows: 1) The system developed is for management that is after the system has been developed, then the one who will use information from this system is management, so the system must be able to support the needs needed by management. 2) The system developed is a large capital investment, ie every capital investment must consider the following two things: a) All alternatives must be investigated; If the alternatives are ignored and have already invested funds into a particular investment project, then investors will lose the opportunity to invest their funds in other investments. Therefore, from several existing investment alternatives, it must be investigated to determine the best or the most profitable alternative. b) Good investment must be of value; Investment is said to be profitable if it is valued which means benefits (benefits) or the return is greater than the cost to obtain it (cost).

In developing this system the author uses structured analysis and design methodologies. The analytical methodology and structured design are the methodologies used in the analysis and design stages. This methodology is included in the Data Oriented Methodologies group which emphasizes the characteristics of the data to be processed, more specifically structured analysis and design methodologies fall into the category of Data Flow Oriented methodologies where the methodology is based on solving the system into modules based on the type of data elements and behavior the logic of the module in the system. With this methodology the system can logically be described logically and described logically from the data flow and the relationship between its functions in the modules in the system. One of the tools used in this methodology is data flow diagram (Jogiyanto, 2008).

V. Conclusions And Recommendations

Conclusions

The digital library program is made from the initial display into the digital library until the book lending process is complete. The appearance of the digital library is still simple. Having a copyright right that is in the copyright law the problem of transferring documents over a computer network has not been understood by the researcher.

Suggestions

If the digital library program is completed, start entering student data as the borrower's book data into the digital library program and start the existing books to be included in the digital library program, start editing and start uploading the complete document for the digital library.

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References

[1] Arif, Oleh Ikhwan, Makalah Seminar, SehariMembangun, and JaringanPerpustakaan. 2003."Konsep Dan PerencanaanDalamAutomasiPerpustakaan." 1–8.
[2] Cardoso Gomes, Faustino. 2010. ManajemenSumberDayaManusia,Yogyakarta: ANDI
[3] DuwiPriyatno. 2010. Paham Analisa AStatistik Data dengan SPSS. Yogyakarta: MediaKom Yogyakarta.
[4] Hartinah, Sri. 2009. "PEMANFAATAN ALIH MEDIA UNTUK PENGEMBANGAN PERPUSTAKAAN DIGITAL *." 11:13–18.
[5] Hasanah, Nanan. 2009. World Class University Library. RapatKerja Forum PerpustakaanPerguruan Tinggi se-Jawa Barat. (M akalah). Bandung.
[6] Kotler, Philip. (2002). ManajemenPemasaran di Indonesia :Analisis, Perencanaan, Implementasi dan Pengendalian. SalembaEmpat. Jakarta. Kpdi, Makalah and JaringanPerpustakaan. 2011. "MAKALAH KPDI 4." (November):1–27.
[7] Lupiyoadi, Rambat, 2001, ManajemenPemasaranJasa, SalembaEmpat, Jakarta.
[8] Mangkunegara, Anwar Prabu. 2009. EvaluasiKinerjaSumberDayaManusia. Bandung: PenerbitRefikaAditama.
[9] Devvret, praveen kumar, kumud pant, ashish thapliyal, neema tufchi. "Bioinformatics approach toward the Identification of Binding Pockets of Rice Metallothionein and its interaction with the heavy metals ." International Journal of Pharmacy Research & Technology 7.2 (2017), 08-14.
[10] Mathis, R dan Jackson, W. 2006. ManajemenSumberDayaManusia. Jakarta: SalembaEmpat.
[11] Moeheriono. 2009. PengukuranKinerjaBerbasisKompetensi. Bogor: Ghalia Indonesia
[12] Panggabean, Mutiara S. 2002. ManajemenSumberDayaManusia. Jakarta: Ghalia Indonesia.
[13] Prawirosentono, Suryadi. 2000. kebijakankinerjakaryawan. BPFE, Yogyakarta.
[14] Robbins, Stephen P. 2006. PerilakuOrganisasi. Edisikesepuluh Jakarta: PT. IndeksKelompokGramedia.
[15] Robbins SP dan Judge. 2008. PerilakuOrganisasi. Buku 2. Jakarta: SalembaEmpat
[16] Satria Abadi, SetyawanWidyarto. 2018. The Designing Criteria and Sub-Criteria of University Balance Scorecard using AnaliticalHierachy Process Method. International Journal of Engineering and Technology (UAE) vol.7, No 2.29. 2018 DOI:10.14419/ijet.v7i2.29.14
[17] https://www.sciencepubco.com/index.php/ijet/article/view/14260/5731
[18] Siregar, Oleh Ridwan and Universitas Sumatera Utara. n.d. "Internet: StrategiPenggunaannya Di PerpustakaanPerguruan Tinggi." 1–8.
[19] Siswadi, Irman. 2008. "Ketersediaan Online Journals Di PerpustakaanPerguruan Tinggi." 10:23–29.
[20] Saleh, Abdul Rahman. 2000. PengantarTeknologiInformasi. IPB Information Resources Center. htttp://iirc.ipb.ac.id (diakses 16 Juni 2016)
[21] Simamora, Bilson. 2001. Memenangkan Pasar denganPemasaranEfektif dan Profitabel .Jakarta: PT. Gramedia.
[22] Simanjuntak, Payaman J. 2011. Manajemen dan EvaluasiKinerja. Jakarta: FE UI.
[23] Siswanto, Bejo. 2003. Manajemen Tenaga Kerja Indonesia PendekatanAdministratif Dan Operasional. Jakarta: PT BumiAksara.
[24] Sugiono. 2012. StatikaUntukpenelitian. Bandung: Alfhabeta.
[25] Sulistyo- Basuki. 2007. EvaluasiKinerjaJaringanPerpustakaan. (Diakses 16 Juni 2016)
[26] Sutrisno, Edy. 2010. BudayaOrganisasi. Jakarta: Kencana
[27] Tjiptono, Fandy. (2001). StrategiPemasaran. EdisiPertama. Andi Ofset.Yogyakarta
[28] Tjiptono, Fandy. (2007). StrategiPemasaran. EdisiPertama. Andi Ofset. Yogyakarta.
[29] Wahono, RS. 2006. TeknologiInformasiUntukPerpustakaan. www.solistyobasuki. com/web/sites/default/files/SLB-APTIK-2007-Ukuran kinerja (diakses 16Juni 2016)
[30] Wibowo. 2007. ManajemenKinerja, Jakarta: PT. RajaGrafindoPersada
[31] Wijayanti, Luki (editor).2004. PerpustakaanPerguruan Tinggi: BukuPedoman, Edisi ke-3. Jakarta: DirektoratJenderal Pendidikan Tinggi Depdiknas RI.

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