Library Book Procurement Proposal System Design Using Profile Matching

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Abstract—**Procurement of books in the library is an important thing to support learning activities. The availability of up-to-date and suitable book collections will greatly assist students in exploring their chosen field of science. The challenge in procuring books in university libraries is that the useful life of books is varied and can change suddenly if there is a curriculum change, the number of copies is small but very varied, the purchase of books that are not necessarily sustainable from a publisher, the selection of suppliers, book prices, and availability books, especially for imported books, as well as a lack of planning for purchasing books every fiscal year. This challenge often causes the department to prefer recommendations from lecturers who handle each subject rather than searching and tracing the quality and profile of books and publishers. The development of the proposed Purchase Proposal System for this book uses the TAM (Technology Acceptance Model).**

Index Terms– *Procurement, library tender, Profile Matching, Decision Support System, technology acceptance model* **(key words)**

I. INTRODUCTION *(HEADING 1)*

Education is very important to support the development of the nation's next generation. Good quality education will create qualified and competitive graduates in their fields. In order to provide quality education, all educational institutions, from early childhood to tertiary education, try to maximize the delivery of material and delivery of materials according to their level of education. The government, through a national standardized curriculum policy, provides direction for every level of education to ensure the quality of its graduates. By the educational institution, the government-directed curriculum is described in more detail into the competency curriculum for each field of science and every subject in it. In higher education institutions, the quality of learning is not only assessed from the teaching staff and the curriculum for each subject, but also considers the factors and infrastructure supporting lectures as an assessment point for the accreditation of each higher education institution. The library is the support unit that is closest to the learning system besides the laboratory. The availability of books that are needed as the main reference in each subject, the latest in book collections, the variety of book collections, the quantity of collections for each book title are very important in supporting the planned curriculum (Xiaomei, 2011). The quality of the book supplier and the continuity of updates from the author are important factors in selecting the main reference book. The choice of reference book procurement also considers its use in various study programs or courses (Slater, 2009). The type of book and the number of copies also need to be considered, some references are better if they have an e-book and a printed version, while others are better in print (Crowley & Spencer). Previous research has found that digital books are more widely used by students in this era than printed books (Slater, 2009). Although the digital version is more flexible and has a wider use capacity, as an educational institution that stands under the auspices of the Ministry of Education of the Republic of Indonesia, the use of the printed version is still a prerequisite for the feasibility of a university library. Therefore, procuring a printed version still needs to be planned with a more careful thought so that the printed version can be used more optimally (Rizhul & Yaya ST 2018)

II. RELATED WORK

The procurement of reference books at universities is a complex process (Group, 2007), there are at least three main criteria in selecting books, namely type / genre, content, visual features (Smolkin, 2002), suitability of book development, and potential use for books that are they choose (Donovan & Smolkin, 2001) which needs attention in order to support teaching and learning activities. Genre discusses the language used, narrative or non-narrative, and whether there is a book structure that makes it easy for readers to get information at a glance per topic. The content reviews the accuracy, depth of information, level of difficulty / level of prerequisite knowledge for users, as well as the breadth of the material and case studies used. Visual features consist of images, photos, diagrams, or easy-to-read text sizes and types. Development suitability is an instruction model that is easy to understand according to the ability level of the target audience. The potential use of the selected book is more directed at what learning subjects can use the book as a reference. Procurement of books in libraries that are still on a small scale can use recommendations from course lecturers to save time and money (DUNCOMBE & SEARCY, Summer 2007).
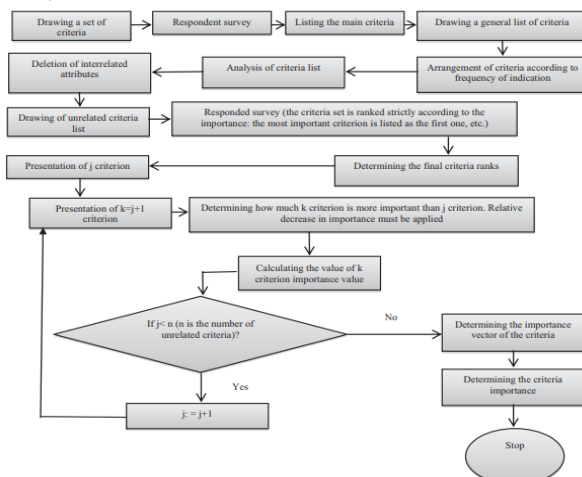
Weighting in the Profile Matching method is a definite value that is firm on certain values because the values are members of a crisp set (Laras Wiranda, Mujiono Sadikin, 2020). In a strict set, the membership of an element in the set is expressly stated whether the object is a member of the set or not by using the characteristic function.

The steps for the profile matching method are:

1. Determine the variable data required.
2. Determine the aspects used for the assessment.
3. Mapping profile Gap.
4. Gap = Minimal profile - Test data profile
5. After obtaining the Gap value, then the weight is given to each Gap value.
6. Calculation and grouping of Core Factors and Secondary Factors. After determining the weight of the gap value, then they are grouped into 2 groups, namely:
   - Core Factor, which is the criterion (competency) that is the most important or prominent or the most needed by an assessment which is expected to obtain optimal results.

   $NFC = ENC / EIC$

   Information:

   NFC: Average core factor value

   NC: The total number of core factor values

   IC: The number of core factor items

   Secondary Factor (supporting factors), namely items other than those in the core factor.

   Or in other words, it is a supporting factor that is less needed by an assessment.

   $NFS = ENS / EIS$

   Information:

   NFS: Mean value of secondary factor

   NS: The total number of secondary factor values

   IS: Number of secondary factor items
7. Calculation of Total Value. Total value is obtained from the percentage of core factor and secondary factor which are estimated to affect the results of each profile.

   $N = (x)\% \ NCF + (x)\% \ NSF$

   Information:

   N: Total value of the criteria

   NFS: Mean value of secondary factor

   NFC: Average core factor value

   $(x)\%$: The percent value entered
8. Calculation of ranking. The final result of the profile matching process is ranking. Ranking refers to the results of certain calculations.

   $Rank = (x)\% \ NMA + (x)\% \ NSA$

   Information :

   NMA: Total score of the Main Aspect criteria

   NSA: Total score of the Supporting Aspects criteria

 $(x)\%$: The percent value entered

   Profile Matching is suitable for determining the most suitable reference book after being selected first with ARRAS. This is because the profile matching algorithm

looks for a match between the needs and the solutions / alternative options offered

III. METHODOLOGY

This research begins by determining the criteria for suppliers of reference books, then these criteria will be analyzed and evaluated by the library and the head of the study program of each faculty. From these criteria, the lecturers of each faculty were asked according to the subjects they were able to propose book titles to be used as references for their courses. Furthermore, from these results a proposed system design for the procurement of library books is made by adopting the TAM model, where the system will be built from the trust of prospective users of this system, namely the Head of Study Programs of each Faculty, Head of libraries, Lecturers, and the finance department that the proposed system for procurement of this reference book will help optimize the selection of suppliers and improve the quality of books provided and ensure that they are more aligned and in line with the capacity and needs of each study program. In addition, the system to be designed also puts forward ease of use by users (Head of Study Program, Lecturers, Head of Libraries, and the Finance Section). The proposed book procurement system design that will be proposed is as shown in Figure 3.2. Actors / system users consist of Lecturers, Heads of Study Programs, Head of Libraries, and the Finance Department. The lecturer proposes the title of a reference book for each subject being taught, then the head of the study program will approve the book proposal, The results of this calculation will obtain book title recommendations for each type of subject, which can be followed up by the process of submitting the procurement of the book titles by each head of the study program and approved by the finance department.

- Diagram Usecase
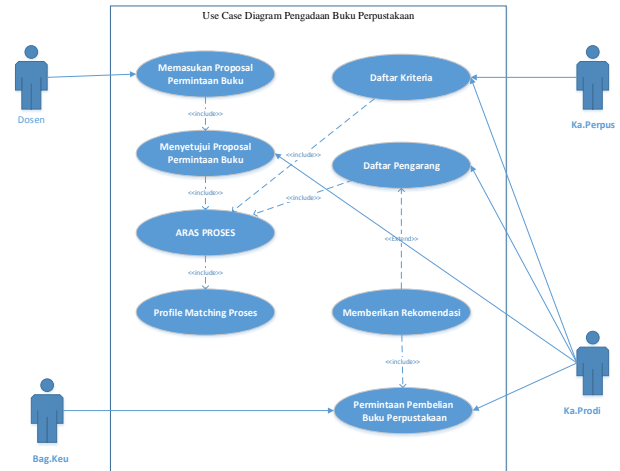
- Use Case Scenario Table Entering Book Request Proposals

Usecase Name	Dashboard
Actor	Lecturer
Description	This menu displays the dashboard page of the lecturer proposal submission system application in requesting library books.
Aim	Ensure that the one who can propose the book purchase request is the lecturer

- Use Case Scenario Table Request approval by the finance department

Usecase Name	Dashboard
Actor	Financial Dept
Description	This menu displays the dashboard page of the financial section of the application system to detect a library book purchase
Aim	Ensure that the finance depatement is aware of the purchase of books from the vendor which be paid

- Activity Diagram
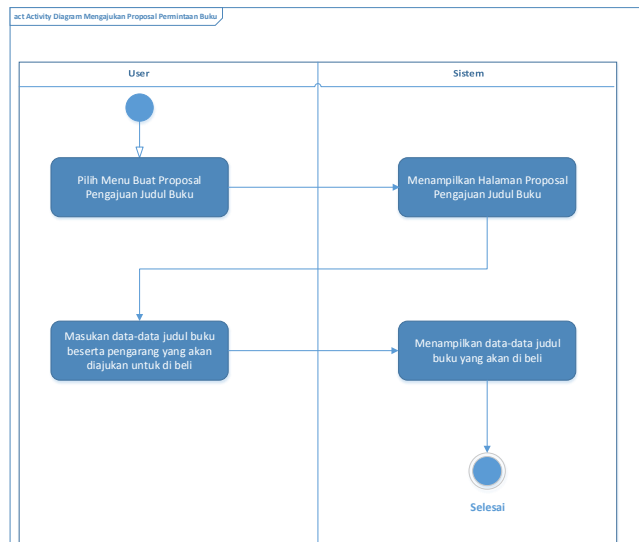
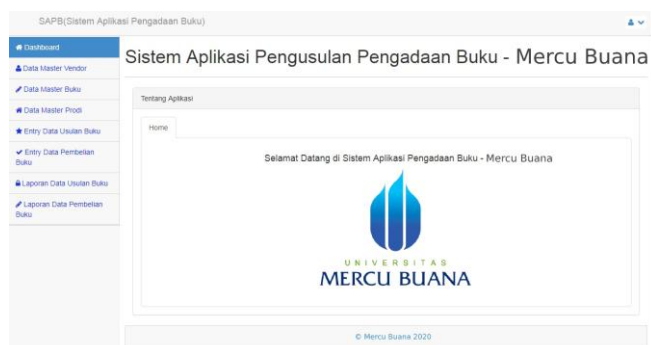- Application Screeen Display
  - Login Screen Display

- Dashboard Screen Display

- Vendor Screen Display

- Vendor Screen Display

IV. EVALUATION

Based on the research results, it can be concluded as follows:

- Students feel interested in using library materials in the library because of the pleasant situation and conditions of the library.
- The availability of library materials in the Engineering Faculty library is still lacking.
- The library collection of the Faculty of Engineering is quite relevant to the needs of students. Likewise, the number of library materials oriented to individual needs, especially students, is sufficient.
- The collection of the latest or most recent publications in the Faculty of Engineering library is quite large and relevant to student needs.
- The balance of subjects from library materials owned by the Faculty of Engineering library is quite balanced.
- The selection in the procurement of library materials in the Engineering Faculty library can be categorized as good so that many students feel the benefits.

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