Development of E-Tabung Pinjaman Perniagaan: Web Application for UUM Students Making Business Loan

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Abstract: E-Tabung Pinjaman Perniagaan is a system designed for students at Universiti Utara Malaysia (UUM) to apply for micro-credit financing from the university to support their on-campus businesses. Currently, the Co-operative and Entrepreneurship Development Institute (CEDI) manages the fund process from application to approval and payment collection, which is done manually with printed materials. This process is causing issues for CEDI and students. This study proposes a computerized system to improve the microcredit financing process for both parties. The final product of this system will benefit students and CEDI staff by improving the entire process. This system was developed using system prototyping, which includes requirements identification, prototype development, and system evaluation. This system benefits students because they can apply for loans online anytime. Furthermore, this online paperless system enables CEDI to manage the fund application, approval, and payment monitoring processes more efficiently. According to the responses, this is an easy-to-use system, with most of them satisfied with all the provided functions, such as sending an agreement function.

1. Introduction

A loan applicant, such as a student in university, uses a loan application system to apply for a loan. Applicants will transmit information about their existing financial documents to a loan provider, such as a bank, and they can approve or reject the loan application via the loan application [1]. In traditional loan management, the process is precise and time-consuming, requiring applicants' reliability and credibility to be collected and verified. Furthermore, the process includes manually calculating interest rates and monitoring payments. The computerized loan management system is a digital platform that aids in automating the entire loan lifecycle, from application to closing. Aside from automating these processes, some loan application systems also provide lenders and borrowers with relevant statistics and analytics [7]. Nowadays, loan application systems are equipped with predictive capability using a mashing learning approach [8,9,10]

Universiti Utama Malaysia (UUM) provides its students with a business loan via which they might apply for micro-credit financing to fund their on-campus companies. Currently, the Co-operative and Entrepreneurship Development Institute (CEDI) is responsible for managing the fund process from application to approval and payment collection, done manually with printed materials. However, this procedure is causing problems for CEDI and students.

The existing loan systems in UUM are inconvenient.

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Students who want to apply for this loan must go to the CEDI office, fill out a form, and sign the loan agreement. Then, based on the amount that students applied for, these documents require approval from three parties: the director of CEDI, the UUM bursary, and the UUM Assistant Vice Chancellor. Moreover, the problem in the existing system comes during the student's payment monitoring. CEDI must notify the CEDI director and bursary of all students who have missed three consecutive loan payments. The CEDI director will then advise the Students Affairs Department (HEP) to suspend their examination results. The current system is inefficient and time-consuming.

This study proposes an online computerized approach called E-Tabung Pinjaman Perniagaan (ETTP) to improve the microcredit funding procedure for CEDI staff and students. The system's outcome will help both parties by improving the entire process. This system benefits students because they can apply for loans online anytime. Furthermore, this online paperless system enables CEDI to manage the fund application, approval, and payment monitoring processes more efficiently. Based on the system prototyping methodology, this study recognized the system requirements, developed the system prototype, and finally assessed the ease of use of the system E-Tabung Pinjaman Perniagaan.

2. Related Studies

This section describes the loan application process for students in the existing system. At UUM, Students can apply for these loans through the Co-operative and Entrepreneurship Development Institute (CEDI). There are numerous financing options ranging from RM 1,000 to RM 5,000. First, the CEDI director will approve the loan range of RM 1,000 to RM 2,000. Then, a special committee will authorize a more considerable amount.

The conditions for applying for these loans are that students must be full-time students (local students), have a cumulative grade point average (CGPA) of at least 2.5, and have been in business for at least three (3) months. Another condition is that the student must have a business licence, of which there are two (2) types: (1) business licence A (licence with the premise) or (2) licence B. (license without premise). Besides that, the business plan is particularly vital for students to include when applying for these loans because the CEDI panel will decide whether or not the students are eligible for the interview. In addition, CEDI will notify students whether their loan was accepted or denied following the interview session. Finally, the students and CEDI will sign a letter of agreement, and the loan amount will be transferred to the student's accounts.

3. Methodology

The methodology of the study is described in this part. As

illustrated in Figure 1, this project employs a system prototyping development methodology. Prototyping is a software development model that involves building, testing, and reworking a prototype until it is acceptable [2]. This method comes in handy when users have difficulties describing system needs [3]. There are various processes in prototyping, including requirements gathering and analysis, quick design, building a prototype, initial user evaluation, refining prototype, and product implementation and maintenance.
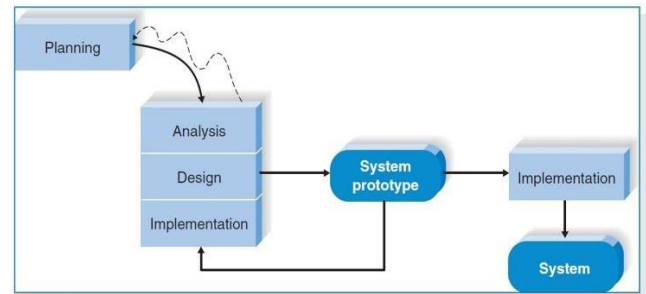

Figure 1. The methodology

Phases 1: Requirements gathering and analysis

During this phase, all system requirements were identified by observing the load application process and interviewing CEDI staff. The printed forms used in the manual process were also investigated. During this phase, the requirements were reported in the specification, and the work breakdown structure was designed.

Phase 2: Quick design

This is also known as the preliminary design phase. During this phase, simple system designs, such as a system storyboard, were constructed. It is not a complete design, as expected from CEDI, but it does provide a brief overview of the system's functions. The output guides the creation of the prototype in the following stage.

Phase 3: Develop a prototype

The actual design was built throughout this step by using information gathered from the quick design. Therefore, this prototype was designed in two phases: a low-fidelity prototype with 50% system functionality and a high-fidelity version with full system capability.

Phase 4: Initial user evaluation

In this phase, we present the prototype to the CEDI for an initial review after it has been built. This evaluation is vital since it assists in determining the exact system that CEDI want by collecting all of their comments and suggestions.

Phase 5: Prototype refinement

If CEDI input is not satisfied with the existing low-fidelity prototype, the prototype is refined based on their suggestions. However, if the feedback on the prototype is positive, the systems will be developed using the approved final prototype.

Phase 6: Product Implementation

After the final system based on the final prototype was developed, the system was evaluated to see if it fulfilled the CEDI requirements. If the final system meets all of CEDI's requirements, it will be placed into production. However, if the system does not meet CEDI's requirements, the prototype will be refined, improved, and improved.

Phase 6: Product Implementation and Maintenance

Following the development of the final system based on the final prototype, the system was evaluated to see if it fulfilled CEDI requirements. The finished system will be deployed for production if it meets CEDI's requirements. However, if the system fails to meet CEDI's requirements, we will return to improving the prototype and re-implementing the system.

3. The Design and Development of E-Tabung Pinjaman Perniagaan

This section is about the requirement specification of the system E-Tabung Pinjaman Perniagaan (ETPP) designed for the Co-operative and Entrepreneurship Development Institute (CEDI). This segment depicts the purpose and scope of the requirement specification for system ETPP. It also characterizes the terms, acronyms, and abbreviations utilized within the document. The purpose of this document is to describe the functional and non-functional system ETPP that will be used by CEDI and University Utara Malaysia (UUM) students.

Scope

The ETPP is a web application system. The advantage of web applications is that they load quickly [4,5]. Several sound web design application principles include website purpose, simplicity, navigation, pattern reading, visual hierarchy, content, grid-based layout, load time, and mobility friendly [6]. There are two types of users which are UUM students and CEDI staff. They can both access this system via the UUM portal. This system provides an interactive form that students must fill up as well as the ability to upload necessary documents. This system will save all information submitted by students and alert CEDI staff via email if students complete all required documents. This technology enables CEDI staff access to student-submitted materials and allows them to invite students to an interview session. The

participant student will be notified of the interview session through email as well as through the UUM portal.

Students will be able to adjust the appropriate time of the interview sessions using the system. In addition, if students fail to make loan payments three times in a row during the loan repayment period, the system will notify CEDI officials and suspend examination results until the payment is made.

Definitions, acronyms, and abbreviations

E-Tabung Pinjaman Perniagaan (ETPP) - The name of the system that will develop in this project. Co-operative and Entrepreneurship Development Institute (CEDI) - The party that requested this system to be developed. University Utara Malaysia (UUM) - The university in Malaysia. CEDI staff - The user of this system. UUM students - The user of this system. UUM portal – the portal to access this system.

System Function

The ETPP system's functions are as follows:
- provide an interactive loan form for students through the UUM portal and a section for students to upload and print documents.
- enable email notice to CEDI personnel and students.
- allow CEDI employees to read and upload documents uploaded by students.
- allow CEDI personnel to use email and the UUM portal to invite all participants to interview sessions.
- allow students to select an appropriate date to undertake an interview session.

User

There are three types of users:
- Students: People studying at a Universiti Utara Malaysia and eligible to apply for a loan.
- CEDI staff – a person in charge of managing student micro-credit loans.
- System Administrator: a person in charge of administering and maintaining systems.

General Constraints

The main constraint of this ETPP system is the system's quality. Unfortunately, this system will be developed in a short period of time. As a result, the quality of this system is not assured, as CEDI expects. Therefore, this system will need to be improved in the future to maintain its high quality.

Assumptions and Dependencies

We assume that the quality of ETPP is not as expected by CEDI. However, this system still meets all of CEDI's standards. It consists of both functional and non-functional

ETPP3_3	The system will send the request to the CEDI staff.	Mandatory
ETPP3_4	The system will enable the students to print the invitation and agreement letter.	Mandatory

requirements. This system is only accessible through the UUM site. This system is only accessible through the UUM portal and cannot be accessed through another portal or website.

Functional Requirements

The functional requirements for the ETPP consist of three major requirements, namely "submit form", "send the letter", and "check invitation", rendered in Table 1.

Table 1. The Functional Requirements Definition

ID	Requirements Description	Priority
ETPP1	Submit complete form	
ETPP1_1	The system will message if students do not fulfil all the criteria to request the loans.	Mandatory
ETPP1_2	The system will allow students to view the loan form if students fulfil all the criteria to request the loans.	Mandatory
ETPP1_3	This system will provide a statement about the loan conditions before students can complete the form.	Optional
ETPP1_4	The system will allow students to fill out the form.	Mandatory
ETPP1_5	The system will enable the students to cancel from filling the form at any time.	Optional
ETPP1_6	The system will enable the students to upload any document like PDF, Word, and image, etc.	Mandatory
ETPP1_7	The system will enable the students to cancel or delete the uploaded document at any time.	Optional
ETPP1_8	The system will give a message to the students when they submit not completed documents.	Mandatory
ETPP1_9	The system will send the email to the CEDI staff when students submit the form.	Mandatory
ETPP2	Send the letter	
ETPP2_1	The system will allow CEDI staff to read the submitted documents by students.	Mandatory
ETPP2_2	The system will enable CEDI staff to set a date for the interview session.	Mandatory
ETPP2_3	The system will enable CEDI staff to send an invitation to students for the interview session.	Mandatory
ETPP2_4	The system will send the invitation to the students through email and the UUM portal.	Mandatory
ETPP2_5	The system will only send the agreement letter to the UUM portal after the interview session.	Optional
ETPP3	Print invitation	
ETPP3_1	The system will allow the students to check the date for the invitation session.	Mandatory
ETPP3_2	The system will allow the students to request a new date for the invitation session.	Mandatory

Use Case Model

A use case model for the system consists of two actors and one-use case, namely Use Case E-Tabung Pinjaman Perniagaan is illustrated in Figure 2.
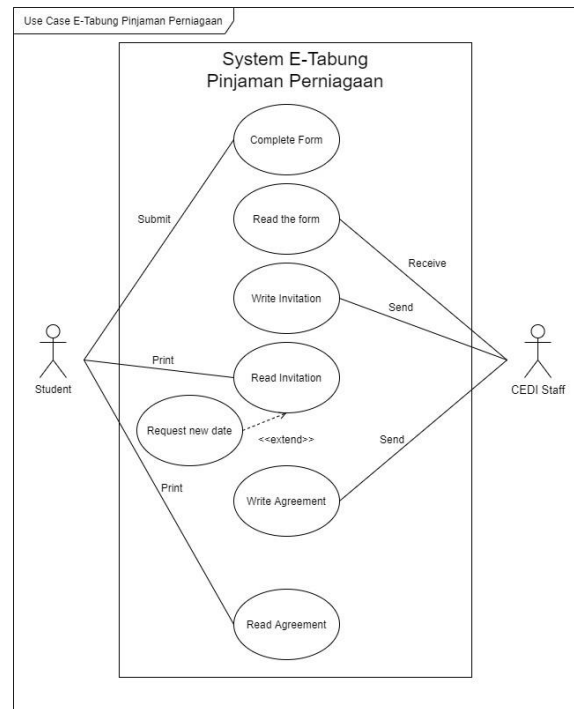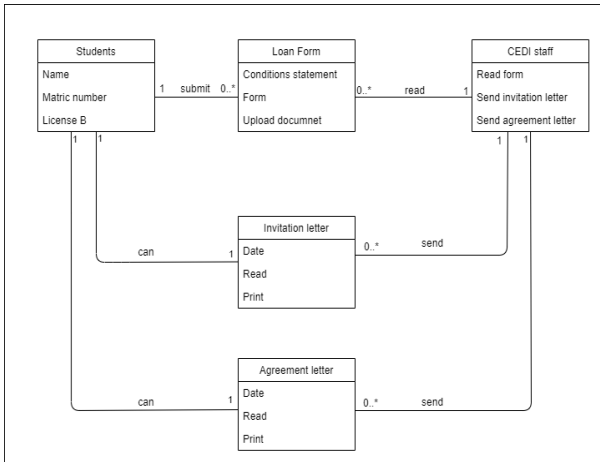
Figure 2. The Use Case Diagram

Figure 3. Class Diagram

User Interface E-TPP

A user interface of E-TPP was developed based on requirement specifications stated in the previous section. The example of the interface was illustrated in Figures 4 and 5.
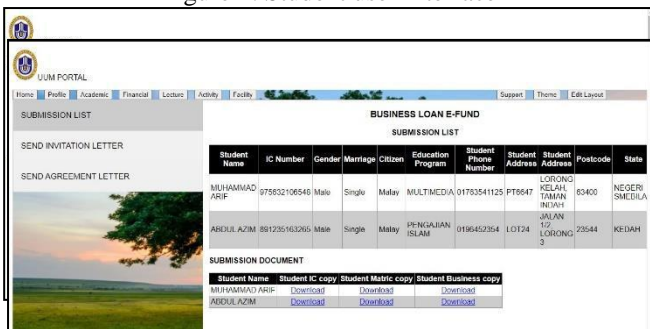
Figure 4. Student user interface

Figure 5. CEDI staff user interface

4. Evaluation of E-Tabung Pinjaman Perniagaan

This section is about the evaluation of system E-Tabung Pinjaman Perniagaan (ETPP). This method included the evaluation type, objective, participants, materials, and procedure of conducting the evaluation.

Type of Evaluation

The type of evaluation that will be conducted is Usability evaluation. An Online (Unmoderated) usability test was conducted. Usability testing is a method of testing the functionality of a website, app, or other digital product by observing real users as they attempt to complete tasks on it. This type of evaluation will be used for the ETPP system.

The objective of the evaluation

The evaluation's objective is to test the system ETPP by observing real users as they attempt to complete tasks on it.

Participants

The participants for this usability test are students from University Utara Malaysia. They will evaluate based on the video given to them.

Materials

The instrument used for evaluation was questionnaire. A post-task questionnaire has been prepared to be answered by the participants after watching the evaluation test video.

Procedure for Conducting the Evaluation

- Send google form link to the participants through WhatsApp
- Here the link https://docs.google.com/forms/d/e/1FAIpQLSd0eC FPsMFyfBSmZzk8PS3ZEvH4mSuYZgubYgjnctm TQpzfGg/viewform?usp=pp_url
- When the participants agree to take part in the evaluation test, they will be given a video in google form to watch it
- After finishing the answer to the post-task questionnaire

Results And Finding

After completing the usability test, the results and findings have been created into graphs for each. Below are the tables and graphs for Usability Evaluation and Website Design. Table 2 shows the percentage of the rate in question for usability evaluation. Most students are satisfied with the function of sending an agreement letter. Based on the table and graph, the rating is 75% for Very Good, which is the highest rating for Very Good. After all, the function of sending agreement letters is this system's last part. The highest rated in Good function is on the student's page, and students will see this first when they enter the system rate is 62.5% refers to the function of submitting a loan form. For the Bad rate, 12.5% of students rated for downloading invitation and agreement letters, viewing submission loan forms and the function of sending invitation letters. No students rated for Very Bad.

Table 2. The Usability Evaluation of ETPP

	Very Bad	Bad	Good	Very Good
After watch the video, how satisfied are you with the function of submit loan form?			62.5%	37.5%
After watch the video, how satisfied are you with the function of download the invitation and agreement letter?		12.5%	37.5%	50%
After watch the video, how satisfied are you with the function of view submission loan form?		12.5%	37.5%	50%
After watch the video, how satisfied are you with the function of sending an invitation letter?		12.5%	37.5%	50%
Based on video that you watch, how satisfied are you with the function of sending an agreement letter?			25%	75%

Table 3 shows the percentage of rate in question for website design. Most students were satisfied with the interface of the system. Based on the table and graph, the rate is 62.5% for the Good rate, which is the highest. Next, the highest rated Very Good rate is 50%, and students choose to rate the overall system and the colour used in this system. For the Bad and Very Bad rate, 12.5% of students rated Bad for interface and font size and Very Bad for colour on this system.

Table 3. The Usability Evaluation

	Very Bad	Bad	Good	Very Good
Based on the video that you watch, what are you thinking about the system function overall?			50%	50%
How satisfied are you with the interface of this system?		12.5%	62.5%	25%
Are you like with the colour of this system?	12.5%		37.5%	50%
How satisfied are when you see the font size for this system?		12.5%	50%	37.5%

5. Conclusion

This paper describes the design and development of ETTP, including the study's context, methodology, design and development, and evaluation. To summarize, the ETPP application has to be improved further. According to the questionnaire's average score, most answered "Good" or "Very Good." The final question of the questionnaire solicits their feedback. Based on the review, the component of this system that needs to be enhanced, according to student opinion, is the interface, such as colour, text size, and usage of modern design. Overall, this is an easy-to-use system, with most of them satisfied with all the provided functions, such as sending an agreement function

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