



Indonesian Business Polytechnic New Student Admissions Test Using a Computer Based Test (CBT)

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ABSTRACT

New Student Admission Is One Process in Higher Education which aims to filter out prospective students who are selected according to the criteria determined by the Higher Education to become their students. In general, the process of admitting new students is carried out through the stages of registration, selection tests, and student admissions. Every year, Polytechnic Bisnis Indonesia conducts the Entrance Examination for ± 300 people, which is done manually so it takes longer time to print the questions, check the results of the exam and report the results of the exam. Computer Based Test (CBT) by utilizing the Moodle CMS is one of the evaluation strategies used to determine the capacity and competence of prospective new students more quickly and more efficiently. Utilizing this application simplifies the work of the Exam Committee so that it is more productive and professional in managing Administration. This application also requires prospective students to be accustomed to using the application and must be more mature in carrying out the examination because it does not allow working with others because the questions and answer choices appear randomly.

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1. Introduction

An exam according to the Big Indonesian Dictionary is something that is used to test the quality of something (intelligence, ability, learning outcomes, etc.). exams generally use a written method, namely pen and paper. Examination models like this are not commonly found in various institutions, ranging from schools, universities, to government agencies. Exams are one way to evaluate the learning process. Exams in the world of education aim to measure the level of achievement of teaching to students as learners, so that teachers and students can measure and evaluate their ability to understand the material. In addition, the test is one of the media to measure the ability, personality, and intelligence of students in a field of study. The results of these measurements obtained an assessment that can be used to make various decisions [7].

The development of Information Technology and the internet is so rapid that various types of human interaction that used to involve non-interactive objects, such as reading books, have shifted to interactive means such as computers [4]. The environment provided by the utilization of such technology makes such interactions more lively and less monotonous. This is increasingly developing along with the increasing number of technology literate users. Based on the latest We Are Social report, in 2020 it was stated that there were 175.4 million internet users in Indonesia. Compared to the previous year, there was an increase of 17% or 25 million internet users in this country. Based on the total population of Indonesia, which amounts to 272.1 million, it means that 64% of the Indonesian population has experienced access to cyberspace.

Moodle stands for Modular Object Oriented Dynamic Learning Environment. Moodle is an inward learning medium open source web forms. This application allows the examinee to take the exam and after completion of the exam the results will come out. Supporting facilities for Moodle include:

a. Assignment Module

This module is arranged based on the date of collection, as students upload the work that has been done to the application. Tasks that have been given will be given an assessment or comment in the form of feedback provided by the teacher that can be seen by students and teachers on their respective pages.

b. Chat module,

This module takes the form of application user interactions (at the same time). Participants can send text messages, files or attachments to the chat window. All sessions can be recorded in a log for later viewing;



- c. Forum module,
The forum module can be customized, including a special forum for educators, special news, open forums in an order according to user posts. This forum is used as an interaction between each participant, both teachers and students. In this forum there is also a facility to reply to posts from participants;
- d. Quiz Module (Quiz),
This module allows the teacher to prepare a database of questions on different quizzes, the questions are grouped into several categories for easy access. Quiz execution is determined in a certain period of time and the assessment can be made automatically;
- e. Material Module (Resource),
This module supports various formats (Power Point, Word, Flash, Video, Audio). Materials are uploaded and managed in the app. Materials can be downloaded by students [1] [2] [3].

Taking into account the situation in the Indonesian Business Polytechnic environment which annually conducts Entrance Screening Examinations for \pm 300 prospective students, it is appropriate that as an educational institution that relies on Information Technology in its development to use computer-based test (CBT) -based assessments as a tool in creating an assessment process objective and effective. CBT can take advantage of one of the open sources, namely Moodle, the CBT system replaces the old system that still used pen and paper. Apart from being more flexible, computer-based exams are more efficient, efficient, fast and transparent in practice. The application of CBT is supported by new prospective students who are technology literate and are familiar with operating computers and infrastructure at the Indonesian Business Polytechnic [3] [4] [5] [7]. The Indonesian Business Polytechnic has 2 Labs, namely Lab 1 consisting of 40 units of laptops and 50 units of Lab 2 with each laboratory having processor specifications equivalent to core i3, 4 GB RAM, 500 GB hard drive, 2 hubs per unit. each computer lab where each hub consists of 32 ports that are connected to the server [6]. (Source: Indonesian Business Polytechnic Laboratory Data).

2. Method

There are 3 activities carried out in collecting data in a study, namely observation, interviews and documentation.

- a. Observation, namely the researcher observes the documents, procedures and procedures for the entrance examination directly and sees the problems at hand.
- b. Interviewing is a process. After observing the documents, procedures and procedures for conducting the exam, the next process is carried out, namely by direct questioning with Prospective New Students, Students and the Indonesian Business Polytechnic Exam Committee.
- c. The documentation method used in this study was to obtain data in the form of documentation, in the form of examination procedures, recapitulation of scores, exam cards, question sheets and answer sheets.

2.1 Research Flow

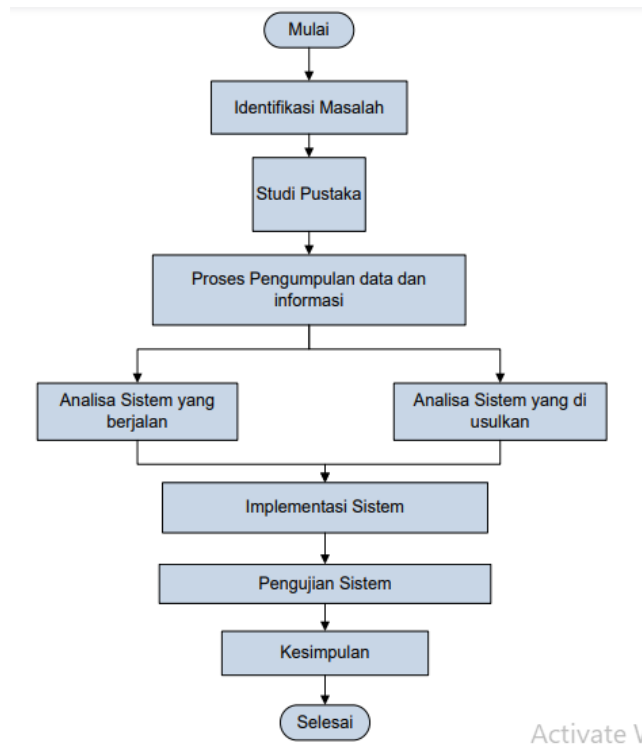


Fig 1. Research Flow

2.2 Current System Analysis

The flowchart below allows a system that runs like the Figure below:

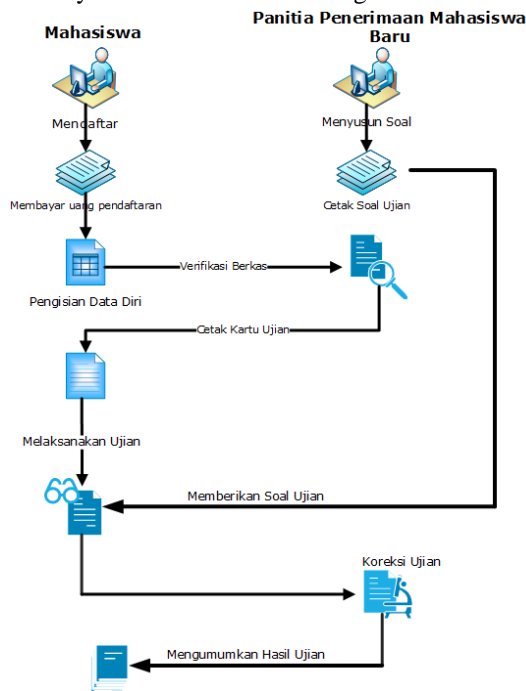


Fig 2. Running System Flowchart

2.3 The proposed system

The System Design in the Application Design for New Student Admissions at the Indonesian Business Polytechnic Computer Based Test is as follows:

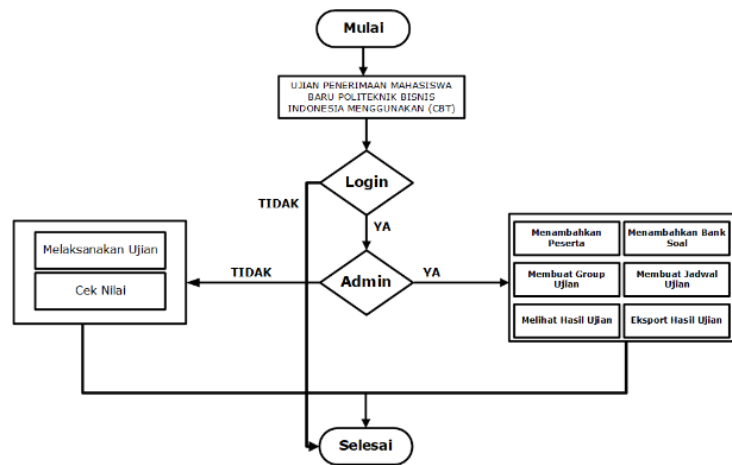


Fig 3. Flowchart of Current System Design

3 Non-Functional Requirements

Non-functional requirements are requirements that are not directly related to certain features in the system.

a. Hardware Requirements

Laptops with the following specifications:

- 1) Intel Core i3 processor.
- 2) 2GB ram.
- 3) 500 GB hard drive.
- 4) Wifi

b. Software Requirements

The Software Requirements in implementing this System are:

- 1) Windows / Linux Operating System
- 2) XAMPP 7.4.10 as a web server and database server
- 3) Google Chrome as a browser

4 Results and Discussion

3.1 Testing for the Entrance Examination Committee

a. Main course

When accessing the URL that has been determined, a display will appear like the Figure below



Fig 4. Main Menu Display

b. Added USM Class

USM is carried out per batch, so groups can be made based on waves and test dates as shown in the Figure below:

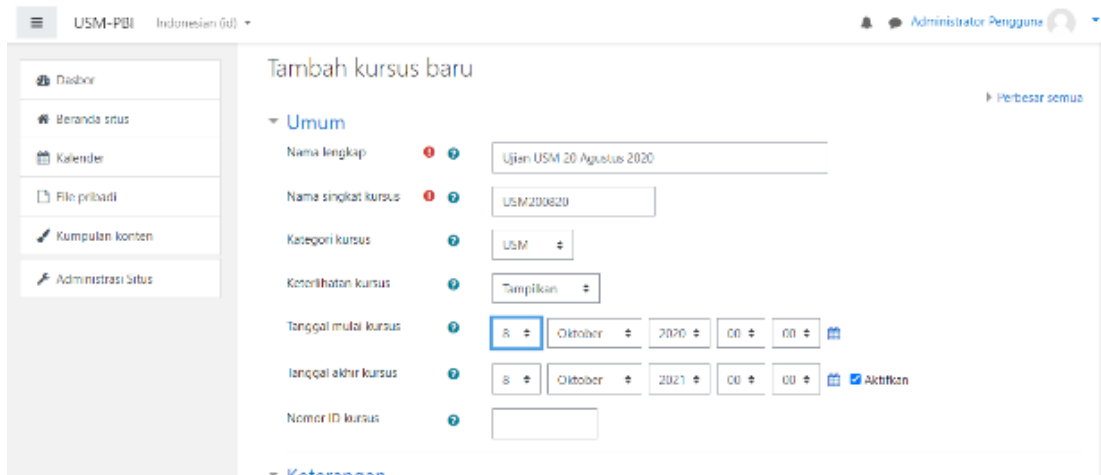


Fig 5. Adding the USM Class

c. Adding New Prospective Student Accounts

Each student has their own account to be able to log into the application and the process of creating a prospective student account can be seen in the Figure below:

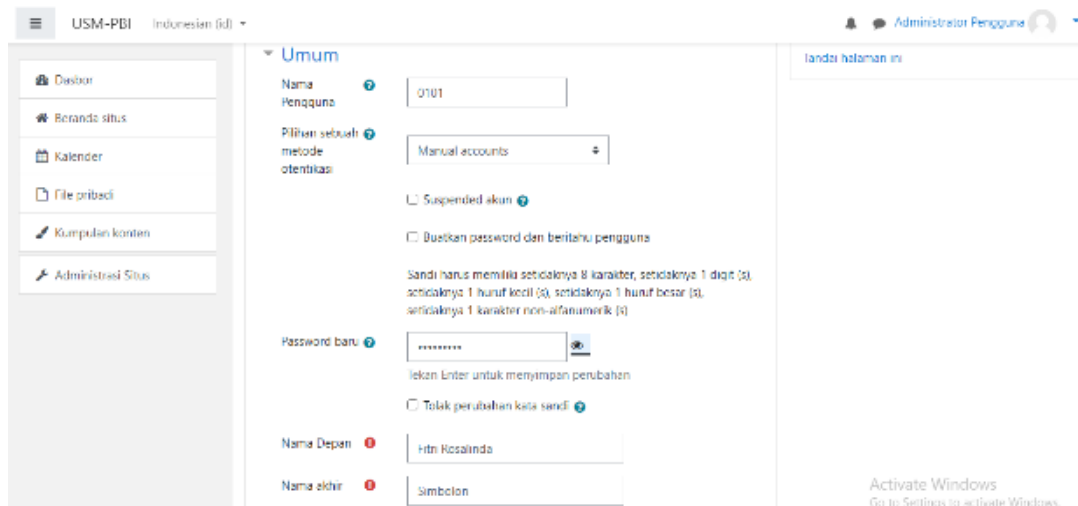


Fig 6. Adding Accounts for Prospective Students

d. Adding Exam Questions

Exam questions to be tested on USM can be input from the Question Bank. Question Bank can be input based on question categories, questions and answers to these questions. The process of making test questions can be seen in the Figure below:

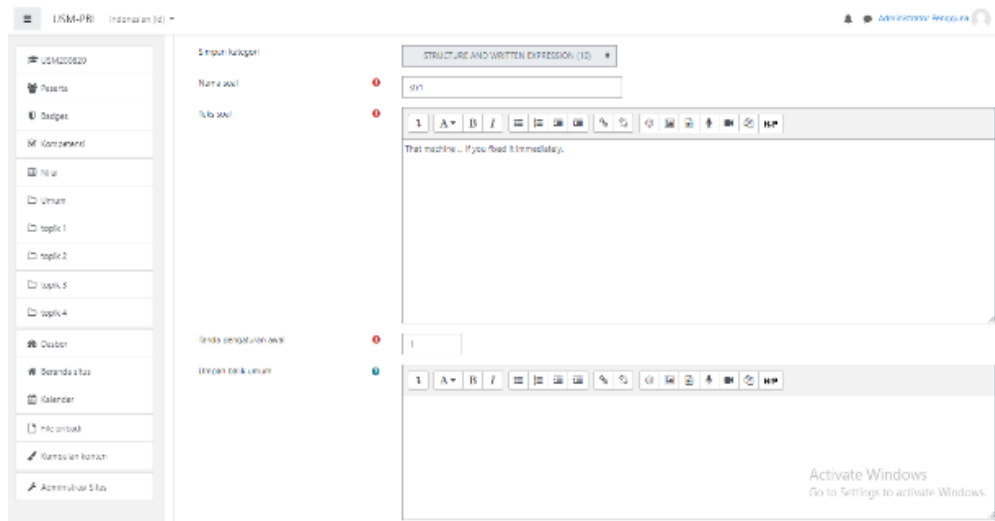


Fig 8. Making Exam Questions

- e. See Value
After the New Student Candidates have finished doing USM, the exam committee can see the results of USM directly as can be seen in the Figure below:

Nama Depan / Nama akhir	Alamat email	Ujian USM 20 Agustus 2020	Total kursus
Elen Cahaya	elen@gmail.com	60,00	60,00
Bobby Chandra	bobby@gmail.com	86,67	86,67
Endang Cindralaras	endang@gmail.com	46,67	46,67
Herianto Daniel	herianto@gmail.com	66,67	66,67
Syafitri Hakim	syafitri@gmail.com	46,67	46,67
Anton Lutfi Siahaan	anton@gmail.com	40,00	40,00
Dedy Malenta	dedy@gmail.com	53,33	53,33
Ferianto Nababan	ferianto@gmail.com	60,00	60,00
Cindy Saragih	cindy@gmail.com	80,00	80,00
Fitri Kosalinda	fitri@gmail.com	66,67	66,67
Rata-rata keseluruhan	Rata-rata keseluruhan	60,67	60,67

Fig 9. Making USM result value

3.2 Testing for Prospective New Students

a. Exam View

Students log in after being given an account, a link will appear for the exam. After the exam link is clicked, it will appear as shown below:

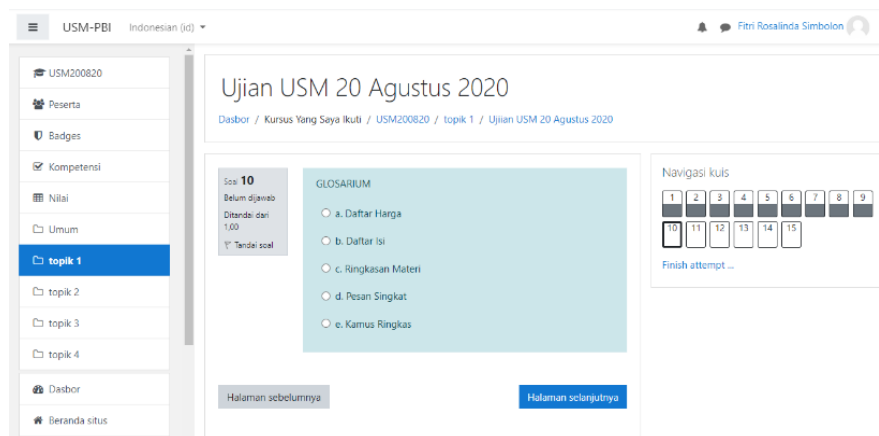


Fig 11. Prospective Student Exam Form

b. Exam results

After completing submitting the test results, the system will display the correct or false results of the student's work as in the Figure below:

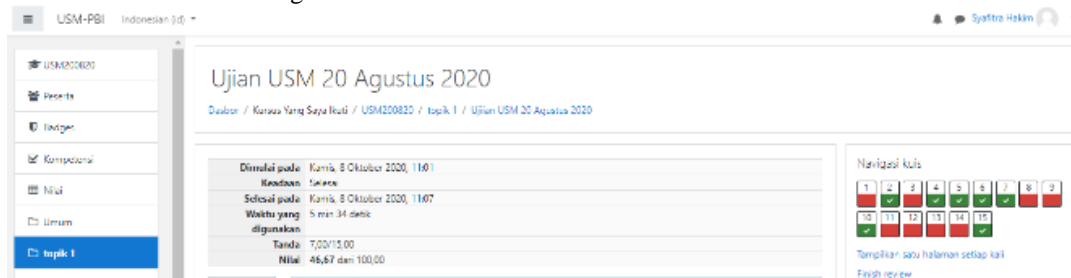


Fig 13. Examination Result Form

c. Test scores

The system will also display the value of the test results as shown in the Figure below:

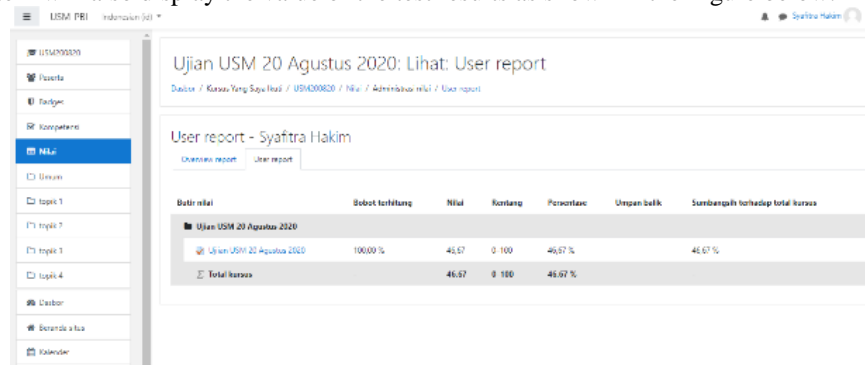


Fig 14. Test scores

5. Conclusion

The results of this study indicate that the computerbased test (CBT) using the CMS Moodle is quite effective and efficient in the implementation of USM for New Student Candidates at the Indonesian Business Polytechnic. This is proven by the fact that the Examination Committee does not need to print exam questions and correct exam results. With the use of the system, the committee simply input questions into the question bank and in practice the questions in the question bank will appear randomly with a choice of random answers as well so as to minimize cheating. After completion, the score will automatically appear in the New Student Candidate System and the committee can immediately see the recapitulation of the overall score per group after completing the exam. However, this application needs to be synchronized with the existing system, so that there is no repetitive work.

Thank-you note

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5 References

- [1] Ambarita, A. (2017). The implementation of the e-learning system uses Moodle software at the Wiratama North Maluku polytechnic of science and technology. *IJIS-Indonesian Journal On Information System*, 1 (2).
- [2] Bariyah, SH, & Imania, KAN (2018). Implementation of Moodle-Based Blended Learning in the Information Technology Education Department. *QUOTATION JOURNAL*, 4 (2), 106-113.
- [3] Coal, HH (2017). Online Exam Implementation Study Using LMS Moodle on PGMI UNISKA MAB Banjarmasin Students. *Al Ibtida: Journal of MI Teacher Education*, 4 (2), 201-216.
- [4] Nurhadi, A., & Indrayuni, E. (2019). ONLINE EXAM SELECTION IN ACCEPTANCE OF NEW STUDENTS IN VOCATIONAL SCHOOLS (VOCATIONAL SCHOOL). *Mantik Penusa's Journal*, 3 (2, Des).
- [5] Ramdani, Z., Widyastuti, T., & Ferdian, FR (2018). Application of classical theoretical analysis, the rasch model, and the computer based moodle test: A pilot study. *Indonesian Journal of Educational Assessment*, 2 (1), 21-30.
- [6] Sinaga, NA (2018). DEVELOPMENT OF WEB-BASED COMPUTER LABORATORY INFORMATION SYSTEM (CASE STUDY OF INDONESIAN BUSINESS POLITECH). *Journal of Information and Computer Engineering (Tekinkom)*, 1 (2), 55-61.
- [7] Susilowati, S., & Hidayat, T. (2018). Online Exam Information System Design (Case Study at SMAN 58 Jakarta). *Journal of Computer Engineering*, 4 (1), 30-36.

