

# The Design of Web-based Learning System using Feasibility Study Concept

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**Abstract:** This study aims to design feasibility study software based on fourth ratio; liquidity, activity, leverage, and profitability (FEASTEDU). The learning process are making small and medium enterprises financial statements, making manual financial statement analysis, confirmed the accuracy of manual calculations with software results, and making conclusions about business feasibility. Learning model is implemented in the FSA courses in the Accounting Department of Universitas Negeri Malang. The software development phase used the development model of the Instructional Development Institute (IDI) by Borg and Gall. IDI implementation is analyzing user needs, designing, validating and implementing, and evaluating software. The problem faced in software implementation are the students schedule of data collection, tax calculation errors, and the software accessibility.

## 1 INTRODUCTION

The number of internet users in Indonesia is 54.68% of the total population in Indonesia (APJII, 2017). Higher education must accommodate this data by making the internet as one of the learning media. Time and space constraints can be solved using internet-based learning. Internet-based learning can improve the quality of education (Atabekova, Belousov, & Shoustikova, 2015; Aziah, Sahari, & Muda, 2013; Chatwattana & Nilsook, 2017; Deejrjing, 2014; Elida, Nugroho, & Suyudi, 2012; Qing & Li, 2011; Ya, Alsancak, & Özüdo, 2015).

The example of internet-based learning is website-based learning (WBL). WBL is more interesting, interactive, and easy to apply because it does not require a complicated programming language (Chatwattana & Nilsook, 2017; Qing & Li, 2011). Another benefit obtained from using the website is time efficiency (Atabekova et al., 2015; Deejrjing, 2014), easier learning process (Aziah et al., 2013; Chatwattana & Nilsook, 2017; Ya et al., 2015) and increasing student understanding (Atabekova et al., 2015; Elida et al., 2012; Qing & Li, 2011). The implementation of WBL is an online discussion forum, submission of material and online assignments (Chatwattana & Nilsook, 2017; Elida et

al., 2012). WBL can be combined with other learning methods such as PBL (Chatwattana & Nilsook, 2017).

This research develops website-based software (FEASTEDU). The development of FEASTEDU was carried out to bring students closer to the practice of preparing financial reports in accordance with applicable accounting standards to support the development of a life-based curriculum. Staron (2011) explained that life-based learning is the whole learning that utilizes all the learning resources around the student.

The components developed in FEASTEDU are: 1) Summary financial ratios concept, 2) financial statements, 3) calculation of each ratio, and 4) assessment of business feasibility. Calculation of financial ratios is presented in the subject of Financial Management and Auditing course, and deeply analyzed in the Financial Statement Analysis (FSA) course.

Munawir (2010) states that financial statement analysis is the study of the relationship of financial statements account. Murhadi (2013) dividing financial ratios in five major groups; liquidity ratio, asset management ratio, debt management ratio, profitability ratio, and market value ratio. Different from Murhadi (2013), Hanafi dan Halim (2009) use the term activity ratio to categorize asset

management ratios, and solvency ratios for debt management. Subramanyam dan Wild (2010) presents financial ratios in three important areas, credit analysis, profitability analysis, and valuation.

Each ratio has a different function. Liquidity Ratio to measure the company's ability to pay short-term liabilities. Activity Ratio to measure the effectiveness of the use of entity resources. Leverage Ratio to measure the amount of the entity's debt financing, and Profitability Ratio to assess a company's ability to generate profits from invested capital. The market value ratio is applied to public company. This ratio is not suitable to be applied to Non-Publicly-Accountable Entities (NPAE). NPAE is a non-listed companies and non-financial institutions (The Indonesian Accounting Standards for NPAE, 2016). The entity that meets this definition is a Small and medium enterprises (SMEs).

## 2 RESEARCH METHOD

This study was implemented in the class of 2016 who are currently taking Financial Statement Analysis course in the accounting department of Universitas Negeri Malang (UM). The selection of students as the subject of research is based on Novianto (2013) which states that students are the most internet users. other than that, Firmansyah dan Noorlaily (2006) states that 93.6% of students use the internet in the learning process.

FEASTEDU uses a Research and Development design (Borg, W.R. & Gall, 1983) using Instructional Development Institute (IDI). The IDI development model uses an approach that includes 3 stages, define, develop and evaluate (UCIDT, 1973). This method is designed to develop a new product or perfect existing products with measurable phases (Borg, W.R. & Gall, 1983). Below is a description of FEASTEDU's development model:

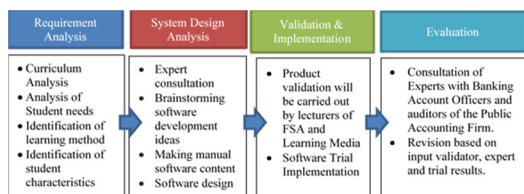


Figure 1: Flowmap Application.

## 3 ANALYSIS

Explanation of the steps above are as follows:

### a. Define Phase

Requirements documentation includes: a) curriculum analysis, b) analysis of student needs, c) identification of learning methodes, and d) identification of student's characteristics. The curriculum analysis phase are 1) Students are able to master the concepts, principles, and calculations of financial statement analysis, 2) Students are able to creatively analyze analytical tools in decision making, 3) Students are able to analyze adjustments and projections on financial statements so that students are able to minimize financial statement bias by utilizing technology , 4) Students are able to develop a set of analytical tools to understand financial statements in decision making.

Analysis of students need based on the questionnaire. The results of the questionnaire state that 70% of students expect learning that is close to the accounting practice, and the rest expect conventional learning because of simplicity and clearer tasks. Identification of learning method is observation and in-depth interviews with lecturers in the course of FSA. The results of the identification indicate that both lecturers and students are confused about the function of FSA to support student accounting skills. Based on the results of the identification of student characteristics, the class chosen is the class with the number of actively students participating in the learning process more dominant than passive students.

### b. Develop Phase

The develop stage includes three main activities, consultation with practitioners and FSA lecturers, making manual calculation content, and software development by the iaccountax team. The first step in software development was consulting with SMEs relationship managers (RM) of Bank Muamalat Indonesia (BMI). The results of the consultations became a reference for the retail sector selection, determining the feasibility criteria using financial ratio analysis, and determining business feasibility of the entity. Discussion with the FSA lecturer were conducted to determine the accuracy of the software conclusion about feasibility concept. Discussions were also conducted to select sub ratio analysis.

Account codes, are a means of categorizing accounts in financial statements. 3 digit account codes are used to simplify accounting calculations. The accounts created are the minimum accounts in the Indonesian Accounting Standard for NPAE.

Reserve accounts in terms of assets, liabilities, income and expenses are made to accommodate other accounts that may be owned by SMEs. In addition, to introduce students with the NPAE accounting standard, some accounts are not presented in their real names, but are replaced by the name of the chapter that discusses the account in the financial statements.

The statement of financial position quality affects the accuracy of the calculation of ratio analysis. The results of manual calculations are consulted with RM SMEs BMI to get input about the calculation accuracy. The income statement function is to describe the business operations of the entity. This report is important to assess the profitability of an entity. General requirements in the manual content for the income statement are minus signs for interest and other expenses. In addition, the link account is also applied at 0.5% of maximum IDR 4,800,000,000 of gross sales. The general criteria in landing are character, capacity, capital, collateral, dan condition of economy (Kasmir, 2009). Capital seen from the financial reporting.

Financial ratios content in this software are financial ratios, calculation formulas, sheet formulas, value amounts, and criteria for determining business feasibility for each ratio. Business feasibility criteria for the overall ratio is to meet 6/8 of the total ratio. The other 3 ratios, return on assets, time interest earned, and asset turnover are not used in the final decision. The last manual content is 88 types of multiple choice question. The function of this content is as a learning tool for students. The questions are designed in such a way as to strengthen students' understanding regarding the topic of financial statement analysis. Students can see the results of the ratio calculation if they can answer 3 questions from the 5 questions provided for each ratio. The last step is software designing by Iaccounttax. The developer input is the use of multiple choice question, not comprehensive case study due to time constraint.

#### c. Evaluation Phase

FEASTEDU uses sub domain of UM website, with a page <http://studikelayakan.fe.um.ac.id>. The constraints of software development is supporting website system and content error. The supporting website system problem is restricted mode of UM website. The content constraints are based on the opinions of media experts and curriculum development team of Lembaga Pengembangan Pendidikan dan Pembelajaran (LP3) UM. Input from media experts is software color selection and the

prominence of certain buttons that students must choose in the operationalization process. Differences buttons can direct students to the stages that must be done. Input from LP3 is addition of software operationalization manual modules, addition of the main menu before the login page, and software narration in home page.

## 4 RESULT

The learning process starts from the second week of September. The learning model used is combination of project based learning (PBL) and WBL. PBL is done by giving assignments to students in groups to collect data on financial reports of SMEs in the retail sector. Learning is done in five meetings. The first meeting, on September 14, 2018, contained an explanation of the learning model and activities to be carried out. The activities carried out by students are data collection, financial reports compilation, manual calculation of ratios, software operationalization, presentation of business feasibility assessments to SMEs owners, and presentation of the overall activities

The second meeting, September 21, 2018 is an activity of data collection and preparation of SMEs financial reports. The data collection stage brings students closer to the accounting practice. At this stage students learn to obtain limited financial report data to produce a high quality financial reports in accordance with the NPAE accounting standards. The third meeting, September 28, 2018 is the presentation of the results of the financial statement analysis manual calculation. At this stage the students confirm to the lecturer about the accuracy of the manual calculation. The problem found at this stage the tax calculation error. Some groups apply taxes 5% of net income.

The fourth meeting, October 5, 2018 is the operationalization of FEASTEDU and a presentation on the assessment of business feasibility for SMEs. Software operational activities are carried out independently by students. The confirmation of FEASTEDU's feasibility assessment is the basis for students to confirm the accuracy of their assessments. The fifth meeting, October 19, 2018 is the class presentation of the overall results of learning activities. At this stage students explain learning experiences and constraints faced in each learning process.

The constraints faced in the data collection stage is student synchronizing schedule of data collection. The solution of this problem is data collection on

weekends. The constraints faced at the manual calculation stage are tax calculation errors. Tax is a determinant of a entities's net profit, so that errors affected the accuracy of the profitability rastos calculation. The obstacle faced in the FEASTEDU operationalitation is software readiness. The restricted mode in UM website affected the software operationalization scheduled. The constraints and solution at the data collection phase are also carried out in presentation of business feasibility assessments to SMEs owners phase.

## 5 CONCLUSIONS

The FEASTEDU design is done in three stages: define, develop, and evaluate. Define stage is a requirements documentation which includes four main activities a) curriculum analysis, b) analysis of student needs, c) identification of learning methodes, and d) identification of student's characteristics. The develop stage includes three main activities, consultation with practitioners and FSA lecturers, making manual calculation content, and software development by the iaccountax team. The evaluation stage is done by capturing input from media experts and material experts about the suitability of FEASTEDU to achieve Learning Outcomes Courses in the FSA course. The limitation in this study is the website accessibility. The next development can be done on an android sytem so that it is more accessible to students.

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