Development of Banking Earnings Management Software

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Abstract: Earnings management is the way taken by the management to affect the numbers in the financial statements. Certain techniques are used to reduce earnings fluctuations by reducing or increasing the amount of profit for specific motivation. Earnings management can occur in all business sectors, among services, trade, and manufacturing. However, although earnings management taught in the subject of financial accounting theory, college students in accounting major still seems unfamiliar with the calculation of earnings management. Therefore, this study aims to develop earnings management software that can be used to detect earnings management in the banking sector. This study focuses on earnings management in the banking sector because of the different characteristics of banks. It is expected that this software becomes a supplementary media in the learning process to increase students' understanding of earnings management. The development process consists of the Analysis Stage, Design Stage, and Development Stage. Earnings management software then was improved based on the validation by expert judgment and the commentary by students as main users.

1 INTRODUCTION

Agency theory studies the contract design to motivate agents to deal with the principal's interest. Agency problems are conflicts of interest between agents (management) and principals (owners of capital) often arise in various companies. Agency theory studies the problem information asymmetry of designing a contract to control moral hazard. The most efficient contract does so with the lowest possible agency cost. Company directors manage earnings to satisfy bondholders and shareholders. The need to influence the financial market perception is one of the motivations for earnings (Scott (2015), Neffati et al. (2011), Hu (2010)).

Earnings management is a management choice for accounting policies or real action. There are several patterns of earning management such as a. Taking a bath (If a company must report a loss, then management also reports a large loss. Taking a bath usually occurs in periods of organizational stress or organizational restructuring. An example of his actions is the write off assets); b. Income minimization; c. Income maximization; d. Income smoothing (managers smooth reported earnings to receive constant compensation) (Scott, 2015). One example is the result of the research by Restuningdiah and Wafaretta (2017) that when the realization of profit exceeds expectations, the manager will avoid the risk of accrual based manipulation. Accrual earnings management can be conducted and detected through many techniques as to reduce the fluctuation of earnings.

Earnings management can be viewed from both a financial reporting and a contracting perspective. From a contracting perspective, earnings management is used to protect companies from unexpected events due to rigid and incomplete contracts. Earnings management influences managers' motivation to facilitate compensation they receive from time to time. From a financial reporting perspective, managers use earnings management to avoid reporting losses so that the company's reputation does not go down, which will result in a decline in stock prices (Scott, 2015).

Company directors manage earnings to reach a situation that satisfies bondholders and shareholders. Indeed, one of the motivations for earnings management is the desire to influence the financial market perception associated with the firm risk, namely the change in net income (overall risk), the

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change in total sales (operational risk) and the debt-to-equity ratio (financial risk) (Neffati et al. 2011).

As an effort to protect the interests of the owner (investor), information is needed regarding the practice of earnings management carried out by management. But until now no tool can quickly detect the existence of earnings management practices in the company, so investors who are unfamiliar with various income smoothing calculation techniques have not been able to utilize income smoothing information in their decision making.

Not only investors but accounting students are also not familiar with earnings management. Most learning process still provides theoretical information only and has not yet linked to the real information of earnings in the capital market. It encourages needs to build earnings management software to ease the understanding of earnings management for students. Based on the background, the objectives of this study to develop earnings management software in the banking sector as an ICT-based learning media for accounting students,

Although earnings management can occur in all business sectors, this study focuses on the banking industry due to the different characteristics of other industries. The banking industry has tighter regulations compared to other industries, for example, a bank must meet a minimum Capital Adequacy Ratio (CAR) and provide financial statements as one indicator of the healthy bank by Bank Indonesia (Setiawati and Na'im, 2001 in Nasution and Setiawan, 2007).

2 RESEARCH METHOD

According to the purpose of research, the development process took six (6) months for the development of earnings management software, obtaining the validation results of the expert of material, and doing the trial test to the student. The development process contains three (3) stages, namely Analysis Stage, Design Stage, and Development Stage, whereas each stage has an output that supports the process of content development of earnings management software as illustrated in figure 1 below.

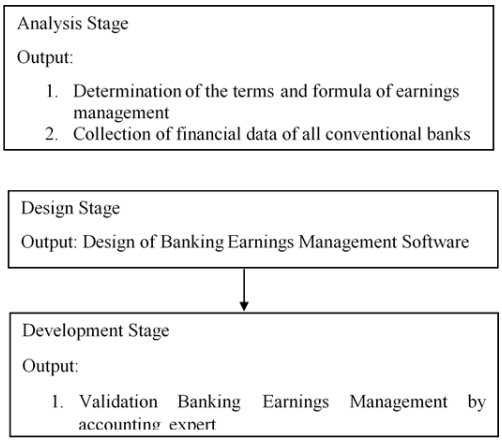

Figure 1: Development of Banking Earnings Management Software

In design stage, the formula of earnings management input in the software are model by Healy (1985) and DeAngelo (1986) (Callao et al., 2017). The formula are shown as follows.

Healy (1985):

$$NDA_{it} = \frac{1}{n\sum_t \frac{TA_{it}}{A_{it-1}}}$$

$$TA_{it} = NI_{it} - CFO_{it}$$

Notes:
TA_{it} : Total Accruals in year t
A_{it-1} : Total Assets in year t -1
n : number of years in the estimation period

DeAngelo (1986):

$$NDA_{it} = \frac{TA_{it-1}}{A_{it-2}}$$

$$TA_{it} = NI_{it} - CFO_{it}$$

Notes:
TA_{it-1} : Total Accruals in year t -1
A_{it-2} : Total Assets in year t -2

2.1 Validation by Experts

This study used primary data by questionnaire to infer the validity of earnings management software. The indicators validated are the suitability of the material and the accuracy of the material. The questionnaire uses a Likert scale of 4. Criteria for each rating scale is score 4 for very clear, 3 for clear, 2 for unclear, and 1 for very unclear. The data

analysis used is by calculating the percentage, according to the formula:

$$P = \frac{\Sigma x}{\Sigma x1} x100\%$$

Notes:
P = percentage
$\sum_x$ = Score of respondents' answer in 1 item
$\sum_{x1}$ = Maximum score in 1 item

Each item is validated by several criteria such as valid, valid enough, less valid and not valid. The score for each criterion can be seen in table 1.

Table 1: Validation Criteria

ANSWER	CRITERIA
80 – 100	Valid
60 – 79	Quite Valid
40 – 59	Need Revision (Less Valid)
0 – 39	Need Revision (Not Valid)

Source: Sudjana (2005)

The questionnaire gave to an accounting lecturer as a material expert in investment management system and a practitioner as a media expert. The questionnaire of earnings management software also includes additional forms of comments, criticisms, and suggestions from the validator related to the software. Feedbacks from the material and media expert judgments then are used as the basis for the revision of the earnings management software.

2.2 Trial Test to the Students

After validation by an expert, the software tested to accounting students who have been taking investment management course. It was based on the consideration that the investment management course discusses how to evaluate the firms' performance including earnings management tendency as the basis for investing.

3 RESULTS

Table 2 shows the results of material expert validation. The suitability of the material is 87,5 % (valid), and the accuracy of the material is 100% (valid). Based on this validation, earnings management software for the banking sector was declared valid and did not need revision.

Table 2: Material Expert Validation

No	Explanation	Score		%	Result
		X	Xi		
1	**The Suitability of the Material**				
a.	The material presented is by the prevailing theory	4	4	100	Valid
b.	The material presented is by the learning outcome	3	4	75	Quite Valid
	Average	3,5	4	**87,5**	**Valid**
2	**The Accuracy of the Material**				
a.	The accuracy of the definition	4	4	100	Valid
b.	The accuracy of the formula	4	4	100	Valid
	Average	4	4	**100**	**Valid**

Table 3 shows the results of media expert validation. The technical quality, the key function, and the display quality of earnings management software are 100% (valid), 100% (valid), and 93,75% (valid), respectively.

Table 3: Media Expert Validation

No	Explanation	Score		%	Result
		X	**Xi**		
1	**Technical Quality**				
a.	The application is easy to use	4	4	100	Valid
b.	Entry and exit process is easy to use	4	4	100	Valid
	Average	**4**	**4**	**100**	Valid
2	**Key Function**				
a.	Key functions are easy to use	4	4	100	Valid
b.	Accuration of key functions	4	4	100	Valid
c.	Speed reaction of key functions	4	4	100	Valid
	Average	**4**	**4**	**100**	**Valid**
3	**Display quality**				
a.	Compatibility of color selection	4	4	100	Valid
b.	The effectiveness of the layout screen	4	4	100	Valid
c.	Font size	4	4	100	Valid
d.	Data Completeness	3	4	75	Valid
	Average	**3,75**	**4**	**93,75**	**Valid**

Revision of Banking Earnings Management Software is related to data completeness. The media expert suggested adding data for five years, such as the annual report from 2012 until 2017. After revision, the learning media is ready to be implemented and evaluated (field test) by the accounting students as the user in the learning process. Field validation was carried out on thirty-three (33) accounting students.

Table 4 shows the result of the field test. The technical quality of media is 98,6 % (valid), the key function of media is 95,8% (valid), and the display quality of media is 81,9% (valid). The suggestions from the respondents that The Banking Earnings Management Software should be able to: a. Be used in offline mode, b. Automatically update the data (annual report), c.Analyze and support short-term decision making from the quartal financial report, d. Encompass not only the banking sector but all industry sectors, d. Add the logo of Universitas Negeri Malang (UM) or IDX, e. Append more colors and pictures to make this software more interesting, and f. Can be downloaded through play store or app store in the future so that this software can be more accessible as learning media.

Table 4: Field Test

No	Explanation	Score		%	Result
		X	Xi		
1.	**Technical Quality**				
a.	The application is easy to use	141	144	97,9	Valid
b.	Entry and exit process is easy to use	143	144	99,3	Valid
	Average	142	144	98,6	Valid
2.	**Key Function**				
a.	Key functions are easy to use	138	144	100	Valid
b.	Accuration of key functions	141	144	97,9	Valid
c.	Speed reaction of key functions	129	144	89,6	Valid
	Average	136	144	95,8	Valid
3.	**Display quality**				
a.	Compatibility of color selection	110	144	76,4	Valid
b.	The effectiveness of the layout screen	119	144	82,6	Valid
c.	Font size	125	144	86,8	Valid
	Average	**118**	**144**	**81,9**	**Valid**

4 DISCUSSION

Learning media helps to simplify the learning process, by connecting learners, lecturers, and teaching materials. The optimal use of media can improve the effectiveness of the learning process. In accounting learning in the classroom, many books used are in English, and often many accounting terms are rarely used, so it needs a tool or media that can help students in studying accounting.

Besides that, in student-centered teaching, the emphasis is on students as active learners. The students find information and problem-solving independently. Multimedia technology supports the self-exploration and active participation by students to solve a problem (Malik and Agarwal, 2012).

5 CONCLUSIONS

This study produced earnings management software for the banking sector which has been validated by an expert. The software was designed to enhance students' ability in self-study and help the accounting learning process.

This study limits designed earnings management software for consolidated banks. Further projects may take to expand the scope by adding more comprehensive calculation as per entity; such as for insurance companies, sharia banks, and sharia insurance banks which are subsidiary companies of the conventional bank as parent company; conventional parent bank itself; and the consolidated banks. Furthermore, the software may comprise all industry sectors.

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