Design of Learning Media for Investment Management Study

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Abstract: Share prices on the stock exchange (secondary market) are influenced by supply and demand. Investors in any decision-making are always dependent on the information they receive. Investors need complete, relevant, accurate, and timely information to make investment decisions, whether they will buy, sell or hold existing shares. It is necessary to have a software that can provide an accurate information, which can help investors to determine the value of current shares. The purpose of this research is to design Investment Decision Support Software, that is connected online to the Indonesia Stock Exchange (www.idx.com), so it can be useful to users of financial statements The research method is the product development process and expert judgment (validation and revision). This software can also be beneficial for the learning process of accounting, especially Investment Management Study, which addresses the issue of stock assessment for investment decisions, because the discussion of the stock assessment in the classroom is limited to the understanding of the theoretical approach, and do not connected directly on the condition of the companies listed on the Stock Exchange.

Keywords: intrinsic value of share, investment decision support software, stock price

Sharpe et al., (1995) stat that investment is the sacrifice of present money to get money in the future, while Jones (1998) stat that investment is the commitment of funds to one or more assets that will be held over some future time period. In general, the investment, there are two types of assets: real assets and financial assets. Both of these assets could equally be considered as an investment in order to achieve the desired financial goals of investors. Real assets are assets that have physical form, such as land, gold, houses, and precious metals, while financial assets are assets that have no physical form, such as stocks and bonds. In investing, there is always a risk of loss of capital. Therefore, investors need to know the real asset value suitable for investment and investors should make a good decision for their investments.

Investor protection can be done by making a stock valuation. Share prices on the stock exchange (secondary market) are influenced by supply and demand. Stock valuation includes Book Value, Market Value and Intrinsic Value. If the market price is higher than its intrinsic value, then the shares eligible to be sold, because it is considered too expensive (overvalued). Conversely, if the market price is lower than its intrinsic value, the stock is worth to buy, because it is considered too cheap (undervalued). If the market price is equal to its intrinsic value, the stock is worth to remain held. Jogiyanto (1998) stated that there are two kinds of analysis used to determine the true value of the stock is fundamental analysis and technical analysis. Fundamental analysis uses fundamental data, such as data derived from the financial companies (such as earnings, dividends paid, sales, and so on). While technical analysis of stock market data (for example, price and volume of stock transactions) to determine the value of the shares.

Investors in any decision-making are always dependent on the information they receive. Investors need complete, relevant, accurate, and timely information to make investment decisions, whether they will buy, sell or hold existing shares. It is necessary to have a software

that can provide accurate information, which can help investors to determine the value of current shares. Vyas (2012) found that a lot of number investors didn't analyze the investment risk and, they were depending upon the broker to make the investment decision. Sigh (2012) stated that individual investors have to create awareness of the various human biases on their portfolios and argues for voluntary detachment from the emotion inherent in investing.

METHODS

The flow chart of product development research is:

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┌─────────────────────────┐
│ Defining requirements    │
│ and mapping of various   │
│ stock assessment         │
└─────────────────────────┘
            │
            ▼
┌─────────────────────────┐
│ Product Development      │
└─────────────────────────┘
            │
            ▼
┌─────────────────────────┐
│ Expert Judgement         │
│ (Validation and Revision)│
└─────────────────────────┘
            │
            ▼
┌─────────────────────────┐
│ Output: Investment       │
│ Decision Support         │
│ Software                 │
└─────────────────────────┘
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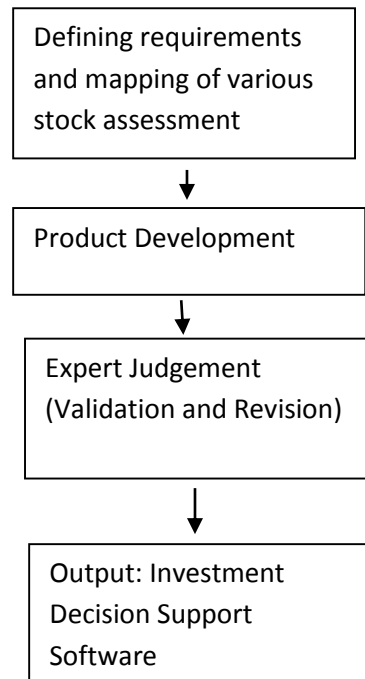
Figure 1. Product Development Research Flow Chart

Explanation

This study has several stages: Requirement Analysis, Product Development, Expert Judgement (validation and revision). From the results of expert validation, then be revised in accordance with the advice given by experts in the field of accounting studies. After doing revision, then Investment Decision Support Software is ready to be implemented and evaluated.

In designing this software using SDLC approach (System Development Life Cycle). Which is the system development life cycle of information that must be passed by each information system development project, as it was outlined in several books (Martin et al. (1994); Bodnar and Hopwood (1995); Mc Leod (1995)). MC Leod (1995) classifies the SDLC into five phases, namely: planning phase, analysis phase, design phase, implementation phase, and the use phase. While the book written by Martin et al., (1994) divides the SDLC into three phases, namely the definition phase (feasibility analysis, requirements definition), construction phase (system design, system building, system testing), and implementation phase *(installation, operations and maintenance)*.

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Definition Phase

Defining exactly what to do in detail the system so that the computer specialist can build the necessary systems. An analysis is made to relate to the following levels:

Feasibility Analysis, in this stage of defining as clearly as possible about what to do system, such as what is the expected output, the input must be received / entered, the main database what is needed, and how output should be available. Important activities in this feasibility study are to define the scope (scope) or limitations (boundaries) with the right, who will be served, what to do and what not to do, what data are included, and what data were not included. In a feasibility analysis is also performed analysis of the cost and benefits to be achieved by the system.

Requirements definition. The whole process of SDLC depends on defining requirements made herein, which include defining what will be done by the system accurately and completely.

With the help of the user-manager, analysts produce a document needs a thorough system (comprehensive system requirements document), which contains a detailed description of the output of the system and processes used to convert input data into output. This document also contains an evaluation of the costs and benefits of new systems and an improvement plan for the further development process. The document is at the core definition phase, and must be approved by the parties concerned. Once approved, these needs are considered permanent and essentially cannot be changed by the operation and maintenance phase. Thus, managers should feel confident that the requirements document has to explain all the system requirements are accurate and complete.

Construction Phase

a. System Design.
   Based on document system requirements (system requirements definition), a specialist Information Systems (IS) design a system that can satisfy all the needs that exist. The system design includes decisions about what hardware and software that will be used to run the system, plan content and structure of the database that will be used, define the processing modules (programs builder system) and the relationship between the modules with other modules.
   This stage will produce a document that describes in detail how the system will work. This document will be given to programmers to create computer code and database for the system, which includes charts that describe the structure of the system, a detailed description of the database and file, detailed specifications for each of the programs in the system, the plan of the programming process, the system test plan, and a plan for conversion and installation of the system.
b. Building and Testing the System.
   There are two activities that include the construction of a system (building), the first is to make computer programs, and the second is to create a database and detailed design files used by the system. IS specialists usually decide the configuration of hardware, system software, database management system (DBMS), and programming languages. IS specialists test each module of the system is generated, and also a test of the whole system. Final testing will involve the user to ensure that the system can work properly in the user environment.

Implementation Phase

a. **Installing the System**.
The main activities that are quite important in this phase is the conversion of data, the strategy of transition from the old system to the new system, and training to those who are involved in the new system as well as to motivate them to change the pattern of the old habits, because if users do not understand how to use the system and resist change, then the system will fail. At this stage of training for system operators.
b. **Operations and Maintenance**. The last stage of the SDLC is operation and maintenance phase. Environmental and organizational needs can change rapidly, the new system may be obsolete before the installation is therefore necessary to do some modifications to the system. The process of modifying the system in order to adapt to the changing needs of the organization with regard to the maintenance of the system. Maintenance of these systems will also follow the flow of SDLC, and can also be an improvement from the previous system or it can be the making of the new system,

TYPE OF DATA

The data used in this research is quantitative data and qualitative data. Quantitative data are an assessment based on the average percentage assessment of the Investment Decision Support Software of quantitative data will be used to infer the validity of this software. Qualitative data in the form of comments, criticisms and suggestions in the form of comments from the validator to this software. The indicators used are: Accuracy formula used, Ease of Operation This Software, Presentation materials are correct, and Clarity Software User's Guide.

Validation Instrument

Instruments used in the validation of a questionnaire. This questionnaire using a Likert scale (4 scale). Criteria for each rating scale is as follows:
Score 4 If excellent / very interesting / clear / is very easy / very precise / highly fit / very decent
Score 3 If the good / interesting / obvious / easy / appropriate / feasible
Score 2 If no good / unattractive / unclear / no easy / false / not fit / unfit
Score 1 if it is not good / very unappealing / very unclear / is not very easy / very imprecise / was incompatible / not very feasible.
The questionnaire used as an instrument in the validation of the software also includes comments and suggestions section validator as a further revision

Data Analysis Technique

For qualitative data, the analysis carried out an analysis of suggestions, comments, and criticism of the validator, whereas for quantitative data analysis used analysis techniques percentage, according to the formula:

$$P = \frac{\sum x}{\sum x1} \times 100\%$$

Explanation:
P = Persentage
$\sum x$ = Number of answers of all respondents in 1 item
$\sum x1$ = Number of ideal answer in 1 item

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To determine the conclusion, each item are validated by several criteria:

Table 1. Validation Criteria

ANSWER	CRITERIA
80-100	Valid
60 - 79	Valid Enough
40 - 59	Less Valid (Revisi)
0 - 39	Not Valid (Revisi)

(Adaptation from Sudjana (2005)

Revision

Revision of the Investment Decision Support Software is based on the feedback received from the expert.

Achievement Indicators: Investment Decision Support Software that has been revised in accordance to the feedback from the expert.

RESULTS AND DISCUSSION

Based on expert analysis of the suitability of the material (conformity with existing theory, the suitability of the material with learning objectives), the material accuracy (the accuracy of definitions, formulas and illustrations) and assessment software operation (Instructions for Use Software Clarity and Ease of Operation) has meet the criteria, so the Investment Decision Support Software declared invalid and does not need to make revisions

Table 2: Validation from Expert

No	Explanation	Score		Prosentage (%)	Result
		X	Xi		
1	The Suitability Of The Material				
a.	The material presented is in accordance with the prevailing theory	3	4	75	Valid Enough
b.	The material presented is in accordance with the learning outcome	4	4	100	Valid
	Average	3,5	4	87,5	Valid
2	The Accuration of Material				
a.	Definition Accuracy	4	4	100	Valid
b.	Formula Accuracy	4	4	100	Valid
c	Ilustration Accuracy	3	4	75	Valid Enough
	Average	3,67	4	91,6	Valid
3	Software Operation				
a	Clarity Instruction	3	4	75	Valid enough
b	Ease of Operation	3	4	75	Valid enough

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		3	4	75	Valid Enough
	Average				

Tablel 4: Summary

No	Komponen yang dinilai	Persentase	Kriteria Kevalidan
1	The Suitability Of The Material	87,5 %	Valid/ Be Used
2	The Accuration of Material	91,6 %	Valid/ Be Used
3	Software Operation	75 %	Valid Enough/Be Used

The results as follows:

Main Menu, the main menu contains Input data (to fill the data companies that go public), calculate Intrinsic Value (to calculate the intrinsic value of shares using a variety of existing models, such as: Discount Model and PER Model and Exit menu (to exit from the program).
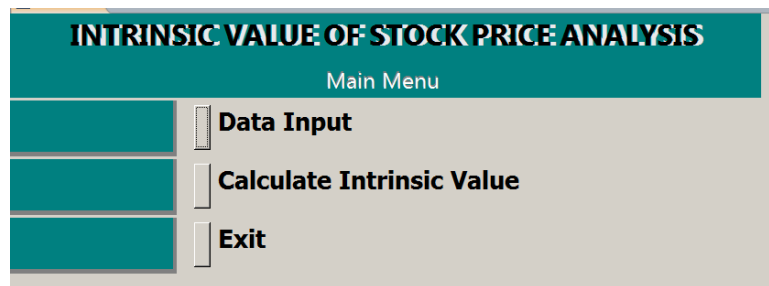
Figure 2. Main Menu

Input Data

Input data contains several menus, such as: Company Data, Deviden Data dan Earning Per Share data.
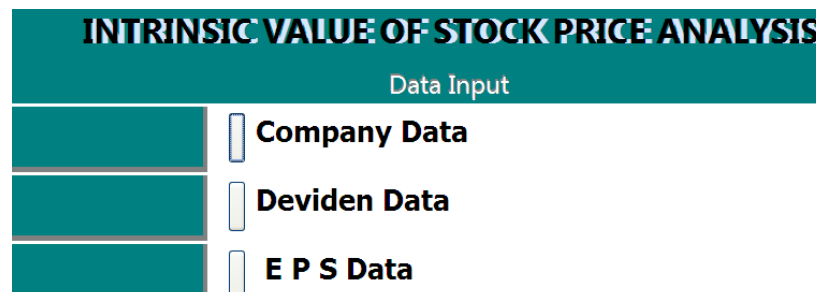
Figure 3. Input Data

Company Data

Company Data contains menu: Company Data Input, Edit Company Data, and Back To Previous Menu
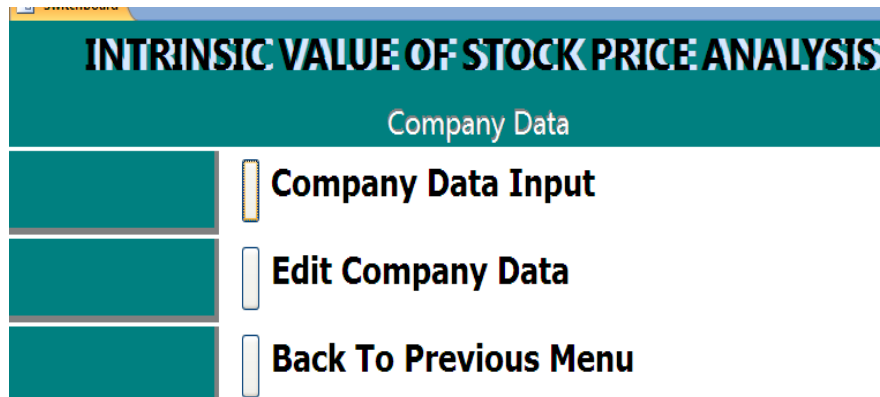
Figure 4. Company Data

Company Data Input

In this menu the user can input data company, by writing the company code in accordance to the company code in the stock exchange. In this menu user can select the desired web, taken from Indonesia stock exchange (www. idx.co.id) or from www. yahoofinance.com

Figure 5. Company Data Input

1. Edit Company Data

   This menu is used to edit the company data that we have been previously entered

Figure 6. Edit Company Data

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2. Deviden Data

This menu contains information about dividen. This menu is connected online to www.idx.co.id dan www.yahoofinance.com, so the user can enter the real dividen data, according ot the company financial statement..
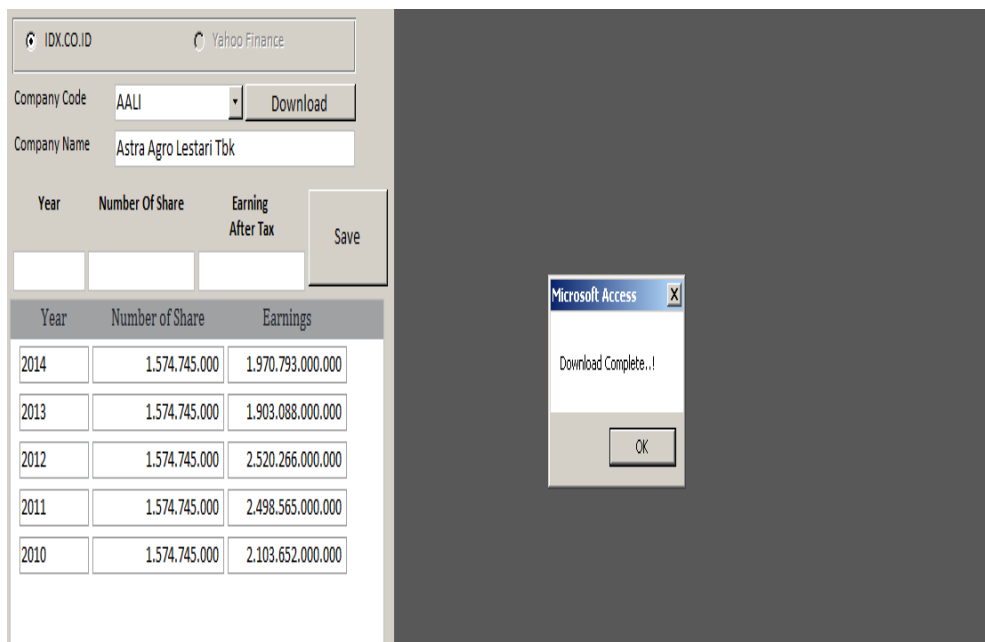

Figure 7. Deviden Data

3. EPS Data

This menu contains information about Earning Per Share data. . This menu is connected online to www.idx.co.id and www.yahoofinance.com, so the user can enter Earning Per Share data, according to the company financial statement.

Figure 8. EPS Data

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4. Data display of EPS after downloaded:
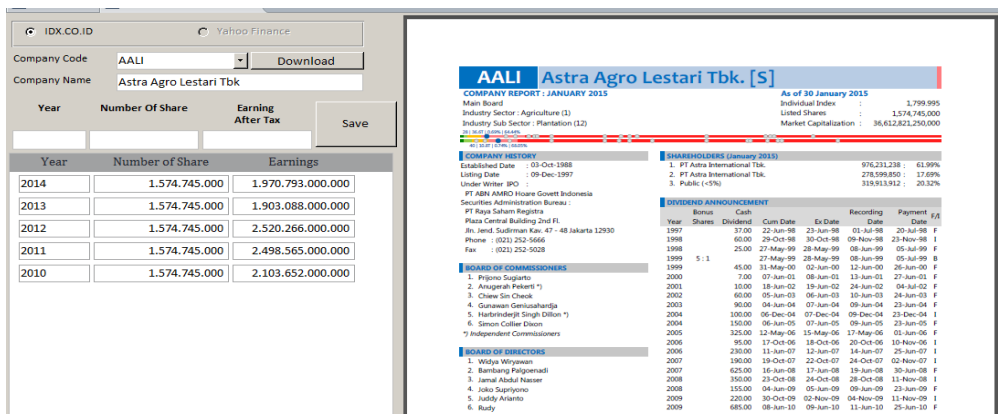
Figure 9. EPS display

5. Stock Price Data
   This menu is to downlod stock price data
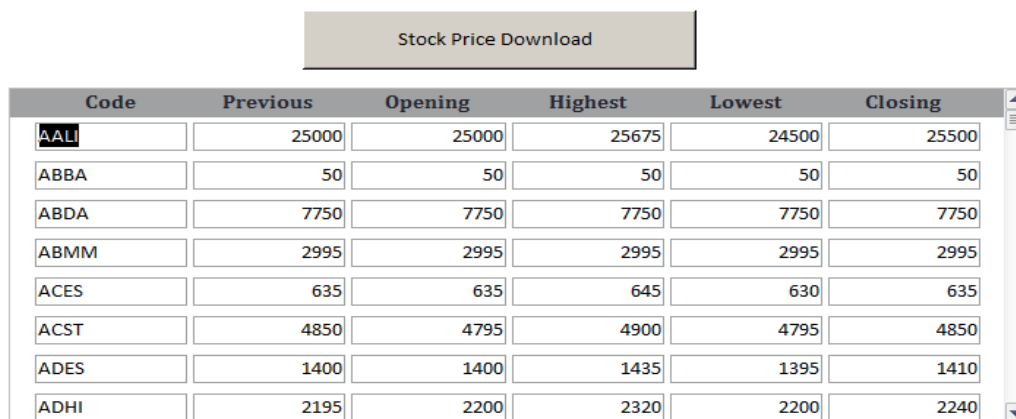
Figure 10. Stock Price Data

6. Calculate Intrinsic Value
   The menu is in the "Main Menu". This menu is used to determine the value of shares based intirinsik PER Discount Model and the Model.
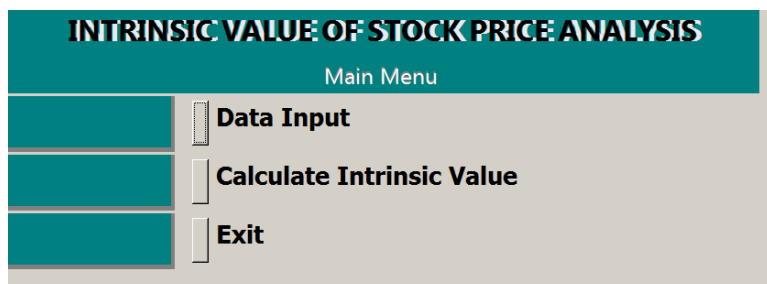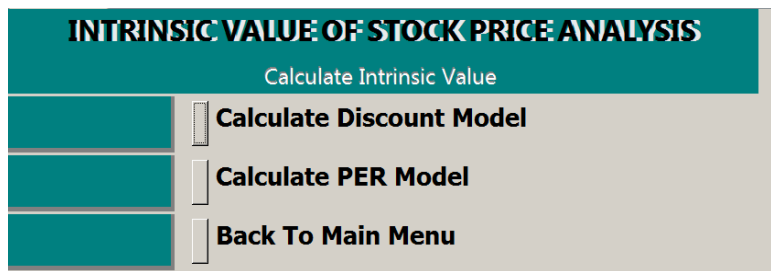

Figure 11. main Menu

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Figure 12 Calculate Intrinsic Value

7. Calculate Discount Model
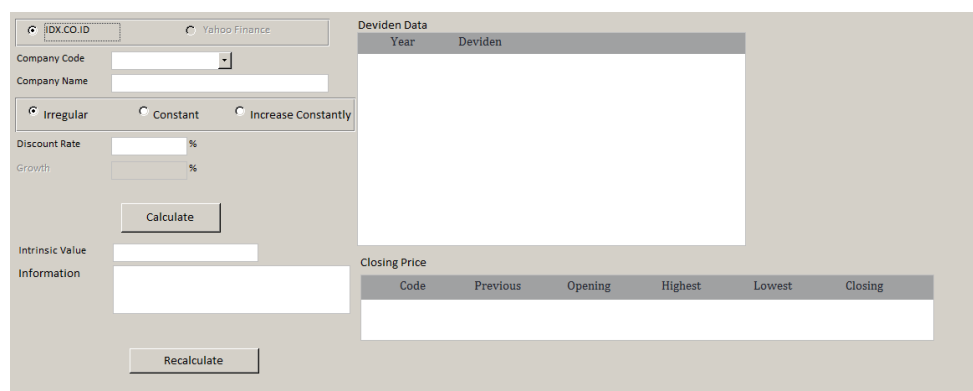   Discount model is used to determine the intrinsic value of stock

Figure 13. Calculate Discount Model

On this menu there are three options for the distribution of dividends, such as:
a. Dividends distributed irregularly
b. Dividends distributed constantly
c. Dividends distributed increased constantly.

This menu also contains information about the current discount rate. After entering the discount rate, then the software will immediately calculate the intrinsic value of stock, and compared with the current share price. In the information section, there are recommendations to assist decision making for investors whether to buy, sell, or hold the existing shares.
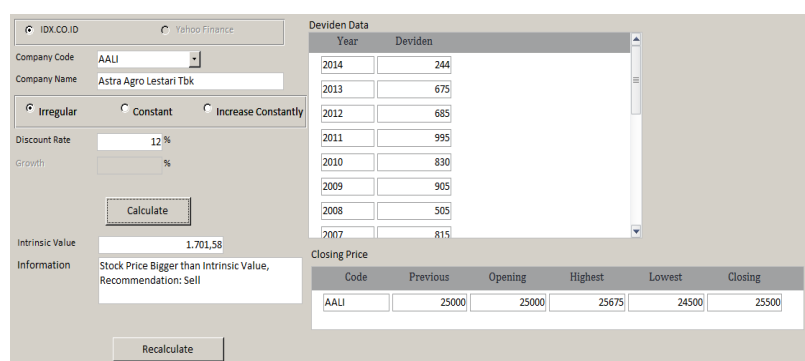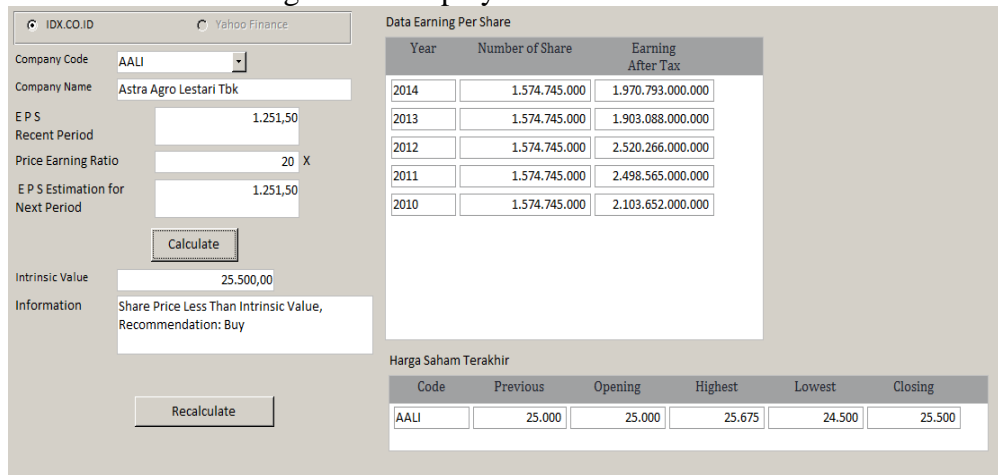
Figure 14. Display Calculate Discount Model

Figure 14. Display of EPS

SUMMARY

This research has produced Investment Decision Support Software, which has been validated by materials experts (expert judgment). Investment Decision Support Software use several models, such as: Discount Model and PER Model. The use of some of these models, in order to do a comparison of calculation results. This software is expected to help investors in making investment decisions

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