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Research Paper

Experimental Studies of Determinant and Consequences Internet Financial Reporting in Technical Best Design to Decision-Makers Performance—Indonesian Cases

Accountings

KEYWORDS : Internet financial reporting, hyperlink, HTML and PDF file, *cognitive overload*

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ABSTRACT

The Increased use Internet, improving user access to online reporting of financial companies (Internet Financial Reporting-IFR) but no regulation to apply it. This research is address the phenomenon of potential conflict of interest due to the absence of regulationand propose the best technical design in the application of IFR based decision-making performance effectiveness. Design maker performance is measured by amount of information, decision time, decision accuracy, user perceptions, and dilution effect. While hyperlink, file format, navigation system, information type and company size used as proxy technical best design. Five hypotheses are developed in 2x2x2x2x2 between subject five stages hierarchically nested design and analys by using Nested Manova. The result show all of hypothesis support and prooved amount of information, decision time, decision accuracy, user perceptions, and dilution effect are bigger for IFR design with hyperlink, HTML file format, irrelevant information, with hierichically navigation in big companythan the others.

INTRODUCTION

Background Issues

Cook (1999) found that 70% of companies use the website to present their financial information (Internet Financial Reporting-IFR). The findings of Cook (1999), Spiro and Baig (1999) have implication for the regulation online financial reporting, caused IFR practice still in voluntary disclosure area. This phenomenon gave birth to potential conflicts of interest between parties who provide information and user information (Lymer et al., 1999).

Hoopwood (1996) in his study states that the majority of accounting research is directed only at the content or accounting charge in the financial statements (content), and less on presentation (presentation). Accounting research also shows that the format in the presentation of financial information can affect decision-making process (Clement and Wolfe, 2000; Rose, 2001; Rose et al., 2004). This research examines and proposes the best technical design in the application of IFR based on the effectiveness of decision-making performance. Technical designs used in this research are: the use of hyperlinks, file formats, navigation systems, the type of information presented and company size. While the performance of decision makers that were examined in this study is the amount of information, decision time, decision accuracy, user perception and the subsequent effects dilution treated as the dependent variable.

Eight expansion used in this research. First, this study emphasizes on technical aspects of the IFR design which different from previous research. This theory assumes, when design of IFR suitable with problem face it, the performance of decision maker will improve. Second, this study use the two file formats such as HTML and PDF as a key factor on IFR (Momany and Shorman, 2006). Third, this study uses company size as trigger if IFR practice and positively related to the application of IFR (Debreceny et al., 2002; Ettredge et al., 2001, 2002). Fourth, using navigation structure which able to improve user productivity such as sequential versus hierarchical (Tung, et al., 2003). The fifth, this study uses pro forma financial statements as irrelevant information developed from research in auditing. Sixth, this research adds measurument of decision maker performance such as investor perceptions of decisions made it, which is considered as a different perspective (Korthauer and Koubek, 1994) and measured by perceived ease of use. Finally, this research used nested design with five layers for experimental design which different by previous studies

THEORETICAL FRAMEWORK AND HYPOTHESIS

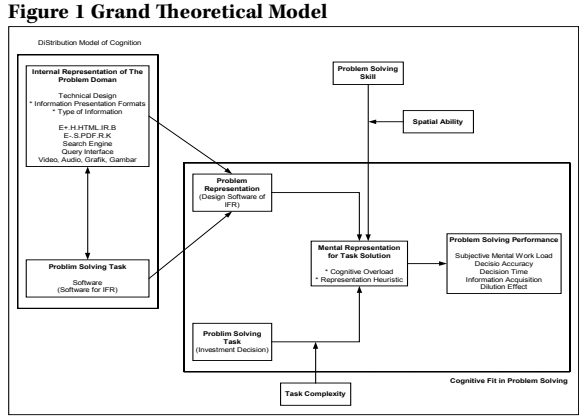
Internet Financial Reporting

Internet Financial Reporting (IFR) or internet-based financial reporting is a new phenomenon that developed rapidly (King, 2001; Khan, 2006). IFR is one form of presentation formats using electronic media other than paper media (Dunn et al., 2001; Kelton, 2006). IFR can use in a variety of formats, such as the use of hyperlinks, audio and video files, the file formats that can be formatted, as well as dynamic graphic (Kelton and Yang, 2005).

Cognitive Overload on IFR

Human behavior is formed by the interaction between system properties and properties of human information processing task environment (Bettman, et al., 1998). As a result of rational limitation, the individual is only a limited amount of information processing during decision making (Simon, 1971). This raises the processing limitations of what is called information overload. Vessey (1991) showed that cognitive fit model in cognitive fit theory that supports the concept that the presentation of information for decision makers will influence the decision. Cognitive fit looked at solving problems as a result of the relationship between presenting problems and problem-solving tasks. For the purpose of this research, we modified Vessey's model with another research which based his model and technical based model which we purpose in this research, as shown as grand theoretical model in Figure 1.

Figure 1 Grand Theoretical Model



Hypothesis Development

Hypertext or hypertext link or hyperlink is also known as nonlinear text, defined as a combination of text with a neutral language with the capacity of computers to the branches of the interactive (Boechlar, 2001). Readers may not know the displacement of one company's website to third party websites that have no relevance.

As shown by Dull (2003), the consequences of the magnitude of information that is used affects the amount of time it takes to make a decision. This is logical, because users will try to read, understand and analyze the information presented. In other words the user will scan the minimal information necessary to be understood and analyzed (Information overload Information Scent-theory) (Rao, 2002).

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User information will be much more confident if the information used in large numbers (Tung et al., 2003). Although Tung et al., (2003) did not find any difference in decision accuracy. In the context of the dilution of information, hyperlinks lead to greater use of information (Dull et al. 2003). These conditions encourage the emergence of a greater dilution of information compared to the financial statements without a hyperlink and make decision accuration lower.

Due to HTML and hierarchical navigation structure has similar properties with hyperlink then the same prediction is also given on the design factor. Amount of information on IFR design with hyperlinks, supported by presence of irrelevant information and large corporations. Conversely the absence of a hyperlink, with PDF file, sequential structure, relevant information on small companies, the amount of information needed will be smaller. Based on the prediction we formulate the hypotesis as;

H1. The amount of information used in making bigger decisions on IFR design with hyperlinks, a hierarchical navigation structure, HTML file format, which presents information in large companies compared to irrelevant design without hyperlinks, sequential navigation structure, the PDF file format, with no irrelevant information, in smaller companies.

For make hypothesis simplier to understand, hypothesis present in notation.

H1. The amount of information:
E +. H.HTML.IR.B> E-.S.PDF.R.K

Hypothesis 2 through 5 for each dependent variable such as Decision Making Time, User Perceptions, dilution Information, Decision Accuracy, presents a comparison of the two designs which same with design in hypotesis one, so the form of the hypothesis is also presented in the form of notation but with another sign.

H2. Decision Making Time:
E +. H.HTML.IR.B> E-.S.PDF.RK
H3. User Perceptions:
E +. H.HTML.IR.B> E-.S.PDF.R.K
H4. Dilution Information:

2. The type of information (INFO)
Types of information are grouped into two types and categories with binomial (1 and 0) where one for relevant information and null for non relevant information. In this research relevant information treats by using the audited financial statements (Kelton, 2006). While irrelevant information treat by financial statements Performa (Frederickson and Miller, 2004).

3. Format files (FILE)
Two types of file formats used in this study, namely PDF and HTML were measured using binomial (1 and 0), where one for HTML and null for PDF.

4. Navigation system (Navigate)
Navigation system is defined as the general design of inter-node links (Conklin, 1987). In this study we use hierarchical and sequential for navigation as Barnstain (1998) said that the main pattern of hyperlink. Navigate variable measured by using1 and 0, where one for hierarchical and null for sequential.

5. Company size (SIZE)
SIZE measured by using the binomial character of the size categories (1 and 0), where one for large (PT. Astra International, Tbk) and null for small companies (PT. Aneka Kemasindo Utama, Tbk). Large and small companies which identified by market capitalization.

E +. H.HTML.IR.B> E-.S.PDF.R.K
H5. Decision Accuracy:
E +. H.HTML.IR.B <E-.S.PDF.R.K

Description
E + : Electronic format with hyperlink
E- : Electronic format without hyperlink
R : Relevant information
IR : Irrelevant Information
PDF : PDF file
HTML : HTML file
B : Large firms
K : Small firm.
H : Hierarchical Navigation Structure
S : Sequential Navigation Structure

RESEARCH METHOD

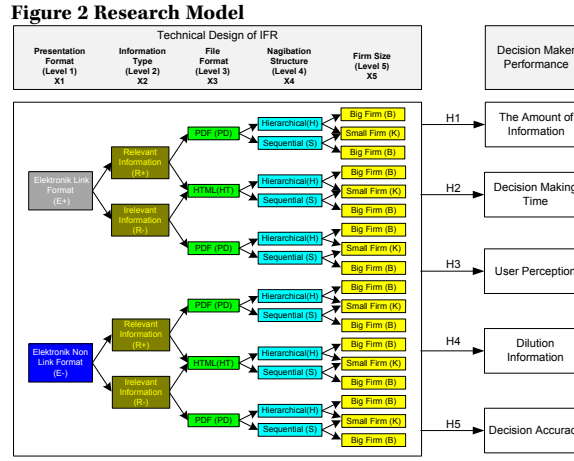
Research Setting

This dissertation research uses an experiment to provide the best technical design to make explanation of IFR. This Research directed to user's decision performance of IFR design which includes hyperlink, type of file, and navigation structure which distinguish types of information and company sizes. Experimental subjects in this research are real investors in Indonesia who stay surround headquarters of working area of the Information Center for Capital Market Development (PIPM) Riau-Indonesia as representation of Indonesian Stock Market.

Experimental Design and Research Variables

Experimental design used in this study are hierarchically or cage design (hierarchical or nested design), which by Gould (2002) called a hierarchically nested design. Independent variables used in this study are: the presentation format, type of information, files formats, navigation systems, and the size of firms, each using the two treatments. Based on the number and treatment of independent variables and the treatment of the participants, the design used in this research is the design of five levels of hierarchy or cage (2 x 2 x 2 x 2 x 2) between the subject of five stages of hierarchically nested design). Layout design as research model is reflected in the figure 2.

Figure 2 Research Model



Independent Variables

Independent variable which manipulated in this study and used to answer the research hypothesis is:

1. Presentation format (FORM)
Presentation format is defined by IFR, which is the company's financial reporting in the company's website. FORM variable were measured using the size categories that are dichotomous or binomial (1 and 0). One for hyperlink and null for non hyperlink.

Dependent Variables
Five dependent variables were tested in this study;

1. The amount of information (INFOACC)
The amount of information measured by number of pages which visited by participants of experiment (Dull et al., 2003).

2. Decision time (TIME)
Decision time is defined as the amount of time (minutes) in making decisions (Dunn and Grabski, 2001; Dull, 2003; Kelton, 2006).

3. Accuracy of decisions (Accurate)
Decision accuracy was measured by giving three-item questions, such as participants' perceptions of current earnings performance of firms, assessing the future earnings potential of companies, and investment decisions. Items adopted from the research questions Hodge (2001), Elliot (2006) and Kelton (2006).

4. User perception (Perception)
User perception is defined by a given user's rating of the model (Dunn and Grabski, 2001) or the software used provides IFR (Tung, et al. 2003).

5. Dilution (dilution)
Dilution effect was measured by using the approach taken by Kelton (2006)

Experimental Procedure
The number of participants who were included in each experiment cells was counted five people which base Desanctis (1989). Based on experimental design which built previously is obtained 32 cells, so accumulation of participat is 160. Experimental material prepare in three separate envelopes. The first envelope contains background information on companies, web site address (URL), the general instructions for completing tasks, and research questions. The second envelope contains the tasks that are disturbing memories of participants. The third envelope contains the research questions after doing experiments. These question use to measure the acquisition of information, information views by participants and whether participants are aware of the presence of dilution effects, and perceptions of quality reports.

Hypothesis Testing
The selection of hypothesis testing using MANOVA because the dependent variable used in this study more than one metric variable and more than one non-metric variable in the independent variable (Ghozali, 2006). The equation model of MANOVA which used to test all of hypothesis given as follows;

INFOACC + TIME + ACURATE + PERCEPTION + DILUTION = FORM + INFO + FILE + NAVIGATE + SIZE

We modified Manova which applied for nested design in experiment, cause no interaction between independent variables, while generaly manova with general linier modelling have interaction between its independen variables. In this research SIZE nested within NAVIGATE, NAVIGATE nested within FILE, FILE nested within INFO, INFO nested within FORM, so overall we can show independent variables simultaneously as

SIZE(NAVIGATE(FILE(INFO(FORM)))).
Caused we applied SPSS for MANOVA in nested design, we also modified original sintax of SPSS. For the purposes of this study we propose measurement by MANOVA on the nested design with **NESTED MANOVA**

DATA ANALYSIS AND DISCUSSION
Testing the hypothesis (H1- H5) is based on two things, mean value of IFR Design which comparable in hypothesys and significant value of NESTED MANOVA. All of IFR design symbolized with PC (Personal computer) 1 to 32 as 32 cell design in this research. The result of Nested Manova show that nested variable which measured by Pilai's Trace shows F value as 1,536 and sign. at 0.000. The same result is also shown by the three other criteria (Wilks' lambda, Hotelling Trace and Roy's Largest Root) with significant value 0.000. It,s mean there is a relationship between nested variables with five dependent variable (INFOACC, TIME, ACCURATE, PERCEPTION, and dilution).

Table 1

Multivariate Tests[c]

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.989	2.180E3[a]	5.000	124.000	.000
	Wilks' Lambda	.011	2.180E3[a]	5.000	124.000	.000
	Hotelling's Trace	87.921	2.180E3[a]	5.000	124.000	.000
	Roy's Largest Root	87.921	2.180E3[a]	5.000	124.000	.000
Form	Pillai's Trace	.159	4.676[a]	5.000	124.000	.001
	Wilks' Lambda	.841	4.676[a]	5.000	124.000	.001
	Hotelling's Trace	.189	4.676[a]	5.000	124.000	.001
	Roy's Largest Root	.189	4.676[a]	5.000	124.000	.001
Info	Pillai's Trace	.215	6.795[a]	5.000	124.000	.000
	Wilks' Lambda	.785	6.795[a]	5.000	124.000	.000
	Hotelling's Trace	.274	6.795[a]	5.000	124.000	.000
	Roy's Largest Root	.274	6.795[a]	5.000	124.000	.000
File	Pillai's Trace	.112	3.129[a]	5.000	124.000	.011
	Wilks' Lambda	.888	3.129[a]	5.000	124.000	.011
	Hotelling's Trace	.126	3.129[a]	5.000	124.000	.011
	Roy's Largest Root	.126	3.129[a]	5.000	124.000	.011
Navigate	Pillai's Trace	.024	.620[a]	5.000	124.000	.685
	Wilks' Lambda	.976	.620[a]	5.000	124.000	.685
	Hotelling's Trace	.025	.620[a]	5.000	124.000	.685
	Roy's Largest Root	.025	.620[a]	5.000	124.000	.685
Size	Pillai's Trace	.136	3.993[a]	5.000	124.000	.003
	Wilks' Lambda	.864	3.993[a]	5.000	124.000	.003
	Hotelling's Trace	.157	3.993[a]	5.000	124.000	.003
	Roy's Largest Root	.157	3.993[a]	5.000	124.000	.003
Size(Navigate(File(Info (Form))))	Pillai's Trace	1.189	1.536	130.000	648.000	.000
	Wilks' Lambda	.248	1.591	130.000	615.933	.000
	Hotelling's Trace	1.758	1.647	130.000	612.000	.000
	Roy's Largest Root	.777	3.027[b]	26.000	128.000	.000

a. Exact statistic
b. The statistic is an upper bound on F that yields a lower bound on the significance level.
c. Design: Intercept + Form + Info + File + Navigate + Size + Size(Navigate(File(Info(Form))))

Hypothesis I
Hypothesys 1 which denoted by The amount of information: E +. H.HTML.IR.B> E-.S.PDF.R.K. Based on IFR Design from PC1-PC32, we got hypothesis was comparing IFR design PC7 vs PC26, so the notation above derive to be The amount of information: PC7 > PC26. The comparing result for two design show mean value of amount of information PC7 is 18,8, more bigger than PC26 as 8,0, so we can conclude that H1 supported. It's mean amount of information for IFR design with hyperlink, Hierarchical navigation, HTML file, with irrelevant information for big company more bigger than IFR design without hyperlink, sequential navigation, PDF file, rellevant information for small company.

Hypothesis 2
Hypothesis 2 which denoted by decision making time: E +. H.HTML.IR.B> E-.S.PDF.RK or Decision making time : PC7 > PC26. The result show that mean value of PC7 for decision making time is more bigger than mean value PC26 (14,40 vs 7,20). Its mean H2 supported and result are logical consequences from amount of information which accesable in PC7. Dull (2003) said that consequences of information size to decision time was more bigger information size more bigger decision time.

Hypothesis 3
Hypothesis 3 which denoted by user perceptions: E +. H.HTML.IR.B> E-.S.PDF.R.K or user perceptin: PC7 > PC26. The result show that mean value of PC7 for user perception is more bigger than mean value PC26 (29,00 vs 15,00). Its mean H3 supported. This result indicated that user in PC7 more confident in decision making cause the size of information. This conclution support by Oskamp (1965), Tung et al. (2003) event it not guaranted de-

cision will be accurate.

Hypothesis 4

Hypothesis 4 which denoted by dilution information: E +. H.HTML.IR.B> E-.S.PDF.R.K or dilution information: PC7 > PC26. The result show that mean value of PC7 for dilution information is more bigger than mean value PC26 (44,80 vs 37,00). Its mean H4 supported and indicated we have same argumentation dilution information with amount of information, time for decision making and user peception. It's mean in dilution contex, size of information can influence who make decision to be dilution in information. Consequences, quality of information will be decreasing.

Hypothesis 5

Hypothesis 5 which denoted by decision accuracy: E +. H.HTML. IR.B <E-.S.PDF.R.K or dilution information: PC7 < PC26. The result show that mean value of PC26 for decision accuracy is more bigger than mean value PC7 (26,40 vs 32,80). Its mean H5 supported. Knight et al. (1990) said that hypertext can make user face a trouble to estimate size of document accuratelly. It show, hypertext contribute to make decison acuracy lower. Niederhauser et al. (2000) also show that *hyperlink* impact on improving the cognitive load and navigational disorientation that caused a decline in the accuracy of decisions .

The last stage in this research is concerned with determining the best technical design of IFR. The Determination of technical best design base on mean value of every dependent variable which sorted by theoretical assumptions. Analysis showed that the design of IFR in PC17 which is the IFR design with hyperlinks, which provide irrelevant information in PDF file format and sequential navigation on large companies, is the best design IFR. For a small company, the best to design of IFR is PC10. If the big companies not only put relevant information but also information irrelevant to his IFR design, the design of IFR on PC21 is the best. While the best design for a small company that presents relevant and irrelevant information in the design of its IFR, PC32 is the best.

CONCLUSION

Conclusion

The study's findings indicate that the amount of information, decision-making time, the user's perception, and the dilution information will be greater when the IFR design used hyperlinks, HTML file format, which include relevant and irrelevant information together, hierarchically navigation for large enterprises. Conversely when making decisions with IFR design that does not use hyperlinks, PDF file format, which presents only relevant information, sequential navigation systems for small companies, proved to be smaller. Contrast to 4 (four) measure of effectiveness and efficiency IFR design, decision accuracy will be lower when decision maker faced to IFR design which consist hyperlink, HTML file format, relevant and irrelevant information together, hierarchical navigation systems for large enterprises. Conversely, decision accuracy will be higher when user or decision maker used IFR desigh that does not use hyperlinks, PDF file format, which presents only relevant information, and sequential navigation systems for small companies.

The last analysis show that the design of IFR in PC17 which is the IFR design with hyperlinks, which provide irrelevant information in PDF file format and sequential navigation on large companies, is the best design IFR. For a small company, the best to design of IFR is PC10. If the big companies not only put relevant information but also information irrelevant to his IFR design, the design of IFR on PC21 is the best. While the best design for a small company that presents relevant and irrelevant information in the design of its IFR, PC32 is the best.

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