

Factors Influencing The Extent of Web-Based Disclosure: An Empirical Analysis of Indonesian Manufacturing Firms

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ABSTRACT

This article aims to investigate the influencing factors of the extent of web-based disclosure among Indonesian manufacturing firms. Measurement of dependent variable (extent of web-based disclosure) relies on instrument developed by Matherly and Burton (2005). Four independent variables are hypothesized to positively influence the dependent variable: profitability (proxied by ROA), percentage of public ownership, firm size (average total assets), and level of leverage. The regression analysis finds that all independent variables (except percentage of public ownership) positively affect the extent of web-based disclosure.

Keywords: voluntary disclosure, web-based disclosure, internet.

INTRODUCTION

The emergence and growth of internet drastically facilitates firm to communicate with broader audience through their website. This fact enables website to serve as improvement of firms' image, a marketing device, or means to transfer firm-related information.

Website as informational device has two advantages that are absent in conventional (print-based) ones. Firstly, information contained in corporate website can be accessed throughout the world at significantly low cost. Secondly, it is more possible for firms to continuously update their information also at low cost. These mutual advantages give way to growing reliance on internet for informational device.

Since internet was first developed in US, the utilization of internet by firms is much more rapid in US (and in any other developed countries) than in Indonesia. While it can be said that most of all US publicly listed firms have their own websites, recent research shows that there are still 49 Indonesian publicly listed manufacturing firms (from total of 147 firms) that still do not possess their corporate website (Prabowo and Tambotih 2005).

Firms are now also using their websites to communicate their information to their existing and potential stakeholders. By doing so it is expected that stakeholders are able to receive required information much more timely. Information displayed to the stakeholders can be in quantitative (whether financial or non-financial) or qualitative.

Accounting research in the utilization of corporate website as a tool to disclose information

began to emerge in the end of 1990s. The pioneering articles, however, are still descriptive or explorative (Pirchegger and Wagenhoffer 1999; Gowthorpe and Amat 1999; Hedlin 1999). Inferential research on this issue began to emerge in the 2000s. Scholars usually investigate two different internet-related variables in their articles: internet financial reporting (IFR – to what extent firms incorporate their financial statements in their corporate website) or internet-based disclosure (to what extent firms disclose their information, financial and/or nonfinancial, in their website). Although these variables are different, they are the same at one point: IFR and web-based disclosure are both voluntary disclosure practices. IFR is voluntary not because of the content of information, but because securities market regulator does not stipulate firms to inform their financial statements in their website (even the possession of website is neither stipulated). On the other hand, web-based disclosure is voluntary because of both the content of information and the way information is transferred (through internet).

Since the internet-related variables are regarded as voluntary disclosure practices, scholars investigate factors affecting these variables by usually employing independent variables used in research on conventional voluntary disclosure (Debreceeny *et al*, 2002; Ettredge *et al*, 2002; Oyelere *et al*, 2003; Prabowo and Tambotih, 2005; Xiao *et al*, 2005). However, research on this issue using Indonesian context is still very rare. To our best knowledge, only Prabowo and Tambotih (2005) investigate this issue in Indonesian context. This article aims to investigate factors affecting web-based disclosure. Although our independent

variables are the same as Prabowo and Tambotoh's, ours is different from Prabowo and Tambotoh (2005) in one point: ours examines web-based disclosure while Prabowo and Tambotoh (2005) IFR.

This article is organized as follows. The next section will be literature review and hypothesis development. Research method will be discussed in the subsequent section. Findings and discussion will follow. This article is closed by conclusion, limitations of the research and research implication.

AGENCY THEORY, INFORMATION PROBLEM THEORY AND VOLUNTARY DISCLOSURE

The practice of voluntary disclosure is usually explained by two economics-based theories: agency theory and signaling theory or information problem theory (Healy and Palepu 2001; Xiao *et al.* 2004). Voluntary disclosure is aimed to solve the *ex-ante* (information problem) and *ex-post* (agency problem) problems at once. The problems create the suboptimal allocation of resources in the capital market.

Jensen and Meckling (1976) lay the cornerstone of agency theory in the domain of economics. However, they really lend the basic idea from previous researchers investigating the human behaviour in economic terms. Agency theory basically assumes that everyone is selfish (pursuing her self-interests). When she is confronted with with alternative set of actions and/ or conditions to choose, she will be most probably to choose the one benefiting her most, even if the action/ condition can potentially bring disadvantages to others.

In the context of modern firms, there exists separation of ownership (principals) and control (agents). Since principals cannot perfectly monitor agents' behaviour and agents are selfish, agents have strong incentives to act for their own interests at the expense of principals'. Agency theory is *ex-post* since it exists after the formation of firms.

In publicly listed firms, the agency problem is complicated by the fact that there exist many and geographically dispersed owners (shareholders). Dispersed shareholders with minor ownership hinders further control of agents' action since it is very difficult and costly for shareholders to monitor and control agents' behaviour individually. Managers lack incentive to maximize firms' value (shareholders' interests) since their wealth is not affected by the maximization of firms' value. They even have incentives to maximize their interests (in the form of shirking, pecuniary and non-

financial benefit) at the expense of shareholders' interests.

Financial statements are one main device to reduce the agency problem, although there are other forms of mechanism (such as efficient market for corporate control, governmental regulation, efficient job market for managers, and managerial stock ownership program). By forcing managers to prepare standardized financial statements, shareholders can monitor and control managers' action with the proxy of firms' financial performance.

Since firms' performance are not only financial and financial performance are also affected by other, non-financial performance, there exist growing requirements for managers to not only disclose financial information (in the form of financial statements), but also nonfinancial information and/or other financial information (such as history of share price). Most of nonfinancial information are not stipulated to be disclosed these information at their annual report. It is expected that by disclosing additional (not mandated) information managers and principals can reduce agency costs (Healy and Palepu 2001; Botosan 2003).

Information problem is the opposite of agency problem. Akerlof (1970) is instrumental in establishing the theory. It exists before investors put their money into certain firms. Therefore it is called *ex-ante* problem. Information problem exists because outsiders (investors) have no or limited information to assess the quality of firms, forcing them to value all the firms at average level. "Good" firms will then be undervalued by investors' action. Since no one firm is willing to be undervalued, "good" firms go out from markets. Investors are now finding only bad firms in the market. This condition leads them to rate down further their valuation of existing firms and finally discouraging further the "good" firms to enter the market. At the extreme illustration, only "bad" firms will exist at the market; forcing the "good" ones to leave the market. Investing in firms using market mechanism will be extremely risky and not profitable. Ultimately, no one investor is willing to invest at the market.

In such imperfect market condition, "good" firms have strong incentives to disclose more information to potential investors to disassociate them from the "bad" ones. Disclosing more (financial and nonfinancial information) to potential investors can reduce the information problem. Potential investors are now much more informed and knowledgeable in order to invest in "good" firms only. In other words, voluntary disclosure can potentially reduce the information problem.

A lot of scholars analyze voluntary disclosure practice using variables derived from these two economics-based theories. Oyelere *et al* (2003) extensively enlist previous articles investigating factors affecting the extent voluntary disclosure practice. They find that there are six most frequently determining variables of voluntary disclosures: firm size, audit size/quality, listing status, profitability, leverage, and industry type. We argue further (after investigating their list of research) that ownership structure are also frequently determinants of the extent of voluntary disclosure.

WEB-BASED DISCLOSURE

If we discuss voluntary disclosure, we actually refer to traditional (print-based) disclosure device. It is understandable since printed media has been the main (if not the only) device to communicate firm-related information for long time.

Web-based disclosure offers advantages that are absent in paper-based voluntary disclosure: it can be accessed globally at much lower costs and it can be updated much more timely also at much lower costs. For example, daily information such as share price of the firm can be informed daily in the firm's website. Firms can also disclose their latest products or other achievements in their websites rather than in printed annual report.

Although the two theories are usually employed to investigate traditional or paper-based voluntary disclosure, they are also used in web-based disclosure since the latter is basically the special form of voluntary disclosure (Debrecey *et al*, 2002; Ettredge *et al*, 2002; Xiao *et al*, 2004, Prabowo and Tambotoh 2005). Web-based disclosure is voluntary one since it is not mandated by accounting regulator (even the possession of website is neither mandated).

Scholars usually differentiate web-based disclosure from internet financial reporting (IFR) practice, although both practices involve internet to disseminate information. IFR refers to incorporation of financial statements (whether in complete form or in summary) in firms' website while web-based disclosure refers to dissemination of financial and nonfinancial information in firms' website. Both practice are voluntary. IFR is voluntary not because of the content of information, but because securities market regulator does not stipulate firms to inform their financial statements in their website (even the possession of website is neither stipulated). On the other hand, web-based disclosure is voluntary because of both the content of information and the way information is transferred (through internet). Although they are both volun-

tary in nature, web-based disclosure is much broader than IFR.

HYPOTHESIS DEVELOPMENT

The relationship between profitability and level of web-based disclosure can be explained by information problem theory. Using the latter one, we can argue that profitability is good news for investors. It is also a signal of managers' skills. They have incentive to disassociate their firms from the less profitable firms. They also expect that more investors are willing to invest in their firms, which eventually leads to reduction of cost of equity capital. Managers of profitable firms are therefore more willing to disclose more to signal the good news to market in the form of more extensive voluntary disclosure or using novel technology (such as web-based disclosure).

In the context of conventionally voluntary disclosure, Patton and Zelenka (1997), Raffournier (1995) and Owusu-Ansah (1998) support the hypothesis. In the context of web-based disclosure, Prabowo and Tambotoh (2005) also support the hypothesis. Based on the previous discussion, the first hypothesis will be:

H_{a1}: Profitability positively affects the extent of web-based disclosure.

Public ownership refers to shareholders with small percentage of shares. Those shareholders are minority ones and have less powerful and more limited access to firms' information because they have less resources to monitor managers' behaviour; creating greater agency problems. Texts on agency theory argue that majority shareholders are potential to exploit minority shareholders in the form of transfer of wealth from the later to the former. This action is usually in cooperation with the managers (Marston and Polei, 2004; Oyelere *et al*, 2003). Firms with more public ownership are therefore more potential to be comprehensively scrutinized (such as by regulators, analysts or press). Consequently, the managers have more incentive to disclose more their (financial) information or to disclose in novel device (such as web-based disclosure) in order to reduce the agency problems.

Higher percentage of public ownership also potentially means more geographically dispersed shareholders since firms have more shareholders. It is more difficult to communicate with such condition using conventional device (print-based one). Utilization of internet (such as web-based disclosure) is more potential in firms with higher percentage of public ownership.

In the context of conventionally voluntary disclosure, Cooke (1991) and Malone *et al* (1993) support the hypothesis. The previous research in the context of web-based disclosure show mixed

evidence, however. Prabowo and Tambotoh (2005) cannot support the hypothesis while Oyelere *et al* (2003) can. Therefore, the second hypothesis will be:

H_{a2}: Percentage of public ownership positively affects the extent of web-based disclosure.

Larger firms potentially have larger agency costs (Jensen and Meckling, 1976) or political costs (Watts and Zimmerman, 1986) than the smaller ones. Larger firms have more resources at stake; creating more risks for the shareholders (principals). Shareholders of larger firms therefore have more incentives to exert their power to press the managers to disclose more information to them.

Broader stakeholders (such as governmental agencies, press, and NGOs) also more probably put pressures to larger firms involving various issues, such as environment, labor, tax, compliance, ethics, and social responsibility. Larger firms therefore incur higher political costs. They can reduce the political costs by disclosing more of their information to wider array of stakeholders to notify them that the firms have “done more and better”, especially in the context of corporate social responsibility.

Larger firms also incur less marginal costs of producing information than the smaller ones (Marston and Polei, 2004). It is cheaper for larger firms to disclose more information (as in conventionally voluntary disclosure) or to disclose in novel device (such as web-based disclosure). This condition induces managers of larger firms to disclose more (either in print-based device or web-based device) their firms’ information.

Most articles find supporting evidence for this hypothesis (Debreceeny *et al*, 2002; Ettredge *et al*, 2002; Oyelere *et al*, 2003; Prabowo and Tambotoh 2005).

H_{a3}: Firm size positively affects the extent of web-based disclosure.

Jensen and Meckling (1976) argue that firms with high level of leverage ratio incur higher monitoring costs due to potential conflict between shareholders and debtholders. Shareholders, as residual claimants, have incentives to urge managers to take high-risk investment opportunity or to provide excessive return to shareholders at the expense of debtholders. If the high-risk investment fails, both debtholders and shareholders bear the loss (in the form of default loan and lost invested fund). On the contrary, only shareholders benefit from successful investments in the form of higher returns. Debtholders cannot enjoy the successful investment since they are fixed claimants (receiving fixed payment on interest). Provision of

excessive return to shareholders can reduce firms’ ability to repay the debt and the interests; increasing the default risk borne by debtholders (Barnea *et al*, 1985).

Considering the increasing agency problems in the more leveraged firms, debtholders have more incentives to push managers to reduce the agency problems. One of the devices that can potentially reduce the agency problem borne by debtholders are voluntary disclosure (whether print-based or web-based). Disclosure facilitates debtholders to monitor managers’ (and shareholders’s) actions.

H_{a4}: Leverage level positively affects the extent of web-based disclosure.

RESEARCH METHOD

Dependent variable (level of web-based disclosure) is measured by instruments developed by Matherly and Burton (2005). They list 34 indicators of web-based disclosure (grouped into five categories: business data, forward-looking data, company background, intangibles, and convenience). Their instruments are used since theirs are specially devoted to web-based disclosure of US publicly listed manufacturing firms. The details of their instruments can be seen at appendix 1. Proxies of independent variables, their measurement method, and source of data can be seen from Table 1 below.

Table 1. Independent Variables, Their Proxies, and the Measurement Method

Independent Variable	Proxy	Measurement Method	Data Source
Profitability	ROA	EBIT/ average total assets (in percentage)	ICMD 2005
Percentage of Public Ownership	Self evident	Self evident	ICMD 2005
Size	Average total assets	Average total assets (in million Rupiah)	ICMD 2005
Leverage	DTA	Long-term debt/ total assets (in percentage)	ICMD 2005

This research analyze the determinant factors of web-based disclosure practice among Indonesian publicly listed manufacturing firms. There are 153 manufacturing firms listed by Indonesian Capital Market Directory (ICMD) 2005. Sample firms are selected purposively. There are two criteria to select the sample firms. First, sample firms must have positive profitability (ROA) since the dependent variable (and other independent variables) has minimum value of null. Second, sample firms must have their own websites. The two criteria leaves only 48 firms as the research sample. The

selection process of the sample can be seen from Table 2 below.

Table 2. Sample Selection Process

Explanation	Amount
Total Publicly Listed Manufacturing Firms	153
Less: Firms with Negative ROA	(55)
Firms with Positive ROA	98
Less: Firms do not have their own websites	(50)
Final Sample	48

After the descriptive analysis and test of classic assumptions, inferential analysis will be done by using multiple regression analysis. The regression equation is as follows:

$$WEB = \beta_0 + \beta_1 PROFIT + \beta_2 PUBOWN + \beta_3 SIZE + \beta_4 LEVERAGE + \varepsilon$$

Where:

WEB = extent of web-based disclosure, PROFIT= profitability, PUBOWN = percentage of public ownership, SIZE= firm size, LEVERAGE= leverage level, and ε = error term.

RESULTS AND DISCUSSIONS

The descriptive statistic of variables can be seen at table 1. From the table it can be deduced that firms' extent of web-based disclosure (dependent variable) is quite limited and varies little (with average value of 9.67 and standard deviation of 2.82). Considering that the theoretical value of dependent variable is 34, the average score is only 28,4% of theoretical score. In US context, Matherly and Burton (2005) find that the average score of firms' extent of web-based disclosure is 38% of theoretical score. This result shows that Indonesian manufacturing firms still do not utilize much their websites for investor relation.

On the other hand, all dependent variables vary highly with PROFIT and SIZE have standard deviation higher than their mean. Percentage of public ownership is also low in Indonesian manufacturing firms (average 27.84%). This fact indicates that manufacturing firms are still dominated by large shareholders (corporate, financial institutions and founders) which potentially reduces further the public power to control managers action. Indonesian manufacturing firms also rely more on equity than long-term debt as indicated by low percentage of leverage (20.99%). The more complete result of descriptive statistic can be seen at table 3 below.

Normality test is conducted by analyzing Normal Probability Plot. The analysis shows that data are located nearby the straight line; indicating that condition of normality is fulfilled. Using other

test (Kolmogorov-Smirnov test), we find that all variables have significant value greater than 0.1; indicating that data of all variables are normally distributed.

Table 3. Descriptive Statistic of Variables

variables	N	Mini-mum	Maxi-mum	mean	st.dev
WEB	48	5	18	9.6667	2.8234077
PROFIT	48	0.02	40.08	6.9004	7.3682331
PUBOWN	48	1.55	86.52	27.8396	19.757503
SIZE	48	41792.5	33274681	2662950	5525880
LEVERAGE	48	0.46	74.42	20.99	16.98806

To detect the multicollinearity problem of the regression equation, we use variance inflation factor (VIF) score as the criteria. VIF score less than 10 indicates that there is no serious multicollinearity problem. All independent variables have VIF score less than 10 (ranging from 1.1 to 1.25); indicating no serious multicollinearity problem.

Heteroscedasticity problem is detected by using Breusch-Pagan-Godfrey (BPG) test. The score of BPG Q is much less than critical value of 5 percent chi-square with degree of freedom of 4 (BPG Q score is 0.000; critical value chi square (0.95;4)=9.49). This fact means that the model does not possess heteroscedasticity problem (Marwata, 2004).

Since the data do not violate the classical assumptions, the OLS regression model can be used to test the hypothesis. The result of regression analysis can be seen at Table 4.

Based on the result, it can be deduced that only H_{a2} that cannot be supported. It means that PROFIT, SIZE, and LEVERAGE, as individual variables, positively affect the extent of web-based disclosure. PUBOWN, on the otherhand, does not influence the dependent variable. The regression model itself is quite conclusive, as indicated by the value of adjusted $R^2 = 0.324$ and significance value for overall model= 0.000 (not displayed here).

Table 4 . Results of Regression Analysis

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	7.031	.908		7.743	.000
PROFIT	.110	.050	.286	2.201	.033
PUBOWN	.012	.019	.083	.634	.530
SIZE	2.064E-07	.000	.404	3.035	.004
LEVERAGE	.048	.021	.287	2.259	.029

Dependent Variable: WEB

The significance of PROFIT in explaining the extent of web-based disclosure is consistent with Prabowo and Tambotoh (2005), although not

consistent with US/international evidence (Oyelere *et al.*, 2003; Marston and Polei, 2004; Xiao *et al.*, 2004). The finding is also consistent with signalling (information-problem) theory. Profitability is good news for managers and outsiders. Managers of profitable firms can inform this information to market by disclosing more (by extensive voluntary disclosure) or by disclosing in novel technology (in the form of web-based disclosure). Internet enables firms to disclose their information at much lower costs and potentially reaching much more audience.

The insignificance of PUBOWN is consistent with Marston and Polei (2004) and Prabowo and Tambotih (2005). This fact can be explained that level of public ownership in Indonesia is quite low (only 27.84%), representing minority interests. Minority interests have less power to demand more extensive or novel technology of disclosure of firms' information. Individual shareholders can also access firm's (financial) information from more generic website (such as JSX website [www.jsx.com] and www.indoexchange.com). Another explanation of the insignificance of percentage of public ownership is that this variable does not really represent the *number* of individual shareholders. Larger number of individual shareholders, and not larger percentage of public ownership, creates larger agency problems for publicly listed firms. Therefore, variable of percentage of public ownership (and its subsequent proxy) is not the best one to measure the degree of dispersion of shareholders.

The result of regression analysis also support H_{a3} . It accumulates the supporting evidence of influence of firm size on the extent of web-based disclosure (Debrecey *et al.*, 2002; Ettredge *et al.*, 2002; Oyelere *et al.*, 2003; Prabowo and Tambotih 2005). Larger agency problems and political costs, added by economic of scale of information production make larger firms are more willing to utilize website to disclose their information to market.

What is surprising is that our research find that LEVERAGE positively affects WEB. To our best knowledge, ours is the first that find the evidence. Using Indonesian context, Prabowo and Tambotih (2005) cannot support the hypothesis that level of leverage influences the extent of internet financial reporting. Our finding confirms the theory of agency conflict between shareholders and debtholders (Barnea *et al.*, 1976). The fact that debt only contribute 20.99% of total capital makes debtholders more vulnerable from agency problems since they are only minority supplier of capital.

CONCLUSIONS AND LIMITATIONS

Research on web-based disclosure using Indonesian context is still limited. Ours is different than Prabowo and Tambotih (2005) since they use the extent of internet financial reporting (to what extent firm upload/discard their financial statements in their websites) as dependent variable while ours web-based disclosure (to what extent firms disclose their information in their websites). We operationalize the dependent variable using Matherly and Burton's 34 indicators. (2003) This article finds that profitability, size and leverage positively affects the extent of web-based disclosure while public ownership does not.

Our research suffers weakness usually found in disclosure research: it weighs each item scored without regarding the extent of disclosure of each item. Additionally, our instrument to measure the extent of web-based disclosure (Matherly and Burton's instrument) is potentially less relevant to Indonesian context or to other industry. For example, Matherly and Burton's indicator use plant volume and suppliers as the indicators of the level of web-based disclosure which are not relevant in service industry. Our attempt to measure the extent of shareholders quantitatively disperses also fails. It is impossible to obtain data on the exact number of individual shareholders. We have to rely on the second-best indicators (percentage of public ownership). Finally, future research can rely on noneconomics-based theory to explain the extent web-based disclosure (such as institutional theory as used by Xiao *et al.*, 2004).

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