

## Internet-Based Compulsory Information Disclosure by Listed Companies in Tehran Stock Exchange

<sup>1</sup>Saeid Homayoun and <sup>2</sup>Sakine Homayoun

<sup>1</sup>Department of Business and Economic Studies,  
Faculty of Education and Economics, University of Gavle, Sweden and  
Lulea University of Technology, Sweden

<sup>2</sup>Department of Accounting, Marvdasht Branch, Islamic Azad University, Marvdasht, Iran

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**Abstract:** This study is aimed at investigating the effect of the industry concentration on the internet-based compulsory information disclosure with respect to the control variables of the firm size, industry, profitability and leverage and independent or non-executive independent board. Statistical population of the study is the firms accepted in Tehran Stock Market, 230 firms were selected omission during 2010-2011 period as the statistical sample and their information was investigated. In this study, the data required to test research hypotheses were collected by a field method through financial statements and notes associated with stock firms and accepted firms web site, then they were created and processed in the form of databases in excel and finally the data and research variables were analyzed using EViews Software. In this study, the researcher analyzed the effect of industry concentration on the information compulsory index. The results show that the industry concentration, the firm size, profitability, leverage and the other industries except the energy and service sector have a significant effect on the compulsory information index but there is no effect for the independent or non-executive independent board.

**Key words:** Internet-based information disclosure, compulsory disclosure index, industry concentration, sample, profitability

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### INTRODUCTION

The role of internet as a communication means in affairs of developing countries is that it directs the demands and wants of stockholders more quickly and with more information volume in better and more effective ways, besides using internet the information can be spread globally and particularly, it causes the financial information improvement and promotion and consequently encourages investment (Willis *et al.*, 2003). Capital market is based on the information, as driving engine of economy. Accurate information flow leads to accurate and logical decision making by the participants and finally to economic development and welfare improvement. According to Jensen and Heekling (1976), the firms disclose information about management activities and economic facts to reduce differences between managers and owners. Apart from the importance of information asymmetry reduction in the capital markets, the stakeholders need sufficient information to monitor managers' behavior. Thus, information disclosure through internet can be helpful in this regard (Homayoun and

Rahman, 2010). Increased disclosure tends to reduce uncertainty regarding a firm's present and future financial performance (Homayoun and Rahman, 2010). Wallace and Naser (1995) combined 2 kinds of disclosures, mandatory and voluntary. The term mandatory disclosure include financial statements, footnotes, management discussion and analysis and other regulatory filings that firms comply with the requirements were required by the firm's ordinance while the voluntary items on the hand is devoted to self-regulated mechanisms were essentially a matter of managerial choice (Beyer *et al.*, 2010). Parker (1991) defined mandatory and voluntary disclosure that is in accordance with legislation or accounting standards or it can be voluntary disclosure.

Based on agency theory and signaling theory the study contributes to examined the relationship between firm characteristics and corporate governance mechanism in relation with internet reporting (Craven and Marston, 1999; Ashbaugh *et al.*, 1999; Debreceeny *et al.*, 2002; Oyelere *et al.*, 2003; Marston and Polei, 2004; Xiao *et al.*, 2004; Gandia, 2008; Homayoun *et al.*, 2012, 2013). Homayoun *et al.* (2012) argued that the uses of the

internet improved availability of corporate social responsibility information and encouraging investment. Homayoun *et al.* (2013) argued that use of internet in corporate social responsibility disclosure is an important step in applying internet for corporate social responsibility disclosure. Consequently, the objective of this study is to examine industry concentration on internet-based compulsory information disclosed according to explanatory factors including corporate size, industry sector, profitability, financial leverage and independent or non-executive independent board.

**Literature review and hypothesis development:** Esu and Nesa in their study on the effective factors on the compulsory disclosure in Zimbabwe, studied financial statements of 49 firms accepted in the stock market in the financial period terminating with December 1994. Results of their study show that there is a positive and significant relationship between the firm size and the quality of financial reports at 99% confidence level. Uyar (2011) investigated the analysis of the web site of the firms accepted in the stock market in Istanbul. The results show that there is a significant relationship between the size of accepted firms and internet-based financial reporting but this is not true with industry type and profitability. Khajehpour *et al.* (2014) examine the impact of aggressive working capital management policy on profitability of firms and found that reduction of current assets does not increase profitability. Cooke (1992) in his study on the effectiveness of the industry type on the disclosure in annual reporting in Japanese firms concluded that Japanese productive firms significantly disclose more information in relation to other firms. Brennan and Hourigan (2000) concluded that internet-based reporting has a positive significant relationship with the industry type. According to them, this may be due to the fact that in different industries, the costs of information disclosure are unique to the industry type. Marston and Leow (1998) did not find any significant relationship between financial information disclosure and the industry type. But when the firms under study were categorized based on the internet-based published information, the results showed that there is a significant relationship between the industry type and amount of internet-based information disclosure. However, according to Kroano (1999) on 206 firms among the largest ones listed in financial times (January 22, 1998) there is no relationship between the industry type and the amount and the type of internet-based disclosure of financial information. Frost and Panel studied the quality of financial reporting in America and England. To this aim, they examined the financial reports of 107 firms during the financial year

terminating to December 1989. The results show that there is a relationship between the quality of financial reporting in the earlier mentioned countries and the firm's size. Iacovou *et al.* (1995) concluded that larger the firms size, higher their benefit and this leads to the fact that larger businesses benefit more from this emergent medium due to accessibility to more abundant resources. Arthur found that 94% of the firms in the selected sample from 350 superior ones had a web site and among them 88% used internet to present the financial information such as annual reports. Mitigating the firm size decreased the amount of internet use. Another study by Craven and Marstonin 1999 on English firms, just confirmed the hypothesis stating a relationship between firm size factor and the amount of information disclosure in firms database. Hedlin (1999) studied Swedish firms in September. The results showed that 83% of the firms published their financial statements through internet and larger firms were more advanced in internet use, as a communication means with investors and disclosed more information through this medium. According to Christopher and Hassan (1995) and Berger and Hann (2002), there is no significant relationship between information disclosure in the sectors and the industry concentration.

Based on agency theory and signaling theory Debreceny *et al.* (2002) and Xiao *et al.* (2004) found that firm size is associated with disclosure via internet. Xiao *et al.* (2004) and Alvarez (2007) significant relationship between disclosure and financial leverage. Oyeler *et al.* (2003) found that Internet disclosure practices were highly related to firm liquidity. Marston (2003) did not find a significant association between industry type and Internet disclosure. Craven and Marston (1999) found no association between industry type and Internet disclosure. Based on the earlier findings, the hypotheses of this study are stated as follows:

- H<sub>1</sub>: There is a significant positive relationship between firm size and internet-based compulsory information disclosure
- H<sub>2</sub>: There is an association between industry type and internet-based compulsory information disclosure
- H<sub>3</sub>: There is a significant positive relationship between firm profitability and internet-based compulsory information disclosure
- H<sub>4</sub>: There is a significant positive relationship between leverage and internet-based compulsory information disclosure.
- H<sub>5</sub>: There is a positive association between proportion of independent non-executive directors on the board and internet-based compulsory information disclosure

## MATERIALS AND METHODS

**Data collection and method:** Industry concentration has a significant effect on the volume of compulsory disclosed information through internet. The current study is descriptive-correlational. In correlational studies, the researcher is aimed at determining the relationship between two or more variables. In fact, this method is aimed at examining the relationship between the change levels of one or more variables and the change levels of one or more other variables. In this study, the data and information are collected through library research. In library research, theoretical bases are collected from specialized Persian and English journals. According to definitions of the study, variables and their measurement procedures, the required data for the study include some accounting items extracted from the firms audited financial statements. Accordingly, the required data are collected from information resources, the data, documents and records of the firms sample and the financial statements, explanatory notes, weekly reports, stock monthly, library, the firms web site and Tehran stock firm site.

**Data analysis and hypothesis testing:** In this study, the required information for hypothesis testing were collected through field study using the financial statements and the notes associated with stock firms and the web site of the firms accepted in Tehran Stock Market, then they were created and processed in the form of databases in excel and finally were analyzed using statistical Software EVIEWS. In this study, several statistical methods are used which are explained in detail in the following. After data collection, descriptive parameters are calculated from the target variables. These parameters include mean, median, standard deviation and other information. The most important statistical tests used in the study are Pearson correlation coefficient test to examine the relationship between variables, Fisher test to examine the significance of regression, t-test to examine the significance of the coefficients. To test collinearity between the variables researchers use VIF parameter. Also to examine variance heterogeneity and continuous correlation, Breusch-Pagan test and Breusch-Pagan-Gadferly test are used.

### Research variables and their measurement procedures

**Independent and control variable:** The study independent variable is the industry concentration and control variables include firm size, industry, profitability, leverage, independent and non-executive independent board. The procedures to measure them are explained as follows:

- Industry concentration; calculated from Herfindahl index as follows:

$$H_i = \sum \left( \frac{R_{ij}}{R_j} \right)^2 \quad i=1, \dots, n_j$$

$R_{ij}$ : Firm  $i$  income at industry  $j$

$n_j$ : The number of firms at industry  $j$

$R_j$ : All firms income at industry  $j$

- Firm size; this variable uses the firm's Market Capitalisation (MC) at the end of financial year as the firm size yardstick
- Industry; including services, transportation, energy and other industries in the case that the firm is a part of these sectors it is assigned 1 and 0 otherwise
- Profitability; obtained by dividing the net profit by the sum of equity capital
- Leverage; obtained by dividing the sum of total debt to total assets
- Independent and non-executive independent board; obtained by the number of irresponsible members by total number of board of directors

**Dependent variable:** Dependent variables include the index of compulsory information disclosure. These indexes include 22 content indices (dependent variable) and the index of Compulsory information disclosure includes 12 accounting and financial information indices and 10 indices related with the firm sovereignty. When referring to the sample web site if the target firm discloses component (variable) under investigation at its web site, value 1 will be assigned to it and 0 otherwise (Appendix).

**Statistical population and statistical sample:** With regard to the purpose of the study that is investigating the effect of the industry concentration on the compulsory information disclosure to make the investors aware of the effectiveness of accounting information in investment decisions and to define the target research variables, the statistical population of the study includes all the firms accepted in Tehran Stock Market. Thus, the research sample, selected by omission, includes the firms with the following requirements:

- They should be accepted in stock market before 2010
- They should have web site
- Their time periods should be March 29 of the years 2010 and 2011

- The required information should be available in current resources

Applying the earlier conditions, 230 firms were selected as the study sample.

**RESULTS**

**Result of hypothesis testing:** Results of the hypothesis are presented in the following. As you see, Pearson correlation coefficient test shows the relationships between the variables and the target hypotheses in this regard are as follows:

$$\{H_0 = \rho = 0$$

Null hypothesis shows the lack of relationship between the variables, so the alternate hypothesis shows a correlation.

The correlation coefficients  $\rho$  between the variables are shown in Table 1 investigating the correlation matrix to assess the relationship between the variables, researchers see that there is asignificant relationship between the industry concentration, profitability, leverage and other industries but energy and services and Compulsory disclosure at significance level 0.05 ( $p < 0.05$ ), it is worth mentioning that the relationship between transportation and profitability and compulsory disclosure is significantly negative and between the industry concentration, the firm size, leverage and other industries with compulsory disclosure is significantly positive.

Besides, based on Table 1 researchers find that there is no significant relationship between services, energy, responsible and irresponsible board of directors and Compulsory disclosure because their significance level is above 0.05. After regression test, the coefficients significance must be tested. This test is aimed at determining whether the calculated coefficients are non-zero at the target confidence level. The test hypotheses are as follows:

- $H_0: \beta = 0$  variable coefficient is zero
- $H_1: \beta \neq 0$  variable coefficient is non-zero

In coefficients table, calculating T parameter and testing its significance, researchers obtain fixed regression coefficients. Researchers observe that in this model there is no fixed coefficient  $\beta_3, \beta_6$  and  $\beta_9$ , because their significance level is not lower than 0.05 but the other coefficients are significant and their value is shown in Table 2, thus the model is in the form of Eq. 1:

Table 1: Results of Pearson correlation coefficient of information compulsory disclosure index variable and other independent and control variables

Correlation probability	Information on content	Probable
Compulsory information	-	1.00
Concentration	0.00	0.31
Company size	0.00	0.37
Services	0.28	0.03
Transportation	0.00	0.17
Industry	0.00	0.33
energy	0.12	0.08
Profitability	0.00	0.25
Leverage	0.00	0.36
Non board members duty/board size	0.16	0.04

Table 2: Results of regression test of the hypothesis

Variables	Coefficient	SE	t-statistic	Prob.
C	-4.767154	0.558398	-8.537192	0.0000
Concentration	0.809352	0.115619	7.000164	0.0000
MC	0.367292	0.041890	8.768049	0.0000
Dum-service	0.007218	0.220636	1.406286	0.0896
Dum-trasport	-0.565512	0.215524	2.623887	0.0088
Dum-industry	1.749834	0.195656	8.943417	0.0000
Dum-energy	0.013752	0.224281	0.131457	0.2050
ROE	-0.461951	0.0130151	-3.549339	0.0004
Levrage	1.293427	0.238346	5.426678	0.0000
Out	-0.012655	0.017670	-0.716212	0.4740
R <sup>2</sup>	0.371888			
Adjusted R <sup>2</sup>	0.365676			
SE of regression	2.163485			
Sum squared resid	4259.408			
Log likelihood	-2010.379			
F-Statistic	59.86512			
Prob. (F-Statistic)	0.000000			
Mean dependent var	3.234783			
SD dependent var	2.716429			
Akaike info criterion	4.392128			
Schwarz criterion	4.444567			
Hannan-Quinn criter	4.412139			
Durbin-Watson stat	1.783479			

$$\begin{aligned} \text{Information inetnet-based} & -4.76+0.80 \text{ (industry concentration) } + \\ \text{disclosurev index} & 0.36 \text{ (firm size)-0.56 (transportation) } + \\ \text{(Compulsory disclosure index)} & = 1.74 \text{ (industry)-0.46 (profitability) } + \\ & 1.29 \text{ (leverage)} \end{aligned} \tag{1}$$

The VIF should  $< 10$  and the tolerance should not be  $< 0.2$ . To examine, the collinearity between independent variables, parameter VIF which shows the collinearity between variables is used. If VIF values are small, the collinearity between variables is acceptable.

According to Table 3, collinearity assumption is not violated. To test variance homogeneity in the pattern of longitudinal data, Breusch-Pagan and Godfrey tests are this test in 1979 to examine variance homogeneity and to determine an estimation method based on random or fixed effects. According to null hypothesis, the pattern is of homogeneous variance. Now with respect to Table 4 because its significance value is 0.08 the null hypothesis is rejected, thus homogeneity of variance is not violated.

Table 3: Collinearity test using parameter VIF

Variables	Coefficient variance	Uncentered VIF	Centred VIF
C	0.311809	61.286990	NA
Concentration	0.013368	4.227948	1.122539
MC	0.001755	62.715300	1.123246
Dum-service	0.048680	2.444060	1.819762
Dum-transport	0.046451	2.967266	1.902905
Dum-industry	0.038281	2.748009	1.744389
Dum-energy	0.050302	2.439518	1.837594
ROE	0.016939	1.327129	1.257085
Leverage	0.056809	0.505714	1.405438
Out	0.000312	1.078287	1.072629

Table 4: Breusch-Pagan test (Heteroskedasticity test: Breuch-Pagan-Godfrey)

Statistical methods	Values
F-statistic	1.486521
Obs *R <sup>2</sup>	11.081580
Scaled explained SS	13.467650
Prob. F (9.910)	0.082900
Prob. $\chi^2$ (9)	0.086200
Prob. $\gamma^2$ (9)	0.062300

Table 5: Breusch-Godfrey serial correlation LM test

Statistical methods	Values
F-statistic	1.514596
Obs *R <sup>2</sup>	4.040842
F (2908)	0.141600
Prob. $\chi^2$ (2)	0.140000

To examine continuous correlation, Breusch-Gadfrey test is used. Absence of a continuous correlation is a classic assumption that researchers use it easily in the calculations but if regression has self-correlation problem or researchers have a lagged dependent variable, this test is used which is shown in the following Table 5. Because probability level of parameter F is above 0.05(0.14) this assumption is confirmed, thus regression does not have self-correlation problem.

### DISCUSSION

It was expected that the industry concentration has a significant effect on the volume of compulsory disclosed information through internet. Here, the industry concentration is independent variable and control variables include size firm, industry (services, transportation, energy and other industries), profitability, leverage, responsible and irresponsible board of directors. This hypothesis was tested for compulsory disclosure indices and the results are as follows:

The industry concentration, calculated from Herfindahlindex has effect on volume of internet-based compulsory disclosed information. In other words, when the firm Herfindahl index increases, volume of internet-based Compulsory disclosed information increases. According to political costs theory, the more the firm's monopolistic power, the more observable it is and the more political costs should be disclosed, thus to

reduce these costs they tend to disclose more information. The firm size which is considered as its market value, affects on the volume of internet-based compulsory disclosed information. In other words, when the firm market value increases, volume of internet-based compulsory disclosed information increases. So, it must disclose more information. For this reason, information disclosure is a way of decreasing these costs and reduces the amount of information asymmetry. The industry consists of four sectors namely services, energy, transportation and the other industries. In the services and energy, there was no effect on the volume of internet-based compulsory disclosed information. In transportation, there was a negative significant effect. Whereas in the other industries, there was a positive significant effect on the volume of internet-based compulsory disclosed information.

It was predicted that profitability affects on the volume of internet-based compulsory disclosed information. So, it was expected that in the firms with high profitability there is a high significance coefficient. But in this study, a negative effect was found. Profitability, calculated from equity return ratio has a significant effect on the volume of internet-based compulsory disclosed information. In other words, when the firm's profit increases, the volume of information decreases. Profitability was analyzed in the form of two theories. According to agency theory, managers in the profitable firms use the information for their personal interests, thus they tend to disclose less information. Besides, according to ownership cost theory, the firms with higher profitability can stimulate competitor firms to enter the market. So, when profitability increases, competitive costs increase and this stimulates the competitor firms to enter the market which in turn leads to fewer tendencies to disclose information.

### CONCLUSION

It was anticipated that leverage affects the volume of compulsory disclosed information through internet, thus it was expected that in the firms with a high leverage there be a higher significance level. The results show that leverage, obtained from debt ratio, affects the volume of compulsory disclosed information through internet. In other words, when the firm's total debt ratio increases, the volume of compulsory disclosed information through internet increases because the firm can fulfill its financial commitments in this way. In stockholders view, information disclosure is a mechanism to control

management and evaluation of the firm's financial health. Because when leverage increases, risk of financial crisis increase. Also, in managers view, the more the firm's debt, the more they seek to account for the firm leverage increase in response to stakeholders, consequently the volume of compulsory disclosed information through internet increases. In this study, it was observed that there is no significant effect for the responsible and irresponsible board of directors on the volume of compulsory disclosed information through internet.

## APPENDIX

### Appendix: Dependent variables

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Information on content  
Compulsory information  
Financial information  
Complete annual accounts  
Partial annual accounts  
Audit report without reservations  
Quarterly information  
Annual accounts of the previous 3 years  
Information on the stock evolution of the company  
Comparison with stock indexes (mainly historical)  
Key ratios of the previous 3-5 years  
Summary of key financial data for the previous three to 5 years  
Segment product by business (product or service)  
Segment product by region or geographic market  
Financial statements according to foreign accounting rules or principles (in case of release of accounting information in other countries)  
Corporate governance  
Complete report on corporate governance  
Partial report on corporate governance  
Reports on corporate governance from the previous 3 years  
News on meetings and agenda of the general shareholders meeting  
Existence of a code of ethics  
Analyst evaluations  
Analyst forecasts  
Availability of reports and other documentation given out in press releases and meetings with analysts  
Organizational chart  
Assistance for shareholders

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