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# The Determinants of Nonfinancial Information Disclosure in MD&A

Hyeon, Jiwon

College of Business Administration

Seoul National University

**Abstract:** This paper examines the determinants of nonfinancial information disclosure level in MD&A. MD&A is a unique setting for studying the contents or level of nonfinancial information, controlling disclosure and its timing. In this paper, nonfinancial information disclosure in MD&A is measured by the frequency of nonfinancial words which are classified based on BSC-framework. For extracting nonfinancial information from MD&A, contents-analysis is conducted. This paper finds

that firms with more intangible assets, bigger size and higher return on assets disclose more nonfinancial information. The results of proprietary cost, ownership structure, performance volatility, leverage and external financing do not show significance.

**Keywords:** disclosure, nonfinancial information, MD&A, contents-analysis, intangible assets

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## Table of Contents

<b>1. Introduction .....</b>	<b>4</b>
<b>2. Overview of Management Discussion and Analysis .....</b>	<b>10</b>
<b>3. Prior Research and Hypotheses Development.....</b>	<b>12</b>
<i>3.1 Intangible Assets .....</i>	12
<i>3.2 Proprietary Cost .....</i>	14
<i>3.3 Ownership Structure .....</i>	16
<i>3.4 Firm Size .....</i>	17
<b>4. Samples and Variables.....</b>	<b>18</b>
<i>4.1 Sample.....</i>	18
<i>4.2 Variables.....</i>	19
<i>4.3 Empirical Models and Descriptive Statistics .....</i>	25
<b>5. Empirical Results.....</b>	<b>27</b>
<b>6. Conclusion.....</b>	<b>32</b>
<b>Reference.....</b>	<b>35</b>
<b>Figure1.....</b>	<b>39</b>
<b>Figure2.....</b>	<b>39</b>
<b>Table1 .....</b>	<b>41</b>
<b>Table2 .....</b>	<b>43</b>
<b>Table3 .....</b>	<b>44</b>
<b>Table4 .....</b>	<b>45</b>
<b>Table5 .....</b>	<b>46</b>

## **1. Introduction**

The purpose of this paper is to investigate the determinants of nonfinancial information disclosure in Management Discussion and Analysis (hereafter, MD&A) in Korea. The Korean disclosure rules mandate the disclosure of MD&A in annual report. In contrast, the contents and amount of MD&A disclosure cannot be regulated because MD&A disclosure format is a narrative style. Thus, the contents and level of MD&A disclosure are discretionary to the management. This unique setting, which means the situation in which the contents and amount are discretionary while disclosure and its timing are regulated, provides an opportunity to examine the determinants of the contents and amount of MD&A disclosure, controlling firms' strategic behaviors in disclosure and its timing. This paper classifies the contents of MD&A into two categories; financial and nonfinancial information and then study the determinants of nonfinancial information disclosure.

Researchers, practitioners and policymakers have discussed about the importance of nonfinancial information since early 1990s. This discussion has two main streams; research related to the use of nonfinancial information in management control system inside firms and the other related to the use of nonfinancial information in firm valuation of capital market

outside firms. The former is mainly about the role of nonfinancial information in performance evaluation and compensation. Beginning with Kaplan and Norton (1992), a significant number of studies suggest firms should use nonfinancial measures for balanced performance evaluation and provide evidence that firms with higher performance of nonfinancial measures have higher future financial performance (Behn and Riley 1999; Banker et al. 2000; Dikolli et al. 2007; Kaplan and Norton 1996; Ittner and Larcker 1998; Trueman et al. 2001; Said et al. 2003). Furthermore, the role of non-financial performance measures in CEO compensation has been discussed. Ittner et al. (1997) examines the factors influencing the relative weights placed on financial and non-financial performance measures in CEO bonus contracts and Davila and Venkatachalam (2004) empirically supports that non-financial measures are positively associated with CEO cash compensation in the airline industry. In addition, there have been various kinds of topics such as effect of nonfinancial performance measurements on measurement system satisfaction (Ittner et al. 2003), promotion and demotion decision (Campbell 2008) and encouraging cooperation across division (Baiman and Baldenius 2009).

The latter is primarily about the valuation role of nonfinancial information in the market. Starting with Amir and Lev (1996), it has been

evidenced that nonfinancial information exhibit incremental value-relevance over financial information. Amir and Lev (1996) finds the evidence based on the wireless communications industry, Deng et al. (1999) on high-tech firms, Trueman et al. (2000) and Graham et al. (2002) on internet firms, Hirschey et al. (2001) on patent data, Rajgopal et al. (2003) on e-commerce firms, Riley et al. (2003) on airline industry, Xu et al. (2007) and Callen et al. (2010) on biotech firms. Furthermore, Lev and Zarowin (1999) and Brown et al. (1999) find that the usefulness of financial information (e.g. reported earnings, cash flows, and book (equity) values) has been declining over the past years. On the ground of these empirical studies, market demands on nonfinancial information explosively increase and the increased market demands lead to studies on the use of nonfinancial information in the market. Analysts' forecast errors and dispersion are less with highly rated MD&A disclosure or more nonfinancial information (Lang and Lundholm 1996; Barron et al. 1999; Orens and Lybaert 2007). Orens and Lybaert (2010) examines in detail the drivers of the financial analysts' use of non-financial information.

As it has been noted so far, a number of papers have extensively researched the value relevance of nonfinancial information and its use in the market outside firms and inside firms. In contrast, studies on firms'

nonfinancial information disclosure behavior, which has role of bridge between firms and market, have received little attention from academic. Therefore, this paper tries to fill that hole and basically finds the factors determining the nonfinancial information disclosure level. There are two reasons why MD&A disclosure is used for samples of nonfinancial information. First, as stated previously, MD&A is a unique setting in which the contents and level of disclosure are discretionary while disclosure and its timing are mandatory. In this regard, MD&A disclosure is more competitive, compared to other nonfinancial information disclosure such as press releases which can be strategically disclosed and so can make noise in studying the contents or level of nonfinancial information disclosure. So, MD&A could be a good sample for studying determinants of nonfinancial information, controlling strategic behavior in disclosure and its timing. Second, the boundary of nonfinancial information contents in MD&A is much larger than another single index of nonfinancial information such as customer satisfaction. Despite the fact that information mining cost is much higher, MD&A enables this paper to study more generalized overall analysis on nonfinancial information disclosure.

This paper is related to Ahn and Lee (2005), Ahn et al. (2005) and Choi (2004). These studies also investigate the narrative style disclosure like

this paper. This paper, however, is distinct from previous studies in two respects. First, frankly speaking, this paper analyzes MD&A disclosure while those studies use the Overview of Operations for samples. Second, this paper focuses on nonfinancial information disclosure not voluntary disclosure. Ahn and Lee (2005) examines the determinants of the voluntary disclosure level not nonfinancial disclosure level in the Overview of Operation. Choi (2004) does not divide disclosure information into financial and nonfinancial categories, considering the whole contents of narrative style disclosure as nonfinancial information. Consequently, it is likely that Choi (2004) examines the overall disclosure level, not nonfinancial information disclosure level. In spite of the initial effort of Ahn et al. (2005) for extracting data form narrative style disclosure, it does not conduct empirical analysis, just showing the descriptive statistics of samples.

The sample of this paper includes 813 MD&A of the firms listed on Korea Stock Exchange from 2009 to 2010. For measuring nonfinancial information disclosure level in MD&A, content-analysis is conducted and the frequency of nonfinancial words is used for proxy of nonfinancial information disclosure level. Regression results show that firms with more intangible assets, bigger size and higher firm performances disclose more nonfinancial information. The results of proprietary cost, ownership

structure, performance volatility, leverage and external financing do not show any significance.

This study contributes to literature in the two ways. First, in Korea, this is the first study that analyzes the contents in MD&A. Thus far, the Overview of Operation has been mainly used as a sample of the study,(Ahn and Lee 2005; Ahn et al. 2005; Choi 2004). This paper use MD&A contents as samples and so could be a starting point of research investigating MD&A contents. Second, this paper is the first contents analysis study of nonfinancial disclosure in Korean. Because it cost much to conduct content analysis, most of papers studying nonfinancial disclosure limit their samples to some nonfinancial indexes, not using the whole contents of nonfinancial disclosure. So, this paper provides more generalized analysis than other papers by analyzing the whole contents of nonfinancial disclosure, not just focusing on some nonfinancial indexes.

The rest of the paper is organized as follows. Section II provides institutional background on the MD&A disclosure in Korea and other leading countries. Section III discusses relation to previous literature and develops the hypotheses. Section IV describes the data and variable measures and research design. Section V presents descriptive statistics and empirical results and finally, Section VI concludes.

## **2. Overview of Management Discussion and Analysis**

In 1968, the Securities and Exchange Commission (SEC) of the U.S. introduced MD&A-related disclosure rules. The initial form of MD&A reporting requirements was a summary and an analysis of earnings and their components. The basic form of present MD&A disclosure requirements was adopted in 1980, mandating that listed companies include a MD&A section in annual reports that include easily understandable information about firms with a narrative style through the eyes of managers. As has been stated so far, the MD&A disclosure regulations fundamentally have “investor-oriented purpose” (Hüfner 2007). Since being introduced in the US, MD&A has been an important channel for firms to communicate with investors and has been adopted in Canada, the UK, Australia, Japan and many other countries.

Following the MD&A regulation of the US, the Financial Supervisory Service (the Korean equivalent of SEC) also requires the listed firms to disclose the MD&A in the annual reports for providing sufficient and easily understandable information to investors since 2009<sup>1</sup>. While MD&A disclosure in Korea is regulated only in annual reports, it should be

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<sup>1</sup> From 1997 to 2008, the FSS required the listed firms to disclose the MD&A in the supplementary documents.

disclosed at least in semi-annual reports in other leading countries. Even though the MD&A disclosure had been required in the supplementary documents from 1997 to 2008 in Korea, it did not provide sufficient qualitative information due to lack of guidelines and supervision by the FSS. Since being included in annual reports in 2009, MD&A has been providing more information with guidelines and regular supervision by the FSS.

**[Inset Figure 1 about here]**

While MD&A disclosure is mandatory, contents and level of MD&A cannot be regulated because its format is a narrative style. So, the contents and level are discretionary whereas disclosure and its timing are mandatory. In this regard, for analyzing contents and level of disclosure, MD&A is superior to other nonfinancial information disclosures such as press releases that could be strategically disclosed and so could make noise in studying its contents or level. MD&A controls firms' strategic behavior in disclosure and its timing. Therefore, MD&A facilitates the analysis of determinants of nonfinancial information disclosure. Moreover, compared to another single index of nonfinancial information such as customer satisfaction, the boundary of nonfinancial information in MD&A is much larger. So, MD&A

enables this paper conduct more generalized analysis on nonfinancial information disclosures although information mining cost is much higher. Thus, despite of the fact that there need to be much further steps for improving the quality of MD&A contents in Korea, MD&A is worth examining for studying determinants of nonfinancial information.

### **3. Prior Research and Hypotheses Development**

#### ***3.1 Intangible Assets***

Existing accounting rules have a limitation to recognize intangible assets because they allow firms to recognize only purchased intangible assets. So, firms' R&D and advertising expenditure are expensed as they are incurred. Expenditures on R&D and advertising, however, are usually investments for intangible assets since R&D and advertisement can create technologies, brands or designs that can generate profit in the future (Wyatt 2008). What is even worse, it is difficult to estimate the value of intangible assets due to the high uncertainty in the value of intangibles, lack of active markets and reliable value estimates for most intangibles (Lev 2001; Gu and Wang 2005). Consequently, even recognized intangibles are measured at amortized cost, not at an estimate of their value. Firms' intangible assets, therefore, are not sufficiently reflected in accounting assets on financial

statements. In knowledge-based economy, however, intangible assets have been getting more important as they are getting the essential sources of firms' benefit. Thus, firms with more intangible assets have difficulty in appealing to the market with accounting information. Additionally, due to information complexity of intangibles, it is also difficult for the market to forecast the performance of firms with more intangibles. It is evidenced by the positive association between intangible assets and the analysts' forecast error (Amir et al. 2003; Barron et al. 2002; Gu and Wang 2005). To sum up, firms with more intangible assets are likely to be in a higher information asymmetric situation (Barth and Kasznik 1999). To reduce this information asymmetry, analyst coverage is significantly greater for firms with more intangible assets and analysts expend greater effort to follow firms with more intangible assets (Barth et al. 2001). In addition to these efforts by the market, firms with more intangible assets increase voluntary disclosure to reduce information asymmetry (Jones 2007).

Then, what kind of information disclosure is likely to make the information gap decrease more efficiently? Nonfinancial information is likely to serve as the key. As stated above, a large number of studies empirically show the incremental value-relevance of nonfinancial information over financial information and the complementarity between

nonfinancial and financial data. Amir and Lev (1996) finds evidence based on the wireless communications industry, Deng et al. (1999) on high-tech firms, Trueman et al. (2000) and Graham et al. (2002) on internet firms, Hirschey et al. (2001) on patent data, Rajgopal et al. (2003) on e-commerce firms, Riley et al. (2003) on airline industry, Xu et al. (2007) Callen et al. (2010) on biotech firms. Furthermore, Lev and Zarowin (1999) and Brown et al. (1999) reveal that the usefulness of financial information (e.g. reported earnings, cash flows, and book (equity) values) has been deteriorating over the past years. Firms with more intangible assets have limitations to show their real value to the market with financial information (Barth et al. 2001; Gu and Wang 2005). Thus, this paper predicts that firms with more intangible assets disclose more nonfinancial information.

**H1:** Firms with more intangible assets disclose more nonfinancial information.

### ***3.2 Proprietary Cost***

Managers' decisions about whether to disclose information of firms or not are expected to be influenced "by the conflicting objectives of informing the market and reducing proprietary costs" (Verrecchia 1983, 2001; Dye 1985; Healy and Palepu 2001; Lang and Lundholm 1996; Dye 2001).

Clarkson et al. (1999) finds that voluntary disclosure level is negatively related to industry competition. Guo et al. (2004) also empirically find that competitive costs are negatively associated with disclosure of product-related information in the biotech industry. Graham et al. (2005), in a survey, find that CFOs do not want to explicitly reveal sensitive proprietary information. Jones (2007) empirically supports that firms in R&D-intensive industries disclose less product-related information. Additionally, Nichols (2010) finds that proprietary costs are associated with less frequent instances of voluntary disclosures such as press releases.

As stated above, a large number of studies find evidence of the incremental value-relevance of nonfinancial information over financial information and the complementarity between nonfinancial and financial data. (Lev and Zarowin 1999; Brown et al. 1999; Amir and Lev 1996; Graham et al. 2002; Riley et al. 2003; Xu et al. 2007; Callen et al. 2010).

Thus, nonfinancial information disclosure is likely to reveal more important information, combining with financial information. It indicates that nonfinancial information disclosure is likely to increase proprietary cost. Thus, firms facing higher proprietary costs are less likely to disclose nonfinancial information.

**H2:** firms that are facing higher proprietary costs disclose less

nonfinancial information.

### ***3.3 Ownership Structure***

A number of empirical studies find that the largest shareholders do not encourage firms to disclose more information because they can directly access managers or purchase the service of financial intermediaries, such as financial analysts, to obtain private information (Lang and Lundholm 1993; Ahn and Lee 2005; Healy and Palepu 2001; Beyer et al. 2010). On the other hand, minority shareholders encourage firms to disclose more information. Especially, minority shareholders would demand more value relevant information than large shareholders (Fan and Wong 2002). Because minority shareholders are less sophisticated and do not have private information access channel except for disclosure, they are likely to encourage firms to disclose more value-relevant information. As stated above, a significant number of studies find evidence of the incremental value-relevance of nonfinancial information over financial information and the complementarity between nonfinancial and financial data. (Lev and Zarowin 1999; Brown et al. 1999; Amir and Lev 1996; Graham et al. 2002; Riley et al. 2003; Xu et al. 2007; Callen et al. 2010). The results of Amir and Lev (1996) even reports that financial information combined with nonfinancial

information shows value-relevance whereas a stand-alone financial information is irrelevant to firm value. Thus, minority shareholders are likely to encourage firms to disclose more nonfinancial information and the largest shareholder are not likely to encourage firms to disclose more nonfinancial information.

**H3-a:** firms with higher proportion of stock held by largest shareholder disclose less nonfinancial information.

**H3-b:** firms with higher proportion of stock held by minority shareholder disclose more nonfinancial information.

### ***3.4 Firm Size***

Size captures a lot of aspect of firms. Theoretical studies suggest the transactions cost hypothesis that disclosure level is positively related to firm size because the incentives for private information acquisition are greater for large firms (King et al. 1990). Consistent with the legal cost hypothesis in Skinner (1994), disclosure may increase in firm size because litigation cost is a function of firm size. A significant number of studies find evidence of positive association between firm size and voluntary disclosure (Lang and Lundholm 1993; Ahn and Lee 2005; Choi 2004; Beyer et al. 2010).

As has been discussed, nonfinancial information has complementary

explanatory power to value relevance of financial information (Lev and Zarowin 1999; Brown et al. 1999; Amir and Lev 1996; Graham et al. 2002; Riley et al. 2003; Xu et al. 2007; Callen et al. 2010). Thus, nonfinancial information could be a good vehicle for reducing litigation risk that might be higher for bigger firms. So, it is likely that firms' size is positively related to nonfinancial information.

**H4:** Large firms disclose more nonfinancial information.

## **4. Samples and Variables**

### ***4.1 Sample***

Our sample period is fiscal years 2009–2010. The initial samples include all firms providing MD&A in the Data Analysis, Retrieval and Transfer System (DART)<sup>2</sup>. It starts with 2009 because MD&A disclosure in annual report has been regulated since 2009<sup>3</sup>. Annual reports are downloaded from DART and then the MD&A is extracted in each filing.

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<sup>2</sup> DART is an electronic disclosure system that allows companies to submit disclosures online, where it becomes immediately available to investors and other users (DART website; About DART)

<sup>3</sup> Even though the MD&A disclosure had been required in the supplementary documents from 1997 to 2008, contents in MD&A were not sufficient and reliable due to lack of guidelines and supervision of the FSS. Compared to those disclosures until 2008, more sufficient and reliable information has been included in MD&A since 2009 because Korean disclosure rules mandate its disclosure in annual reports since 2009. Additionally, since 2009, the FSS has released guidelines and increased the supervision about the quality of MD&A disclosure. Since then, quality of MD&A disclosure has been improved. So, this paper uses only 2009-2010 period for MD&A samples.

Before further processing for information mining, tables are removed from the MD&A as in Ahn et al. (2005) and Li (2008). Nonfinancial information in MD&A is extracted by the computer programming tool that uses computational linguistic program<sup>4</sup>.

**[Inset Table 1 about here]**

This paper then merges MD&A data with financial statement data from KisValue and stock return from DataGuide and excludes observations (1) of financial service firm, (2) whose data in KisValue and DataGuide is missing, and (3) that changed the month of fiscal year ending during the year. This yields samples of 813 firm-years from 2009 to 2010. Table1 presents sample selection procedure.

## ***4.2 Variables***

### ***Definition and Measurement of Dependent Variable***

Using the method in Frazier et al. (1984) and Ahn et al. (2005), the frequency of nonfinancial words is used to measure the nonfinancial

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<sup>4</sup> I make computer programming software based on the open source of computational linguistic program made by prof. Hyo.Pil. Shin. Nonfinancial information mining process from MD&A is described in the section of 'Definition and Measurement of Dependent Variable'

disclosure level. It is ideal to read all contents and then classify those contents into nonfinancial and financial information categories for measuring the nonfinancial disclosure level. However, it is much more costly compared to other methods. Thus, this paper measures nonfinancial information level in MD&A as follows: (1) Using the computer software program<sup>5</sup>, all words in MD&A are extracted. (2) Obtained words are filtered, based on the minimum frequency, 20. (3) Those words are classified into 6 categories based on BSC framework. (4) The frequency of words in nonfinancial categories is used for proxy of nonfinancial information disclosure level. The overall process of measuring nonfinancial words is described in Panel B of Figure2.

**[Inset Figure 2 about here]**

First of all, for obtaining words, this paper uses my own built software program based on the open source of computational linguistic program, which makes it possible to extract noun from sentences<sup>6</sup>. Most of software

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<sup>5</sup> I make computer program, using the open source of computational linguistic program made by prof. Hyo.Pil. Shin. Prof. Shin's program is made for Korean content analysis.

<sup>6</sup> This software program makes it possible to decompose sentence into its morpheme. Take '무형자산은 비재무정보 공시량에 영향을 끼친다.' for example. It decomposes this sentence into "무형자산, 은, 비재무정보, 공시량, 에, 영향, 을, 끼치, ㄴ다." This paper uses

packages of the Pearl language, which has been used for contents analysis, usually focus on the analysis of contents written in English. Even worse, Korean is classified as an agglutinative language unlike English and so it is difficult to even modify existing Pearl language programs for the Korean content analysis<sup>7</sup>. Thus, it is necessary to develop our own software program, considering the characteristics of Korean. And only noun is a target for analysis in this paper because affix such as postpositional particle or ending particle does not contain meaning<sup>8</sup>. Total number of extracted noun is 28,169 after running noun-extracting program. Then, based on the minimum frequency (20) of the words, those selected words are filtered<sup>9</sup>. This minimum frequency rule is adopted, following Ahn et al. (2005). Finally, 1,455 words are selected.

Ahn et al. (2005) counts the frequency of finally selected words in each firm-year MD&A and then use the frequency as proxy for voluntary disclosure level in the Overview of Operations. The purpose of this study,

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“무형자산, 비재무정보, 공시항, 영향” for nonfinancial information analysis. Through this tool, noun is extracted from sentences.

<sup>7</sup> Korean is categorized into an agglutinative language in which noun is followed by affix (접사接辭 in Korean) such as postpositional (조사助詞 in Korean, such as -는, -에, -을) or ending particles (어미語尾 in Korean, such as -이다, -쓰다) without space.

<sup>8</sup> Affix (접사接辭 in Korean) is a kind of functional word in Korean. So, meaning contained in those words is much less than meaning contained in noun

<sup>9</sup> Underlying assumption of the minimum frequency rule is that words with more frequency are more important than those with less frequency. For reducing cost of information mining, it is adopted.

however, is examining the nonfinancial information disclosure not overall voluntary disclosure. Accordingly, it is necessary to categorize selected words into nonfinancial and financial information prior to the words-counting process. Based on the Balanced Scorecard framework, the selected final words are divided into 6 categories; Finance, Learning and Growth, Customer, Internal Business Process, Environment and Strategy. MD&A is supposed to provide overall information about firms in all aspects because its purpose is to improve the investor's understanding about firms (Cole and Jones 2005). Thus, MD&A significantly describes strategies that lead firms' business and environment factors that firms are facing for doing business. Consequently, the BSC framework is limited in categorizing MD&A information appropriately and so the last two categories, Environment and Strategy, are added to the original BSC framework. The Environment is defined as factors that firms cannot control, including business conditions. The Strategy is defined as firms' business plan. The definition of the other four categories is the same as those in the BSC. Finally, this paper define the nonfinancial and financial information disclosure level as

$$\ln\_T = \log (F \text{ of Total Words}),$$

$$\ln\_F = \log (F \text{ of Words in Finance categories}),$$

$$\ln\_NF = \log (F \text{ of Words in the other 5 categories}),$$

$NF = F \text{ of Words in Nonfinancial category} / F \text{ of Words in Financial category}$ ,

where F is the frequency. The natural logarithm rather than the raw number of words is used because of the skewness in the number of words across firms and some extreme values.

### ***Definition and Measurement of Independent Variable***

Table 1 summarized the definition and measurement of all the variables used in this paper. Two measures are used as a proxy for intangible assets. As an accounting approach, this paper measures intangible asset as the ratio of R&D and advertising expenditure divided by total asset (INTANG)<sup>10</sup>. R&D expenditure and advertising expenditure have been used in the analysis of intangible assets because R&D and advertisement has been considered to create intangible assets such as technology or brand. Following prior studies, this paper adopt proxy of R&D and advertising expenditure. As an economic approach, market to book ratio (MTB) is also used for proxy of intangible assets. Consistent with prior studies, this paper measures the proprietary cost using the Herfindahl-Hirschman Index of

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<sup>10</sup> Amortization cost of capitalized R&D expenditure is included to calculate this proxy for intangible assets.

firms' market share (HHI)<sup>11</sup>. This paper uses two proxies for ownership structure; largest shareholders (LOWN) and minority shareholders (MOWN)<sup>12</sup>. All proxies for ownership structure are measured only in common stocks. Natural logarithm of total assets is used for Firm size (SIZE)<sup>13</sup>. This paper includes several control variables that could economically influence nonfinancial information disclosure level and previous studies have shown to explain the determinants of corporate disclosure. This paper include firm performance, using return on asset (ROA) and stock returns (RET) to capture the effect of firm profitability on the level of nonfinancial information. For controlling future performance uncertainty, this paper uses two measures; stock return volatility (RV) and earning volatility (EARNV). Leverage is measured as the book value of liabilities divided by the book value of assets (LEV). To control external financing effect, debt financing and equity financing proxies are included (FIN).

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<sup>11</sup> For calculating the HHI, this paper uses two digit Korean SIC. Higher HHI means lower industry competition and lower industry competition means lower proprietary cost. So, proprietary cost is negatively related with HHI. So, this paper predicts negative association between HHI and level of nonfinancial information.

<sup>12</sup> Ownership data is gained from TS2000 database.

<sup>13</sup> This paper also uses natural logarithm of sum of market value of equity and book value of debt instead of that of total assets. The regression result is similar with that of total assts.

[Inset Table 1 about here]

### 4.3 Empirical Models and Descriptive Statistics

This paper estimates the following cross-sectional regression model for determinants of nonfinancial information disclosure in MD&A. All firm-level continuous independent variables except for Herfindahl-Hirschman Index (HHI) and firm size (SIZE) are winsorized at the 1st and 99th percentiles to reduce the effect of outliers<sup>14</sup>. The definition and measurement of variables are presented in Table1. Industry dummies are included to control the industry effect and year dummies to control the year effect.

$$\begin{aligned} NF_{i,t} = & \alpha_0 + \alpha_1 INTANG_{i,t} + \alpha_2 MTB_{i,t} + \alpha_3 HHI_{i,t} + \alpha_4 LOWN_{i,t} \\ & + \alpha_5 MOWN_{i,t} + \alpha_6 SIZE_{i,t} + \alpha_7 RV_{i,t} + \alpha_8 EARNV_{i,t} \\ & + \alpha_9 ROA_{i,t} + \alpha_{10} RET_{i,t} + \alpha_{11} LEV_{i,t} + \alpha_{12} FIN_{i,t} \\ & + \sum_{j=1}^{30} \beta_j IND_{j,i,t} + \sum_{t=1}^2 \gamma_t YEAR_{j,i,t} + \varepsilon_{i,t} \end{aligned}$$

Table2 reports descriptive statistics of the full sample for the variables used in this study. Mean value of natural logarithm of financial words (3.884)

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<sup>14</sup> Since the Herfindahl-Hirschman Index is industry specific variable, this paper exclude HHI index from winsorization. This paper does not winsorize binary independent. This paper also excludes firm size from winsorization because the disclosure of extreme sized firms is also worth examination.

is slightly larger than that of nonfinancial words (3.671). This descriptive statistics shows on average MD&A contains more financial information than nonfinancial information. This reminds us that all information in narrative style disclosure, MD&A, is not nonfinancial information. This suggests that information should be categorized into financial and nonfinancial information. Moreover, the variation of nonfinancial words included in MD&A is much larger than that of financial words (Standard deviation of nonfinancial words 1.132 is almost twice as large as that of financial words 0.667). This result indicates that the amount of nonfinancial information in MD&A is more discretionary than financial information. On average, firms invest 1.1 percent of total asset on R&D and Brand. Total number of observations used in the analysis is 813.

**[Inset Table 2 about here]**

Table3 documents Pearson-Spearman correlation coefficient among all regression variables used in this analysis. The lower (upper) triangle shows Pearson (Spearman) correlation coefficient. Correlations significantly different from zero at p-values less than 10% are in bold. Intangible asset (INTANG) is significantly positively correlated with the ratio of

nonfinancial information level to total information level (Pearson coefficient 0.10) and thus support H1. Another proxy for intangible assets, MTB, also shows significantly positive correlation with NF (Pearson coefficient 0.11). It means that even after controlling total disclosure level in MD&A, intangible asset is significantly associated with nonfinancial disclosure level in MD&A. HHI, which is proxy for proprietary cost and specifically industry competition, is not significantly correlated with NF. Proxies for ownership structure are not significantly related to nonfinancial information disclosure (NF) while firm size is positively related to it (Pearson coefficient 0.31). Earnings volatility (EARNV) and return volatility (RV), which are proxies for future performance uncertainty, are negatively associated with nonfinancial information disclosure (Pearson coefficient -0.17, -0.19), inconsistent with hypothesis 4. Additionally, the results between independent variables do not document high correlations that might cause multicollinearity problems.

**[Inset Table 3 about here]**

## **5. Empirical Results**

This paper investigates which factors determine the nonfinancial

disclosure level in MD&A. All regressions are estimated with clustered errors at the firm level to control for cross-sectional dependence.

**[Inset Table 4 about here]**

Table 4 documents the results of estimating determinants of absolute level of total disclosure, financial information disclosure and nonfinancial information disclosure in MD&A, respectively. The  $R^2$  for financial information and nonfinancial information are 16.9% and 26.0%, respectively. The results show that intangible assets (INTANG) are positively associated with total disclosure level and nonfinancial disclosure level while it is insignificantly related to financial disclosure level. These results indicate that nonfinancial information disclosure is more sensitive to intangible assets than financial information. It means that the significant positive relation between total disclosure level in MD&A and intangible assets is driven by nonfinancial information not financial information. On the contrary, market-to-book ratio (MTB) as an economic approach proxy for intangible assets does not show significance. Inconsistent with H2, industry competition is negatively associated with the nonfinancial disclosure level and total disclosure level whereas the result of financial

information disclosure does not show significance. This indicates that firms in more competitive industry are likely to disclose more nonfinancial information. It implies that nonfinancial information does not deliver critical information that could increase proprietary cost. Otherwise, it implies that in a situation of a trade-off between the benefits of reducing information asymmetry and the costs of aiding rivals, the motivation to reduce information asymmetry works more efficiently. All results of ownership structures do not show significance. The signs of those variables on nonfinancial information, nevertheless, are the same as predicted sign. It means that the largest shareholders do not prefer nonfinancial disclosure and minority shareholders prefer it. The coefficients of firm size (SIZE) significantly show the positive relation with all dependent variables; total disclosure level, financial information disclosure level, nonfinancial information disclosure level. Estimated coefficient of nonfinancial information disclosure level is as twice as that of financial information disclosure level. It implies that nonfinancial information disclosure is more sensitive than financial information.

As a control variable, the coefficient of earnings volatility on nonfinancial disclosure level (-2.270) is negative. It is the same as on financial information disclosure level (-1.399). These results reveal that

firms with higher earnings volatility disclose less nonfinancial information. The underlying assumption of positive relation between performance volatility and disclosure level is that performance volatility captures information to which managers have prior access. Alternatively, if performance variability does not capture information to which managers have prior accesses; performance variability could be negatively correlated with information asymmetry and, accordingly, negatively correlated with disclosure. So, the negative coefficient of earnings volatility on nonfinancial information level (-2.270) empirically supports that performance volatility does not capture the nonfinancial information to which managers have prior access. Relation between other control variables and nonfinancial information disclosure level is insignificant.

**[Inset Table 5 about here]**

Table 5 shows the regression result of relative nonfinancial disclosure to total disclosure. This implies that this regression estimates the result of nonfinancial disclosure level determinants after controlling the level of total disclosure. So, this regression model is more sophisticated. Thus, this table presents the more efficient setting for finding evidence of hypotheses

because the total disclosure is controlled in this regression model. Consistent with H1 and the result of table 4, intangible assets (INTANG) are positively related to nonfinancial information disclosure level at 10 percent significant level (0.166) even after controlling total disclosure level. The result of economic proxy for intangible assets (MTB) does not show significance, inconsistent with the result of disclosure level in table 4. The sign of the coefficient, however, is positive as that of prediction. Thus, nonfinancial information disclosure could be a good vehicle to reduce information asymmetry between firms with more intangible assets and the market. The coefficient estimate of HHI is insignificantly related to nonfinancial information disclosure, consistent with the result of Table 4. The results of ownership structures do not show any significance. It implies that shareholders are indifferent to nonfinancial information in MD&A in Korea. Finally, consistent with H4, coefficient of size shows positive result at 1 percent significance.

The coefficient of earnings volatility (-0.260) and the coefficient of return volatility (-0.178) are insignificant. As mentioned above, in predicting the positive relation between performance volatility and nonfinancial disclosure level, there is an assumption that performance volatility captures information to which management has prior access.

Based on that assumption, information asymmetry increases in performance volatility because managers already know firms-related information that the market cannot access to. Alternatively, if performance variability captures information to which management does not have prior accesses, performance variability might be negatively correlated with information asymmetry and, consequently, negatively correlated with disclosure. This result in table 5 indicates that performance volatility does not capture the nonfinancial information to which management has prior access.

## **6. Conclusion**

This paper examines the factors determining nonfinancial information disclosure in MD&A. There are two reasons MD&A disclosure is selected as a sample for nonfinancial information disclosure. First, its unique setting, which the contents and level of disclosure in MD&A are discretionary while disclosure and its timing are regulated, enables this paper to study the determinants of nonfinancial information, controlling firms' strategic behaviors about disclosure and its timing. Second, compared to other single nonfinancial indexes, contents in MD&A are more sufficient and include overall information about firms. Thus, MD&A facilitates this paper to study more generalized analysis on nonfinancial information disclosure. All

contents in MD&A, however, are not nonfinancial information. Narrative style disclosure does not mean nonfinancial information disclosure. Consequently, MD&A is categorized into nonfinancial and financial information by using computer programming tool.

This paper finds that firms with more intangible assets, bigger size and higher firm performances disclose more nonfinancial information. The results of proprietary cost, ownership structure, performance volatility, leverage and external financing do not show any significance.

This study contributes to literature in the two ways. First, in Korea, this paper is the first study that examines the determinants of nonfinancial information in MD&A. Thus far, the Overview of Operation has been mainly used as a sample of the study (Ahn and Lee 2005; Ahn et al. 2005; Choi 2004). This paper use MD&A contents as samples and so can be a starting point of research investigating MD&A contents. Second, this paper is the first contents analysis study of nonfinancial disclosure in Korean. Because it cost much to conduct content analysis, most of papers studying nonfinancial disclosure limit their samples to some nonfinancial indexes, not using the whole contents of nonfinancial disclosure. So, this paper provides more generalized analysis than other papers by analyzing the whole contents of nonfinancial disclosure not just focusing on some

nonfinancial indexes.

This paper includes several limitations. First, it is likely that reliability of MD&A contents in Korea is less than in other nonfinancial measures. While MD&A disclosure system is already settled down in leading countries, it is in beginning stage in Korea. So, the contents of MD&A are less reliable and not sufficient, compared to those of other leading countries. Continuous supervision and sufficient guidelines are necessary for improving reliability of MD&A contents. Second, classification process of nonfinancial information is based on author's judgment. This paper tries to build BSC-based categorizing framework that can suggest the objective guidelines for data classification. Data validity, nevertheless, is still questionable. More advanced computer program need to be developed. In particular, existing PEAR program, which is widely used for contents analysis written in English, cannot be used for Korean contents analysis. So, effort to develop the advanced programs is necessary. Third, this paper does not focus on the managers' strategic disclosure behavior but general economic incentives. Therefore, future studies have an opportunity to investigate the strategic disclosure behavior on nonfinancial information in MD&A.

## Reference

- Ahn, T. S., and J. H. Lee. 2005. Determinants of Voluntary Disclosures in Overview of Operations - Korean Evidence. *Korean Accounting Study* Vol.30 (2).
- Ahn, T. S., Y. G. Lee, and J. H. Lee. 2005. Voluntary Disclosure of Soft Information in Annual Reports: Empirical Evidence on the Overview of Operations. *Korean Accounting Journal* Vol.14 (2 ).
- Amir, E., and B. Lev. 1996. Value-relevance of nonfinancial information: The wireless communications industry. *Journal of accounting and economics* 22 (1):3-30.
- Amir, E., B. Lev, and T. Sougiannis. 2003. Do financial analysts get intangibles? *European Accounting Review* 12 (4):635-659.
- Baiman, S., and T. Baldenius. 2009. Non-financial performance measures as coordination devices. *The accounting review* 84 (2):299-330.
- Banker, R. D., G. Potter, and D. Srinivasan. 2000. An empirical investigation of an incentive plan that includes nonfinancial performance measures. *The accounting review*:65-92.
- Barron, O. E., D. Byard, C. Kile, and E. J. Riedl. 2002. High-Technology Intangibles and Analysts' Forecasts. *Journal of Accounting Research* 40 (2):289-312.
- Barron, O. E., C. O. Kile, and T. B. O'KEEFE. 1999. MD&A Quality as Measured by the SEC and Analysts' Earnings Forecasts\*. *Contemporary Accounting Research* 16 (1):75-109.
- Barth, M. E., and R. Kasznik. 1999. Share repurchases and intangible assets. *Journal of accounting and economics* 28 (2):211-241.
- Barth, M. E., R. Kasznik, and M. F. McNichols. 2001. Analyst coverage and intangible assets. *Journal of Accounting Research* 39 (1):1-34.
- Behn, B., and R. Riley. 1999. Using nonfinancial information to predict financial performance: The case of the US airline industry. *Journal of accounting, auditing and finance*.
- Beyer, A., D. A. Cohen, T. Z. Lys, and B. R. Walther. 2010. The financial reporting environment: Review of the recent literature. *Journal of accounting and economics* 50 (2):296-343.
- Brown, S., K. Lo, and T. Lys. 1999. Use of R-squared in accounting research: measuring changes in value relevance over the last four decades. *Journal of accounting and economics* 28 (2):83-115.
- Callen, J. L., I. Gaviious, and D. Segal. 2010. The complementary relationship between financial and non-financial information in the biotechnology industry and the degree of investor sophistication.

- Journal of Contemporary Accounting & Economics* 6 (2):61-76.
- Campbell, D. 2008. Nonfinancial Performance Measures and Promotion-Based Incentives. *Journal of Accounting Research* 46 (2):297-332.
- Choi, Y. S. 2004. The Determinants of the Level of MD&A in An Annual Operating Report. *Thesis for master's degree*.
- Clarkson, P. M., J. L. Kao, and G. D. Richardson. 1999. Evidence That Management Discussion and Analysis (MD&A) is a Part of a Firm's Overall Disclosure Package\*. *Contemporary Accounting Research* 16 (1):111-134.
- Cole, C. J., and C. L. Jones. 2005. Management discussion and analysis: A review and implications for future research. *Journal of Accounting Literature* 24:135.
- Davila, A., and M. Venkatachalam. 2004. The relevance of non-financial performance measures for CEO compensation: Evidence from the airline industry. *Review of Accounting Studies* 9 (4):443-464.
- Deng, Z., B. Lev, and F. Narin. 1999. Science and technology as predictors of stock performance. *Financial Analysts Journal*:20-32.
- Dikolli, S. S., W. R. Kinney Jr, and K. L. Sedatole. 2007. Measuring Customer Relationship Value: The Role of Switching Cost\*. *Contemporary Accounting Research* 24 (1):93-132.
- Dye, R. A. 1985. Disclosure of nonproprietary information. *Journal of Accounting Research*:123-145.
- . 2001. An evaluation of “essays on disclosure” and the disclosure literature in accounting. *Journal of accounting and economics* 32 (1):181-235.
- Frazier, K. B., R. W. Ingram, and B. M. Tennyson. 1984. A methodology for the analysis of narrative accounting disclosures. *Journal of Accounting Research*:318-331.
- Graham, C. M., M. V. Cannice, and T. L. Sayre. 2002. The value relevance of financial and non financial information for Internet companies. *Thunderbird International Business Review* 44 (1):47-70.
- Graham, J. R., C. R. Harvey, and S. Rajgopal. 2005. The economic implications of corporate financial reporting. *Journal of accounting and economics* 40 (1):3-73.
- Gu, F., and W. Wang. 2005. Intangible assets, information complexity, and analysts' earnings forecasts. *Journal of Business Finance & Accounting* 32 (9-10):1673-1702.
- Guo, R. E. J. I. N., B. Lev, and N. Zhou. 2004. Competitive costs of disclosure by biotech IPOs. *Journal of Accounting Research* 42

- (2):319-355.
- Hüfner, B. 2007. The SEC's MD&A: Does it Meet the Informational Demands of Investors?-A Conceptual Evaluation. *A Conceptual Evaluation. Schmalenbach Business Review* 59.
- Healy, P. M., and K. G. Palepu. 2001. Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of accounting and economics* 31 (1):405-440.
- Hirschey, M., V. J. Richardson, and S. Scholz. 2001. Value relevance of nonfinancial information: The case of patent data. *Review of Quantitative Finance and Accounting* 17 (3):223-235.
- Ittner, C. D., and D. F. Larcker. 1998. Are nonfinancial measures leading indicators of financial performance? An analysis of customer satisfaction. *Journal of Accounting Research* 36:1-35.
- Ittner, C. D., D. F. Larcker, and M. V. Rajan. 1997. The choice of performance measures in annual bonus contracts. *The accounting review*:231-255.
- Ittner, C. D., D. F. Larcker, and T. Randall. 2003. Performance implications of strategic performance measurement in financial services firms. *Accounting, Organizations and Society* 28 (7-8):715-741.
- Jones, D. A. 2007. Voluntary Disclosure in R&D-Intensive Industries\*. *Contemporary Accounting Research* 24 (2):489-522.
- Kaplan, R. S., and D. P. Norton. 1992. The Balanced Scorecard-Measures That Drive Performance. *Harvard business review*.
- . 1996. Using the balanced scorecard as a strategic management system. *Harvard business review* 74 (1):75-85.
- Lang, M., and R. Lundholm. 1993. Cross-sectional determinants of analyst ratings of corporate disclosures. *Journal of Accounting Research*:246-271.
- Lang, M. H., and R. J. Lundholm. 1996. Corporate disclosure policy and analyst behavior. *Accounting Review*:467-492.
- Lev, B. 2001. *Intangibles: Management, measurement, and reporting*: Brookings Inst Press.
- Lev, B., and P. Zarowin. 1999. The boundaries of financial reporting and how to extend them. *Journal of Accounting Research* 37 (2):353-385.
- Li, F. 2008. Annual report readability, current earnings, and earnings persistence. *Journal of accounting and economics* 45 (2):221-247.
- Nichols, D. C. 2010. Proprietary Costs and Other Determinants of Nonfinancial Disclosures. *working paper*.
- Orens, R., and N. Lybaert. 2007. Does the financial analysts' usage of non-

- financial information influence the analysts' forecast accuracy? Some evidence from the Belgian sell-side financial analyst. *The International Journal of Accounting* 42 (3):237-271.
- . 2010. Determinants of sell-side financial analysts' use of non-financial information. *Accounting and Business Research* 40 (1):39-53.
- Rajgopal, S., M. Venkatachalam, and S. Kotha. 2003. The value relevance of network advantages: The case of e-commerce firms. *Journal of Accounting Research* 41 (1):135-162.
- Riley, R. A., T. A. Pearson, and G. Trompeter. 2003. The value relevance of non-financial performance variables and accounting information: the case of the airline industry. *Journal of Accounting and Public Policy* 22 (3):231-254.
- Said, A. A., H. R. HassabElnaby, and B. Wier. 2003. An empirical investigation of the performance consequences of nonfinancial measures. *Journal of Management Accounting Research* 15 (1):193-223.
- Skinner, D. J. 1994. Why firms voluntarily disclose bad news. *Journal of Accounting Research*:38-60.
- Trueman, B., M. H. F. Wong, and X. J. Zhang. 2000. The eyeballs have it: Searching for the value in Internet stocks. *Journal of Accounting Research*:137-162.
- . 2001. Back to basics: Forecasting the revenues of Internet firms. *Review of Accounting Studies* 6 (2):305-329.
- Verrecchia, R. E. 1983. Discretionary disclosure. *Journal of accounting and economics* 5:179-194.
- . 2001. Essays on disclosure. *Journal of accounting and economics* 32 (1):97-180.
- Wyatt, A. 2008. What financial and non-financial information on intangibles is value-relevant? A review of the evidence. *Accounting and Business Research* 38 (3):217-256.
- Xu, B., M. L. Magnan, and P. E. André. 2007. The Stock Market Valuation of R&D Information in Biotech Firms\*. *Contemporary Accounting Research* 24 (4):1291-1318.

**Figure1**

<b>MD&amp;A Disclosure Regulations in leading countries and Korea</b>					
	US	UK	Australia	Japan	Korea
Annual Report	O	O	O	O	O
Registration Statement	O	O	O	O	X
Semi-Annual Report	O	O	O	O	X
Quarterly Report	O	X	X	O	X

*Source: Press releases of FSS on 20<sup>th</sup> of March, 2008; Guidance of adopting MD&A regulation.*

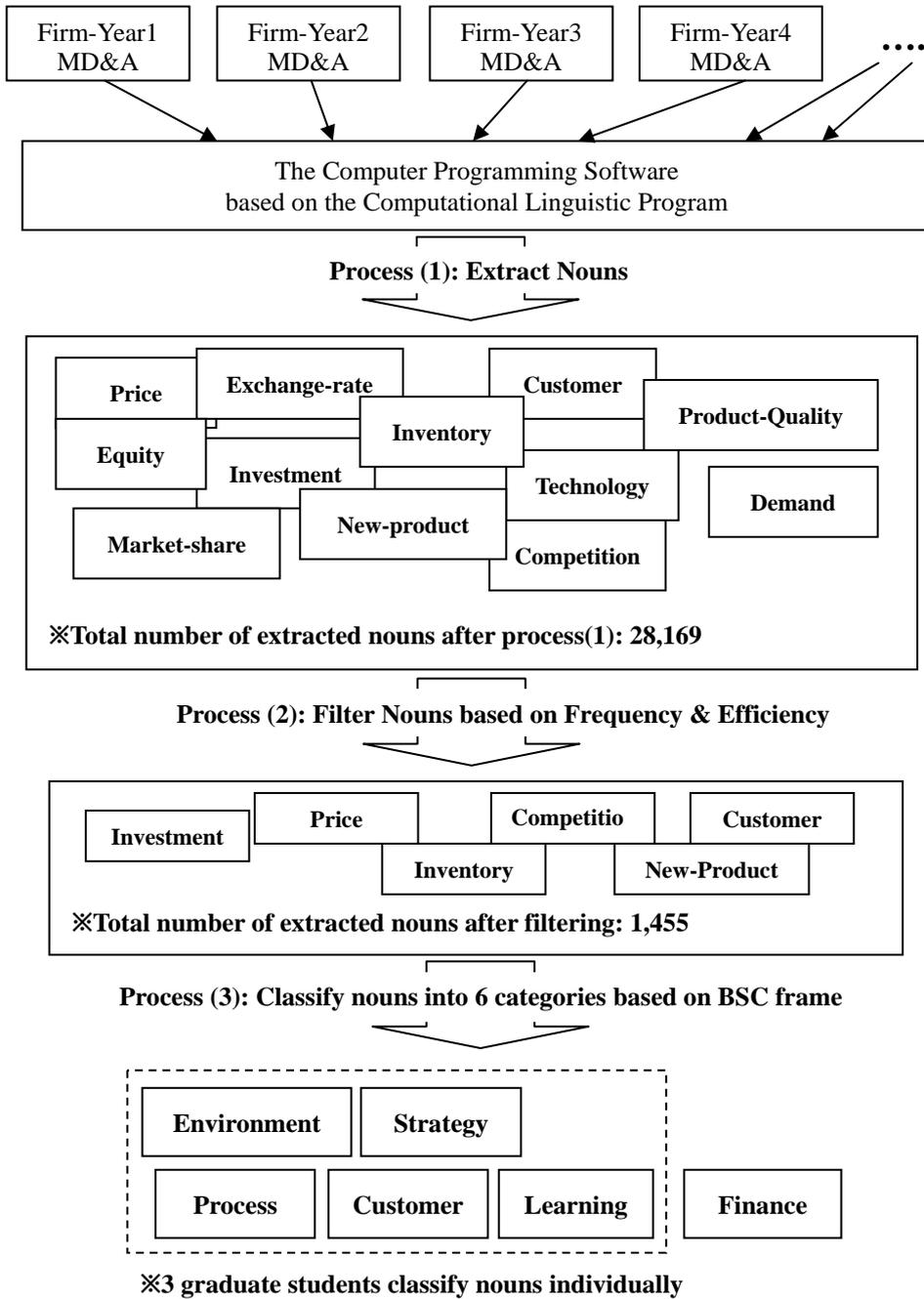
**Figure2**

**Nouns Extracting Process**

***Panel A: Nouns Extracting Process***

	Obs.
Total Number of Nouns extracted from MD&A	28,169
The Number of Nouns below Frequency 30	(25,188)
The Number of Nouns Over Frequency 30	2,981
The Number of Nouns Eliminated for Efficient Frequency Counting	(1,526)
	<hr/> 1,455

**Panel B: Nouns Extracting and Classifying Process**



**Table1****Definition and Measurement of Variables**

Variable	Pred.	Definition	Measurement
<i>Dependent variable</i>			
<i>NF</i>			The ratio of the frequency of nonfinancial words to the frequency of total words
<i>Independent variable</i>			
<i>INTANG</i>	+	Intangible Asset by R&D and ADV	The sum of R&D and Advertising expenditure divided by the total asset at the end of the fiscal year t
<i>MTB</i>	+	Market to Book Ratio	The market value of equity divided by the book value of equity at the end of the fiscal year t
<i>HHI</i>	+	Herfindahl-Hirschman Index	The sum of squared market share of firms competing in an industry. Industry membership is classified by the two-digit Korean SIC codes
<i>LOWN</i>	-	Largest Shareholders	The proportion of common shares held by the largest shareholder and her related parties at the end of the fiscal year t
<i>MOWN</i>	+	Minority Shareholders	The proportion of common shares held by the minority shareholders at the end of the fiscal year t
<i>SIZE</i>	+	Firm Size	The natural logarithm of the firm's total assets at the end of the fiscal year t
<i>ROA</i>	?	Return on Assets	The firm's return on assets in the fiscal year t
<i>RET</i>	?	Stock Return	The monthly compounded annual stock return with
<i>RV</i>	+	Return Volatility	The standard deviation of monthly stock returns over the five-year period prior to the fiscal year t

<i>EARNV</i>	+	Earning Volatility	The standard deviation of annual earnings over the five-year period prior to the fiscal year t
<i>LEV</i>	?	Leverage	The firm's debt-equity ratio at the end of the fiscal year t
<i>FIN</i>	?	External Financing	A (0,1) variable with a value of 1 for firms that raise debt or equity financing during the fiscal year t+1 and 0 otherwise

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**Table2****Descriptive Statistics for Variables Used in Regression**

	Obs.	Mean	S.D.	Min.	1Q	Median	3Q	Max.
<i>ln_T</i>	813	4.656	0.794	1.386	4.19	4.663	5.13	7.138
<i>ln_F</i>	813	3.884	0.667	1.386	3.497	3.892	4.29	6.133
<i>ln_NF</i>	813	3.671	1.132	0	3.091	3.807	4.344	6.631
<i>NF</i>	813	0.452	0.164	0	0.341	0.464	0.563	0.886
<i>INTANG</i>	813	0.011	0.021	0	0	0.003	0.012	0.109
<i>MTB</i>	813	0.987	0.794	0.173	0.493	0.737	1.202	4.483
<i>HHI</i>	813	0.188	0.133	0.042	0.081	0.155	0.252	0.672
<i>LOWN</i>	813	0.419	0.165	0.081	0.302	0.426	0.52	0.822
<i>MOWN</i>	813	0.358	0.188	0	0.22	0.352	0.485	0.831
<i>SIZE</i>	813	26.66	1.531	22.76	25.61	26.41	27.55	32.3
<i>EARNV</i>	813	0.05	0.047	0.005	0.02	0.037	0.063	0.264
<i>RV</i>	813	0.156	0.061	0.067	0.117	0.147	0.182	0.437
<i>ROA</i>	813	0.035	0.084	-0.38	0.01	0.04	0.078	0.204
<i>RET</i>	813	0.149	0.495	-0.586	-0.159	0.038	0.289	2.163
<i>LEV</i>	813	0.436	0.186	0.074	0.298	0.442	0.571	0.856
<i>FIN</i>	813	0.517	0.5	0	0	1	1	1

*Variables definitions are presented in Table1.*

Table3

**Correlation Among Regression Variables. Pearson (Spearman) Correlations in Lower (Upper) Triangle**

	<i>ln_T</i>	<i>ln_N</i>	<i>NF</i>	<i>INTA</i>	<i>MTB</i>	<i>HHI</i>	<i>LOW</i>	<i>MO</i>	<i>SIZE</i>	<i>EAR</i>	<i>RV</i>	<i>ROA</i>	<i>RET</i>	<i>LEV</i>	<i>FIN</i>
		<i>F</i>		<i>NG</i>			<i>N</i>	<i>WN</i>		<i>NV</i>					
<i>ln_T</i>	1.00	<b>0.95</b>	<b>0.62</b>	<b>0.15</b>	<b>0.09</b>	<b>0.09</b>	-0.02	-0.05	<b>0.36</b>	<b>-0.15</b>	<b>-0.22</b>	<b>0.15</b>	0.05	0.05	0.00
<i>ln_NF</i>	<b>0.94</b>	1.00	<b>0.81</b>	<b>0.15</b>	<b>0.11</b>	<b>0.07</b>	-0.02	-0.04	<b>0.37</b>	<b>-0.14</b>	<b>-0.23</b>	<b>0.18</b>	<b>0.06</b>	0.04	-0.01
<i>NF</i>	<b>0.63</b>	<b>0.83</b>	1.00	<b>0.11</b>	<b>0.12</b>	0.01	0.00	-0.02	<b>0.29</b>	<b>-0.10</b>	<b>-0.18</b>	<b>0.20</b>	0.04	-0.02	-0.03
<i>INTANG</i>	<b>0.09</b>	<b>0.11</b>	<b>0.10</b>	1.00	<b>0.29</b>	<b>-0.21</b>	-0.04	<b>0.07</b>	<b>0.07</b>	<b>-0.15</b>	<b>-0.13</b>	<b>0.07</b>	0.01	-0.03	0.00
<i>MTB</i>	<b>0.08</b>	<b>0.09</b>	<b>0.11</b>	<b>0.23</b>	1.00	0.04	<b>-0.21</b>	<b>0.29</b>	<b>0.11</b>	<b>0.15</b>	<b>0.17</b>	<b>0.29</b>	<b>-0.09</b>	<b>0.07</b>	-0.03
<i>HHI</i>	<b>0.10</b>	<b>0.07</b>	0.03	<b>-0.15</b>	0.03	1.00	<b>-0.06</b>	0.04	0.02	<b>0.10</b>	0.04	-0.03	0.00	0.01	<b>-0.10</b>
<i>LOWN</i>	-0.01	0.00	0.01	-0.05	<b>-0.22</b>	-0.01	1.00	<b>-0.57</b>	-0.03	-0.06	<b>-0.07</b>	<b>0.11</b>	<b>0.06</b>	<b>-0.16</b>	0.01
<i>MOWN</i>	<b>-0.06</b>	<b>-0.06</b>	-0.05	0.04	<b>0.26</b>	0.00	<b>-0.56</b>	1.00	-0.04	<b>0.17</b>	<b>0.27</b>	-0.05	<b>-0.09</b>	<b>0.17</b>	0.04
<i>SIZE</i>	<b>0.39</b>	<b>0.40</b>	<b>0.31</b>	0.05	<b>0.19</b>	<b>0.08</b>	<b>-0.08</b>	0.01	1.00	<b>-0.20</b>	<b>-0.24</b>	<b>0.16</b>	-0.05	<b>0.18</b>	0.02
<i>EARNV</i>	<b>-0.21</b>	<b>-0.21</b>	<b>-0.17</b>	<b>-0.11</b>	<b>0.17</b>	<b>0.11</b>	<b>-0.11</b>	<b>0.21</b>	<b>-0.22</b>	1.00	<b>0.38</b>	<b>-0.10</b>	<b>-0.06</b>	<b>0.08</b>	0.03
<i>RV</i>	<b>-0.20</b>	<b>-0.21</b>	<b>-0.19</b>	<b>-0.13</b>	<b>0.17</b>	0.03	<b>-0.07</b>	<b>0.25</b>	<b>-0.25</b>	<b>0.36</b>	1.00	<b>-0.28</b>	<b>-0.19</b>	<b>0.31</b>	<b>0.12</b>
<i>ROA</i>	<b>0.14</b>	<b>0.17</b>	<b>0.20</b>	<b>0.10</b>	<b>0.07</b>	0.01	<b>0.19</b>	<b>-0.15</b>	<b>0.19</b>	<b>-0.27</b>	<b>-0.36</b>	1.00	<b>0.15</b>	<b>-0.37</b>	<b>-0.13</b>
<i>RET</i>	0.05	0.06	0.06	-0.03	-0.05	-0.04	0.03	-0.01	<b>-0.06</b>	-0.01	<b>-0.09</b>	<b>0.10</b>	1.00	<b>-0.11</b>	-0.04
<i>LEV</i>	0.02	0.01	-0.04	<b>-0.10</b>	<b>0.14</b>	<b>-0.07</b>	<b>-0.15</b>	<b>0.17</b>	<b>0.18</b>	0.05	<b>0.23</b>	<b>-0.33</b>	-0.05	1.00	<b>0.21</b>
<i>FIN</i>	-0.02	-0.02	-0.02	0.01	-0.02	<b>-0.11</b>	0.02	0.04	0.00	0.04	<b>0.10</b>	<b>-0.13</b>	0.01	<b>0.21</b>	1.00

Correlations significantly different from zero at t-values less than 10% are in bold.

The variables are defined in Table1.

All the continuous variables are winsorized at the top and bottom one percentile. .

**Table4**

**Regression examining Determinants of Disclosure level in MD&A**

Variables	Pred. sign	ln_T		ln_F		ln_NF	
		Coeff.	t-value	Coeff.	t-value	Coeff.	t-value
Intercept		0.497	(0.63)	0.788	(1.23)	-2.226**	(-2.01)
INTANG	+	4.028*	(1.90)	2.774	(1.59)	6.252**	(2.10)
MTB	+	0.014	(0.29)	-0.026	(-0.65)	0.014	(0.22)
HHI	+	-1.383*	(-1.65)	-0.834	(-1.16)	-1.903*	(-1.67)
LOWN	-	-0.036	(-0.15)	-0.051	(-0.25)	-0.023	(-0.07)
MOWN	+	-0.079	(-0.39)	-0.165	(-0.92)	0.007	(0.03)
SIZE	+	0.179***	(6.43)	0.138***	(6.38)	0.248***	(6.19)
EARNV	+	-1.755*	(-1.96)	-1.399*	(-1.93)	-2.270*	(-1.84)
RV	+	-0.783	(-1.26)	-0.369	(-0.65)	-1.188	(-1.36)
ROA	?	0.267	(0.66)	0.046	(0.13)	0.758	(1.37)
RET	?	0.043	(0.85)	0.019	(0.44)	0.077	(1.14)
LEV	?	0.172	(0.73)	0.262	(1.30)	0.223	(0.70)
FIN	?	0.010	(0.17)	0.006	(0.13)	0.016	(0.20)
Year FE		YES		YES		YES	
Industry FE		YES		YES		YES	
Obs.		813		813		813	
Adjusted R <sup>2</sup>		0.224		0.169		0.260	

\*\*\*, \*\*, \* indicate significant at 1 percent, 5percent and 10 percent level, respectively. The numbers in parentheses refer to t-value. This model is controlled for year-fixed effect and industry-fixed effect by adding dummy variables and run with clustered standard errors by firm. Coefficients on industry and year dummies are suppressed

**Table5**

**Regression examining Determinants of  
Nonfinancial information Disclosure**

variables	Predicted sign	Coefficient	NF <i>t-value</i>
Intercept		-0.166	(-1.01)
INTANG	+	0.802*	(1.88)
MTB	+	0.011	(1.21)
HHI	+	-0.294	(-1.29)
LOWN	-	0.011	(0.23)
MOWN	+	0.035	(0.89)
SIZE	+	0.024***	(4.22)
EARNV	+	-0.260	(-1.49)
RV	+	-0.178	(-1.34)
ROA	?	0.174**	(2.09)
RET	?	0.012	(1.23)
LEV	?	-0.002	(-0.06)
FIN	?	0.002	(0.13)
Year FE		YES	
Industry FE		YES	
Obs.		813	
<i>Adjusted R<sup>2</sup></i>		0.203	

\*\*\*, \*\*, \* indicate significant at 1 percent, 5percent and 10 percent level, respectively. The numbers in parentheses refer to *t-value*. This model is controlled for year-fixed effect and industry-fixed effect by adding dummy variables and run with clustered standard errors by firm. Coefficients on industry and year dummies are suppressed

## 요약 (국문 초록)

본 연구는 MD&A (Management Discussion and Analysis)의 비재무정보 공시량 결정요인에 대하여 조사하였다. MD&A의 공시와 공시시점은 법규에 의하여 규정되어있지만, 서술식 공시의 특성상 MD&A의 공시내용과 공시량은 규정될 수 없다. 따라서 MD&A는 기업의 공시와 공시시점에 대한 전략적 행동을 통제하여 순수하게 공시내용과 공시량에 대한 연구를 가능하게 하는 좋은 샘플이다. 실증분석 결과 MD&A에 포함된 비재무 정보 공시수준은 무형자산, 기업의 규모, 기업 수익율과 양의 유의적인 관계를 보였다. 이에 비해 전유정보비용, 최대주주/소액주주 지분율, 기업 성과 변동성, 레버리지, 외부자금조달 여부와는 유의한 결과를 보여주지 못하였다.

**주요어:** 공시, 비재무정보, MD&A, 내용분석, 무형자산

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