

## The web-based financial reporting adopted by the listed companies in the Athens Stock Exchange\*

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**Abstract:** Web-based corporate reporting is the provision of financial information through the Internet. Other companies prefer to disclose their financial information in order to satisfy their investors and to attract new ones while others prefer to provide as less information as possible. The purpose of this paper is twofold: first it provides a critical examination of the main reporting criteria followed by the Greek listed companies, in order to point out how many of these companies present these criteria. Second, it considers how the industry sector of the listed companies or their capitalization category is related with their disclosure degree of financial reporting.

**Key words:** financial reporting; web-based reporting; voluntary disclosure; capitalization category; industry sector

### 1. Introductory comments and the purpose of this study

Corporate reporting is obligatory for all the listed companies in the Athens stock exchange in order to provide to stockholders and potential stockholders useful information about the past, the present and the future of the company (Patten, D. M., 2002). In addition, the progress of the information technology and the evolution of the Internet have considerably affected the way the stock exchange transactions are carried out.

The advantages and disadvantages of the E-stock exchange transactions and the extension to which they pertain to the Greek banks have been the topic of investigation in a recent paper of ours (Anargiridou, D., Papadopoulos, D., 2004). Specifically, the paper points out that the stock dealing through the Internet, without the interference of the brokers, has become a reality. This means that investors could save money and time but are all alone to decide where to invest their money. For successful investments, it becomes obvious, that investors should be able to obtain any potentially useful information in time which will permit them to evaluate a company.

The purpose of the present paper is twofold: First to provide a critical examination of the main qualitative and of some quantitative internet reporting criteria followed by the 302 listed companies in the Athens Stock Exchange (ASE). An analysis of these criteria: how they were chosen, how they were grouped into five categories and how they have participated in the construction of an Internet Reporting Index is given in the second part of the paper. In the third part of this paper authors present and analyze authors' research results. That is how many of the listed companies present in their web-site each one of these criteria that consist the five categories of criteria. This information is presented in the average, the minimum and the maximum percentage form.

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Second, to investigate the extent to which the industry sector to which the listed companies belong or their capitalization category (Medium and Small Capitalization vs. Big Capitalization, Under Supervision, Special Stock Exchange Characteristics and Under Suspension) influences the web disclosure degree of financial reporting they provide. This research efforts to find out this relationship between the industry sector/capitalization category and the web disclosure degree of financial reporting, is taken in the fourth part of this paper. The results give the listed companies with the best and the worst web site disclosures.

The last part of this paper presents authors' conclusions about the web based disclosure degree of financial reporting followed by the Greek listed companies and provides pieces of advice for successful internet corporate reporting. Besides, it points the direction that authors' future research should take with regard to the issues related to the corporate reporting of the Greek listed companies in the A.S.E.

## **2. The framework of the methodology used in this study**

### **2.1 Description of the sample used in this study**

The sample used in this study consists of all the 302 listed companies on the Athens Stock Exchange during April 2008. More specifically, we studied 84 Big Capitalization companies, 154 Medium and Small Capitalization companies, 22 Under Supervision companies, 29 Special Stock Exchange Characteristics companies and 13 Under Suspension companies. As regards to their industry sector the listed companies are classified as follows: Real Estate (10), Insurance (4), Industrial Goods & Services (29), Retail (15), Construction & Materials (33), Media (14), Oil & Gas (3), Personal & Household Goods (46), Basic Resources (17), Travel & Leisure (16), Technology (27), Telecommunications (3), Banks (15), Food & Beverage (32), Health Care (9), Utilities (5), Chemicals (10), Financial Services (14).

The authors' first priority was to find out whether all these companies have a corporate website and if so we were interested in finding whether they disseminate financial information in their sites or if they use their sites exclusively for E-commerce or promotional purposes and provide no investor relations information at all. To locate the corporate web sites we used the official site of the Athens Stock Exchange. In some cases the ASE' site did not provide a link to the company we studied or the link was not right. In these cases we visited the powerful Google search engine. The Microsoft Excel 2002 was the software we used for the statistical analysis.

The result of our research revealed that all the firms possess a web site which is functional and provides at least some pieces of financial information. The rest of this paragraph provides a description of the reporting criteria, used to group the firms in five categories and based on this how we constructed an Internet Reporting Index.

### **2.2 The reporting criteria**

Most effort of previous similar research (Marston, C., Polei, A., 2004; Ettredge, M., Richardson, V. J., Scholz, S., 2002; XIAO J. Z., YANG H., Chow, C. W., 2004) has focused on agency or capital need theories to generate hypotheses explaining why companies decide to provide internet financial reporting. Other researchers examined a number of various factors as potential predictors of internet financial disclosure degree (Bonson E. and Escobar, T., 2006; Spanos Loukas, Mylonakis John., 2006; Allam, A., Lymer, A., 2003; Poon, P. L., LI D., YU Y. T., 2003; Craven, B. M., Marston, C. L., 1999).

The authors decided to measure companies' web disclosure degree to develop a checklist instrument of 57 criteria that expresses its company's disclosure policy. These criteria were chosen based on earlier research on

E-finance reporting (Andreas Andrikopoulos, Nikolaos Diakidis, 2007; Deller, D., Stubenrath, M., Weber, C., 1999; Pirchegger, B., Wagenhofer, A., 1999; Brennan, N., Kelly, S., 2000; Gowthorpe, C., Amat, O., 1999). However, our intention was to include criteria that were not mostly included in previous internet financial disclosure studies.

The first two criteria authors have chosen respond to the industry sector and the capitalization category. The authors grouped the rest 39 criteria into four categories related with the companies' disclosure content, and finally the authors grouped the other 16 criteria into a category related with the presentation formats of the web financial reporting. The following table (Table 1) presents the five categories we have chosen, the number of criteria they include and a quick reference to these criteria.

**Table 1 The criteria per group**

Group	Num.	Criteria
Financial highlights	16	Balance Sheet, Balance Sheet of Previous Years, Cash Flow, Cash Flow of Previous Years, Interim Reports, Annual Report, Annual Report of Previous Years, Interim Results, Current Share Price, Stock Price of Previous Years, Dividend, Dividend of Previous Years, Press Releases, News, Analysts' list, Reports of analysts
Corporate governance information	9	Organizational Chart, Shareholding Structure, Number of Shares, Directors' Information, Executive Officer's Information, Audit Company, Management Board, Resolutions of Shareholders' Meetings, Risks
Investor relations	7	Special Csr Page, Environmental Policy, Energy Savings, Profiles, Training, Donation, Quality and Safety
Corporate social responsibility	7	Name of Investor Relations Officer, Email, Phone, Address, FAQ, Calendar, Newsletter
Presentational items	16	PDF Reporting Files, Reporting in XLS Format, Reporting in XML, English PDF Files, Multilingual Site, Search Engine, Sitemap, Links to Related Sites, Links to Accounting Data, Not Hard to Find, Video, Graphics, Audio, Last Modified, Help Section, Site's Size
Total	55	

In case a company's site presents each one of the characteristics chosen for this study, the authors assigned the value of one otherwise we assigned the value of zero. The authors have to point out that there were cases where the sites had links which were not active. In these cases we assigned the value of zero to the certain characteristic. The authors assign values different than one or zero only in three characteristics: (a) if the site was multilingual, that is the site features a second language, we assigned the value of one, if the site features a third language the authors assigned the value of two and so on (b) if the site provided English PDF files, that is the site presents its financial statements providing English PDF files we assigned the value of one, if the site presents its financial statements providing PDF files written in an other language the authors assigned the value of two and so on and (c) the site's size, if the number of pages on each site was smaller than 50 the authors assigned the value of zero, if the number of pages on each site was between 50 and 200 the authors assigned the value of 1 and otherwise we assigned the value of 2.

### 2.3 The construction of the Internet Reporting Index

To construct an Internet Reporting Index (IRI) the authors have used the financial reporting scores of the 55 out of the 57 attributes (the first two criteria respond to the industry sector and capitalization category and do not take part in the score). The math formula the authors have chosen for calculating the score for stock *i* is the following one:

$$IRI(i) = \sum_{j=1}^{52} C_j + (L - 1) + (P - 1) + S \quad (1)$$

where  $C_j$  equals 1 if the company's website satisfies the *j*-th informational criterion and equals zero otherwise, *L*

is the number of the different languages that the site features, P is the number of the different languages that are used for the PDF files which presents the financial statements and S responds to the size of the site and takes values 0, 1, 2 as the authors have seen above. The authors have noticed a maximum of 6 different languages for the site and a maximum of 3 different languages for the PDF files. Consequently, the authors could say that a firm could score a minimum of 0 points and a maximum of  $[52+(\text{the number of different site's languages} -1)+(\text{the number of different languages used for the PDF files} -1)+2]=52+6+3=61$ .

### 3. A statistical analysis of the number of web based financial reporting criteria followed by the listed company in the Athens Stock Exchange

#### 3.1 General comments

The collection of the data and the construction of the Internet Reporting Index allow us to proceed to the next step of our research: data processing and statistical analysis. We thought that it would be useful for each criterion to calculate the average percentage of all listed companies, in order to find out whether or not the companies present this criterion.

We calculated the average percentage score, for each of the five categories, and we found which criterion achieved the minimum and the maximum percentage score. The rest of this paragraph presents our analysis for the five categories.

#### 3.2 Analysis of the financial highlights category

The first and most important criteria the authors looked for were the financial highlights, which included financial statements, stock prices, dividends, corporate news and so on. The following table (Table 2) presents for each one of the financial highlights criteria the average percentage score achieved by the listed companies and the average, minimum and maximum percentage score of the entire category.

**Table 2 Financial highlights: Average, minimum and maximum percentages**

	Balance sheet	Balance sheet of previous years	Cash flow	Cash flow of previous years	Interim reports	Annual report	Annual report of previous years	Interim results	Current stock price	Stock price of previous years	Dividend	Dividend of previous years	Press releases	News	Analysts' list	Reports of analysts
%	98.3	99.3	98.3	98.7	94.6	97.7	98.3	95.4	70.5	72.5	53.0	56.0	98.7	93.4	16.9	16.2
Average		78.6		Min	16.2		Max	99.3								

The authors can easily point out that the average percentage score of the entire financial highlights category was 78.6%, which was very encouraging. Besides, almost all the listed companies' sites provide to their investors balance sheets of previous years, 99.3%, which was the maximum percentage score.

On the other hand very few companies provide an Analysts' List and Reports of Analysts (16.9 % and 16.2% correspondingly). These two percentages were very disappointing if we compare them with the ones that had been estimated by another research conducted during 2005. More specifically, Spanos and Mylonakis' research had estimated that the sites of the Greek listed companies provided an Analysts' List and Reports of Analysts at a 33.2% and 33.9% correspondingly. The explanation the authors could provide is that our research included 302 sites compared to 121 sites that were assessed by this previous research.

As regards to the current stock price and stock price of previous years criteria the authors' investigation shows that other companies have included separated web pages to provide that kind of financial information, while others provided links to the [www.ase.gr](http://www.ase.gr), [www.naftemporiki.gr](http://www.naftemporiki.gr) or other similar sites. The 70.5 % and 72.5 %

of the listed companies that give information with respect to these criteria includes all of the above cases.

### 3.3 Analysis of the corporate governance category

Next, the authors estimated the score for the Corporate Governance Category, which included references to the Corporate Management and Audit. The following table (Table 3) presents for each one of the Corporate Governance consisting criteria the average percentage score achieved by the listed companies and the average, minimum and maximum percentage score of the entire category.

**Table 3 Corporate governance: Average, minimum and maximum percentages**

Organizational chart	Shareholding structure	Number of shares	Directors' information	Executive's informing	Audit company	Management board	Resolutions of shareholders' meetings	Risks
60.26%	59.27%	58.28%	55.96%	53.97%	43.71%	86.42%	69.44%	10.63%
Average	55.33%		Min	10.63%		Max	86.42%	

The average percentage score of the entire Corporate Governance Category was 55.33%. Besides, most of the listed companies' sites inform their investors about their Management Board, 86.42%, which was the maximum percentage score. The information about the corporate risks is something companies seem to prefer to hide as the percentage score they achieved was 10.63%.

### 3.4 Analysis of the Corporate Social Responsibility category

Another category, which almost all previous research includes, is the Corporate Social Responsibility (CSR) (Zeghal, D., Ahmed, S. A., 1990). This category includes all the companies' activities related with the protection of the environment, the employment conditions, the donations and the quality of the company's products or services. The following table (Table 4) presents for each one of the Corporate Social Responsibility consisting criteria the average percentage score achieved by the listed companies and the average, minimum and maximum percentage score of the entire category.

The results were very disappointing. The average percentage score of the entire category was 17.23%, which means that almost all the listed companies do not care about their Corporate Social Responsibility, or they do not think it is something they should refer in their sites.

The existence of a special CSR page criterion was the one that achieved the maximum average score, 24.5%. We included this criterion in order to find out whether companies disclosure that kind of information or not. The result led us to the conclusion that 1 to 4 companies adopted the Corporate Social Responsibility category criteria.

The minimum score was achieved by the employee training criterion, 12.58%, which means that very few companies care about their employees' training or they just do not prefer to disclosure that kind of information.

**Table 4 Corporate Social Responsibility: Average, minimum and maximum percentages**

Special CSR page	Environmental policy	Energy savings	Employees' profiles	Employee's training	Donation	Quality and safety of products
24.50%	21.19%	13.58%	14.67%	12.58%	20.20%	13.91%
Average	17.23%		Min	12.58%	Max	24.50%

### 3.5 Analysis of the investor relations category

Another important category is the investor relations, which included all the possible ways that an investor can use to communicate with the company. The following table (Table 5) presents for each one of the Investor Relations criteria the average percentage score achieved by the listed companies and the average, minimum and

maximum percentage score of the entire category.

The authors can easily see that the average percentage score of the entire Investor Relations category was 49.72%. Besides, almost all the listed companies' sites provide to their investors the possibility to communicate by sending an E-mail, 94.04%, which was the maximum percentage score. On the other hand very few companies provide a Frequently Asked Question (FAQ) page, 13.00%.

The authors noticed that the deviation between the maximum and minimum percentage score was 81.04% which led us to the conclusion that all those corporations believe that an email address is enough for their communication with their investors. It is remarkable that only 28.48% of the corporate sites included the name of the employee who is responsible for the Investor Relations. The explanation we could provide is that they have not yet understood that investors feel more secure when they know that there is someone they can communicate to find answers to their questions.

**Table 5 Investor relations: Average, minimum and maximum percentages**

Name of investor relations officer	Email	Phone	Address	FAQ	Calendar	Newsletter
28.48%	94.04%	89.70%	87.09%	13.00%	15.56%	20.20%
Average	49.72%		Min	13.00%	Max	94.04%

### 3.6 Analysis of the presentational items category

Finally, the authors looked for the presentational items category, which included all those technological features and formats that were used as presentation formats of the financial contents in the internet. The following table (Table 6) presents for each one of the presentational items criteria the average percentage score achieved by the listed companies and the average, minimum and maximum percentage score of the entire category.

**Table 6 Presentational items: Average, minimum and maximum percentages**

	PDF files	XLS_Formats	XML	English PDF	Multilingual	Search engine	Sitemap	Links to related sites	Links to accounting data	Not hard to find	Video	Graphics	Audio	Last modified	Help section	Site's size
%	99.0	5.0	1.3	64.0	88.4	41.7	48.3	16.6	7.6	92.4	8.0	52.3	4.6	13.6	2.7	95.4
Average	40.05			Min	1.3		Max	99.0								

The average percentage score of the entire presentational items category was 40.05%. Besides, almost all the listed companies' sites provide to their investors financial information in PDF files, 99.0%, which was the maximum percentage score.

In a paper of ours (Anargiridou D., Papadopoulos D., 2005) the authors have investigated the advantages and disadvantages of the financial reporting with the Extensible Business Reporting Language (XBRL). XBRL is a freely available computer language that provides a common Extensible Markup Language standard (XML) to add structure and context to unstructured information, to allow easier categorizing and sorting and to provide more relevant searches (Eileen Colkin, Paul Mcdougall., 2002). XBRL delivers benefits to both public and private companies and other organizations and to both creators and users of corporate business reporting information (Robert Tie, 2000).

This before mentioned research of the authors' has shown that almost none of the Greece listed companies provide to their investors financial information in XML format. Our last research confirms the above conclusion. More specifically, the authors have found out that only 1.3% of the Greece listed companies provide to their

investors financial information in XML format, which was the minimum percentage score. Besides, the deviation between the maximum and minimum percentage score of this category was the greatest one, 97.7%. These facts led us to the conclusion that Greek listed companies have not yet found out the important advantages of XML and they base their reporting in the use of PDF files.

#### 4. How the industry sector and the capitalization category of the listed companies in the A.S.E. influences their disclosure degree of financial reporting

##### 4.1 General comments

The authors' research would be very weak if the authors did not try to find a relation between the authors' first two criteria and the disclosure degree of each company's financial reporting. More specifically, as the authors have mentioned in 2.2 sector, the first two criteria the authors have chosen were: the capitalization category (Big capitalization companies, medium and small capitalization companies, under supervision companies, Special Stock Exchange Characteristics companies and Under Suspension companies) and the industry sector (Real Estate, Insurance, Industrial, Goods & Services, Retail, Construction & Materials, Media, Oil & Gas, Personal & Household Goods, Basic Resources, Travel & Leisure, Technology, Telecommunications, Banks, Food & Beverage, Health Care, Utilities, Chemicals, Financial Services).

To understand how these two criteria influence the disclosure degree of financial reporting we should devote the rest of this paragraph in a quick reference of the listed companies' sites which achieved the best and the worst IRI scores. This will then permit us to support our conclusions (Matherly, C. M., Burton, H. A., 2005).

##### 4.2 The listed companies that achieved the best and the worst IRI scores

The authors have to say that this attempt to present the sites which achieved the best and the worst IRI scores in the authors' research did not aim to congratulate or repudiate companies, but based on these cases, the authors tried to lead to conclusions. The following two tables (Table 7, Table 8) present correspondingly all the listed companies that achieved the ten best and the ten worst IRI scores.

As regards to the minimum score the result was not expected. More specifically, the minimum score (4 points) was achieved by a technology company. A second look at the site of that particular company, INTERTECH, reminded the authors that the company is an agent of a Japanese company, Panasonic, and they suggest the authors to visit this site, which unfortunately neither provides us financial information.

**Table 7 Companies that achieved the best IRI scores**

	Company	Site	IRI
1	Alpha Bank	<a href="http://www.alpha.gr">http://www.alpha.gr</a>	47
2	Public Power Corporation S.A.	<a href="http://www.dei.gr">http://www.dei.gr</a>	46
3	Sidenor	<a href="http://www.sidenor.gr">http://www.sidenor.gr</a>	46
4	National Bank of Greece	<a href="http://www.nbg.gr">http://www.nbg.gr</a>	45
5	OPAP	<a href="http://www.opap.gr">http://www.opap.gr</a>	45
6	Piraeus Bank	<a href="http://www.piraeusbank.gr">http://www.piraeusbank.gr</a>	44
7	Hellenic Petroleum	<a href="http://www.hellenic-petroleum.gr">http://www.hellenic-petroleum.gr</a>	44
8	TITAN	<a href="http://www.titan-cement.com">http://www.titan-cement.com</a>	44
9	HYGEIA S.A.	<a href="http://www.hygeia.gr">http://www.hygeia.gr</a>	43
10	COSMOTE	<a href="http://www.cosmote.gr">http://www.cosmote.gr</a>	43

**Table 8 Companies that achieved the worst IRI scores**

	Company	Site	IRI
1	Intertech S.A.	<a href="http://www.intertech.gr">http://www.intertech.gr</a>	4
2	Hospitality Integrated Technologies	<a href="http://www.hit.com.gr/">http://www.hit.com.gr/</a>	6
3	Ippotour Group of Companies	<a href="http://www.ippotour.gr">http://www.ippotour.gr</a>	10
4	Elviemek	<a href="http://www.elviemek.gr">http://www.elviemek.gr</a>	13
5	Kepenos	<a href="http://www.kepenos.gr">http://www.kepenos.gr</a>	14
6	Ilyda	<a href="http://www.ilyda.com">http://www.ilyda.com</a>	14
7	Audio Visual Enterprises	<a href="http://www.ave.gr">http://www.ave.gr</a>	14
8	Alisida	<a href="http://www.alisida.com">http://www.alisida.com</a>	15
9	Attica media Publications	<a href="http://www.atticamedia.gr">http://www.atticamedia.gr</a>	15
10	President Hotel	<a href="http://www.president.gr">http://www.president.gr</a>	16
	Kordelos Bros S.A.	<a href="http://www.kordelos.gr">http://www.kordelos.gr</a>	16

The results were even unexpected as the second worst score was also achieved by a technology company. The only possible reason the authors could give for this certain case is that the hospitality integrated technologies is an under suspension company.

On the other hand the maximum IRI score was 47 and it was achieved by a bank (Alpha Bank). The authors have to admit that when the authors were choosing the criteria for the IRI score the authors thought that there would be more than one company whose sites would achieve 56 points. Obviously, the authors' hypothesis was very optimistic and demanding.

Besides, the authors can remark that none of the ten sites with the best IRI scores belongs to a technology or financial services company. In addition, the nine sites that achieved the best IRI scores all belongs to big capitalization companies. The tenth one belongs to a company (COSMOTE) which is under suspension until the completion of its acquisition.

#### **4.3 How the industry sector of the companies influences their disclosure degree of financial reporting**

The above two tables led us to new thoughts. When the authors have started this research we believed that there is a relation between the industry sector of the company and its disclosure degree of financial information. More specifically, the authors had considered that the companies of certain sectors, such as the technology or the financial services, have the potentials and the know-how to provide better financial disclosure. However, the above two tables (Table 7, Table 8) have shown that this assumption was not true. That's why the authors have tried to calculate the average IRI score achieved by the companies of each sector. The following table (Table 9) presents the average, the minimum and the maximum IRI scores per A.S.E. industry sector.

The authors point out that the average score that all the ASE listed companies have achieved is 30.30, which is not a positive result as it responds to almost 50% of the potential maximum score.

As regards to the minimum average IRI score per sector the authors could see that it was 23.93 and it was achieved by the Media sector. Anyone would believe that those companies which inform people should also have the potentials to provide to their investors financial information. However, the authors' research has shown that most of these sites focus on the general information of people apart from the financial information.

The second worst average IRI score was 26.04 and it was achieved by the technology sector. The authors' first thought was that the minimum score that achieved by a technology company (4 points) which the authors remarked above was the one to blame for this weak minimum average score. That's why the authors decided to remove this score and to re-calculate the average IRI score for the technology sector. The result was as much

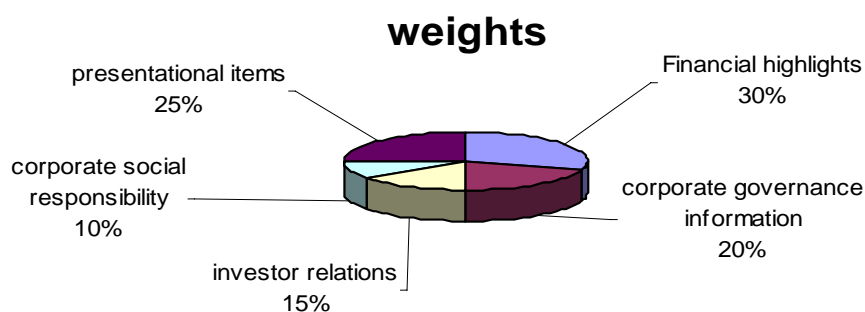
unexpected as the above ones. Precisely, the new average IRI score for the technology sector, which was 26.88, was still weak and greater only to the score of two sectors: financial services and media.

**Table 9 Average, minimum and maximum value of the internet reporting index per sector**

Industry sector	No of companies	Average score	Min score	Max score
Real estate	10	28.00	13.00	37.00
Insurance	4	29.75	23.00	37.00
Industrial goods & services	29	27.21	17.00	37.00
Retail	15	29.80	17.00	39.00
Construction & materials	33	27.42	17.00	44.00
Media	14	<u>23.93</u>	14.00	37.00
Oil & gas	3	39.00	34.00	44.00
Personal & household goods	46	27.39	15.00	39.00
Basic resources	17	33.18	16.00	46.00
Travel & leisure	16	29.25	16.00	45.00
Technology	27	26.04	<u>4.00</u>	37.00
Telecommunications	3	<u>40.67</u>	39.00	43.00
Banks	15	33.53	22.00	<u>47.00</u>
Food & beverage	32	28.56	10.00	40.00
Health care	9	30.22	18.00	43.00
Utilities	5	36.20	26.00	46.00
Chemicals	10	28.90	22.00	41.00
Financial services	14	26.29	22.00	38.00
Total	302	30.30	4.00	47.00

The authors could say that even though the technology companies have the knowledge to build a proper site which will enable investors to easily find financial information, they do not seem willing to provide this kind of information. Besides, the next weaker score of the financial services sector brought us to the conclusion that those companies which are mostly involved with financial reporting avoid to disclose their own financial information.

The maximum average IRI score per sector was 40.67 and it was achieved by the telecommunications sector. Besides, the telecommunications companies' sites achieved the minimum deviation between the maximum and minimum IRI scores ( $43.00 - 39.00 = 4.00$ ). The Oil & Gas Companies follow, as the deviation between their maximum and minimum IRI scores is  $44.00 - 34.00 = 10.00$ . These last two results were expectable as the number of companies of both these industry sectors is only three.



**Fig. 1 Weights of the five categories of criteria**

The authors have to point out that the above results were based on the hypothesis that all the criteria the authors have chosen are equal for the estimation of the disclosure degree. However, in order to estimate the

average IRI scores, many other previous researchers (Marston, C., Polei, A., 2004; Pirchegger, B., Wagenhofer, A., 1999; Lang, M., Lundholm, R., 1993; Chow, C. W., Wong-Boren, A., 1987) had assigned various weights to the groups of criteria. Assigning weights is a really subjective procedure. After much reconsideration, in order to be as objective as possible, the authors decided that the most suitable assigning of weights is the one that is presented in the following pie chart (Fig. 1).

So, for each sector the new average IRI score was estimated as follows:

$$\begin{aligned} \text{Avg} = & 30\% * \text{Avg} (\text{Financial highlights}) + 20\% * \text{Avg} (\text{corporate governance information}) + \\ & 10\% * \text{Avg} (\text{corporate social responsibility}) + 15\% * \text{Avg} (\text{investor relations}) + \\ & 25\% * \text{Avg} (\text{presentational items}) \end{aligned} \quad (2)$$

The following table (Table 10) presents the new average, the minimum and the maximum IRI scores per ASE industry sector after the assigning of weights. The new calculations show that the weighted average score which all the ASE listed companies have achieved is 49.71, almost 50%. But this result was the one the authors estimated without the weights.

As regards to the minimum weighted score (7.90%), it corresponds to the same technology company (INTERTECH) that achieved the worst score without the weights. In addition, the maximum weighted IRI score was 83.35% and it was achieved by the same bank which had the best score without the weights.

**Table 10 Average, minimum and maximum value of the Internet Reporting Index per sector (after the assigning of weights)**

Industry sector	Previous Avg score	Weighted Avg score	Weighted Min score	Weighted Max score
Real estate	28.00	48.25%	19.73%	66.68%
Insurance	29.75	52.36%	39.93%	64.76%
Industrial goods & services	27.21	47.28%	28.78%	65.07%
Retail	29.80	50.61%	25.21%	68.30%
Construction & materials	27.42	47.41%	27.23%	75.21%
Media	<u>23.93</u>	<u>42.12%</u>	21.25%	66.85%
Oil & gas	39.00	67.44%	57.65%	76.99%
Personal & household goods	27.39	47.72%	25.19%	70.70%
Basic resources	33.18	57.90%	25.51%	82.63%
Travel & leisure	29.25	51.83%	27.63%	79.94%
Technology	26.04	45.27%	<u>7.90%</u>	67.43%
Telecommunications	<u>40.67</u>	<u>72.26%</u>	69.26%	76.06%
Banks	33.53	58.39%	38.53%	<u>83.35%</u>
Food & beverage	28.56	49.55%	14.38%	69.78%
Health care	30.22	52.71%	31.64%	71.28%
Utilities	36.20	64.25%	48.45%	80.18%
Chemicals	28.90	49.15%	37.84%	69.64%
Financial services	26.29	45.55%	36.82%	70.29%
Total	30.30	49.71%	7.90%	83.35%

As regards to the minimum average weighted IRI score per sector the authors see that it was 42.12%, as without the weights, and it was achieved by the media sector. Besides, the second worst average weighted IRI score was 45.27% and it was also achieved by the technology sector. The maximum average IRI score per sector was 72.26% and as you can imagine it was also achieved by the telecommunications sector. The authors could add that the telecommunications companies' sites achieved the minimum deviation between the maximum and minimum weighted IRI scores (76.06%–69.26%=6.8%). The Oil & Gas Companies follow again, as the deviation

between their maximum and minimum weighted IRI scores is  $76.99\% - 57.65\% = 19.35\%$ .

#### 4.4 How the capitalization category of the companies influences their disclosure degree of financial reporting

The previous paragraph 4.2 sector offered no proofs to the authors' hypotheses that certain industry sectors should be positively related with the disclosure degree of financial reporting. On the contrary, many of the industry sectors (such as the media, the technology and the financial information sectors) which the authors had considered they would achieve the best scores, they achieved the worst.

That's why the authors tried to find a relation, if there exists one, between the ASE capitalization categories and the average IRI score achieved by the companies. More specifically, for each of the five groups of criteria, the authors have calculated the average score that was achieved per each ASE capitalization category. Then the authors calculated the average, the minimum and maximum IRI scores per each ASE capitalization category and the average weighted IRI score per each ASE capitalization category. The following table (Table 11) presents the average percentage score for each of the five groups of criteria, the average, the minimum, the maximum and the average weighted IRI scores per ASE capitalization category.

First of all, the authors can easily point out, by examining this table, that the minimum average IRI scores (24.0) was achieved by two capitalization categories: the under supervision and under suspension companies, and the minimum weighted average IRI score (41.86%) was also achieved by under suspension companies. On the other hand, the maximum average IRI score (31.0) and the maximum weighted average (58.11%) IRI score were both achieved by big capitalization companies. All these results were expectable (Watts, R. L., Zimmerman, J. L., 1978; Debreceny, R., Gray, G. L., Rahman, A., 2002; Geerings, J., Bollen, L. H. H., Hassink, H. F. D., 2003).

However, the minimum IRI score (4.0) was achieved by a medium and small capitalization company, which as the authors have discussed in the previous paragraphs is surprising. That's why, the authors looked for the next worst score (6.0), which was achieved by an under suspension company, a fact which we found completely logical. In addition, the maximum average IRI score (47.0) was achieved by a big capitalization company, which is also reasonable.

**Table 11 Average, minimum and maximum value of the internet reporting index per industry sector**

Capitalization category	Financial highlights	Corporate governance information	c. s. r.	Investor relations	Present. items	Avg score	Min score	Max score	Weighted Avg score
Medium and small capitalization	77.67%	55.31%	12.99%	48.33%	41.26%	28.0	<u>4.0</u>	39.00	47.84%
Big capitalization	85.99%	61.24%	29.59%	56.43%	52.87%	<u>31.0</u>	14.0	<u>47.00</u>	<u>58.11%</u>
Under supervision	70.34%	47.98%	7.14%	42.21%	35.74%	<u>24.0</u>	10.0	37.00	<u>41.86%</u>
Special stock exchange characteristics	74.09%	45.59%	14.29%	45.07%	38.31%	26.0	16.0	40.00	44.25%
Under suspension	65.29%	51.11%	14.29%	50.00%	37.73%	<u>24.0</u>	6.0	43.00	43.03%
Total	78.62%	55.33%	17.23%	49.72%	40.05%	29.0	4.0	47.00	49.71%
Under suspension exclusive cosmote	62.13%	46.91%	7.94%	46.03%	34.34%	23.0	6.0	33.00	40.28%

As regards to the average percentage score for each of the five groups of criteria we can easily see that the financial highlights is the group of criteria which is presented in the vast majority of the sites (78.62%), while, the Corporate Social Responsibility is the group of criteria which is presented by very few sites (17.23%).

The big capitalization companies have achieved the maximum average scores to all categories of criteria. The

medium and small capitalization companies follow as they have achieved the second position to three of the five categories of criteria and the third position to CSR and investor relation categories. The under supervision companies, on the other hand, achieved the worst average scores to three out of the five categories of criteria and the second worst to the other categories of criteria.

The authors should remind you that one of the under suspension companies is COSMOTE, which has achieved one of the ten best IRI scores. So, in order to find out whether this site greatly affects the average scores of this capitalization category the authors removed it from the estimation of the average scores and the results are presented in the last line of the previous table (Table 11). More specifically, the authors can see that all the scores have weakened and after the adjustment the under suspension companies have achieved the worst average scores to two out of the five categories of criteria and the second worst to the other two categories of criteria.

## 5. Concluding remarks and suggestions for further research

The authors' research tried to find the criteria that best represent the web-based disclosure degree of financial reporting of the 302 listed companies in the Athens Stock Exchange and to locate a possible relationship between the disclosure degree of financial reporting and the industry sector or the capitalization category of the listed companies.

The authors searching the web sites of the 302 listed companies. The fact that each one of the 302 listed companies has a website which presents at least some kind of financial information was a very encouraging starting point. Then the authors chose 57 criteria which we thought best describe the disclosure degree of financial reporting. The first two criteria were the capitalization category and the industry sector of the companies and they were not grouped. The rest 55 ones were grouped to five categories and they were used to develop an Internet Reporting Index.

Our research was first based on the hypothesis that all the criteria we have chosen are equal for the estimation of the disclosure degree. Then for purposes that our research serves objectivity we assigned weights to the groups of criteria. The average IRI score that all the ASE listed companies have achieved was 30.30 and the weighted average score was 49.71. The authors have to note that almost all the other results the authors have reached without the weights were verified with the corresponding weighted scores. Consequently, the authors can say that the selection of both the criteria and the weights of their categories were successful.

The financial highlights is the category of criteria which is presented in the vast majority of the sites (78.62%), and more specifically almost all the listed companies' sites provide to their investors balance sheets of previous years, 99.3 %. On the other hand, the Corporate Social Responsibility is the group of criteria which is presented by very few sites (17.23%). In this group of criteria, the minimum score was achieved by the employee training criterion, 12.58%, which means that they do not provide training or that they just prefer not to disclose that kind of information. In addition, almost none of the listed companies provide to their investors financial information in XML format, 1.3%, which was the minimum percentage score. The second worst score (10.63%) was achieved by the criterion risks, which responds to the information about the corporate risks.

The authors' research has shown that certain industry sectors that the authors thought they would be positively related with the disclosure degree of financial reporting; they achieved the worst scores, while the big capitalization companies have achieved the maximum average scores to each one of the five categories of criteria. Our research leads to the conclusion that the capitalization category of the company is positively related with the

IRI score. More specifically, big capitalization companies achieve better IRI scores, media capitalization companies follow, special stock exchange characteristics, under suspension and last follow the under supervision companies.

The authors believe that during the next few years more and more investors will use the web-based corporate reporting to choose the right investments. This fact therefore means that the listed companies should try to improve their sites and to provide to their investors as much financial information as possible.

The investor should feel that there is always someone in the company who can give him/her answers. Therefore, companies should try to improve their investor relations criteria. Providing the name of the investor relation officer is something simple but very important for an investor.

As regards to the financial highlights category, companies should at least provide a link to the Naftemporiki or the Athens stock exchange sites to enable the investor to find the current stock price.

Companies should not be afraid to inform their investors about their corporate risks. The reference to them means that the company has full knowledge of the risks and has taken all the necessary actions to face them.

It is very important all the companies to find out the advantages of the XML language and to try to provide their financial statements in XML format. This will not necessarily be beneficial for all investors, however those who know how to use XML files, will find it extremely useful.

The web sites often change and new features are offered or some others are canceled, as the authors have found in a recent paper of ours (Anargiridou D., Papadopoulos D., 2004a). This leads us to support the view that the companies should always provide to their investors the possibility to find easily the financial information they want. As a result, the changes in the IRI scores of the companies in the next couple of years would be a very interesting topic to investigate. An interesting topic would be also to investigate how the Greek government could audit the web-based reporting statements, in a changing environment.

#### References:

- Allam, A. Lymer, A.. (2003). Developments in Internet financial reporting: Review and analysis across five developed countries. *The International Journal of Digital Accounting Research*, 3(6), 165-206.
- Anargiridou D., Papadopoulos D.. (2004a). The advantages and disadvantages of the E-banking and the extend to which they pertain to the Greek banks. In Proc. of the *5th International Congress in Sheffield Enterprise Partnership in Europe*, England.
- Anargiridou D., Papadopoulos D.. (2005). Financial Analysis with XBRL. In Proc. of the *2o ICESAcc*, Thessaloniki, Greece.
- Anargiridou, D., Papadopoulos, D.. (2004). The advantages and disadvantages of the E-stock exchange transactions and the extend to which they pertain to the Greek Banks. Paper presented at the *3rd WSEAS International Conference on E-activities*, Rethymno, Crete Island, Greece. In *WSEAS Transactions on Information Science and Applications*, 1(5).
- Andreas Andrikopoulos, Nikolaos Diakidis. (2007). *Financial reporting practices on the internet: The case of companies listed in the Cyprus Stock Exchange*, Working Paper Series.
- Bonson E. Escobar, T.. (2006). Digital reporting in eastern Europe: An empirical study. *International Journal of Accounting Information Systems*, 7(4), 299-318.
- Brennan, N., Kelly, S.. (2000). Use of the Internet by Irish companies for investor relations purposes. *Irish Business and Administrative Research*, 21(2), 107-135.
- Chow, C. W., Wong-Boren, A.. (1987). Voluntary financial disclosure by Mexican corporations. *The Accounting Review*, 62, 533-541.
- Craven, B. M., Marston, C. L.. (1999). Financial reporting on the Internet by leading UK companies. *European Accounting Review*, 8(2), 321-333.
- Debreceeny, R., Gray, G. L., Rahman, A.. (2002). The determinants of Internet financial reporting. *Journal of Accounting and Public Policy*, 21, 371-394.
- Deller, D., Stubenrath, M., Weber, C.. (1999). A survey on the use of the Internet for investor relations in the USA, the UK and Germany. *European Accounting Review*, 8(2), 351-364.
- Eileen Colkin, Paul McDougall. (2002). Nasdaq first stock market to adopt XML-based tags for financial data, InformationWeek.

- Ettredge, M., Richardson, V. J., Scholz, S.. (2002). Dissemination of information for investors at corporate websites. *Journal of Accounting and Public Policy*, 21(4-5), 357-369.
- Geerings, J., Bollen, L. H. H., Hassink, H. F. D.. (2003). Investor relations on the Internet: a survey of the Euro next zone. *European Accounting Review*, 12(3), 567-579.
- Gowthorpe, C., Amat, O.. (1999). External reporting of accounting and financial information via the Internet in Spain. *European Accounting Review*, 8(2), 365-371.
- Lang, M., Lundholm, R.. (1993). Cross-sectional determinants of analyst ratings of corporate disclosures. *Journal of Accounting Research*, 31, 246-271.
- Marston, C., Polei, A.. (2004). Corporate reporting on the Internet by German companies. *International Journal of Accounting Information Systems*, 5, 285-311.
- Matherly, C. M., Burton, H. A.. (2005). An analysis of corporate website disclosures. *Management Accounting Research*, 6(2), 26-33.
- Patten, D. M.. (2002). Give or take on the Internet: An examination of the disclosure practices of insurance firm Web innovators. *Journal of Business Ethics*, 36, 247-259.
- Pirchegger, B., Wagenhofer, A.. (1999). Financial information on the Internet: A survey of the homepages of Austrian companies. *European Accounting Review*, 8(2), 383-395.
- Poon, P. L., LI D., YU Y. T.. (2003). Internet financial reporting. *Information Systems Control Journal*, 1.
- Robert Tie. 2000. Comments encouraged on newly named XBRL. *Journal of Accountancy*, 189(6), 14-15.
- Spanos Loukas, Mylonakis John. (2006). *Internet Corporate Reporting in Greece*, *European Journal of Economics, Finance and Administrative Sciences*, (7).
- Watts, R. L., Zimmerman, J. L.. (1978). Towards a positive theory of the determination of accounting standards. *Accounting Review*, 53(1), 112-134.
- XIAO J. Z., YANG H., Chow, C. W.. (2004). The determinants and characteristics of internet-based disclosures by Chinese listed companies. *Journal of Accounting and Public Policy*, 23(3), 191-225.
- Zeghal, D., Ahmed, S. A.. (1990). Comparison of social responsibility information disclosure media used by Canadian firms. *Accounting, Auditing and Accountability Journal*, 3(1), 38-53.

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- Raihan, M. A., Ullah, M. A.. (2007). Chittagong stock market of Bangladesh: Turning of a weak-form market into an efficient market. *SAARC Journal of Human Resource Development*.
- Razin, A., Sadka, E., Yuen, C. W.. (1999). *Implications of the home bias: A pecking order of capital inflows and correlative taxation, the economics of globalization*. Cambridge University Press, Cambridge, 85-122.
- Richardson, T., Peterson, D. R.. (1999). The cross-autocorrelation of size-based portfolio returns is not an artifact of portfolio autocorrelation. *Journal of Financial Research*, 22, 1-13.
- Shiller, R. J.. (1981). Do stock prices move too much to be justified by subsequent changes in dividend? *American Economic Review*, 71, 421-436.
- Subrahmanyam, A.. (1999). Circuit bakers and market volatility: A theoretical perspective. *Journal of Finance*, 49, 237-254.
- Timmerman, A.. (1995). Cointegration tests of present value models with a time-varying discount factor. *Journal of Applied Econometrics*, 10, 17-31.
- Viale, A. M., Kolari, J. W., Fraser, D. R.. (2009). Common risk factors on bank sectors. *Journal of Banking & Finance*, 33, 464-472.
- WANG J., Meric, G., LIU Z., Meric, I.. (2009). Stock market crashes, firm characteristics, and stock returns. *Journal of Banking and Finance*.
- Wohar and Mark, E.. (2006). What drives stock prices? Identifying the determinants of stock price movements. *Southern Economic Journal*.
- Wong, W. K., LIU B., ZENG Y.. (2009). Can price limits help when the price is falling? Evidence from transaction data on the Shanghai Stock exchange. *China Economic Review*, 20, 91-102.
- WU C. S., LIN J. L., TIAO G. C., Cho, D. D.. (2005). Is money demand in Taiwan stable? *Economic Modeling*, 22, 327-346.

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