

The International Journal of Digital Accounting Research

Vol. 2, No. 4, pp. 195-234

ISSN: 1577-8517

On-Line Financial Reporting. An Analysis of the Dutch Listed Firms

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Abstract. This paper reports on the extent to which the Internet is used for financial reporting in the Netherlands. Results show that corporate reporting via the Internet seems to be an established fact. Most large companies have websites, and a growing percentage of those companies are placing business reporting information, including financial data, on their sites. However, the situation is not as positive as it seems. Further results show that Dutch corporations vary not only in their stage of Web-utilization, but also in the depth or volume of released information (divided into financial statement information and other investor related information). Besides, there is considerable variability in the manner in which the data are delivered, as shown by the scores of timeliness, technology and user support. In fact, the total weighted scores ranged between 11% and 74%. Concentrating on two sectors, it is found that the reporting behaviour within a single sector seems to be more or less homogeneous. This makes us conclude that companies are (partly) inspired by their competitors, and that they wish to keep pace with rivals.

Key words: *Financial reporting, Internet, the Netherlands, followers' effect*

1. INTRODUCTION

Corporate websites are designed for multiple reasons, including advertising the firms' products, facilitating electronic commerce, promoting brand identification, attracting potential employees, and enhancing the corporate image. Besides, corporate leaders see the potential for the voluntary disclosures to improve investors' relations and capital market efficiencies, for example by the posting of business and financial information. The advantages which the Internet has over existing communication technologies in the transmission of corporate reporting data, indeed makes that the Internet appears particularly pertinent to financial reporting (Lymer, 1997).

So Internet reporting is expected to bring significant benefits to reporting companies, including facilitating access to potential investors and other stakeholders, disseminating information more quickly, more widely and at less cost, providing a platform to integrate different technologies, reducing the cost of providing hard copy annual reports, and providing small companies with an opportunity for global marketing. The Web also offers dynamic updating potential (addressing timeliness implications), provides less constraints on presentation flexibility than traditional paper versions, and allows interactive information dissemination (with previously unidentified consumers of information) in a fashion that is not possible in print form. Besides these micro level advantages, business reporting on the Internet can be very beneficial to businesses at the macro level as well (Lymer *et al.*, 1999). Here business reporting on the Internet is a boon for the globalization of business because it can yield benefits for both the business concerns and its customers.

Also for the user, the Web offers a low cost solution to access of corporate data by using an established network structure that all can participate in easily, and this at convenient times for those users. Besides the access to greater volumes of data than previously possible, the Internet is potentially useful by providing flexibility in user models of data, hypermedia delivery of data (using the inter-linking of information capabilities of the Web), as well as possibilities for exporting of data for user manipulation. So the Internet allows users more easily to relate financial information to non-financial information, makes financial information more readily accessible to non-accounting users, makes available the latest information on a company, offers an efficient way for investors/viewers to give the company comments and feedback, improves equality of information access, for example, when the company publishes its meetings with institutional investors and analysts on its website or via a broadcast service, and enables investors to purchase and sell securities more efficiently and at a lower transaction cost.

Concerning the costs, it can be mentioned that publishing and maintaining financial information at corporate websites is costly. Xiao *et al.* (2000) even consider the cost savings of posting the company's results on the Web to be zero at present, since any savings arising from replacing hard copy annual reports by information on the website are offset by increased follow-up queries. In addition,

potential costs arise from litigation caused by increased and inconsistent information and issues relating to confidentiality, data security, and data credibility. The increased amount of unedited corporate information being placed into circulation and the lack of reliability consequently leads to the need for conduct codes and definitions of audit scope. Another major disadvantage that attracts some experts' attention is the potential of information overload caused by Internet reporting.

According to Xiao *et al.* (2000), the business reporting environment is currently in an early stage where business reporting is evolving from an almost entirely paper-based environment to one that is likely to be almost entirely digitally based. So the authors report on the findings of a study undertaken on the predicted state of Internet-based financial reporting by 2010. Some experts foresee minimum changes in financial reporting, while others adopt a progressive or even radical perspective. However, there is a clear consensus among the experts that, by 2010, on-line reporting will be the norm for corporate communication. Meanwhile, there is also evidence that illustrates the seriousness with which the professional accountancy bodies are examining these speculations (for example, Spaul, 1997; Lymer *et al.*, 1999; FASB, 2000).

Given the growing importance of the Internet and its apparent relevance to financial reporting, it may not be surprising that financial reporting on the Internet is becoming an increasingly popular subject of research. Not all articles speculate upon the possible uses of the Internet by companies for financial reporting though. Much of the literature is practitioner focused, and sometimes driven by explicit commercial interest. Very few studies are theoretically grounded. Also, many have adopted a technological imperative perspective, largely neglecting non-technological factors (Xiao *et al.*, 2000)¹.

However, probably the biggest focus of electronic dissemination research has been on collecting and reporting descriptive statistics on Web-based financial and business reporting, thereby sometimes treating the reporting statistics as dependent variables and exploring a variety of independent variables that might influence those results. This former group of studies shows that corporate reporting via the Internet seems to be an established fact. Most large companies in most

countries across the world now have websites, and a growing percentage of those companies are placing business reporting information, including financial data, on their sites. Other general findings are that there is no one way in providing access to the financial information, that there is a great deal of variation in the information presented at corporate sites and that, to date, the uses of the Internet by companies for reporting are largely routine.

This article is also mainly descriptive, illustrating the state of the art of Internet reporting in the Netherlands. To give a snapshot of the state of affairs, an empirical study was performed in July 2000. Our study extends the scope of previous studies by providing detailed information on reporting behaviour from the entire set of listed companies on the Amsterdam Stock Exchange, and by including more features than only annual report related items. However, we do not want to limit ourselves to an indication of the frequency of each item. We want to go a step further, and put the company in a central position. More specifically, we want to end up with a score for each sample firm, which is not yet available in the Netherlands. And this is contrary to the US, where the Report of the FASB (2000), for instance, mentions different websites representing ratings of investor relations websites.

So the purpose of the present survey is to identify and classify shared traits and behaviour among the companies. We are aware that in light of the rapid evolution in this area, the survey can only attempt to disclose the practices at a given point in time, which may soon be forgotten. Differing results could reflect the exact timing of when the websites were evaluated. However, we need a score for each firm, since in a later stage, the purpose is to provide insight into why different levels of financial reporting are being made on the Web. Since maintaining financial data at websites is costly, we expect the information sets provided by companies to vary as firms attempt to maximize their benefits from this investment. The discussion of the followers' effect in this article is already a step into this direction.

What follows? In the next section, we provide brief synopses of some research related to Web-based financial and business reporting. First a world-wide basis is taken, next we limit to what the Netherlands is concerned. In section 3 some proxies are presented how to measure the Internet usage disclosure, after which

our choice is documented. In section 4 the composition of the sample and the process of data gathering is illustrated. In section 5 the results are discussed. In a first part, the analysis takes place on a vertical basis, presenting the results by item. In a second part, the analysis happens on a horizontal basis, presenting the results by firm. Section 6 starts with an overview of variables that can explain the differing use of the Web, after which the existence of the followers' effect is looked for in our sample. A discussion and conclusion ends this article.

2. ON-LINE CORPORATE BUSINESS REPORTING

2.1. International studies

As mentioned before, probably the biggest focus of electronic dissemination research has been on collecting and reporting descriptive statistics on Web-based financial and business reporting. For people unfamiliar with this phenomenon, it may be a good starting point to read the reports sponsored by the FASB (2000) and the IASC (Lymer *et al.*, 1999). Here several problem areas are discussed, as there are the technological opportunities, the role of outsiders, the need for standards in the short and long term and other legal issues. However, most attention is paid to the state of Web-based reporting.

The report for the FASB (2000) was charged to survey the state of reporting business information over the Internet and to identify notable practices. The paper describes the electronic distribution of business information and casts a new light on the exciting possibilities and problems of the Internet and technology on the business reporting universe. The sample consists of the Fortune 100 companies.

As expected, investor relations activities in the US via the Internet are more common and offer more features than in other countries. This is not surprising, since all public corporations in the US have been required, since 1996, to file annual accounting information via EDGAR (Electronic Data Gathering, Analysis and Retrieval System), and this information is readily accessible on the Web. Nevertheless, the study found that considerable variation can be observed in both the content of business reporting on the Internet and the manner in which it is delivered. Many core features of corporate websites, such as annual reports and

press releases, are provided by a clear majority of sites. In contrast, leading-edge technologies, such as streaming audio and video, are less commonly employed. So although Internet technology offers a variety of possibilities to communicate with investors, the opportunities are only used partially, even in the US.

While US corporations were early adopters, the proportion of companies using the Web for financial reporting is increasing in all countries with active capital markets and advanced communications networks, leading to diminishing differences. This is one of the conclusions of the biggest study undertaken so far, namely by Lymer *et al.* in mid-1999. The final results are included in a major international report published by the IASC.

The main purpose of this report is to examine and explore the rapidly changing world of Web-based business reporting. Therefore a survey was made of the 30 largest listed corporations in 22 countries in Europe, Asia-Pacific and North and South America, making a total of 660 companies. Results show for example that 86% of the corporations surveyed had a website, varying from 100% for Australia, Canada, France, Germany, Sweden and the US, to 53% in Chile and 43% in Malaysia. Some 62% of these corporations make some form of financial disclosure on their websites, varying from above 93% in Canada and to below 50% in Italy.

So although corporations in other parts of the world are not quite as advanced as the US, the research shows there has been broad and deep adoption of the Web for reporting financial and related performance information in a substantial number of corporations of the 21 other countries investigated. However, there is considerable variation between countries. Besides, the nature of disclosures varies widely, showing that companies are at different stages in their use of the Web for financial reporting.

A range of other studies that are referenced in both reports or that have been performed afterwards, confirm the overall results. Indeed, although many publications covering this topic exist from professional sources or have been written primarily for practitioners, there is also a growing academic research on the use of the Internet in corporate reporting and investor relations.

In Europe, for instance, the following authors have investigated the Internet investor relations activities: Craven and Marston (1999) for the UK, Gowthorpe and Amat (1999) for Spain, Hedlin (1999) for Sweden, Holm (2000) for Denmark, Molero *et al.* (1999) and Sevillano and Molero (2001) for Spain, and Pirchegger and Wagenhofer (1999) for Austria. These reports are all single-nation studies. With few exceptions, empirical studies investigate more than one country. Examples include the CAROL UK study (1999) looking at 1000 European companies, Debreceeny *et al.* (1999) looking at France, Germany and the UK, Deller *et al.* (1999) looking at the US, the UK and Germany, Bonson *et al.* (2000) studying Eurostoxx50 companies, and Cordazzo (2001) looking at France, the UK, the US, Germany and Spain. Studies only concentrating on the US include, for instance, Ashbaugh *et al.* (1999) and Ettredge *et al.* (1999, 2000a, 2000b, 2001).

This overview of literature only includes the studies being published since 1999, and should not be considered as comprehensive. Besides the references made in the reports of the FASB (2000) and Lymer *et al.* (1999), a good overview of former studies is given in Gowthorpe (1999), Lymer (1999) and Xiao *et al.* (2000). As will be clear, much of the existing pertinent literature has been produced in the form of working papers and conference proceedings. This should not be surprising given the newness of Web-based business and financial reporting and the long lead time needed to get studies published in academic journals.

2.2. Situation in the Netherlands

Like any developed Internet-penetrated country, the use of Internet for financial reporting is discussed in the Netherlands as well. Various articles in business and accountancy journals (as “De Accountant”, “Accountant-Adviseur”, “Maandblad voor Accountancy en Bedrijfskunde”) are intended for an audience of professional accountants, providing information about how to access the WWW and briefly summarising resources of interest to the practising accountant. Another problem area often discussed are the difficulties encountered by accountants when giving opinions for annual reports published on the Internet.

The research we want to discuss here is that on reporting descriptive statistics on Web-based financial and business reporting in the Netherlands. One of the studies has been mentioned before, namely the paper of Lymer *et al.* (1999), with

the Netherlands being one of the 22 investigated countries. Out of this study, it becomes clear that of the 30 Dutch companies surveyed, 3 (10%) do not have a website, whilst another 8 (27%) do have a website but no financials. For the remaining 19 companies, the details of financial reporting vary widely (see Lymer *et al.*, 1999, pp. 50-56 for more details). Although the UK is still somewhat ahead of the rest of Europe in the provision of financial information on-line, the Netherlands seems to catch up fast.

The fact that the supply of financial information reported by companies on the Web is growing at a rapid rate becomes clear when comparing these results with the first study we are aware of. During the period April until June 1997, Pronk and Gelderman (1997) investigated to what extent the Dutch listed companies used the Web for financial reporting. For 180 companies it was determined whether they were present on the Web and which data were presented. Only 59 companies (33%) seemed to be present on the Internet. Of these, 42 companies (23%) presented financial information, whilst only 11 firms (6%) presented the complete annual report.

Another study providing insight into the level of financial reporting on the Web concerns Blommaert and Mertens (1999). They investigated to what extent 44 Dutch listed firms made use of the possibilities to publish financial information on the Internet and in what way that happens. Hereby they limit themselves to information of the annual report. So it was concluded that during the period of investigation, being February until June 1999, 1 company did not have a website, 2 companies did not present financial information and 8 companies only presented financial key data. The remaining 33 companies (75%), presenting the whole annual report or parts of it, were looked at more closely. It was concluded that design and contents of the on-line published annual report could differ a lot.

And this is not surprising. Despite the wide adoption of the Internet for publishing the annual report, there are no national rules, standards or directives applicable for the website. So Dutch - as well as any other - firm using the Web for the publishing of (financial) data, still operate without specific national and international rules of Internet reporting.² Therefore firms are free to select any combination of contents and presentation, out of the enormous amount of possible contents/presentation combinations.

3. MEASUREMENT OF WEB-BASED BUSINESS REPORTING

3.1. Proxies used in previous studies

The measurement of the Internet disclosure is not an exact science. Disclosure is an abstract concept that cannot be measured directly. Nevertheless, in the literature it is conceded that a suitable proxy such as an index of disclosure can be used to gain insight into the level of information disclosed by companies (Debreceeny *et al.*, 1999b).

In this section, some proxies are presented. As mentioned, various studies document the use of the Internet in a certain country. This type of research mainly gives the reader an impression of the number of companies that provide information, how much information they give, how effectively they use the Internet, and how companies differ from each other concerning Internet reporting. In fact, each study uses another catalogue of criteria to evaluate company websites.

Some studies limit themselves to a very rough classification. So Craven and Marston (1999) survey UK companies to establish whether they have a website and if so whether financial information is available. They also investigate whether that information is in summary form or whether the full annual report is available. The study of Molero *et al.* (1999) and Sevillano and Molero (2001) is very similar. They look for Spanish companies with a Web homepage, and divide these into four groups: those having complete annual accounts, those having partial financial information, those that offer relevant data and those having a Web homepage but without economical-financial information.

The study of Gowthorpe and Amat (1999) also concern Spanish companies. First they give a subjective judgement as to the extent of the communication, and secondly a rough indication is given concerning four types of financial information and the current share price. Hedlin (1999) investigates the presence and details concerning seven characteristics, being website, financial reports, hyperlinks, graphics, press releases, download, dynamic update and other language. His final aim is to explore to what extent Swedish companies have entered the three stages

of development in reporting over the Internet, being (1) establishing Web presence (2) using the Internet to communicate financial information, and (3) taking advantage of the unique features and possibilities of the medium.

In fact, few studies limit themselves to financial information. Deller *et al.* (1999) consider the existence of some features in the context of the Internet as an investor relations instrument. More particularly they examine for each US, UK and German corporation the existence of financial statements and interim reports, presentation advantages, press releases and further information services, direct contact via e-mail and mailing lists, annual meetings, analyst conferences and chat settings. The same interest is shown in the study of Ettredge *et al.* (2000a). Here financial disclosure is broadly defined as information that IR personnel consider of interest to investors, not just accounting information. The characteristics appear to fall into three categories: general information of interest to investors, financial accounting information and information about the firm's common stock.

An additional dimension is found in a former study of these authors (Ettredge *et al.*, 1999). Here they identify a total of 15 information items to be coded one (zero) if it is present (absent) from a firm's website, which they classify as information items with high objective content, with high subjective content, and with mixed content. Also Debreceeny *et al.* (1999b) divide their criteria in such a way that not only the variation in the stage of Web-utilization of corporations is looked for, but also the variation in the depth or volume of information they provide via the Web.

The survey of Holm (1999) examines both the presence (yes/no) and the appearance (being the format: html, pdf, doc, xls) of a number of variables. These variables are related to (1) access to information related to the annual report in a broad sense and (2) access to financial updates and periodic releases through the Internet. For the study of the IASC (Lymer *et al.*, 1999) a checklist is developed to capture key information of both a financial and non-financial nature. While one of the sections on the checklist covers downloadable files, each of the other sections reviews only Web-based disclosures. The IASC data collection instrument was also used by Cordazzo (2001), although some variables were added and the other variables were enlarged with new elements.

The most extensive survey instrument found is the one used in the Business Reporting Research Project of the FASB (2000). This data collection form includes 325 attributes. Of those attributes, 292 require “yes” or “no” answers. The attributes can be divided into two basic groups: (1) those attributes related to a company’s general website and (2) attributes related to investor relations and financial and business reporting.

3.2. Development of our own questionnaire

A study that is not mentioned, but which has been used as the basis for developing our questionnaire, is the one of Pirchegger and Wagenhofer (1999) concerning Austria. What makes their survey so attractive, is the fact that their catalogue of criteria, used to evaluate company websites, concerns four distinctive areas, being content, timeliness, technology and user support. The areas are measured by respectively 15, 8, 16 and 18 questions. Although this division into four groups is maintained in our study, we decided to take into account other questions. The investigated items that we developed for this purpose, are listed in the Appendix. They will be discussed in section 5, when discussing the results.

The first group of assessment criteria, representing the content, measures the type of published financial information, including the availability of company financial statements, interim statements and prior period information. However, unlike Pirchegger and Wagenhofer (1999) we added an additional group of variables concerning investor related information. The motive is that the use of the Internet is becoming another tool with which investor relations and financial departments communicate information (Ashbaugh *et al.*, 1999, FASB, 2000). Therefore the presence of items as, for instance, the availability of press releases, FAQ, minutes, shareholder structure, financial calendar and price development is investigated.

The next group of assessment criteria measures the timeliness of the financial information provided, such as the availability of the most recent stock price information and the updating of information³. Another group of questions concerns the attempt that was made to assess the organizational integration of the Internet reporting. This was done by measuring response times to a standard as well as to a special request.

The criteria of technology examine the extent to which the companies under investigation make use of some of the more advanced features. They include, for instance, refreshment time (the time it takes to access the websites), moving pictures, hyperlinks, external links, search engines and downloading of data. However, one of the most significant decisions in designing financial and business reporting Web pages is the use of HTML and PDF formats. Also this aspect is investigated here.

The assessment criteria in the group of user support measure the design and layout of the websites. This section utilizes a number of interrelating factors such as, for instance, how easy it is to find the homepage of the company, the adequacy of presentation, the availability of a structure of contents, the number of clicks necessary to go to certain information items, and the possibility to download information.

For each group some 8 or 9 questions are developed, giving a total of 43 questions. The reason we decided not to copy the questions of Pirchegger and Wagenhofer (1999) is to obtain a smaller survey, to give a better reflection of recent results in literature as well as to integrate the Dutch situation. With the choice of variables we also try to maximise the presence of the data items sought at each website, since one can have a reasonable expectation to find these items on any website. So we do not ask for “segmental reporting”, since the missing of this item is not necessarily an indication of a missing element. Neither do we ask for “cookies”⁴, since this item is so advanced, that it can be expected that few companies, if any, will show it.

As is clear, we only concentrate on investor-related information, meaning that the questionnaire is not taking into account information concerning jobs available, the customer or employee profile, news of latest products and services, etc. But the restriction is going further, in the sense that any question has to relate to investor-related information. This means that, for instance, items as FAQ or e-mail may be available, but in case it does not concern investor-related information, (for instance, e-mail for customers or FAQ concerning products), it is not taken into account.

4. THE SAMPLE AND DATA GATHERING

So as to make up our sample, we decided to concentrate on stock based companies. Because of their size and capital, these companies can afford to develop state-of-the-art Web pages and, therefore, a review of these companies will probably uncover the vast majority of attributes. At the same time, these companies are considered to have a substantial global following from institutional investors as well as a national following from institutional and retail investors, increasing the motivation for Internet reporting.

In fact, all studies we read so far likewise report on the listed companies in their country. However, most of these studies limit themselves to the companies listed in the most liquid market segment of the Stock Exchange, being the largest companies. We do not make this limitation. So the focus in the present study is on the access to financial information for all companies listed on the Amsterdam Stock Exchange (the AEX), irrespective of their size.

To qualify for our sample, companies have to be listed on the AEX, but have to lay down their annual report in the Netherlands as well. This does not mean we limit ourselves to Dutch companies, since they may be partly or totally owned by foreign parties. However, we do not make a distinction between Dutch and foreign companies in the formal sense.⁵ An overview of the companies can be found on the REACH⁶ database. In total, 188 companies⁷ fulfilled both criteria in June 2000.

Once the companies are known, the next step is the identification of the homepages of the respective companies. In this respect, Debreceny *et al.* (1999a) state that, as the Web grows, the difficulty of locating and navigating to specific information on the Web also grows. This makes that the seemingly simple task of finding a corporation's "official" website can be a major undertaking. This finding has been confirmed in many studies, and ours is no exception.

Fortunately, the search to establish the existence of a website for each corporation was facilitated in our study by the fact that REACH makes notice of the Web address for some companies. And so as to search for the homepages of the other companies, the AEX-site was used. However, while working in the site,

addresses available via the REACH database were compared with the addresses on this site. It was found that – in various cases – another address was mentioned. A closer look learned that - in some cases - the site given by REACH was a promotional site, while the site given on the AEX was investor oriented. In other cases typing the addresses mentioned by REACH automatically converted into the address of the AEX. In still other cases there was one identical website, having two different names.

In a last attempt to discover as many company sites as possible, use was made of a search tool. However, no additional company homepages could be identified, and it was assumed that the remaining corporations did not have a company website.

All together we were not able to locate websites for 20 companies. However, we have to agree with Lymer *et al.* (1999) that - in spite of the care taken in the survey - it is not possible to definitively state that a corporation does not have a website. Financial reporting pages on a third-party site (other than that of the designated corporation) are excluded, unless there is a hyperlink from the corporation to the third party site.

As the FASB (2000) states, on the Internet, Internet-months are like years in the sense that things change so quickly. (So they mention that 18 Internet weeks equal 1 normal year.) As such, by the time the last company is completed, the first company can have changed significantly. Websites can change content and layout without notice (Deller *et al.*, 1999). As a result of this dynamic development of the Internet, the findings in this article offer only a snapshot of the companies' Internet activities. To achieve a high degree of temporal comparability, the data were collected in the short time interval of 14 days, being in the first two weeks of July 2000.

In order to complete our checklist, it was decided to have the websites of the companies extensively surveyed by only one researcher, so as to provide a consistent view of each corporation. However, again we have to agree with Lymer *et al.* (1999), stating that “it is not possible to definitively state that content does not exist on a corporate website. This particularly applies to those questions that relate to other than the financial statements. The reason is that many of the corporate

sites are large and complex or employ counter-intuitive or complex navigations strategies. It is often difficult to find the desired information and, despite significant effort, some information may have been missed. The results are likely, then, to be an underestimate of the actual reporting.”

5. RESULTS

As mentioned in the former section, of the 188 companies, 168 had a Web address. Out of these, 6 did not even pass the basic test of managing to communicate anything at all. The sites were in construction or could not be displayed.

A glance at the other sites made clear that some firms' website contents are quite limited. For example, some firms only have a homepage that provides their address and a description of their business activities. However, the majority of the companies have websites that are active in promoting the business in some way or another. In most cases these sites provide (at least) a range of advertising material, contact details and other promotion material about the company and its activities.

Since our focus is on the use of the Internet to disseminate financial information, we concentrated on the variation in firms' financial disclosures on the Internet. The first finding to be mentioned concerns the fact that 10 companies did not disclose any financial information at all on their website. These companies were skipped out of the sample. As shown in Table 1, this made the final extent of our sample to become 152.

original sample	188
no Web address	20

firms having Web address	168
website in construction	4
page cannot be displayed	1
temporarily not on-line	1

firms having website	162
no financial information	10

final sample	152

Table 1. Composition of the sample

So we can conclude that of the 162 companies with websites, 94% included “some” form of financial information Web pages. Attributes relating to those pages vary widely. Indeed, even a cursory review of the 152 sites reveals a wide diversity in terms of content and presentation of financial information. Just as Lymer *et al.* (1999) concludes: “Content ranges from entire annual reports, quarterly statements, and press releases to the other end of the spectrum where companies display only summary information. Presentation styles are equally diverse ranging from static information on one extreme to sites that are enlivened with sound, video and interactive features at the other review.”

Not only variation was remarked. Filling in the survey was becoming even more difficult by the considerable differences in the structure of the websites and in the consciousness about effective communication. Consistent with the overall picture that the companies do not approach the Internet in a similar fashion, it can be concluded that there is no one way in providing access to the financial information either. On most of the websites, the information is scattered all over a number of Web pages. Holm (2000) suggests four possible practices, that he identifies as functional, promotional, communicational, and unstructured.⁸

What follows now, is a vertical analysis by item investigated, followed by a horizontal analysis by firm.

5.1. Vertical analysis, results by item

a. Content: Financial information

Looking at the websites soon makes clear that integrating one question concerning the availability of the annual report is not sufficient to give a representative picture of reality. Lots of companies seem to divide the annual report in its components⁹. Likewise the sample has to be divided into four distinct groups, so as to make a correct interpretation concerning the extent of publishing financial information.

The first group includes those companies that only present an annual report as a whole. As mentioned in Table 2, this group includes 66 companies. The second group includes the 53 companies publishing their annual report as a whole,

however decide to publish one or more of the separate parts additionally. Remarkable is that only 3 companies do not publish the balance sheet and the profit and loss account a second time, but limit themselves to the inclusion of the management discussion as an additional element.

	Group 1	Group 2	Group 3
Annual report as a whole	66	53	-
Separately:			
- the balance sheet	-	50	21
- the profit and loss account	-	50	22
- the cash flow statement	-	44	6
- the notes	-	32	4
- the management report	-	39	7
- the audit opinion	-	28	2

Table 2. The availability of the annual report

What is different with the third group is that these companies also publish one or more of the elements separately¹⁰, but do not make available the annual report as a whole. In this group, consisting of 24 companies, 21 do publish at least a balance sheet and a profit and loss account, showing variation in the presence of the other four elements. However, two companies do only present a management report, and one is only publishing a profit and loss account. These three companies come very close to those present in the last group, including those companies that do not publish an annual report as a whole, neither one of the six parts separately¹¹. In total 9 companies seem to be in this situation.

Whilst the reader of a printed annual report has a reasonable expectation that the bound document includes a predictable set of information, the information provided on Internet does not have the same quality of predictable completeness. Often the two main financial statements are not accompanied by the cash flow statement, the notes, the management report or the report of an independent accountant.

Another reasonable expectation of the user is that the companies are attempting to distribute the most current information available about their activities. However, it is found that 15 of the 119 companies still publish numbers concerning the year 1998, 19 months after year-end¹². So Internet users cannot even expect to find the latest information on a website.

Some have suggested that the Internet will drive business reporting from its monthly, quarterly, and annual cycles to a system of real-time reporting (FASB, 2000). Indeed, information technology allows companies to report information in a timely manner and to provide it more frequently to all who are interested¹³. Our results do show that most companies are not inclined to present interim information. Only 56 companies (37%) integrate some form of interim reporting¹⁴ in their website, and this despite the fact that – in order for accounting information to be useful for decision makers - it must be relevant and timely.

So consistent with other studies (for instance, Ashbaugh *et al.*, 1999), we find substantial variation, in that some firms provide more timely interim financial disclosures, while other firms report outdated financial data. Now questions can be asked concerning the availability of older data. Here it is found that financial ratios for a three-year period (or longer) can be found on the websites of merely 45 companies (30%). More companies seem to pay attention to the presence of previous annual reports. So 68 companies (about 45%) present the annual report of former years: 2 companies had information going back to 1995, thus presenting some full 5-year highlights, and 7 companies went back to 1996. However, most companies did not go back in time that much: 26 firms presented 3 years and 33 firms limited themselves to 2 years.

b. Content: investor related information

As Ashbaugh *et al.* (1999) found, firms perceive their websites to be an important vehicle to disseminate information to shareholders. Also the FASB (2000) shows that - paralleling the rapid growth in the supply of Web-based business and financial reporting – there is a rapid growth in the demand for this information by on-line investors. Considering these studies, it can be expected that all the attributes selected as investor related information, will appear on all websites. However, the only attribute appearing on more than 90% of the sites are the press releases (95%). The next most popular characteristics are e-mail addresses and up-to-date investor/financial calendars, which are included on respectively 69% and 48% of the sites.

Information that is not reported frequently - although it can be considered as important for existing or potential investors - concerns the shareholder structure (22%), frequently asked questions (11%), and the minutes from the general meeting (2%). Concerning information about the stock prices, 38% of the sites presents charts about stock price movement, whilst only 3% describes the share price development in numbers. Obviously the companies do expect the investors to use more specialised information channels to find these crucial data.

A last item to be discussed concerns the language of the site¹⁵. It can be expected that - as an added feature that reflects the globalisation of the Web - lots of websites offer alternative languages to the Dutch. So we were not surprised that 57 companies (38%) offer their website in Dutch and an additional language. For 49 companies, this additional language is English; the other 8 even present a wider mix. Those sites using only one language, opted for Dutch in 26 cases (17%) and for English in 68 cases (45%). One company used English and Spanish.

c. Timeliness

The Web offers the ability for rapid/instant updating facilities to enhance the provision of performance data, amongst which are the stock quotations. However, this ability has yet to be adopted by many companies on their websites. Only 27% of the sample makes available their quotation of the same date, and only 24% updates this quotation during the day. Considering that only 3% of the companies report the quotations of the former days (see results of investor related information), this is more than might be expected. When interpreting these results, it must be taken into mind that the numbers only include those firms that make this information available on their homepage directly. Not included are all those firms that do have a link to the AEX-site where 15 minutes delayed stock prices for the company, as well as an historic overview of quotations, can be obtained.

Since quality pertains to the timeliness and therefore, the usefulness of firms' financial reporting on the Internet, it could be expected that every site would start with referring to current information. However, only 42% of the companies investigated mention a hint on their homepage for finding current information. In most instances this link refers to press releases, and rarely to current financial information. Can we assume no current information was integrated recently for

the other 58%. This answer cannot be found by looking at the date of the last update mentioned. Only 7% makes this date available. This situation would not be possible in France, the only European country with regulations for Internet reporting. There it is prescribed that clear mention must be given of the last update of the displayed information, and that automatic update procedures must be in place to avoid errors or neglect. Time of origin of quotes and other market data must be specified¹⁶.

As mentioned higher, an attempt was made in this study to assess the organizational integration of the Internet reporting. More concretely, this happened by sending requests to the e-mail addresses listed on the website, after which the response times to these requests were measured. In fact two requests were delivered¹⁷. A standard request asked for the last annual report. It is assumed that such a request can be answered by anyone who receives this request (probably a secretary) almost immediately after receipt. A special request asked for the date on which the company had opened its website, and had published annual reports for the first time. It is assumed that in order to answer this request, the receiver may have to refer to other colleagues.

All together we were able to send a standard request to 137 companies, of which 56 happened by immediate order. The other 15 companies did not mention an e-mail address for investor relations, or it did not work. In total we received 116 annual reports (being 76% of the total sample, but 84% of the companies that effectively received a request). Concerning these annual reports, the mailing happened within one or two days for 53 companies (being 35% of the total sample, but 38% of the companies that effectively received a request). Most of the other reports were received within one week, however, for some we had to wait for nearly a month. In fact, it is unbelievable that this service for the investor is not efficient for 100%, especially since 13 of the 21 companies who never answered, provided the possibility to request the report by immediate order.

Concerning the special request, the situation is even worse. Here we were not able to send our request to 20 companies. Of the 132 companies that received the message, we got a response of 66 companies. In fact, 41 companies answered within the time limit (being 27% of the total sample, and 31% of the companies that effectively received a request). In addition, 25 companies have given an

answer, although not within the time limit (being 16% of the total sample, and 19% of the companies that effectively received a request). Of the remaining companies, 58 companies never answered, while 8 companies send a message, but without the requested data. The fact that the request was sent in vacation time might be an excuse for not receiving the answer within the time limit, but is no excuse for sending no answer at all.

d. Technology

Concerning technology, 14 companies (9%) even fail in a basic characteristic as having the homepage completed within 10 seconds. The other technological features score as follows: direct e-mail contacts (76%), external links (72%), on-line order service (69%) and moving pictures (59%). Less than a third of the sample makes an internal search engine available (30%), whilst the use of hyperlinks (3%) can be neglected.

When interpreting these data, it should be taken into mind that the result of “not fulfilled” does not necessarily refer to the fact that the technology is not available, but that the technology is not used for an investor-related perspective. For example, some firms might have an internal search engine for their customers concerning their products, whilst this option cannot be used for the search by investors. However, even considering this, the scores surely show that companies do not make use of the available technologies for building up their websites as information source for the investor.

The most important technological aspect investigated, probably concerns the use of HTML and PDF formats for designing the Web pages. HTML is the primary language for Web development. PDF is a special file format, developed by the Adobe Corporation, for creating documents that can look and print exactly like the original printed document. An HTML document can be viewed directly in the browser. To view a PDF file, the user requires an Adobe Acrobat Reader plug-in to be installed on his/her computer. Although many studies detail the advantages and disadvantages of using HTML and PDF files (amongst them: FASB, 2000, Holm, 2000), there is a considerable uncertainty as to which conceptual design of reporting is best suited to fulfil investors' requirements for financial information.

Gassen (2001) carried out an experimental research, so as to find out how a PDF-version of an annual financial report compares to a HTML-version qualitatively, when quality is measured in information retrieval accuracy and speed of the experimental participants. The results strongly suggested that the participants prefer HTML-reports over PDF-reports. They were also able to answer the questions faster using HTML-reports, transferring a smaller amount of data, and producing fewer incorrect answers. Thus both formats cannot be viewed as alternatives, but have to be used for those data it is best suited for. So the question whether to use PDF or HTML is not an all-or-nothing-decision, and the two formats are not mutually exclusive. As Table 3 shows, companies use a variety of combinations of the two formats.

	PDF	No PDF
HTML	62	37
No HTML	53	

Table 3. The choice between PDF or HTML

In total, 115 companies use PDF format. Duplicating the printed financial statements into “electronic paper” is an inexpensive, straightforward process. Besides, only a minority of companies makes the effort of publishing the annual report as parts. More specifically, on the sites of the 62 companies using both formats, 43 appear as a whole, 11 as parts, and 8 as both. On the sites of the 53 companies using only pdf-formats, 33 appear as a whole, 15 as parts and 5 as both. The wide use of Adobe Acrobat indicates a clear wish on behalf of companies to supply data on their activities whilst maintaining the maximum control possible on the way in which that information is presented (FASB, 2000). However, still 99 companies (65%) take the time and effort to convert their printed reports into HTML. This indicates that these corporations are serious about using the Web as an information distribution medium.

e. User support

Some criteria concerning the design and layout of the websites score very well. So it is found that 99% of the companies uses frames, that on 97% of the sites a pull-down menu is available, and in 95% the site is considered to be well structured. However, for the criteria concerning the easiness to find the homepage, only 85% succeeds. An intuitive address is like [http://www.\[firm\].com](http://www.[firm].com) or <http://>

www.[firm].nl. The main reason for failing is the fact that the company integrates a “-” in its address, although this is not used in its name.

Ashbaugh *et al.* (1999) observe that the usefulness of firms’ financial reporting on the Internet depends on how easy it is to access that data, the amount of data disclosed and/or whether users can download or analyse the data. Concerning this last criterion, the option to download information is only available in 79% of the cases. Information concerning technical devices, such as the format and the size of these downloads, can be found on 68% of the sites. Compared with the 79%, this is not that bad.

Two questions concern the number of clicks required to go to certain information items. Hereby it is assumed that the deeper information is in the site, the harder it is to find and therefore, the lower the priority these data are likely to have received in the design of the site. In other words, the finding of how deep certain material is placed within the website, is adopted as a surrogate measure of the importance a company places on the accessibility of data (FASB, 2000). In 48% the company address is to be found no deeper than one level down, and in 51% the extent of the assets is found within 2 clicks¹⁸. In our opinion this suggests that those who put such data on their site do not even consider a general item as address to be of significant interest to visitors of the site, whilst the same conclusion can be drawn for a general accounting figure as assets.

The last criterion to be mentioned concerns the availability of a table of content. So as to help users navigate the websites, 24% of the websites have tables of content, indicating little user support.

5.2. Horizontal analysis, results by firm

For the horizontal analysis, it was necessary to develop a score of the use of the Internet for each company separately. Since each criterion is formulated in a way that it can be answered by a simple “fulfilled/not fulfilled”, encoded as 1 and

0, respectively, the score for a firm was made up as the sum of these numbers. Contrary to the study of Pirchegger and Wagenhofer (1999), we decided not to assign individual weights to the criteria in each group to capture their relative importance¹⁹. So the scores achieved in each of the five groups are a non-weighted combination of raw criteria scores. One remark should be made here, namely that for the group of financial information content the maximum is 9. This means that publishing the annual report as a whole and a separate reporting of one or more of the 6 elements separately does not implicate a double score.

Some summary statistics of the scores by assessment criteria are shown in Table 4²⁰. They make clear that the means and the medians are the greatest for the user support criteria, closely followed by the financial information content criteria. They are the lowest for the investor related information content criteria and the timeliness criteria. Also, the criteria measuring the financial content and the timeliness have a remarkably higher variance than the other criteria. For both criteria, the difference in score between the best and the worst company is the maximum.

	Financial content	Investor content	Timeliness	Technology	User support
Mean	69	36	35	58	72
Median	78	33	38	63	78
Range	0 – 100	0 – 78	0 – 100	25 – 100	22 – 100
Variance	538	280	524	224	208

Table 4. Summary statistics of the scores by group of criteria

In order to develop a global score for the company, the scores of the five groups had to be summed up. However, just as Pirchegger and Wagenhofer (1999), we perceive content and timeliness to be more important than technology and user support. So the first three groups are assigned weights of 0,3, 0,3 and 0,2 respectively. The resulting score can be interpreted as the overall percentage of the fulfilment of the criteria.

Considering the results of Table 4, it can be expected that the global weighted scores will be lower than the global non-weighted scores. And indeed, for 150 of the 152 companies, this happens to be the case. In Table 5, some summary statistics of the two global scores are presented.

	Non-weighted total score	Weighted total score
Mean	54	46
Median	55	46
Range	23 - 83	11 - 74
Variance	124,6	137,7

Table 5. Summary statistics of the global scores

Although there is a wide variation of the scores achieved by the companies, nobody reaches a score of more than 75% after weighting, and this despite the fact we had selected a compilation of questions concerning those features that are “easy and convenient” to have. All information items may be useful to find on a corporate website. In Figure 1, a graphical overview is given concerning the division of the weighted total scores. As is clear, most companies are situated in the middle. In fact, 101 firms have a score between 35 and 55.

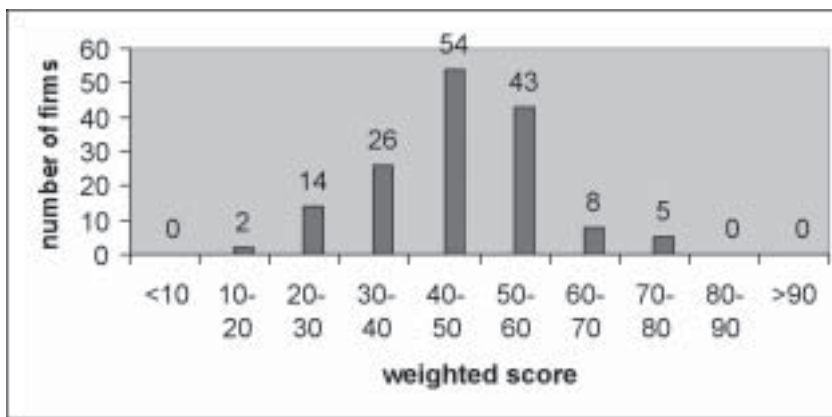


Figure 1. Division of the global weighted scores

So although it concerns all publicly traded companies, the results show that even among these elite corporations, use of the Web for electronic dissemination of financial information varies widely. Corporations vary not only in their stage of Web-utilization, but also in the depth or volume of information they provide via the Web.

6. THE FOLLOWERS' EFFECT

6.1. The influencing variables on Internet usage

In our opinion, the criteria used to assess the websites can be seen as a compilation of those features that are “nice to have”. So it may be wondered why there are no scores of 100. However, knowing that the set-up and maintenance of a website is costly, it is not obvious that firms would wish to achieve the maximum of 100 points, nor that users would want the firm to achieve that maximum score (Pirchegger and Wagenhofer, 1999)²¹. The firms trade off the benefits and costs of using the Internet as a communication device for the distribution of financial information, and many internal and external factors can influence its decision as to how much to invest into developing a website.

Knowing that a firms' participation in Internet reporting may be viewed as a component of their voluntary disclosure practices, the variable use of the systems capabilities is not surprising. As the FASB (2000) states: “Because companies are not specifically required to place their financial reports on the Web, any company that does so is doing it voluntarily. In addition, there are no specific rules that say what companies must include in their Web financial reports. Therefore, other than outright misrepresentation of the facts, companies are free to include as much or as little as they choose.” As long as this voluntary, no-specific-rules environment of Web-based financial and business reporting remains, the variation will last.

Substantial researches have been devoted to studying the initial disclosure of financial information, and to examining managers' decisions to voluntarily disclose non-obligatory (financial) data (Botosan, 1997; Frankel *et al.*, 1999, FASB, 2001, Van de Wiele, 2001, amongst others). However, we know little about what motivates firms to bear the incremental costs of additional dissemination, via websites or any other medium. Therefore, various studies have attempted to look behind the statistics to explore whether the differences in the contents or the set-up of the websites are associated with various environmental and company characteristics.

Some of those studies are: Ashbaugh *et al.* (1999) looking at company size, level of profitability, quality paper-based corporate reporting and industry type, Craven and Marston (1999) looking at company size and industry type, Craven and Otsmani (1999) looking at company size and industry type, Debreceny *et al.* (1999) looking at company size, level of equity funding, audit by Big-5, financial leverage, access to international capital markets, level of securities markets regulation and penetration of Internet usage in society, Ettredge *et al.* (1999) looking at sophistication of the user base, Hedlin (1999) looking at company size, Molero *et al.* (1999) looking at company size and industry type, Pirchegger and Wagenhofer (1999) looking at company size and free float, Ettredge *et al.* (2000a) looking at company size, level of profitability, quality paper-based corporate reporting, need for new external equity capital, systematic risk, stock owned by corporate insiders and by institutional investors, FASB (2000) looking at company's philosophy and goals, Holm (2000) looking at company size and industry type, Cordazzo (2001) looking at industry type and size of the national Stock Exchange, Gassen (2001) and Sevillano and Molero (2001) looking at company size and industry type. Discussion of the results, however, is not the focus of this paper.

6.2. The followers' effect

Given the possibility for firms to make on-line information available for a broad array of stakeholders, it may not be surprising that the Internet can give these firms a competitive advantage over competitors who do not provide Internet disclosures (Debreceny *et al.*, 1999b). In our sample, we also see that the change is ongoing. More and more companies are going on the Internet with their own websites²². We are convinced that these companies are (partly) inspired by their competitors. At the same time non-financial websites are inspired by competitors to release financial information. So our expectation is that within a couple of years, total penetration will take place. The more companies use the Internet, the harder it becomes for the "left-behinds" not to do so.

A more or less analogous conviction has been stated in literature before. So Ashbaugh *et al.* (1999) found out that firms generally agree that an important reason for establishing a website is the need to keep pace with their competitors.

Lymer (1999) noticed that the trend to follow the sector suggests that companies are very aware of what their rivals are using the Web for and are likely to be responding more to what they do than to the community as a whole. The study of the FASB (2000) found out that almost all of the companies interviewed at least occasionally monitor other organizations' sites to stay abreast of what others are providing and also to generate ideas for what should be included on their site. However, the regularity and the profoundness of these activities are dependent on the philosophy of the company.

The question we want to look at here is whether the scores within one single sector are more homogeneous, given the wide variation in the scores achieved by all companies of the sample. This could proof the existence of the followers' effect. So we had to concentrate on sectors. However, our original sample of 188 companies (see Table 1) is composed in such a way that 35 sectors²³ are represented. In 19 of those sectors, three or fewer firms are present. Since, in our opinion, at least about 15 companies are required to give a representative view of the sector, we were obliged to limit ourselves to two sectors, namely sector 51, being wholesale and commission trade (not in cars and motorcycles) and sector 72, being computer services and related activities. These sectors included 19 and 24 firms, respectively.

So as to have a more clear view of a possible "followers' effect", it seemed relevant here to integrate the results concerning the special request of our survey. However, since only 12 firms of both sectors had sent an answer, we decided to contact all the investigated companies of the selected sectors once again. But this time we asked for three dates, being the date of establishing the website, the date of publishing the first financial data, and the date of publishing the first annual report. Another difference concerned the fact we mentioned the dates were needed for academic research. This way, we hoped to heighten the response rate.

And indeed, after various contacts, 29 answers were received. Since 7 companies were not considered because of the absence of a (functional) website, and since we did not succeed in sending a mail to 3 other companies, this means that only for 4 companies the requested dates are missing.

Some summary statistics for both sectors are given in Table 6 and Table 7 respectively. A remarkable conclusion is that the variance of the total score has diminished significantly, especially for sector 72. Also the variances of various groups of assessment criteria have become much lower. In particular the financial content criteria of sector 72 is worth mentioning.

	Financial content	Investor content	Timeliness	Technology	User support	Non-weigh. score	Weighted score
Mean	61	36	27	51	68	49	41
Median	67	33	25	50	67	48	43
Range	0-89	22-56	0-50	38-75	33-89	33-65	25-58
Variance	589	168	230	168	244	87	93

Table 6. Summary statistics of the scores for sector 51

	Financial content	Investor content	Timeliness	Technology	User support	Non-weigh. score	Weighted score
Mean	76	31	36	60	76	56	47
Median	78	33	38	63	78	58	46
Range	44-100	11-67	0-75	38-88	56-100	44-67	37-61
Variance	153	209	510	141	138	43	44

Table 7. Summary statistics of the scores for sector 72

Perhaps the reason for the higher variance for the financial content criteria, to be observed in sector 51, has to be found in a different publishing behaviour of financial data by competitors in that sector. The results of our questions can give the answer.

What the first question is concerned - being the date of going on-line - the results are given in Figure 2 and Figure 3, whereby the time axis is split up by quarter. In both sectors, 1995 seems to be the year in which the first websites were created²⁴. However, in sector 72 there are already 6 companies to be noticed before year-end, compared to only 1 in sector 51. Remarkable is the observation that the number of companies going on-line is slowly increasing in time. So the establishment of a website by one single company seems not to lead to an explosion on short term.

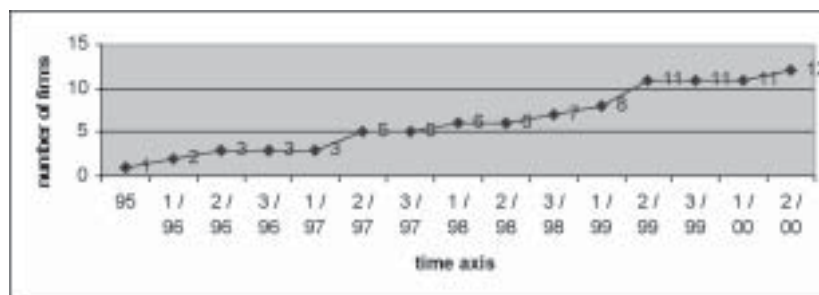


Figure 2. The establishment of websites in sector 51

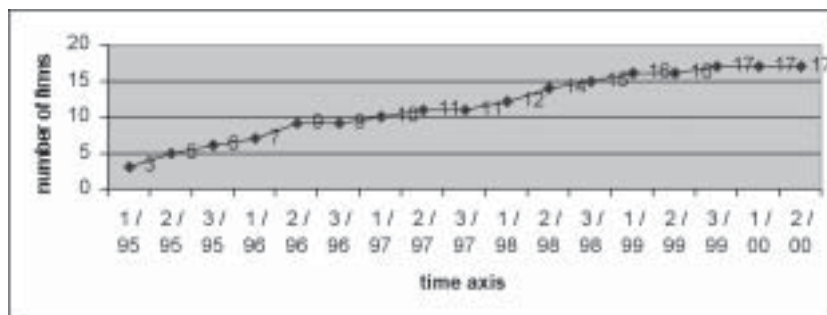


Figure 3. The establishment of websites in sector 72

What the second question is concerned – being the date of publishing the first financial data - there is some more variation. Not so much are there differences to notice in the dates of the first publishing of financial data by the first firm, which can be dated back to 1996 and 1995, respectively. However, for 9 of the 12 companies of sector 51 (being 75%), the date of the first publishing of financial data by the companies is the same as the date of going on-line. In sector 72, this date is the same for only 5 of the 17 companies (being 29%). In fact, it took various months (even years) before some financial information was available on the other companies' websites. So out of these results, it might be concluded that the publishing of financial data surely was not the original purpose for going on-line for the other 71% of the companies of sector 72.

However, concluding that financial reporting is less important for these companies is completely counteracted by the results of the third question - being the date of publishing the first annual report. Here there are even more differences to notice. So in sector 51, only 8 of the 12 firms make their annual report available. For at least 5 of them, this even happened at a later date than the one mentioned in answer 2. And even more surprising is the fact that the publishing of the first annual reports all took place in 1999 and 2000, and never before. For sector 72, the publishing of the annual report seems to be more important. So all of the companies do publish it. For 10 firms this concerned the first publishing of financial data, for the other 7 it took place at a later date than the one mentioned in answer 2. So it is not surprising that publishing the annual report already started to take place in 1996.

Out of this section, we are able to conclude that the reporting behaviour within one single sector seems to be more or less homogeneous. Perhaps one remark to end this section might be there is no clear ordering of scores according to the time of presence on the Internet. So the last companies going on-line do not have the worst score, but at the same time the first companies do not show the best score.

7. DISCUSSION AND CONCLUSION

Over the last years, there has been growing research on financial reporting on the Web. Most of the prior studies are mainly descriptive illustrating the present state of the art of Internet reporting. This study too reports on the extent to which the Internet is used for financial reporting in the Netherlands. It extends the scope of previous studies by providing detailed information on reporting behaviour from the entire set of Dutch listed companies on the AEX stock exchange, by including more features, by calculating scores for each firm separately, and by looking at the interactivity of corporate webs.

The results found are very consistent with other - international - research. Also in the Netherlands, corporate reporting via the Internet seems to be an established fact. Most large companies have websites, and - in addition to sales and customer service materials - a growing percentage of those companies are placing business reporting information, including financial data, on their sites.

However, although these observations seem positive at first sight, a closer look into the survey might change this opinion somehow. So the results concerning the published financial information show that, whilst the reader of a printed annual report has a reasonable expectation that the bound document includes a predictable set of information, the information provided on Internet does not have the same quality of predictable completeness. In addition the Internet users cannot even expect to find the latest information on a website, and, contrary to many predictions, our results show that most companies are not inclined to present interim information. Also for what other investor related information is concerned, the companies obviously do expect the investors to use more specialised information channels to find some crucial data. So before we can define the Internet as a system of real-time reporting, or as an important vehicle to disseminate all information to investors, lots of changes are needed.

Many shortcomings were also discovered concerning the organizational integration of the Internet reporting. More concretely, this happened by sending two requests to the e-mail addresses listed on the website, after which the response times to these requests were measured. So companies can be mentioned that even never answered, although they provided the possibility to request the needed data by immediate order. Also other results concerning timeliness show that companies do not use the abilities that the Web offers for rapid/instant updating facilities to enhance the provision of performance data.

Results concerning technology show that companies do not make use of the available technologies for building up their websites as information source for the investor. Also the results concerning user support show some shortcomings. Whilst some criteria concerning the design and layout of the websites score very well, it was found that still too many companies do not have an intuitive address, or do not help users navigate the site. Findings also suggest that firms do not even consider a general item as the address or the extent of the assets to be of significant interest to visitors of the site. Since the usefulness of firms' financial reporting on the Internet depends on these aspects as well, questions could be raised.

So there was considerable variation in the scores of the examined assessment criteria. And logically, the variation in the stage of Web-utilization combined with this variability in the depth of information that is provided via the Web and the way this happens, leads to varying scores for each firm separately. More specifically, the total weighted scores vary between 11 and 74 on a total of 100.

In this study we investigated one aspect that might explain the differing use of the Web by companies, namely the wish to keep pace with competitors. So, concentrating on two sectors, we found that scores within a single sector are more homogeneous, contrary to the wide variation of the scores achieved by the total of companies. A closer look makes clear that the financial reporting behaviour shows even more common traits.

In fact, it is our intention now to give some more insight into other factors explaining the differences in the design and contents of the websites, and to test empirically for factors that might drive these differences. The results of this study,

reporting on a snapshot of the state of Web-based financial and business reporting in July 2000, will be the starting point.

We are aware of the fact that websites seem to be changing so quickly that minor differences in timing can result in very different statistics. In light of the rapid evolution in this area, this survey only attempts to disclose the practices at a given point in time, which may soon be forgotten. Therefore, we also intend to repeat this study in some time, so that scores of the companies can be analysed across firms and over time. That way we will also find an indication for the validity of the statement that on-line reporting will be the norm for corporate communication, and that, over time, the Web will become the primary means of communication of financial information.

However, given the shortcomings found after performing this study, we do not expect the printed data to be replaced by the digital version in the near future. First the companies need to change their approach concerning the use of this broadcast (mass communication) medium for corporate reports and related data. They must realize it is not sufficient to make parts of the information available, but they must guarantee the visitor an instantaneous communication of updated, complete information, integrated in an efficient working, modern and user-friendly environment. And obviously, this tradition is not present yet.

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NOTES

1. Since these studies are not the central focus of our study, we refer to Xiao *et al.* (2000) for references, as well as to the other papers mentioned in the bibliography.
2. In other countries too, there is little regulation concerning financial reporting via the Internet. Only the Toronto Stock Exchange (TSE) and the French "Commission des Operations de Bourse" (COB) offer rules for electronic reporting. In the Netherlands, the "Richtlijnen voor de jaarverslaggeving", the "Richtlijnen voor de Accountantscontrole" (RAC) and the "Gedrags- en beroepsregels registeraccountants" (GBR) give regulations for the traditional annual report. These rules are applicable for the digital reporting via Internet as well.
3. We do not investigate the timing of disclosures, by looking at the time lag between posting information on the website and the traditional announcement of these data. Petravick and Gillett (1998), for instance, looked at the timing of earnings announcements.
4. Cookies are a technology that enable corporations to find out about user preferences and information needs. In connection with a questionnaire or a feedback form, the users can individually be identified. Based on the collected information, the websites can be designed to meet individual user needs.
5. In fact, of the 152 companies investigated, 22 had a foreign mother holding. The influence this might have, is not subject of this study.
6. REACH stands for "Review and Analysis of Companies in Holland", and is a database, published by Bureau Van Dijk.
7. This number does not include companies from the NMAX market.
8. The functional practice is where the annual and interim reports are presented under links with titles such as finance or economy. The promotional practice is where the main page provides a link to the latest annual report. The communicational practice is where all corporate information is presented in accordance with a conscious and consistent communication strategy, where the potential and existing investors are identified specifically (often under a link with the title Investor relations). The unstructured practice is where the financial information is scattered all over the website and with no obvious structure.
9. According to the Dutch law, the annual report has to include a balance sheet, a profit and loss account, a cash flow statement, notes, a management report and an audit opinion.
10. Very often, the audit opinion is integrated in other data.
11. The reason these companies are still included in the sample, is that they do present some financial information. However, these data are considered not to be of sufficient detail to fulfil the criteria mentioned under A1-7. Often it just concerns key figures.
12. Sometimes an icon concerning 1999 was visible already. However, if it could not be opened, the year 1998 was considered as the most recent year. The same requirement concerns the available previous years.
13. The availability of interim reporting is one way to examine how firms use the Internet to increase the timeliness of their financial reporting. Timeliness in the context of Internet financial reporting involves disclosing information before it loses its capacity to influence decisions as well as disseminating information in a manner that allows for faster acquisition and use of that information (Ashbaugh *et al.*, 1999). We have decided not to integrate this item under the second group, since it is more related to the availability of financial information.
14. If only one or more of the six separate components are made available for the most recent year, there is the same restriction with respect to the interim reporting and the former data.
15. It was not sufficient that only parts of the site were available in an additional language. To be considered, the whole site had to be translated.

16. In France the Commission des Opérations de Bourse (COB) has regulated Web disclosures in a similar fashion to the long-standing regulation of the French national Minitel system.
17. When sending our requests, we never explicitly referred to the link with university or with academic research.
18. If the first page of the site was only created to make a choice between two or more languages, this was not taken into account as a first click.
19. The measurement of a single score, which aggregates many criteria, has already been used in the disclosure literature. However, as Pirchegger and Wagenhofer (1999) mention, weights usually prove to be critical in scores like this. A general standard for relative importance for weighting does not exist which can be adhered to. Weights never are free from subjectivity. Therefore, to test the impact of the weights used, they performed sensitivity analysis for several firms. Since we do not use weights in this stage, we were not intended to do so.
20. The Pearson correlation coefficients between the five scores were highly significant, all showing p-values of 0,00.
21. Firms also appear to have different views about what a good Internet presentation should be. One view is that the Internet complements other information channels, and thus should include only the most recent and additional information since, for example, the last annual or interim report was published. Another view holds that the Internet replaces other information channels. Therefore, it should include all earlier information too.
22. During the time frame of this survey, some new websites were added to the total set of companies on the Internet.
23. With a sector, we refer to a two-digit BIC code.
24. If a company could not specify the month, we assumed the second quarter of the year.

APPENDIX

FIRM: _____

DATE: _____

URL address: <http://www>.Or website available on other commercial site service, namely: <http://www>.

Website, but no financial information.
Website, but financial information only available on request.

If yes: STOP !

1 Content

<i>Financial statement information:</i>	
1. Is the annual report of 1999 (98) as a whole available?	119 (78%)
2. Is the detailed consolidated balance sheet (separately) available?	71 (47%)
3. Is the detailed consolidated profit and loss account (separately) available?	72 (47%)
4. Is the cash flow statement (separately) available?	50 (33%)
5. Are the notes to the consolidated statements (separately) available?	36 (24%)
6. Is the management discussion or analysis (separately) available?	46 (30%)
7. Is the audit opinion (separately) available?	30 (20%)
8. Are annual reports of the previous year(s) available?	68 (45%)
From year till year	
9. Are interim statements available?	56 (37%)
10. Are financial ratios for a three-year period (or longer) available?	45 (30%)

<i>Other investor related information:</i>	
1. Is the website available in Dutch and an additional language (English)?	57 (38%)
If one: . If another:	
2. Are e-mail addresses available?	105 (69%)
3. Is the share price development described?	2 (1%)
4. Are charts about stock price movements available?	57 (38%)
5. Are press releases available?	145 (95%)
6. Are the minutes from the general meeting available?	3 (2%)
7. Is the shareholder structure available?	33 (22%)
8. Are frequently asked questions (FAQ) available?	17 (11%)
9. Is an up-to-date investor/financial calendar available?	73 (48%)

2 Timeliness

1. Is the date of the last update available?	11 (7%)
This date is: ..	
2. Are there any hints for finding current information directly?	64 (42%)
3. Are quotations of the same day available?	41 (27%)
4. Are quotations updated during the day?	37 (24%)
5. Was there a response on the standard request?	116 (76%)
Could this be asked by immediate order? ..	
6. Was this mailing of the annual report within one or two days?	53 (35%)
7. Was there a response on the special request?	66 (43%)
8. Was this response on the same day or the day after?	41 (27%)

3 Technology

1. Is the homepage on the screen completed within 10 seconds?	138 (91%)
2. Are there moving pictures, such as java applications?	90 (59%)
3. Are there hyperlinks between accounting data?	5 (3%)
4. Are external links to related contents available?	109 (72%)
5. Are direct e-mail contacts available?	116 (76%)
6. Is there an on-line order service for company and investor information?	105 (69%)
7. Is an internal search engine available?	46 (30%)
8. Are financial data in html or processable format (in spreadsheet compatible, xls, or ASCII, asc, txt, formats)?	99 (65%)
And in pdf-format? . As 1 whole? ..	115 (76%)

4 User support

1. Does the homepage have an intuitive address?	129 (85%)
2. Are frames used?	151 (99%)
3. Is the website well structured?	144 (95%)
4. Is a structure of contents of the website available?	37 (24%)
5. Is there information concerning technical devices (such as formats, size of downloads)?	103 (68%)
6. Is a pull-down menu available?	148 (97%)
7. Can you get the extent of the assets within 2 clicks?	78 (51%)
8. Can you get company addresses within 1 click?	73 (48%)
9. Is it possible to download financial information?	120 (79%)

1=fulfilled 0 = not fulfilled