The Irish Accounting Review (2000), Vol. 7, No. 1, 37-68

CORPORATE REPORTING ON THE INTERNET BY IRISH COMPANIES

Niamh Brennan

University College Dublin

Denis Hourigan

ARI Duty Free

ABSTRACT

The use of the Internet for financial reporting purposes by 109 Irish companies in 1998 is examined. The relationship between Internet disclosure and size, leverage, demand for corporate information and industry is analysed.

Results show that 35 (37 per cent) listed and 15 (100 per cent) semi-state companies had a Web site. Larger companies, with larger annual report print runs, were significantly more likely to have a Web site. There was no association between presence of an Internet site and leverage or number of shareholders. Companies in the services and financial industries were significantly more likely to have a Web site.

INTRODUCTION

The Internet was created in the United States of America in the late 1960s as a means of enabling government researchers and contractors to share computer files relating to military projects. The Internet also facilitated communication between academic institutions. It was not, however, until the early 1990s that business users began to use the Internet for commercial applications (Lymer, 1997).

The convergence of commerce and technology has meant profound changes in both business communications and the way business is conducted. Technology can greatly assist companies in conducting business on a global basis. Globalisation has meant that companies must now operate in a global market for capital. Operating in such an environment has pressurised companies into having the 'highest international standards of disclosure' (Myners, 1998, p. 27). Growing internationalisation of shareholder bases has meant that companies are seeking more effective and efficient means of communicating with their stakeholders.

The Internet is seen as one of the most valuable tools for investor relations. Potentially, the Internet allows information previously only available to large institutional investors to be available to individual shareholders. The Internet as a medium for investor relations should also ensure that smaller companies can access global capital markets by allowing a low cost solution to dissemination of financial information.

Organisations world-wide have successfully adopted the medium of the Internet for business communication, in particular for the purposes of marketing services and products (Lymer and Tallberg, 1997). The Internet as a communications medium has facilitated dramatic changes over recent years and corporate reporting has not been immune to such change. The debate on how best to present financial information has recently gained new impetus based on the belief that the Internet can act as a mechanism to deliver a "new look" financial report based on relational databases driven by the needs of users (Lymer, 1997; Schneider and Bowen, 1997). The potential impact of the Internet on the future of financial reporting could be dramatic with traditional forms of financial information being replaced by financial and non-financial databases, permitting the user as decision maker to access more relevant information. In this scenario, the distinction between historic and current information would blur (Baker and Wallage, 1998).

The Financial Accounting Standards Board has recently created a Web site (http://www.rutgers.edu/Accounting/raw/fasb/tech/index.html) for a mythical company FauxCom, Inc., for the purpose of inviting comments on the Internet's role in business information reporting (Journal of Accountancy, 1998). In February 1999, the International Accounting Standards Committee announced the establishment of a project on electronic financial reporting to examine issues such as the different

means of corporate electronic reporting, what standards and what type of standards are needed. More radically, use of the Internet to allow users to access corporate databases, including records and minutes of company meetings, has been suggested by the Institute of Chartered Accountants of Scotland's Research Committee (1999).

The Accounting Standards Board (ASB) encourages the trend of making financial information available electronically in its non-mandatory statement *Preliminary Announcements*, noting that 'companies should explore the use of electronic means (e.g. the Internet), as a way of disseminating the preliminary announcement to a wider audience without delay' (ASB, 1997).

The technology of the Internet is constantly evolving. Recent developments include "push technology" which enables users to receive information automatically. In addition, the Internet has enabled "corporate dialogue" – the multidirectional process of communication with companies and stakeholders in two way communication rather than the traditional one way process of corporate reporting (Spaul, 1997).

At the same time, technology for financial reporting on the Internet is also developing. The American Institute of Certified Public Accountants has recently established a Web site to encourage the application of eXtensible Markup Language (XML) to Financial Reporting (XFRML) to facilitate standard methods of maintaining, using and exchanging financial data (see http://www.xfrml.org). Baldwin-Morgan and Williams (1999) consider the use of intelligent Internet agents for financial reporting purposes, including for navigating regulatory filings, for tracking company performance through stock quotes and for searching annual reports and other statements for financial data.

COSTS AND BENEFITS OF REPORTING ON THE INTERNET

The Investors Relations Society in the UK provided estimates of the initial costs of providing financial information on the Internet. However, because the complexity and volume of information drive cost, the variability of these estimates is substantial. A summary of these costs is shown in **Table 1**. This table suggests that it costs between £20,000 and £30,000 per annum to maintain financial information on a Web site.

Table 1: Estimated costs of provision of financial Web site

Level of financial information	Cost estimate
Basic interim results	Stg£1,000 - 2,000
Extracts from annual report - Profit and Loss Account, Balance Sheet, Cash flow, Five year review	Stg£5,000 - 10,000
Enhanced treatment of annual report	Stg£15,000 - 20,000
To retain results as archive on site	Stg£50 - 100 p.a.

Source: Investor Relations Society (1998)

The benefits of using the Internet in corporate reporting include:

- Low cost distribution
- Instant access
- Provides a mass communication medium
- Facilitates dynamic updating
- Greater flexibility in presentation
- The possibility of exporting data for later manipulation by users.

Investor relations managers in the UK have estimated that the average cost to despatch a copy of the annual report to shareholders, researchers etc. is Stg£5 (Investor Relations Society, 1998). There is anecdotal evidence that companies reporting on the Internet can reduce the number of hard copies of the annual report. Companies will continue to be required by company law to send shareholders hard copies of their annual reports, but general enquiries from the public can be re-directed to company Web sites. Some countries (e.g. UK, USA and Canada) are currently debating how these laws can be changed to remove this constraint. No such debate is happening in Ireland.

Based on the above estimates, a company could recover the annual costs of maintaining a Web site (£30,000) by a reduction of 6,000 in the annual report print run.

Ireland aspires to embrace the concept of the information society (International Data Corporation, 1998). One of the fundamental indicators of the level of information awareness is the level of Internet usage.

There have been several international surveys of financial reporting practices on the Internet. The purpose of this study is to conduct a similar examination of corporate reporting practices on the Internet by Irish listed and semi-state companies. A comprehensive quantitative and qualitative analysis of the Internet reporting practices is reported. Three research issues are examined:

- The level of Internet usage by Irish companies
- Corporate reporting practices of Irish companies on the Internet
- Corporate characteristics exhibited by companies with Web sites.

The findings of the study are then benchmarked against empirical evidence from other international studies.

This paper is the first survey in Ireland of financial reporting on the Internet. A by-product of the research is the list of Internet addresses of the 50 Irish companies with Web sites in Appendices 1 and 2.

PRIOR LITERATURE

Level of Internet Usage

Prior research suggests a growing level of Internet usage by companies. Of the top Fortune 150 companies, Louwers, Pasewark and Typpo (1996) found that 97 (65 per cent) had a Web site while Petravick and Gillett (1996) found that 103 (69 per cent) had a Web site. Of the top 50 companies in the UK, Lymer (1997) found that 46 (92 per cent) had corporate Web sites. Lymer and Tallberg (1997) surveyed 72 companies in Finland and established that 65 (90 per cent) of these companies had corporate Web sites. Deller, Stubenrath and Weber (1999) studied samples from the US, the UK and Germany that form the respective country's stock market 100 index (i.e. S&P 100, FTSE 100, DAX 100). They found that 95 (95 per cent) of US corporations, 85 (85 per cent) of German companies and 72 (72 per cent) of UK companies had Web sites. Marston and Leow (1998) found in 1996 that 63 of the FTSE 100 companies had Web sites. By the time of Hussey, Gulliford and Lymer's (1998) survey, this number had increased to 71 Web sites. Craven and Marston (1999) combined the Marston and Leow (1998) sample with the top 200 UK companies and found that 154 (75 per cent) of the 206 sample companies had Web sites. Ashbaugh, Johnstone

and Warfield (1999) found that 253 (87 per cent) of the 290 US firms surveyed in 1998 had a Web site.

Extent of Financial Information Disclosed on Web Sites

Of the top 50 (by capitalisation) UK companies surveyed, Lymer (1997) found that 26 (52 per cent) had full or summary accounts on their Web site. Lymer and Tallberg (1997) found that 44 (61 per cent) of 72 Finnish companies surveyed had full or summary financial statements. Deller et al. (1999) found that 90 per cent of US companies surveyed had financial data on their Web site compared with 74 per cent of UK companies. Of the 63 companies with Web sites, Marston and Leow (1998) found that 45 (71 per cent) disclosed financial data, while Hussey et al. (1998) found financial data in 63 (89 per cent) of Web sites. Company Annual Reports On Line (CAROL) (1999) found that 67 per cent of the top 1,000 European companies have financial reports on the Web. Of these, 80 per cent provide other financial information in addition to annual reports. A detailed annual report was disclosed on 67 (32 per cent) of Craven and Marston's (1999) sample Web sites, while 42 (20 per cent) reported parts or summaries of annual reports on their sites. Ashbaugh et al. (1999) defined firms as Internet reporting firms if they provided comprehensive financial statements on their Web site or a link to their annual report elsewhere. Of the 253 firms with Web sites, 177 (71 per cent) were classified as Internet reporting firms.

Characteristics of Companies Reporting on the Internet

Marston and Leow (1998) looked at the extent of Internet financial disclosure by the FTSE 100 companies in 1996 and tested for a relationship between Internet disclosure and two company characteristics, size and industry. Six industry categories were examined. They found significant differences between large and small company disclosure practices on the Internet. They also found significant differences in industry classification and in the format of financial information – whether summary or full accounts. Services and utilities were significantly more likely to disclose financial information. While size was also found by Craven and Marston (1999) to be associated with use and extent of disclosure on the Internet, they found no association between

industry and Internet disclosure. CAROL (1999) found that companies in the electronics, transport and utilities industries were most likely to use the Web for financial reporting. Of the European countries studied, UK and German companies were best users of the Web.

Ettredge, Richardson and Scholz (1998) studied 234 US companies listed by the Association for Investment Management and Research (i.e. firms heavily followed by analysts) and 207 US companies listed on the Standard & Poor's Compustat PC Plus data base (i.e. high tech companies generally smaller than the AIMR companies with greater retail ownership). The study examined whether investor relations material provided by company Web sites varied by (i) level of individual ("retail") ownership, (ii) level of press coverage and (iii) level of analyst following. Companies with high levels of retail ownership were more likely to feature information adapted for users with relatively low levels of financial information expertise. These included discussions of advantages of holding the company's shares, directors' or investor relations officers' speeches, current share price and information about the company's dividend reinvestment plan. In contrast, companies with greater analyst following provided financial information more suited to sophisticated users, including annual reports, links to EDGAR (a Web site featuring US Securities and Exchange Commission (SEC) filings) and information on the firm's stock transfer agent. Companies with heavy press coverage also tailored the content of their Web site to business journalists, featuring annual reports, quarterly reports, directors' or investor relations officers' speeches and current stock prices.

RESEARCH QUESTIONS

This paper examines three issues: (i) Level of use of the Internet by Irish companies for corporate reporting; (ii) Content analysis of financial information on Irish company Web sites; and (iii) Company characteristics that may be common to Irish companies reporting on the Internet.

Four corporate characteristics are specifically examined to establish whether companies that use the Internet for reporting have common traits: Size, Leverage, Demand for corporate information and Industry.

Size

Previous studies have suggested many reasons why large companies might disclose more information than other companies. Disclosure is less costly for larger companies (SEC, 1977). Large firms may have a greater need for disclosure as their shares are more widely traded. Small firms may be more reluctant to disclose because this may place them at a competitive disadvantage.

Most prior research has documented a greater level of disclosure of financial accounting information by larger firms (see Marston and Shrives (1991) for a review of some of this research).

Economies of scale in disclosure and litigation deterrence (larger firms are more exposed to litigation as they are seen to have "deeper pockets") are two reasons put forward by Kasznik and Lev (1995) explaining why size might be related to disclosure. They found firm size to be a significant explanatory variable for their group of good news as well as bad news firms.

Size proxies for many variables. As Ball and Foster (1982) point out, results confirming a size hypothesis may have alternative explanations. Care must be taken in interpreting the results of tests including this variable.

H_1: Larger firms are more likely to have a Web site than smaller firms

Leverage

Jensen and Meckling (1976) and Smith and Warner (1979) have observed that agency costs are higher for firms with proportionally more debt in their capital structure. As the proportion of debt increases, shareholders, and managers acting on behalf of shareholders, have greater incentives to transfer wealth from lenders. As leverage increases, lenders and shareholders may demand more information in order to assess the probability of a firm meeting its debt obligations. This suggests a positive relationship between voluntary disclosure and leverage.

Under the free cash flow model of Jensen (1986) the lower the free cash flow, the higher the debt and, consequently, the lower the monitoring costs between shareholders and management. Firms' management are to some extent controlled and disciplined by the providers of debt. Shareholders are supposed to have superior monitoring and bonding facilities in contrast to all equity financed firms. Thus, the direction of the relationship between leverage and disclosure is not clear from the literature.

A positive association between financial leverage and voluntary segment disclosures (Salamon and Dhaliwal, 1980; Bradbury, 1992) and financial leverage and voluntary current cost disclosures (Wong, 1988) has been found, but the evidence is not unanimous (Leftwich, Watts and Zimmerman, 1981; Bazley, Brown and Izan, 1985; Kelly, 1994). Given the weight of evidence linking leverage with increased disclosure, firms with greater financial leverage are hypothesised to be more likely to disclose more information through the Internet.

H_2: Firms with high debt-equity ratios are more likely to have a Web site than firms with low debt-equity ratios.

Demand for Corporate Information

Agency theory explains managerial motives in firms where ownership of the firm is separated from the control function which is carried out by managers acting on behalf of shareholders. Disclosure of information narrows the information gap, consequently decreasing agency costs. Leftwich et al. (1981) and Bradbury (1992) included size to proxy for agency costs of capital held by outsiders on the assumption that the proportion of outside capital tends to be higher for larger firms.

It has been argued that the Internet is best suited for communication with private shareholders (Myners, 1998; Deller et al., 1999). Electronic reporting will enable democratisation of shareholder information such that even the smallest shareholder will be able to access the same information as the largest institution. The greater the demand for such communication, the more likely a company is to disclose financial information through the Web.

H_3: Firms with higher demand for corporate information are more likely to have a Web site than firms with lower shareholder numbers.

Industry

Differences in industry have been found to be related to disclosure on the Internet (Marston and Leow, 1998; CAROL, 1999). This may be due to different industries having different proprietary costs of disclosure. Some may be more technologically advanced than others.

H_4: Different proportions of firms in different industries will have Web sites.

RESEARCH METHODOLOGY

Sample

This study is based on a sample of 94 public companies listed on the Irish Stock Exchange as recorded on the daily official list on 9 July 1998. A non-random sample of 15 commercial semi-state companies was also included. Appendices 1, 2 and 3 list the companies in the sample.

Survey of Web Sites

An on-line search of the Web sites of sample companies was conducted. The initial problem was to identify the Web addresses of the relevant listed and semi-state companies. Most addresses could be established intuitively, using the address suffix of either '.ie' or '.com'. For example, the Web site address of Elan was www.elan.ie. Where this approach proved unsuccessful, Web search engines such as Yahoo, Alta Vista etc. were used to locate Web addresses.

Where the preliminary survey did not identify a company's Web site, that company was contacted by telephone to verify that no corporate Web site existed. These telephone calls revealed several companies

which possessed unusual Web addresses or whose Web sites were hosted by their Internet service providers.

Content Analysis

Corporate Web sites were subject to a two-stage, in-depth content analysis. Initially, the following data was extracted: (i) company background data, (ii) service / product information, (iii) presence of financial information (e.g. annual report / investor relations pages), (iv) press releases, (v) directors' biographies, and (vi) employment opportunities with the company.

Secondly, financial information provided on Web sites was further analysed. Elements outlined in the London Stock Exchange and Investor Relations Society *Best Internet Annual Report* guidelines and briefing papers (Investor Relations Society, 1998) were considered. Content was analysed with respect to (i) the nature (financial highlights or full accounts) and (ii) the type of financial statements available (chairman's and chief executive's reviews; financial statements; notes to accounts; segmental analysis; five year trends; corporate governance documents; directors' information etc.).

Company Characteristics

Four company characteristics were measured: Size, Leverage, Demand for corporate information and Industry. Four proxies were used to measure company size: Market capitalisation, Turnover, Profitability and Number of employees. Leverage was measured by the debt / equity ratio.

Demand for corporate information was proxied in two ways: (i) by the size of the print run of the most recent annual report; and (ii) by the number of shareholders. This was used as an approximation of the number of users of corporate information. It is accepted that this proxy has limitations as the Internet has widened the demand for corporate information beyond existing shareholders to a broader group of interested users.

Companies were classified into the same six industry categories used by Marston and Leow (1998): Mineral extraction, General industrial, Consumer goods, Services, Utilities and Financials.

Information on Market capitalisation, Turnover, Profitability and Leverage was obtained variously from company annual reports, *Business & Finance* (1998) and O'Neill (1998). Data on the number of shareholders and the number of printed copies of the most recent annual report was obtained by writing to each company in July 1998 with follow up telephone requests for the information where necessary.

Statistics

Basic descriptive univariate and nonparametric bivariate statistics were calculated, including Mann-Whitney U tests of differences in mean rankings of variables for companies with / without Web sites. Spearman bivariate correlations for all independent variables were calculated. Simple two-way crosstabulation was performed to calculate bivariate correlations between the categorical *Industry* variable and companies with / without Web sites. Related Pearson chi-square statistics are reported.

RESULTS

Level of Internet Usage by Irish Companies

Table 2 shows that 50 (46 per cent) of 109 companies in the sample had a Web site. There were 35 (37 per cent) listed companies with Web sites (see Appendix 1). Semi-state companies had a higher level of Internet usage – all had Web sites. These findings are consistent with the results of a similar survey conducted by *Interface Business Information* in November 1997, which found that approximately one third of their sample of 300 of medium to large sized companies had a Web site (Dunne, 1997).

Table 2: Level of Internet usage by Irish companies

	Listed[1]		Semi-state		Total	
	No.	%	No.	%	No.	%
Sample	94	100	15	100	109	100
Web site	35	37	15	100	50	46
No Web site / no response	59	63	0	0	59	54
	94	100	15	100	109	100

Content Analysis

Table 3 shows the types of information disclosed in Web sites. The two highest-ranking categories are company background and products / services. Approximately two thirds of sites disclosed financial information. There were 24 (69 per cent) listed company Web sites disclosing financial information. Public companies are better at using their Web sites for financial reporting purposes. Only eight (53 per cent) semi-state company sites incorporated financial information.

Table 3: Type of information on Web sites

	Listed		Semi-state		Total	
	No.	%	No.	%	No.	%
Number of Web sites	35	100	15	100	50	100
Company background	30	86	11	73	41	82
Products / Services	31	89	8	53	39	78
Financial	24	69	8	53	32	64
Press releases	21	60	8	53	29	58
Director information	9	26	4	27	13	26
Employment	8	23	1	7	9	18

Table 4 analyses those entities reporting financial information on the Web. Nine (28 per cent) companies reproduced the financial statements (profit and loss account and / or balance sheet only). Interestingly, the UK Society of Investor Relations has as its guideline for awards that merely replicating the printed form of financial statements on the Internet will not go far in their competition. A detailed content analysis of the sites containing financial information is also shown in **Table 4**. The profit and loss account and balance sheet ranked the most common financial disclosures at 75 per cent.

Table 4: Analysis of Financial information on Web Sites

	Listed		Semi-state		Total	
Nature of financial information	**No.**	**%**	**No.**	**%**	**No.**	**%**
Financial highlights only	5	*21*	5	*63*	10	*31*
Financial statements only	8	*33*	1	*12*	9	*28*
Financial highlights and financial statements	11	*46*	2	*25*	13	*41*
Sites with financial information	24	*100*	8	*100*	32	*100*
Type of financial statements	**No.**	**%**	**No.**	**%**	**No.**	**%**
Chairman's statement	14	*58*	4	*50*	18	*56*
Chief executive's review	11	*46*	5	*63*	16	*50*
Profit and loss account	21	*88*	3	*38*	24	*75*
Balance sheet	21	*88*	3	*38*	24	*75*
Cash flow statement	13	*54*	3	*38*	16	*50*
Notes to accounts	9	*38*	3	*38*	12	*38*
Non-financial performance indicators	2	*8*	-	-	2	*6*
Financial ratios	1	*4*	2	*25*	3	*9*
Five / ten year summary	9	*38*	-	-	9	*28*
Multiple currency	1	*4*	-	-	9	*28*
Segmental analysis	11	*46*	-	-	11	*34*
Corporate governance	8	*33*	2	*25*	10	*31*
Directors' report	8	*33*	3	*38*	11	*34*
Directors' information	9	*38*	4	*50*	13	*41*

The following comments are relevant to the quality of financial information provided on the Internet by the Irish companies:

- The location of financial information was not always obvious to the user. In some cases, although the site included a financial section, the information was in the press releases area (see, for example, Avonmore Waterford Group (www.awg.ie)
- Many sites did not hyperlink pages. This facility would have been particularly helpful in moving from the balance sheet and profit and loss account to the associated notes
- Few listed companies made use of graphics. It was not clear whether this was due to omission or a design decision to minimise time to download pages
- The format and content of financial information was not adapted to the new medium. The majority of companies present information in "page" rather than screen format. In some sites, the user was obliged to scroll back and forward through large volumes of data to assemble information
- Where the user wished to make use of the pdf format to download and view documents, files were lengthy resulting in long download times (one to two hours for average modem speeds)
- Sites with incomplete financial information left the reader with little option but to request a hard copy of the accounts.

Benchmarking of Results against Other Studies

Results of prior studies of corporate reporting on the Internet are summarised in **Table 5**. The studies are listed according to the date on which the research was carried out. This shows the rapid increase over time of companies with Web sites.

In general, a considerably lower proportion of Irish companies have Web sites (37 per cent) compared with their corporate counterparts in the US (87 per cent Ashbaugh et al. (1999), 95 per cent Deller et al., (1999)) and in the UK (63 per cent Marston and Leow (1998), 92 per cent Lymer (1997), 72 per cent Deller et al. (1999) and 71 per cent Hussey et al. (1998)). This may, in part, be due to differences in sample composition – the top 100/150 listed companies in the UK/US are likely to be considerably larger, on average, than the 94 Irish listed companies. For example, the average size of Marston and Leow's FTSE 100

companies was: Turnover £2,845 million, Employees 20,663 and Market capitalisation £3,243 million (compared with average sizes for the 94 Irish listed companies of Turnover IR£647 million, Employees 4,516 and Market capitalisation IR£1,146 million – between one-fifth to one-third the size of the UK sample).

Table 5 also shows that most company Web sites contain financial data.

Descriptive statistics for each variable are shown for listed companies in **Table 6**. The skewness statistics shows that the distribution properties of the data are not normal. Consequently, non-parametric statistical tests are used in subsequent analyses.

Spearman bivariate correlations for all independent variables were calculated and are shown in **Table 7**. The four size variables are highly correlated (ranging from 0.92 to 0.66). Correlations between the four size variables and the remaining variables is lower (ranging from 0.42 to 0.13). Correlation between the size of the annual reports print run and the number of shareholders is high at 0.83. Because of the high correlation among the independent variables, no multivariate analysis was performed.

Table 5: Benchmarking of results against other studies

Authors (Date of study)	Population/ Sample	Web site (%)[1]	No financial data[2]	Balance sheet[2]	Profit & Loss[2]	Notes[2]	Cash flow[2]
Louwers, Pasewark and Typpo (1996) (March 1996)	US Fortune 150 companies	97 (65%)	43%	36%	36%	n/a	n/a
Petravick and Gillett (1996) (May 1996)	US Fortune 150 companies	103 (69%)	19%	45%	45%	n/a	n/a
Marston and Leow (1998) (November 1996)	FTSE-100 Companies	63 (63%)	29%	n/a	n/a	n/a	n/a
Lymer (1997) (February 1997)	Top 50 UK Companies	46 (92%)	43%	13%	13%	n/a	n/a
Lymer and Tallberg (1997) (February 1997)	All 72 Finnish listed companies	65 (90%)	11%	37%	37%	n/a	n/a
Ashbaugh, Johnstone, and Warfield (1999) (January 1998)	290 US firms	253 (87%)	n/a	n/a	n/a	n/a	n/a

Deller, Stubenrath and Weber (1999) (January 1998)	Top 100 US listed companies	95 (95%)	n/a	93%	93%	92%	92%
	Top 100 UK listed companies	72 (72%)	n/a	74%	75%	60%	64%
	Top 100 German listed companies	85 (85%)	n/a	65%	63%	42%	30%
Hussey, Gulliford and Lymer (1998) (March 1998)	FTSE-100 Companies	71 (71%)	11%	86%	86%	n/a	n/a
Craven and Marston (1999) (July 1998)	206 UK largest firms	154 (75%)	29%	n/a	n/a	n/a	n/a
Brennan and Hourigan (2000) (July 1998)	All 94 Irish listed companies	35 (37%)	31%	60%	60%	26%	37%
CAROL (1999) (November/December 1998)	European top 1000 companies	n/a	33%	n/a	n/a	n/a	n/a

n/a: Information not available
[1] % of sample
[2] % of total number of Web sites found

Table 6: Descriptive statistics of continuous independent variables for listed companies

Variable	Mean	Median	Skewness[1]	Standard deviation	No.	Missing values
Size: Market capitalisation (£million)	1,146	126	5.84	3,937	90	4
Size: Turnover (£million)	647	70	6.40	2,487	86	8
Size: Profitability (£million)	57	7	6.24	206	90	4
Size: Number of employees	4,516	542	6.14	16,263	88	6
Leverage: Debt/Equity ratio	1.30	0.36	8.73	5.15	90	4
Demand for corporate information: Number of annual reports	28,128	5,000	6.08	96,483	93	1
Demand for corporate information: Number of shareholders	20,756	2,500	6.68	73,324	93	1

[1] These values (compared with values given in tables by Kanji (1993)) would indicate that assumptions that the variables are distributed normally are inappropriate.

Table 7: Bivariate Spearman correlations of independent variables

	Market Capitalisation	Turnover	Profit	Employees	Leverage	Annual Reports
Turnover	0.71**					
Profit	0.80**	0.92**				
Employees	0.66**	0.86**	0.80**			
Leverage	0.42**	0.35**	0.39**	0.36**		
Annual Reports	0.54**	0.39**	0.39**	0.41**	0.15	
Shareholders	0.43**	0.32**	0.28**	0.32**	0.13	0.83**

** Significant at < 0.01

Number of cases varied depending on availability of data on each pair of variables

Table 8 reports Mann-Whitney U test results of differences in mean rankings of the continuous variables of listed companies with / without Web sites. Results indicate that larger listed companies (as defined by market capitalisation, turnover, profits and employees) are significantly more likely to use the Internet. Their objective may be to deliver timely, cost effective financial information to their current shareholders and potential investors, thus providing a higher quality of investor relations and informational service.

No association was found between leverage and disclosure on the Internet. The relationship between presence of a Web site and number of annual reports is significant at two per cent. It is interesting to note that there is no statistical difference between the number of shareholders in listed companies with Web sites and in those with no Web sites.

Table 8: Mann-Whitney U tests of differences in mean rankings between listed companies with / without Web site

	Mean rank			
	Web site	**No Web site**	***Z*-stat.**	**Two-tailed prob.**
Market capitalisation	63	35	-4.86	0.00**
Turnover	54	37	-3.23	0.00**
Profit	61	37	-4.27	0.00**
Employees	57	37	-3.58	0.00**
Leverage	50	43	-1.36	0.17
Annual Reports	56	42	-2.35	0.02*
Shareholders	52	44	-1.46	0.15

** Significant at < 0.01 * Significant at < 0.05

Analysis by industry in **Table 9** reveals significant differences in the industries of companies with and without Web sites. A Web site is significantly more likely in the services and financial industries. This may be because financial institutions and businesses in the service industry

are interfacing with the public more to sell their products/services via the Internet.

Table 9: Differences in industry between companies with / without Web sites

	Web site	No Web site	Total
Industry			
Oil and mining	2 (6%)	18 (31%)	20 (21%)
General Industrial	6 (17%)	19 (32%)	25 (27%)
Consumer Goods	4 (11%)	8 (14%)	12 (13%)
Services	12 (34%)	9 (15%)	21 (22%)
Utilities	2 (6%)	0 (0%)	2 (2%)
Financials	9 (26%)	5 (8%)	14 (15%)
	35 (100%)	59 (100%)	94 (100%)

Pearson chi-square 19.62 (d.f. 5) Significance 0.00**
** Significant at < 0.01

To summarise, these results indicate that the small to medium-sized listed companies, as defined by market capitalisation, turnover, profit and employees, are not realising the potential of the new technology to overcome the possible disadvantages of their smaller size.

DISCUSSION AND CONCLUSIONS

The primary motivation for this exploratory research was to conduct a quantitative and qualitative analysis of financial reporting practices of Irish listed and semi-state companies on the Internet.

The following summarises the findings:

- Results show that 50 companies (46 per cent) (37 per cent of listed companies and 100 per cent of semi-state companies) provided a Web site, which compares poorly with other countries
- Of the 50 companies with Web sites, 32 (64 per cent) provided some form of financial information

- Larger listed companies, with larger annual report print runs, were significantly more likely to have a Web site. No association was found between leverage and presence of a Web site
- There was no significant association between Internet usage and the total number of shareholders
- Companies in the services and finance industry are significantly more likely to have a Web site.

As expected, Irish listed companies lag behind their US, UK and German corporate counterparts. The "wait-and-see" approach being adopted during this period of rapid change could put Irish listed companies, and users of their financial information, at a comparative disadvantage. For Irish listed companies to succeed in global terms, more effective use of the Internet, and all associated technologies, is needed to communicate financial information.

Future Developments

Interest in the Internet for financial reporting purposes is increasing. The number of Internet users is growing rapidly. The total number of people estimated to be online worldwide in June 1999 is 179 million, with 350 million expected by the year 2005 (Nua, 1999). The number of Irish adults with Internet access is estimated at 380,000 in June 1999 and was expected to reach 518,000 by the end of 1999. Nua (1999) predicts that 829,000 adults will be online in Ireland by 2001. Debreceny and Gray (1999) predict that Web-based financial statements will become the primary means of information dissemination, with printed versions occupying a secondary, archival role.

Lymer (1999) summarises the issues created as a result of Internet-based reporting, ranging from management of the process, regulation, standard setting, validity and reliability of data, liability for errors and demand for additional disaggregated corporate information. The Internet in its current form is unregulated. Ashbaugh et al. (1999) have found substantial variations in the quality of firms' Internet financial reporting practices and they call for regulation of financial information disseminated via the Internet.

Financial information on the Internet is not subject to independent verification. Statements do not have to be audited prior to posting on the

Internet. Confidence in the Internet for financial reporting purposes may be undermined due to concerns about the reliability of the financial information thereon (KPMG, 1999). Debreceny and Gray (1999) draw attention to the ease with which data can be altered without any indication that a change has been made. Web site security is an additional concern. Only 35 per cent of US firms surveyed provide assurance to users on the accuracy of data on their Web site (Ashbaugh et al., 1999).

In summary, it is likely that over the next few years further developments in financial reporting will take place in terms of format and presentation of information on the Internet, and in regulation and auditing of this information.

ACKNOWLEDGEMENTS

Participants at the 12th Annual Conference of the Irish Accounting and Finance Association, Cork, provided helpful comments on an earlier draft of this paper. The authors are grateful to the anonymous referees for their constructive suggestions.

NOTE

[1]By July 1999 (exactly one year since the research in this paper was carried out), the proportion of companies with Web sites had doubled, with 66 (67 per cent) of the 99 Irish companies listed on the Irish stock exchange having a Web site (Brennan and Kelly, 1999).

Appendix 1: Listed company Web sites

	Company	Web site	Industry
1.	Allied Irish Banks plc	www.aib.ie	6
2.	Anglo Irish Bank Corporation plc	www.angloirishbank.ie	6
3.	Arnotts plc	www.iol.ie/arnotts	4
4.	Avonmore Waterford Group plc (now Glanbia plc)	www.awg.ie	3
5.	Bank of Ireland plc	www.bankofireland.ie	6
6.	BCO Technologies Group plc	www.bco-technologies.com	4
7.	CRH plc	www.crh.ie	2
8.	DCC plc	www.dccplc.com	6
9.	Diageo plc	www.diageo.com	3
10.	Dragon Oil plc	www.dragonoil.com	1
11.	Elan Corporation plc	www.elan.ie	3
12.	Fitzwilton plc	www.fitzwilton.ie	6
13.	Fyffes plc	www.fyffes.com	3
14.	Hibernian Group plc	www.hibernian-group.ie	6
15.	Icon CMT	www.icon-icr.com	4
16.	Independent Newspapers plc	www.independent.ie	4
17.	Iona Technologies plc	www.iona.ie	4
18.	Irish Continental Group plc	www.irishferries.ie	4
19.	Irish Life plc	www.irishlife.ie	6
20.	Irish Permanent plc	www.irishpermanent.ie	6
21.	ITG Group plc	www.itg.ie	5
22.	Jurys Hotel Group plc	www.jurys.com	4
23.	Kingspan Group plc	www.kingspan.com	2
24.	Marlborough International plc	www.marlborough.ie	4

25.	Norwich Union plc	www.norwich-union.ie	6
26.	Oglesby & Butler plc	www.kol.ie/oglesby	2
27.	Ormonde Mining plc	www.info-mine.com/ormonde	1
28.	Powerscreen International plc	www.powerscreen.co.uk	2
29.	Rapid Technology Group plc	www.rt-interface.com	4
30.	Ryan Hotels plc	www.ryan-hotels.com	4
31.	Smurfit (Jefferson) plc	www.smurfit.ie	2
32.	Tesco plc	www.tesco.co.uk	4
33.	Ulster Television plc	www.utvlive.com	4
34.	Unidare plc	www.unidare.ie	2
35.	Viridian Group plc	www.viridiangroup.co.uk	5

Appendix 2: Semi-state company Web sites

1.	ACC Bank plc	www.accbank.ie
2.	Aer Lingus plc	www.aerlingus.ie
3.	Aer Rianta cpt	www.aer-rianta.ie
4.	An Post	www.anpost.ie
5.	Bord Gais Eireann	www.bordgais.com
6.	Bord Na Mona	www.bnm.ie
7.	Coillte Teo	www.coillte.ie
8.	Electricity Supply Board	www.esb.ie
9.	ICC Bank plc	www.icc.ie
10.	National Lottery Company	www.lotto.ie
11.	RTE	www.rte.ie
12.	Shannon Free Airport Development Company Limited	www.shannon-dev.ie
13.	Telecom Eireann	www.telecom.ie
14.	TSB Bank	www.tsbbank.ie
15.	Voluntary Health Insurance Board	www.vhi.ie

Appendix 3: Listed companies not responding / with no Website at time of Survey

	Company	Industry		Company	Industry
1.	Abbey plc	2	31.	IAWS Group plc	3
2.	Adare Printing Group plc	4	32.	IFG Group plc	2
3.	Aminex plc	1	33.	ILP Group plc	4
4.	Arcon Int. Resources plc	1	34.	Ivernia West plc	1
5.	Ardagh plc	2	35.	IWP International plc	2
6.	Athlone Extrusions plc	2	36.	Jermyn Investment Properties plc	6
7.	Barlo Group plc	2	37.	Jones Group (The) plc	2
8.	Boxmore International plc	2	38.	Kenmare Resources plc	1
9.	Bridgend Group plc	2	39.	Kerry Group plc	3
10.	Bula Resources plc	1	40.	Lamont Holdings plc	2
11.	Celtic Resources Holdings plc	1	41.	Mackie International plc	2
12.	Clondalkin Group plc	2	42.	McInerney Holdings plc	2
13.	Crean (James) plc	2	43.	Minmet plc	1
14.	Dana Petroleum plc	1	44.	Navan Resources plc	1
15.	Donegal Creameries plc	3	45.	Norish plc	4
16.	Dunloe House Group plc	6	46.	Ovoca Resources plc	1
17.	Ennex International plc	1	47.	Peterhead Group plc	4
18.	European Leisure plc	4	48.	Premier Oil plc	1
19.	Ewart plc	6	49.	Providence Resources plc	1
20.	FBD Holdings plc	6	50.	Qualceram plc	2
21.	Fishers International plc	4	51.	Readymix plc	2
22.	Gaelic Resources plc	1	52.	Reflex Group plc	4
23.	Galen Holdings plc	3	53.	Ryanair Holdings plc	4
24.	Glencar Mining plc	1	54.	Seafield plc	2
25.	Golden Vale plc	3	55.	Silvermines Group plc	1
26.	Grafton Group plc	2	56.	Tullow Oil plc	1
27.	Green Property plc	6	57.	Tuskar Resources plc	1
28.	Greencore Group plc	3	58.	United Drug plc	3
29.	Hampden Group plc	4	59.	Waterford Wedgwood plc	3
30.	Heiton Holdings plc	2			

REFERENCES

Accounting Standards Board (ASB) (1997). 'Preliminary Announcements – ASB Publishes Proposals for 'Best Practice' Statement', ASB Press Notice 99, London: ASB.

Ashbaugh, H., Johnstone, K. M. and Warfield, T. D. (1999). 'Corporate Reporting on the Internet', *Accounting Horizons*, Vol. 13, No. 3, pp. 241-257.

Baker, C. R. and Wallage, P. (1998). 'The Future of Financial Reporting (in Europe): Is it Time to do away with Financial Reporting?', Paper presented at the 21st Annual Congress of the European Accounting Association, Antwerp, Belgium, April.

Baldwin-Morgan, A.A. and Williams, S. L. M. (1999). 'The Future of Intelligent Internet Agents in European Financial Reporting', *European Accounting Review*, Vol. 8, No. 2, pp. 303-319.

Ball, R. and Foster, G. (1982). 'Corporate Financial Reporting: A Methodological Review of Financial Research', *Journal of Accounting Research*, Vol. 20, Supplement, pp. 161-234.

Bazley, M., Brown, P. and Izan, H. Y. (1985). 'An Analysis of Lease Disclosure by Australian Companies', *Abacus*, Vol. 21, No. 1, pp. 44-62.

Bradbury, M. E. (1992). 'Voluntary Disclosure of Financial Segment Data: New Zealand Evidence', *Accounting and Finance*, Vol. 32, No. 1, pp. 15-26.

Brennan, N. and Kelly, S. (1999). 'Use of the Internet by Irish Companies for Investor Relations Purposes', Working paper, University College Dublin.

Business & Finance (1998). 'Ireland's Top 1000 Companies', *Business & Finance*, February, Dublin: Belenos Publications Limited.

Company Annual Reports On Line (CAROL) (1999). *The Use of the WWW for Corporate Reporting in Europe*, London: CAROL.

Craven, B. M. and Marston, C. (1999). 'Financial Reporting on the Internet by Leading UK Companies', *European Accounting Review*, Vol. 8, No. 2, pp. 321-333.

Debreceny, R. and Gray, G. L. (1999). 'Financial Reporting on the Internet and the External Audit', *European Accounting Review*, Vol. 8, No. 2, pp. 335-350.

Deller, D., Stubenrath, M. and Weber, C. (1999). 'A Survey on the Use of the Internet for Investor Relations in the USA, UK and Germany', *European Accounting Review*, Vol. 8, No. 2, pp. 351-364.

Dunne, J. (1997). 'Accountants are not Cautious', *Sunday Business Post*, 2/11/97.

Ettredge, M., Richardson, V.J. and Scholz, S. (1998). 'Financial Data at Corporate Web Sites: Do Information Clienteles Matter?', Working paper, University of Kansas.

Hussey, R, Gulliford, J. and Lymer, A. (1998). *Corporate Communications. Financial Reporting on the Internet*, London: Deloitte Touche Tohmatsu.

Institute of Chartered Accountants of Scotland (1999). *Business Reporting: The Inevitable Change?*, Edinburgh: The Institute of Chartered Accountants of Scotland.

International Data Corporation (IDC) (1998). *World Times Information Society Index, 1997*, International Data Corporation.

Investor Relations Society (1998). *Annual Reports and the Internet*, London: Investor Relations Society.

Jensen, M. C. (1986). 'Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers', *American Economic Review*, Vol. 76, Papers and Proceedings, pp. 323-329.

Jensen, M. C. and Meckling, W. H. (1976). 'Theory of the Firm: Managerial Behaviour, Agency Costs and Ownership Structure', *Journal of Financial Economics*, Vol. 3, pp. 305-360.

Journal of Accountancy (1998). 'News Report: Model Company goes Online', *Journal of Accountancy*, June, p. 17.

Kanji, G. K. (1993). *100 Statistical Tests*. London: Sage Publications.

Kasznik, R. and Lev, B. (1995). 'To Warn or not to Warn: Management Disclosures in the Face of an Earnings Surprise', *The Accounting Review*, Vol. 70, No. 1, pp. 113-134.

Kelly, G. J. (1994). 'Unregulated Segmental Reporting: Australian Evidence', *British Accounting Review*, Vol. 26, No. 3, pp. 217-234.

KPMG (1999). 'Accountants on the Web', *Financial Reporting Update*, February, p.1.

Leftwich, R., Watts, R. and Zimmerman, J. (1981). 'Voluntary Corporate Disclosure: The Case of Interim Reporting', *Journal of Accounting Research*, Vol. 19, Supplement, pp.50-77.

Louwers, T. J., Pasewark, W. R. and Typpo, E. W. (1996). 'The Internet: Changing the Way Corporations tell their Story', *CPA Journal*, Vol. 66, November, pp. 24-28, 52.

Lymer, A. (1997). 'The Use of the Internet for Corporate Reporting - a Discussion of the Issues and Survey of Current Usage in the UK', *Journal of Financial Information Systems*, http://www.shu.ac.uk/jfis.

Lymer, A. (1999). 'The Internet and the Future of Corporate Reporting in Europe', *European Accounting Review*, Vol. 8, No. 2, pp.289-301.

Lymer, A. and Tallberg, A. (1997). 'Corporate Reporting and the Internet - a Survey and Commentary on the Use of the WWW in Corporate Reporting in the UK and Finland', Paper presented at the European Accounting Association Annual Congress, Graz, Austria, April.

Marston, C. and Leow, C.Y. (1998). 'Financial Reporting on the Internet by Leading UK Companies', Paper presented at the European Accounting Association Annual Congress, Antwerp, Belgium, 6-8 April.

Marston, C. L. and Shrives, P. J. (1991). 'The Use of Disclosure Indices in Accounting Research: A Review Article', *British Accounting Review*, Vol. 23, No. 3, pp. 195-210.

Nua (1999). *Internet Surveys*, 28th June 1999, www.nua.ie.

Myners, P. (1998). 'Improving Performance Reporting to the Market' in Carey, A. and Sancto, J. (eds.), *Performance Measurement in the Digital Age – Adding Value to Corporate Reporting*, London: The Institute of Chartered Accountants in England and Wales, pp. 27-31.

O'Neill, J. D. (1998). *The Irish Stock Market Annual*, Dublin: Private Research Limited.

Petravick, S. and Gillett, J. (1996). 'Financial Reporting on the World Wide Web', *Management Accounting*, Vol. 78, July, pp. 26-29.

Salamon, G. L. and Dhaliwal, D. S. (1980). 'Company Size and Financial Disclosure Requirements with Evidence from the Segmental Reporting Issue', *Journal of Business Finance and Accounting*, Vol. 7, No. 4, pp. 555-568.

Schneider, G. and Bowen, P. (1997). 'User Customised Financial Reporting: The Potential of Database Accounting and the Internet', Proceedings of PACIS '97, April, pp. 91-97.

Securities and Exchange Commission (SEC) (1977). *Report of Advisory Committee on Corporate Disclosure.* Washington, D.C.: US Government Printing Office.

Smith, C. W. and Warner, J. B. (1979). 'On Financial Contracting: An Analysis of Bond Covenants', *Journal of Financial Economics*, Vol. 7, pp. 117-161.

Spaul, B. (1997). *Corporate Dialogue in the Digital Age*, London: Institute of Chartered Accountants in England and Wales.

Wong, J. (1988). 'Political Costs and an Intraperiod Accounting Choice for Export Tax Credits', *Journal of Accounting and Economics*, Vol. 10, pp. 37-51.