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**CORPORATE FINANCIAL REPORTING:
FIRM CHARACTERISTICS AND THE
USE OF THE INTERNET AS A MEDIUM
OF COMMUNICATION**

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Abstract

The development of the Internet as a medium for the dissemination of corporate financial information creates a new reporting environment. Extensive literature examines the extent and determinants of voluntary financial reporting through traditional mediums such as paper based annual reports. This paper extends this literature by examining the extent and determinants of voluntary corporate Internet financial reporting (IFR) by New Zealand companies. The results indicate that some determinants of traditional financial reporting such as firm size and spread of shareholding are influential determinants of IFR. However, other characteristics such as liquidity do not significantly explain the choice to use Internet as a medium for corporate financial reporting.

Key words

Financial reporting, firm characteristics, Internet, voluntary disclosure, determinants.

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1. Introduction

Internet financial reporting (IFR) is a recent but fast-growing phenomenon.¹ Many companies worldwide are taking the opportunity provided by the worldwide web (WWW) to publish their corporate financial information. This practice is expected to grow in the near future, with possible wide-ranging implications for financial information providers, consumers, auditors and regulators, among others. Recent studies document the extent of the practice among companies listed in a number of countries (e.g., UK (Craven and Marston, 1999), Austria and Germany (Pirchegger and Wagenhofer, 1999), US and Canada (Trites, 1999), USA, UK and Germany (Deller, Stubenrath, and Weber, 1999), Sweden (Hedlin, 1999), Spain (Gowthorpe and Amat, 1999)), including international comparison (such as Lymer, Debreceny, Gray and Rahman, 1999). An examination of developments among companies listed on the New Zealand Stock Exchange (Fisher et al, 1999) indicates that many of them use the web for the dissemination of their financial information.

Despite the growing use of the Internet as a medium for the dissemination of corporate information, some companies either do not have a corporate website, or are not using their website to disseminate such information. Substantial accounting literature has emerged in the last thirty years that explains corporate financial reporting behaviour. This literature focuses primarily on the voluntary provision of financial information through the traditional medium of paper-based annual reports. The development of Internet as a medium for the distribution of corporate financial information creates a new corporate reporting environment that may be different from the traditional paper-based one.

This paper examines the extent of IFR by New Zealand companies and the determinants of their WWW presence and IFR practices. The determinants of IFR practices have not been examined in depth (Craven and Marston, 1999). The examination of such determinants extends the theories and models which have been examined in voluntary reporting through traditional mediums to the new corporate reporting environment created by the Internet. The results of our analysis indicate that size, spread of shareholding and efficiency are the primary determinants of IFR practices among New Zealand companies. Other predictors of voluntary

¹ See for example, Petravick and Gillett (1996); Flynn and Galthorpe (1997); Koreto (1997); Lymer (1997); Lymer and Tallberg (1997); Wildstrom (1997); Brennan and Hourigan (1998); Marston and Leow (1998); Craven and Marston (1999); Pirchegger and Wagenhofer (1999); Lymer, Debreceny, Gray and Rahman, (1999); Trites (1999); Deller, Stubenrath, and Weber (1999); Hedlin (1999); Gowthorpe and Amat (1999).

reporting, industrial grouping and foreign affiliation, are not significantly associated with the practice of IFR.

The remainder of this paper is organised as follows. The next section provides a review of the literature on the theoretical and empirical findings of corporate financial reporting in general and literature on IFR in particular. Section 3 describes the research hypotheses. This is followed by a description of the research methods, including data collection and analysis, used in the study. The results and findings of the study are then presented and discussed. Summary and conclusions, including possible limitations and areas for future research are presented in the final section.

2. Literature Review

Considerable literature has emerged in the last thirty years that examines voluntary corporate financial reporting. Further literature has emerged which examines practices and issues relating to the recent development of the Internet as a medium for dissemination of corporate financial information. This section provides a review of both aspects.

2.1 Determinants of Corporate Financial Reporting

The investigation of the determinants of disclosure in hard-copy corporate annual reports represents one of the most systematic and sustained research efforts in the financial reporting literature. Cerf's (1961) inaugural empirical study of factors influencing the adequacy of US corporate annual report disclosure laid the foundation for a succession of studies conducted in numerous countries (e.g., Bangladesh (Ahmed and Nicholls, 1994; Ahmed, 1996), Hong Kong (Tai *et al.*, 1990; Lau, 1992; Wallace and Naser, 1995), India (Singhvi, 1968; Marston and Robson, 1997), Japan (Cooke, 1991, 1992, 1993), Mexico (Chow & Wong-Boren, 1987), New Zealand (Courtis, 1979; McNally *et al.*, 1982; Hossain *et al.*, 1995), Sweden (Cooke, 1989a, 1989b), UK (Firth, 1979), and USA (Singhvi and Desai, 1971; Buzby, 1975; Malone *et al.*, 1993)). Variables hypothesised to influence disclosure levels in these studies include a variety of firm specific characteristics, such as size, profitability, listing status, size of the firm's auditors, and leverage.

The level of researcher interest in this area directly reflects the impact that the adequacy of financial report disclosure has on decisions made by the various users of hard-copy financial statements, and more generally, the efficiency of capital markets. The findings of this stream of research have particular implications for regulators responsible for ensuring high quality financial report disclosure, such as New Zealand's Accounting Standards Review Board, and the US's Securities and Exchange Commission and Financial Accounting Standards Board. The fact that systematic differences in hard-copy financial report disclosure have been found among firms within and across industries, lends weight to the argument that efficient solutions are being found in the market for financial information (Malone *et al.*, 1993; Wallace and Naser, 1995). Evidence of market efficiency, such as this, should not be a complete surprise given Benston's (1969) finding that voluntary disclosure was not uncommon in the US prior to disclosure regulation imposed by the Securities Exchange Act of 1934. Regulators can use research findings regarding determinants of disclosure to further their understanding of the existing market for financial information before determining whether intervention is necessary. Regulators are more likely to consider that regulation is warranted where they perceive the existence of 'market failures', such as where disclosure levels are non-optimal in a Pareto sense, or where current levels of disclosure are considered "inequitable" in the sense that market participants are not factoring in all costs or benefits, e.g., social costs and benefits are being omitted from the cost/benefit considerations (Foster, 1986). Regulators ought to be cautious in imposing disclosure requirements when market forces appear to be finding efficient solutions, as may be the case where systematic disclosure differences are found between firms, because firms may be placed at a relative economic disadvantage as a result of the direct and indirect costs of regulation (Malone *et al.*, 1993), such as collection and processing costs, litigation costs, political costs, competitive disadvantage costs, constraints on managerial behaviour, and the costs of rewriting certain contracts (Foster, 1986; Watts and Zimmerman, 1986).

In addition to regulators, Ahmed and Courtis (1995) suggest that the investment community may be able to benefit from being made aware of systematic differences in disclosure. For example, large, and highly leveraged listed companies which fail to comply with an expected higher level of disclosure, may be "signalling through their reticence that they have 'something to hide'" (Ahmed and Courtis, 1999, p. 57), thus alerting investors to the possibility that more careful analysis is warranted.

Annual report disclosure may be either mandatory or voluntary. Mandatory disclosure may arise from a number of sources, such as stock exchange listing requirements, professional promulgations, and statutes. Voluntary disclosure represents disclosure in excess of mandatory disclosure, and in efficient markets is likely to be provided where the marginal benefits to the provider exceed the marginal costs. Disclosure may also be in quantitative (either in dollars or other units of measure) or qualitative form. Relatively few disclosure studies explicitly define what attribute of the dependent variable, disclosure, is being measured, and fewer still adequately reconcile the variable under study with its measurement. For instance, McNally *et al.* (1982) fail to reconcile the ‘quality’ of corporate disclosure practices with their measurement of the ‘extent’ of disclosure. As Buzby (1975, p. 30) states, “extent of disclosure is not synonymous with adequacy of disclosure”, therefore measurement based on ‘extent’ “... cannot be taken as a measure of the overall quality in annual reports”. A notable exception appears to be Wallace and Naser (1995) who, based on a review of the literature, identify five key aspects of ‘quality’ of disclosure: (1) adequate for a defined purpose; (2) informative; (3) timely; (4) understandable/readable; and (5) comprehensive. In their study, the researchers adopted ‘comprehensiveness’ of disclosure as the dependent variable, and proceeded to construct a specific measure of comprehensiveness. This leads to a second and compounding problem with existing research: few studies acknowledge that the underlying variable is not amenable to measurement (Marston and Shrivess, 1991). Again, Wallace and Naser (1995, p. 326) are an exception: “Financial disclosure is an abstract concept which cannot be measured directly. It does not possess inherent characteristics by which one can determine its intensity or quality like the capacity of an automobile”.

Notwithstanding these concerns, most disclosure studies measure annual report disclosure using a disclosure index. Some, however, have employed a dichotomous measure. For example, Forker (1992) looked at share options disclosure (good/bad), while Thomas (1986) examined the disclosure/non-disclosure of forecast information in interim accounts. Depending on research objectives, disclosure index studies involve establishing a list of mandatory, voluntary, or aggregate disclosure items. The sample firms’ financial reports are then assessed relative to this list. Although some variations to scoring do exist, a score of one (zero) is usually assigned for each item (not) disclosed. Each firm’s aggregate score is then divided by the total number of items relevant to that firm. The quotient represents the firm’s overall disclosure index score, whose value will lie somewhere between zero and one, inclusive (e.g., Cooke 1989a, 1989b, 1991, 1992, 1993; Patton and Zelenka, 1997). Some studies, such as Buzby 1975, McNally *et al.*, 1982, assigned weights to each disclosure item,

based on the assessment of each item's importance by a particular class of user, e.g., financial analysts. Other studies, however, have dispensed with the use of weights on the basis that (1) using only one or two user groups results in weights not representative of all user classes, whereas using a multitude of user groups will result in an unwieldy study (Cooke, 1989a), (2) as there are no real economic consequences for subject raters, their assessments may not reflect their actual use of each item (Chow and Wong-Boren, 1987), and (3) the results of using weighted and unweighted disclosure indices may not be statistically significantly different from each other (Chow and Wong-Boren, 1987). A more detailed description and critique of the use of disclosure indices can be found in Marston and Shrivs (1991).

As discussed above, a wide variety of potential determinants of hard-copy financial report disclosure have been examined in the literature. The most frequently studied include corporate size, size of firm's auditors, listing status, profitability, leverage, and industry. A brief review of these variables is provided below. As noted by Ahmed and Courtis (1999), a wide range of theoretical arguments are employed, including agency costs, political costs, signalling and information asymmetry, capital needs, litigation costs, and audit firm reputation.

As Buzby (1975, p.18) points out, "[w]hen we speak of an association between asset size and disclosure, we are really referring to the special characteristics surrounding the *size of a firm* and their logical link to the extent of disclosure". Size is a proxy for a number of corporate characteristics, so it is not surprising that many reasons have been advanced in the literature supporting an *a priori* expectation of an association between corporate size and disclosure. Singhvi and Desai (1971) and Buzby (1975) put forward three reasons. First, larger firms generally have a more diverse product range and more complex distribution networks than smaller firms. As a result, larger and more complex management information systems and databases are required for management control purposes. Consequently, disclosure costs may be generally lower for larger firms. Second, larger firms make more extensive use of capital markets for external financing relative to smaller firms. It is further argued that firms can increase the marketability of their securities in capital markets, and obtain capital more easily and cheaply through more extensive disclosure. Last, smaller firms may consider themselves to be placed at a competitive disadvantage relative to larger firms through more detailed corporate disclosure. Using agency theory, Hossain *et al.*(1995) argue in support of a positive association between size and disclosure on the basis that the potential benefits of disclosure increase with agency costs. Consistent with Jensen and Meckling (1976), agency costs rise

with increases in the proportion of outside equity (which tends to be higher for large firms). Wallace and Naser (1995) argue that larger firms naturally attract a large following of suppliers, customers, and analysts, which consequently increases the demand for information about their activities.

Political cost arguments have been put forward in support of both a positive association between firm size and disclosure (Cooke, 1989a; Wallace and Naser, 1995; Wallace *et al.*, 1994), and a negative association (Wallace and Naser, 1995; Wallace *et al.*, 1994). Cooke (1989a) argues that larger companies are vulnerable to political costs, such as regulation, nationalisation, expropriation, or the breakup of the entity or industry (Jensen and Meckling, 1976). To counter the threat of governmental interference, companies may "... employ a number of devices, such as social responsibility campaigns in the media, to minimise reported earnings (Watts and Zimmerman, 1979). As part of the social responsibility campaign, firms might decide to increase social responsibility accounting in their corporate annual reports" (Cooke, 1989a, p. 178). In contrast, both Wallace and Naser (1995) and Wallace *et al.* (1994) suggest that firms may employ an alternative strategy - one in which firms attempt to reduce the level of detail in their annual reports. Empirical evidence generally supports the association between size and disclosure (Singhvi, 1971; Singhvi and Desai, 1971, Buzby, 1975; Davies and Kelly, 1979; Courtis, 1979; Firth, 1979; McNally *et al.*, 1982; Chow and Wong-Boren, 1987; Cooke, 1989a, 1989b, 1991, 1992; Tai *et al.*, 1990; Hossain *et al.*, 1994; Wallace *et al.*, 1994; Hossain *et al.*, 1995; Raffournier, 1995; Wallace and Naser, 1995; Inchausti, 1997; Marston and Robson, 1997; Patton and Zelenka, 1997; Owusu-Ansah, 1998), although there are a number of notable exceptions, e.g., Lau (1992), Malone *et al.* (1993), Ahmed and Nicholls (1994); and Ahmed (1996).

Stock exchange listing status (e.g., listed versus unlisted, or listed versus multiple listings) has been found by many researchers to be associated with disclosure (Singhvi and Desai, 1971, Firth, 1979; Cooke, 1989a, 1989b, 1991, 1992, 1993; Malone *et al.*, 1993; Hossain *et al.*, 1994; Wallace *et al.*, 1994; Hossain *et al.*, 1995; Inchausti, 1997; Patton and Zelenka, 1997). This association largely reflects the additional information disclosures specified in the listing requirements of the various stock exchanges. Additionally, Cooke (1989a) argues that agency costs increase as shareholders become more remote from management. As unlisted companies tend to have a smaller number of shareholders, agency costs are expected to be lower than those for listed companies. Conversely, due to the greater separation between owners and managers, listed companies are likely to incur more agency costs, such as

'monitoring costs'. These costs can be reduced through the voluntary disclosure of additional corporate information (Schipper, 1981). Hossain *et al.* (1995) suggests that both stock exchange listing status and voluntary corporate disclosure are complementary forms of monitoring. Consequently, one would expect to find a positive relationship between the two variables.

Agency theory has largely been used to explain the relationship between *firm leverage* and corporate disclosure. It is argued that as leverage increases, there are wealth transfers from fixed claimants to residual claimants. As debenture holders are able to 'price-protect' themselves, managers and shareholders have an incentive to voluntarily increase the level of monitoring, such as by increasing the disclosure of additional information about the firm activities (Myers, 1977; Schipper, 1981). Empirical evidence appears to be inconclusive. While Courtis (1979), Lau (1992), Malone *et al.* (1993), Hossain *et al.* (1994), Hossain *et al.* (1995), Patton and Zelenka (1997) have all found a positive relationship between leverage and corporate disclosure, many researchers have not (Chow and Wong-Boren, 1987; Ahmed and Nicholls, 1994; Wallace *et al.*, 1994; Raffournier, 1995; Wallace and Naser, 1995; Ahmed, 1996; Inchausti, 1997).

Corporate profitability has been studied by a number of researchers. The two main measures of profitability used are rate of return (Singhvi and Desai, 1971; McNally *et al.*, 1982; Raffournier, 1995) and earnings management (Singhvi and Desai, 1971; Malone *et al.*, 1993). It is argued that disclosure is used by the managers of profitable firms to assure investors of the firm's profitability, and to help support management's continuation and compensation (Singhvi and Desai, 1971; Malone *et al.*, 1993). However, Wallace *et al.* (1994) caution that "... according to Lang and Lundholm (1993, pp. 248 and 251), disclosure may be related to variability of a firm's performance, if performance serves as a proxy for information asymmetries between investors and managers" and that "the empirical evidence on the direction of the relation between disclosure and the performance measures earnings and profit is not clear". In general, the empirical findings are conflicting. Studies have found a positive relationship (Singhvi, 1968; Singhvi and Desai, 1971; Courtis, 1979; Owusu-Ansah, 1998), no relationship (McNally *et al.*, 1982; Lau, 1992), and a negative relationship (Wallace and Naser, 1995).

Industry has been posited to be associated with disclosure. According to Wallace and Naser (1995), differential levels of disclosure on similar items in financial reports published by

firms in different industries may arise from the adoption of industry-related disclosures. Differences in disclosure levels between industries could also be attributed to the high level of voluntary disclosure by a dominant firm within an industry which leads to a bandwagon effect (Cooke, 1989a). Empirical studies have yielded mixed results. Industry was found to be a determinant of disclosure levels in Courtis (1979), McNally *et al.* (1982), Cooke (1989a, 1991, 1992), and Fekrat *et al.* (1996); whilst no relationship was found in Tai *et al.* (1990), Wallace *et al.* (1994), and Patton and Zelenka (1997).

Lastly, *size of audit firm* has been included in many disclosure studies. Both Malone *et al.* (1993) and Wallace and Naser (1995) suggest that larger audit firms are less likely to be pressured by clients than smaller practices due to their lower levels of fee dependence. Consequently, one would expect a higher level of report disclosure among the clients of larger audit firms. In addition, Hossain *et al.* (1995) argue that large audit firms, such as the Big 5, have incentives not to accede to client pressure for limited disclosure due to the economic consequences stemming from damages to their 'brand name' (reputation.). Further, Hossain *et al.* (1995) draw on signalling theory to suggest that choice of auditor can serve as a signal of firm value, and about the quality of a firm's disclosures. Empirical evidence is inconclusive. The hypothesised role of the external auditor variable was confirmed by Ahmed and Nicholls (1994), Raffournier (1995), Ahmed (1996), Inchausti (1997), and Patton and Zelenka (1997). However, no association was found in Singhvi (1968), Firth (1979), McNally *et al.* (1982), Tai *et al.* (1990), Malone *et al.* (1993), Wallace *et al.* (1994), Wallace and Naser (1995), and Owusu-Ansah (1998).

A summary of major disclosure studies is presented in Table 1. As is evident from this table and the preceding discussion, there appear to be significant variations in the results of studies both within and between countries. The mixed results are likely to reflect, among other things, differences in socio-economic and political environments between countries, variation in sample size, the differing nature and measurement of the dependent variable and independent variables between studies, differences in statistical methods, and sampling error (Ahmed and Courtis, 1999; Wallace *et al.*, 1994). A recent meta-analysis by Ahmed and Courtis (1999) attempted to tackle some of these issues by integrating prior disclosure studies, and identifying some of the underlying factors contributing to the observed variations in results. Using 29 studies, the researchers found a significant association between disclosure levels and firm size, listing status, and leverage. Further, they found that prior results were

moderated by differences in disclosure index construction, differences in definition of the explanatory variables, and differences in research setting.

2.2 Internet Financial Reporting Literature

The literature in relation to financial reporting on the Internet is growing. A number of studies discuss the benefits of IFR, speculate on its future, and identify issues and concerns in relation to the use of such medium. Some studies report on surveys of IFR practices in single countries while others undertake cross-country comparisons. A few studies examine the corporate characteristics associated with the choice of Internet corporate financial reporting.

2.2.1 Benefits, Issues, Future, and Professional Pronouncements Relating to Internet Financial Reporting

A number of studies discuss the benefits of providing financial information on the Internet (e.g., McCafferty, 1995; Louwers, Pasewark and Typpo, 1996; Green and Spaul, 1997; Trites and Sheehy, 1997; Trites, 1999). Cost savings from the reduction of production and distribution associated with paper-based annual reports and incidental requests from non-shareholder financial statement users is one of the main benefits from providing financial reports on the Internet. Internet reporting improves users' access to information by providing information that meet their specific needs, allowing non-sequential access to information through the use of hyperlinks, interactive and search facilities, and allowing the opportunity for providing more information than available in annual reports. This improved accessibility of information results in more equitable information dissemination among stakeholders.

However, the advantages of IFR give rise to a number of issues, which include blurring the line between audited and unaudited information, equity and efficiency of access, introduction of errors, security and integrity of the information, and other professional issues.

Internet reporting blurs the distinction between current financial information used by management and the historical (and audited) information made available to the public (Green and Spaul, 1997). This reporting may supersede the historically audited information currently made available to shareholders and the company's broader constituencies by providing financial information used by management (Laine, 1997). This may place greater demands on auditors to provide opinion on this data (Trites and Sheehy, 1997).

Debreceeny and Gray (1999) discuss the implications of growing IFR for external auditors. They identify a number of audit and auditor implications regarding the dissemination of audited financial statements on the Internet. These implications include the association of the audit report with unaudited information and the responsibilities of auditors to monitor clients' websites. Debreceeny and Gray argue that if the auditing profession does not address such issues, the courts and government regulatory bodies will develop standards to address them.

Access to information on the Internet is currently limited to those with costly equipment and services, and computer skills. To ensure equity and efficiency, there is a need to make sure that the information provided on the Internet has been disclosed previously or simultaneously by using other forms of communication (McCafferty, 1995).

Companies that choose to extract or re-key data from annual reports and make it accessible through the Internet may introduce errors, which affect the integrity of the information. Placing a disclaimer concerning the completeness of the information would alert the users of the information (Hussey and Sowinska, 1999).

The security and integrity of corporate information on the Internet may be compromised intentionally or unintentionally. It is the responsibility of companies to ensure the security and integrity of financial information they place on the Internet. To overcome such concern, Hussey and Sowinska (1999) suggest that regulators should address the issue of compulsory filing system for financial reporting on a secure and government-controlled server.

There are a number of other professional and technical issues. Providing financial information on the Internet may not enhance the understanding of corporate financial information. Generally Accepted Accounting Practice (GAAP) is developed in a traditional reporting environment and may not be suitable for electronic financial information environment. Users may not regard Internet reporting as an acceptable substitute for hard copy annual reports. Companies use their websites for many purposes and therefore financial information may become difficult to locate.

The use of the Internet for the dissemination of corporate information is a recent phenomenon and some studies speculate on its future. Louwers, Pasewark and Typpo (1996) note that the future of online financial reporting may involve extending disclosure beyond the reproduction of a hard copy annual report, improving timeliness, expanding scope, and permitting a high

degree of interactive retrieval of information. Timeliness is improved by providing financial data to the public as soon as possible by disclosing annual report data on the Internet before it is available in hard copy. The future of IFR may include the use of multimedia, such as sound, animation and video to potentially increase the understanding of information. Lymer (1999) suggests that the cost savings and the wide availability of data made possible by using the Internet are likely to encourage more demand for its use to fulfil statutory, as well as extra-statutory, reporting requirements.

In December 1999, the first professional pronouncement relating to IFR was released by The Auditing and Assurance Standards Board (AuASB) of the Australian Accounting Research Foundation (AARF) in the form of an Auditing Guidance Statement (AGS 1050) "Audit Issues Relating to the Electronic Presentation of Financial Reports".

AGS 1050 clarifies that providing assurance about the effectiveness of the controls and security over information on the entity's web site is beyond the scope of the audit of a financial report. The Guidance draws the auditor's attention to the practices surrounding the electronic presentation of information on a web site as certain characteristics in the presentation of electronic documents may increase the risk of inappropriate association of unaudited information with the audit report. The AGS identifies specific matters which may be addressed by the auditor with management, to raise awareness of the risks arising and to assess any impact on the audit report to be presented on the entity's web site.

2.2.2 Internet Reporting Practices

A number of professional studies in the US, Canada, UK, Ireland and Finland examine corporate financial reporting on the Internet (see, for example, Petravick and Gillett, 1996; Flynn and Galthorpe, 1997; Koreto, 1997; Lymer, 1997; Lymer and Tallberg, 1997; Wildstrom, 1997; Brennan and Hourigan, 1998; Marston and Leow, 1998). These studies report that increasing numbers of companies are using the Internet for communicating financial information. However, these studies report little improvement in the provision of such information where online corporate reports consist mainly of displaying hard copies annual reports in an electronic format.

IFR practices in many countries have been surveyed by a number of academic studies (UK (Craven and Marston, 1999), Austria and Germany (Pirchegger and Wagenhofer, 1999),

International Comparison (Lymer, Debreceeny, Gray and Rahman, 1999), US and Canada (Trites, 1999), USA, UK and Germany (Deller, Stubenrath, and Weber, 1999), Sweden (Hedlin, 1999), Spain (Gowthorpe and Amat, 1999)). These studies indicate the growing use of the Internet for corporate dissemination including providing annual reports on the Internet and some cross country differences.

Williams and Ho (1999) compare corporate social disclosure on companies' websites and annual reports in Australia, Singapore, Malaysia and Hong Kong. They find that Australian and Singaporean companies provide more corporate social disclosures on websites than in annual reports while companies in Malaysia and Hong Kong are reporting similar information in the two media.

2.2.3 Characteristics Associated with Internet Financial Reporting

The determinants of IFR practices have not been examined in depth. Craven and Marston (1999) examine the extent of financial information disclosure on the Internet by the largest companies in the UK in 1998 and whether such practice is associated with firm size and industry type. They find that the extent financial disclosure on the Internet is positively associated with firm size but not associated with industry type.

Ashbaugh, Johnstone and Warfield (1999) examine the IFR practices of US companies. They find that firms operating websites are larger than firms without websites. Using univariate analysis, they find larger and more profitable firms, and indicators of excellence in reporting practices, and to some extent the percentage equity shares held by individual investors are associated with IFR. However, a multivariate logit regression indicates that only firm size is associated with IFR. Ashbaugh, Johnstone and Warfield suggest the development of a more complete model of the determinants of IFR for future research.

Pirchegger and Wagenhofer (1999) examine IFR practices by Austrian and German companies. They find that for Austrian companies IFR is associated with firm size, measured by sales, and dispersion of its equity ownership. However, such results did not extend to German companies.

There has not been an in depth study of the determinants of IFR. Many theories or models in the accounting literature such as agency/contracting, signalling and costs/benefits attempt to

explain financial reporting behaviour based on identifying the motivations for voluntary reporting practices. The voluntary and growing use of the Internet as a medium for the dissemination of financial information provides an opportunity for an in depth examination of the incentives that motivate such unregulated dissemination of corporate information. An understanding of voluntary reporting behaviour would be gained by assessing whether the determinant associated with traditional dissemination of financial information through paper-based annual reports would explain IFR practices.

Previous studies examining Internet reporting practices have relied on search engines in identifying study samples or populations. This sample selection method may under-identify entities providing Internet financial information and may introduce sample selection bias. This study uses a more comprehensive approach in identifying entities engaging in IFR.

3. Hypotheses Development and Statement

Hypothesis 1: Size and IFR

IFR is largely unregulated, and as such, individual firm disclosure will likely reflect the trade-off between the relevant perceived costs and benefits of supplementing traditional financial reporting with IFR. Among other things, costs could include preparation and dissemination costs, litigation costs, or loss of competitive position; while benefits may include factors such as reductions in agency costs, and avoidance of political or legal costs. Based on this fact, and the literature reviewed in the preceding section, the study's formal hypotheses are developed in this section.

For reasons mentioned earlier, agency costs tend to increase with firm size [Hossain *et al.*, 1995]. As voluntary disclosure can reduce monitoring costs, a significant agency cost, one would expect to find greater disclosure among large firms relative to small firms. Further, as the cost of information production and dissemination on the Internet is likely to be largely unrelated to firm size [Pirchegger and Wagenhofer, 1999], the benefits of disclosure over the Internet are likely to be increasing with size. As a consequence, the first hypothesis (stated in alternative form) is:

H_1 : There is a positive association between company size and the voluntary use of Internet financial report disclosure.

In this study size is measured in several different ways: market capitalisation, total assets, turnover, and number of employees.

Hypothesis 2: Performance and IFR

According to Lang and Lundholm [1993, p. 248 - 249], there is a common perception that management is more forthcoming with information “... when the firm is performing well than when it is performing poorly”. One explanation is that management is keen to raise shareholder confidence and support management compensation contracts [Singhvi and Desai, 1971; Malone et al., 1993]. However, Lang and Lundholm [1993, p. 249] suggest that sometimes, certain types of negative information (particularly earnings information) may be disclosed voluntarily to reduce the likelihood of legal liability”, e.g. due to unexpectedly large losses. Accordingly, we hypothesise, in alternative form, that:

H₂: There is a positive (negative) association between company performance and the voluntary use of Internet financial report disclosure.

Performance is measured using one measure of growth (change in share price), several measures of profitability: profit before interest and tax, profit after tax, return on equity, and return on total assets, and two measures of efficiency: operating expenses, and operating expenses relative to total sales.

Hypothesis 3: Liquidity and IFR

Due to the concern that regulators, investors, and other users have with regards to companies' going concern status, highly liquid companies may desire to make their levels of liquidity known through disclosure in their annual reports [Wallace and Naser, 1995; Owusu-Ansah, 1998].

H₃: There is a positive association between company liquidity and the voluntary use of Internet financial report disclosure.

Hypothesis 4: Internationalisation and IFR

The degree of internationalisation of a firm is likely to be associated with disclosure because as companies expand operations into foreign localities, their need to raise capital internationally increases accordingly [Cooke, 1991, 1992]. Companies will have an incentive to lower capital costs through the voluntary release of information [Choi, 1973; Owusu-

Ansah, 1998]. Two main scenarios for internationalisation are studied in this paper: Listed New Zealand companies may also list on an overseas exchange, or, alternatively, multinational companies may have subsidiaries operating within New Zealand that are listed on the New Zealand Stock Exchange.

H_{4a} : There is a positive association between foreign listing status and the voluntary use of Internet financial report disclosure.

H_{4b} : There is a positive association between ownership status (foreign owned versus locally owned) and the voluntary use of Internet financial report disclosure.

Hypothesis 5: Ownership spread and IFR

According to agency theory, managers of companies whose ownership is diffuse have an incentive to disclose more information in order to assist shareholders in monitoring their behaviour [Raffournier, 1995]. In this study, diffuseness of ownership is measured by share spread.

H_5 : There is a positive association between diffuseness of ownership and the voluntary use of Internet financial report disclosure.

Hypothesis 6: Industry and IFR

Political cost theory suggests that industry membership may affect the political vulnerability of firms [Inchausti, 1997; Craven and Marston, 1999]. Firms in industries which are more politically vulnerable may use voluntary disclosure to avoid political costs, such as regulation, breakup of the entity/industry, etc. Signalling theory also suggests industry differences in disclosure. If a company within an industry fails to follow the disclosure practices of others in the same industry, then it may be interpreted that the company is hiding bad news [Craven and Marston, 1999].

H_6 : There is an association between industry type and the voluntary use of Internet financial report disclosure.

4. Research Design and Methodology

This section describes the design and methodological highlights of the study including the sample description, data collection and analysis.

4.1 Sample Description

Two hundred and twenty-nine (229) companies listed on the New Zealand Stock Exchange (NZSE) as at the end of 1998 were used in this study. Seventeen of these (eight NZ and nine overseas companies) were new listings. Three approaches were used to determine the WWW presence or otherwise of the companies. First, two websites - The Global Register <<http://www.globalregister.co.nz>> and Knowledge Basket <<http://www.knowledge-basket.co.nz/datex/free/webs.htm>>² - were consulted to establish presence and obtain the web addresses of relevant companies. Second, searches (using the www.metacrawler.com search engine) were carried out on the companies not hyperlinked to the above two websites. Finally, the outstanding companies were contacted by telephone to find out whether or not they have established corporate websites and if so obtain web addresses. The multiple approach was considered necessary given the speed of developments with regards to website establishment among companies. Table 2 presents the distribution of website- and non website-owning New Zealand companies by industry and overseas listing. This approach is an improvement on the typical method of identifying websites through search engines.

About half of NZSE's 229 listed companies are either in Primary industries such as Mining, Forestry and forest products, Agriculture and Fishing or Services industries (25.3%). Fifty-one (22.3%) others are listed as Investment companies. The Energy sector is the least represented, with only 14 (6.1%) companies.

One hundred and twenty-three companies (53.7%) have websites, while the remaining 106 do not have websites. The highest proportions of companies with websites are either in the Primary industry (32.5%) or the Services industry (27.6%). The Property sector has the least proportion (6.5%). On intra-industrial basis, the Energy sector has the highest proportion of corporate website with 79% of energy companies having websites. This compares to about 71

² These websites identify and provide links to the websites of NZSE-listed companies which are registered in New Zealand. As at December 1999, the Global Register site provided links to the websites of 14 of the 102 companies listed thereon, while the Knowledge Basket site is linked to 69 (out of 139) company sites.

and 70 per cents respectively for the Goods and Primary sectors respectively. The Investment and Property sectors, however, have lesser proportions of website owners compared to non-websites. Less than 20 per cent (10) of Investment industry members have websites while 60 per cent from the Services sector do not have websites.

About one-third (32.3%) of the companies are overseas-listed. Of these, about 60 per cent (44) have websites, as compared to 51 per cent (79) of companies not listed overseas, suggesting overseas listing as a potential factor affecting companies' decision to create websites.

4.2 Data Collection and Description

Data for this study were collected mainly from the WWW. By browsing through the websites of companies in our sample, it was established whether they provide Internet Financial Reports or not. The financial data on size, profitability, efficiency, liquidity, etc were then downloaded from their annual reports or highlights. In addition, the *Datex* database was accessed to obtain data for the remaining companies, particularly those without websites. Where these two sources fail to yield the required dataset, hard copies of the company's annual reports and accounts were consulted. Finally, various editions of *The New Zealand Business Who's Who* (1996-1998) directory were consulted to obtain additional descriptive details such as the location of ownership and number of employees. Details of the primary data variables collected are presented in Table 3.

5. Data Analysis

This study aims to identify the determinants of IFR among NZSE-listed companies. To achieve these aims, both univariate and multivariate analytical approaches are employed in the study. First, comprehensive exploratory data analysis is carried out to determine the latent tendencies of the collected data. The 229 companies in the dataset are categorised into companies with websites (websites) and companies without websites (non-websites) (see Table 2). The group of 123 websites are then divided into two sub-groups, companies providing financial reports on the Internet (IFRC) and companies not providing financial reports on the Internet (N-IFRC). Descriptive statistics on grouped and sub-grouped companies are presented in Table 4.

Secondly, univariate independent sample *t-tests* were carried out on relevant variables for the four sub-groups of companies. The test allows us to test for possible differences in the mean of the selected variables between IFRC and N-IFRC. The results of the test are presented in Table 5.

Finally, multivariate logit regressions were employed to explore the impact of each of the variables on IFR practices. For this investigation, the dependent variable is classified as a binary choice between IFRC and N-IFRC. Logit analyses enable us to investigate the probability of an event's occurrence in relation to a number of measurable independent variables such as size, performance, efficiency, etc., with the estimation allowing us to compare the relative importance of these variables.

An algebraic statement of the estimated model is as follows:

$$Y_i = \alpha + \sum X_{ij} \beta_j + \mu_i \quad (1)$$

where, for the i^{th} company

- Y = the dependant variable (1 IFR; 0 for N-IFR)
- α = the equation's intercept
- X_j = the measure of the exploratory variable j
- β = estimate of the coefficient of the exploratory variable
- μ = stochastic disturbance term

In its full form with respect to this paper, the equation is:

$$Y_i = \alpha + \beta_1 (\text{Size})_i + \beta_2 (\text{Sector})_i + \beta_3 (\text{Profitability})_i + \beta_4 (\text{Efficiency})_i \\ + \beta_5 (\text{Liquidity})_i + \beta_6 (\text{Growth})_i + \beta_7 (\text{Ownership Spread})_i \\ + \beta_8 (\text{Internationalisation})_i + \mu_i \quad (2)$$

Where, for the i^{th} firm,

- Y = IFR practice; 0 for N-IFRC and 1 for IFRC
- α = the constant of the equation

Size	=	measure of size
Profitability	=	measure of profitability
Efficiency	=	operating expenses to sales
Sector	=	industrial sector
Liquidity	=	cash assets by total assets
Growth	=	growth in share
Ownership spread	=	proportion of shares held by top 40% shareholders
Internationalisation	=	overseas listing or control
μ	=	error term

5.1 Descriptive Statistics

5.1.1 Websiters versus Non-Websiters

Preliminary statistics, as represented in Table 4 indicate that, generally, websiters are larger than non-websiters. This holds across all size indicators (market capitalisation, total assets, turnover and number of employees) measured in this study. The mean market value of websiters, for example was about \$8,000 million (total assets = \$2,489 million) compared to non-websiters' market value of about \$70 million (total assets = \$152 million); while their average number of employees was more than 3.5 times greater than those of non-websiters. This result is similar to that reported by Ashbaugh et al. (1999) that the size of US websiters (as measured by their total assets) is, on average, more than double those of non-websiters.

This trend is repeated for the performance (profitability and efficiency) of the two groups of companies. Websiters, on average, are more profitable. They returned average profit figures (profit before interest and tax and profit after tax) which are substantially greater than those of non-websiters between 1996 and 1998. This position of higher profitability holds even when projects are scaled down by some measures of size (return on equity and return on total asset). Incidentally, websiters incurred higher mean operating expenses as well, reinforcing a notion that companies that create websites are "big spending-high profiteers". It would appear though that their "big-spending" are "small" in relative terms, given that their operating expenses to sales of 0.99% is less than that of non-websiters (1.65%), indicating higher level of efficiency on their (websiters') part. The combination of higher profits and lower OEXS has resulted in a higher rate of growth in the market value of websiters, which is double that of non-websiters.

5.1.2 IFRC versus N-IFRC

A similar comparison between IFR and N-IFR reveal that companies that engage in IFR are generally larger and more profitable than non-IFR ones. Their average market value of \$11,421 million is far greater than that of N-IFR (only \$375 million). The same applies to all the other measures of size used in this study.

Performance-wise, IFR companies returned greater levels of profit across both single and size-denominated variables. These were substantial enough to result in higher level of growth in share value for IFR companies between 1996 and 1998. With regards to efficiency, however, IFRCs incurred a comparatively higher level of expenditure, the magnitude of which is further revealed when their operating expenses are denominated by sales. IFRCs appear to be more liquid while a greater proportion (82%) of N-IFRCs' shares are held by their top 40% shareholders, indicating greater spread among IFRCs.

6. Results and Discussion

6.1 Univariate Data Analysis

Univariate statistical analysis is used to investigate the level of significance of the observed differences in size, profitability, efficiency, liquidity and ownership spread. The results of the tests as presented in Table 5, support H_1 in that differences in size are statistically significant across most of the variables. Differences in market capitalisation was significant at the 1% level while those of total asset and turnover were at the 5% level. Differences in the number of employees is significant at 10% level.

Similarly, there are statistically significant differences in the performance of the two groups of companies. This is highly pronounced in their profit before interest and tax, and profit after tax which are all significant at the 1% level. In all cases, IFR companies reported greater level of profitability. Efficiency-wise, differences in OEXS was found to be statistically significant, with IFR companies being more efficient than their non-IFR companies. This, however, was not replicated for differences in growth in market value, which was not statistically significant at the 10% level or higher. The latter result is consistent with the only

other New Zealand study to investigate the effects of growth [McNally *et al.*, 1982]. In general, univariate tests appear to provide support for H₂.

Liquidity appears not to be an issue when the two groups are compared as no statistically significant differences were found in the companies end of year cash asset balances. On this basis, H₃ is not supported. With respect to ownership spread, websites' shareholding base appear to be more dispersed as they have greater number of shareholders and a lower percentage of these is retained in the hands of their top 40% of shareholders. The difference between the two groups is significant at the 1% level and is thus consistent with H₅.

Although not reported, H_{4a} (foreign listing status), H_{4b} (foreign ownership), and H₆ (industry) were tested using Chi-square tests. Both foreign listing status (H_{4a}) and foreign ownership (H_{4b}) were statistically significant (p<0.05 and p<0.000, respectively), while industry (H₆) was not significant.

On the univariate level, on average, IFR listed companies are larger, more efficient and more profitable with a more widely dispersed shareholding base. This paper further investigates whether the IF reporting practices of these companies can be predicted from a combination of these variables. A multivariate logistic regression analysis is employed for this purpose.

6.2 Multivariate Regression Analysis

Two models, A and B, incorporating different independent variables as measures of size, profitability and foreign listing/ownership, were specified and used to investigate the determinants of IFR among the listed companies. The general model, as earlier specified in equation (2) states that:

$$\begin{aligned}
 Y_i = & \alpha + \beta_1 (\text{Size})_i + \beta_2 (\text{Profitability})_i + \beta_3 (\text{Efficiency})_i + \beta_4 (\text{Sector})_i \\
 & + \beta_5 (\text{Liquidity})_i + \beta_6 (\text{Growth})_i + \beta_7 (\text{Ownership Spread})_i \\
 & + \beta_8 (\text{Internationalisation})_i + \mu_i
 \end{aligned} \tag{2}$$

Where, for the i^{th} firm in Model A,

$$\begin{aligned}
 Y & = \text{IFR practice; 0 for Non IF reporters and 1 for IF reporters} \\
 \alpha & = \text{The constant of the equation}
 \end{aligned}$$

Size	=	log of market capitalisation
Profitability	=	Return on equity
Efficiency	=	Operating expenses to sales
Sector	=	Industrial sector
Liquidity	=	Cash assets by total assets
Growth	=	Growth in market value
Ownership spread	=	Proportion of shares held by top 40% shareholders
Internationalisation	=	Overseas listing
μ	=	error term

The exploratory variables used in Model B are identical to those of Model A above except for the following:

Size	=	log of total assets
Profitability	=	Earnings per share
Internationalisation	=	Foreign control

The results of the estimate of Model A for all 123 websites is reported under A1 in Table 5. *Cook's Distance* test is used to explore potential outlying or misclassified cases. The results indicate that three outlying cases were exercising undue influence on the residuals resulting from the estimation of Model A1. These cases were removed and the model is re-estimated with the smaller sample of 120 companies. The results of this estimation are presented as A2 in Table 6.

Model A1, which accurately classifies more than 75% of the observations in this study is statistically significant at the 1% level. The results of its estimation indicate that NZSE-listed companies' IFR practices are highly dependent on size, ownership spread and efficiency thereby supporting H₁, H₅, and giving weak support only to H₂. Size is a statistically significant predictor at the 1% level, while spread of shareholding and efficiency are significant at the 5% and 10% levels respectively.

The rate of correctly predicted observations is improved after the three outliers were removed (Model A2 = 78%). The model is also significant at the 1% level. It's results are broadly similar to those of Model A1, the main exception being the coefficient of Industrial Sector, which is now significant at the 5% level thereby providing some support for H₆.

Model B1 was estimated using alternative variables for size, profitability, and foreign listing/affiliation. The results confirm the findings in the earlier models that size and level of efficiency are positively related to IFR practices. High concentration of shares in the hands of the top 40% of shareholders, as in previous models, is also negatively related to IFR. These results are consistent with H₁, H₄, and H₆. Again, weak evidence is presented for H₂.

Similar to the procedure applied to Model A1 above, *Cook's Distance* test revealed that three of the cases in the study exerted disproportionate influence on the coefficients that resulted from Model B1's estimation. Model B2 is a re-estimation of B1 excluding the three outlying cases. It resulted in the highest level of correct classification of the cases in this study. The results again confirm the influence of size, efficiency and shareholding spread on listed companies' IFR practices. In addition, foreign affiliation was revealed to be a significant predictor of IFR practice at the 1% level, supporting H₄.

Across the four models estimated in this study, size is shown to have a significant and positive impact on IFR practice. Larger firms are more likely to engage in IFR. This finding is consistent with those reported by Ashbaugh et al. (1999) on IFR practices of US firms. It is also in line with the findings of a number of studies on hard copy-based corporate disclosure (McNally et al., 1982; Hossain et al., 1995; Wallace and Nasar, 1995; Owusu-Ansah, 1998). It appears that larger companies are able to derive scale benefits from incremental voluntary disclosure and are less likely to be competitively disadvantaged by such incremental disclosures.

Higher level of shareholding by the top 40% of shareholders was consistently negatively related to IFR practices in all four models. The combination of the finding relating to size with that of ownership spread is interesting. IFR companies are not only large, but their shareholding is more widely dispersed rather than concentrated in a few hands. Incremental voluntary disclosure through the web could be viewed as an additional channel of communication set up by IFR to reach their more widely dispersed owners.

Although relatively weak in all the four models, the finding that efficiency is statistically significant (at the 10% level) and positively related to IFR practice could indicate that incremental voluntary disclosure is not necessarily wasteful. IFR companies are significantly more efficient in comparison to their non IFR counterparts. The significance of this finding is increased given that large firms are not usually associated with higher levels of efficiency.

IFR companies in this study are able to benefit from scale efficiencies which significantly over-compensated for their apparent higher level of operating expenditure.

The statistically significant residuals returned by industrial sector and foreign affiliations in Models A2 and B2 respectively provide additional insight into the factors that determine NZSE-listed companies' IFR practices. Cross-industrial differences in disclosure requirements have been reported to influence conventional disclosure practices (see Owusu-Ansah, 1998). How this is transferable to IFR is not immediately clear aside from the possibility industries that operate closer to the end-user such as Services are more likely to be prone to use the web to reach out to the outside world more than primary industries such as Agriculture and Fishing. Whether this is transferable to investor relations or not is open to conjecture. The weak relationship revealed in this study is expected to dissipate in the near future as a convergence of interest in the WWW is achieved across industries. The relationship between foreign affiliations and IFR could indicate that the reporting environments of their foreign affiliates influence New Zealand companies reporting practices. It could also indicate that New Zealand companies with foreign affiliates have global stakeholders who are served by reporting on the Internet, a medium which enhances international access for information.

To summarise, multivariate analysis supports H_1 (size) and H_5 (diffusion of ownership). Only weak evidence consistent with H_2 (performance) is found.

7. Summary and Conclusion

The development of the Internet as a medium for corporate communication creates new ways for the dissemination of corporate financial information. The paper reports on the website practices of NZSE-listed companies and the determinants of IFR practices among these companies. A significant number of the companies have set up websites and some of them engage in IFR. The results of the study indicate that firm size, efficiency and the spread of ownership motivates the provision of IFR. The larger a company is, the more likely it is to set up a website and to use it for IFR. This finding suggests that large firms are deriving benefits from setting up websites and engaging in IFR. The results indicate that the ratio of operating expenses to sales (a measure of efficiency) is a significant predictor of IFR practices. IFR companies are significantly more efficient and could be clearly distinguished from non-IFR

companies. The higher the proportion of shareholding, by the bottom 60% of shareholders, the greater the probability a NZ company provides financial information on the internet. It was surprising to find no significant relationship between profitability and IFR.. Similarly, the level of liquidity is not significantly related to IFR practices. This is another unexpected result, given the costs incurred in the development of web presence.

Future research may consider other explanatory variables that are not incorporated in the current study which may provide further insights into NZ firms' IFR practices. The suggested factors are unique to the reporting culture created by the Internet. They include factors such as the age and levels of education of company directors/key decision makers, attitude of management to IT and new ideas, the age and strategic position of each company in its industry, the stage in the life cycle of the company's major products, etc. These factors may influence voluntary IFR practice. Our study is based on NZ practices; practices in other countries and international comparisons of determinants of IFR are useful in the development of a comprehensive predictive model for the choice of IFR.

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Table 1
Description of Disclosure Studies

Author(s)	Country	No. of Firms	Dependent Variable (Disclosure index)	Type of Analysis	Hypothesised Independent Variables*	
					Significant influence (p<0.1)	Not significant
Davies & Kelly (1979)	Australia	50	Aggregate	Univariate	Size (REP)	
Ahmed & Nicholls (1994)	Bangladesh	63	Mandatory	Multivariate	Auditor size Foreign parent Qualif. of principal acctg. officer	Leverage (BVD) Size (TA, S)
Ahmed (1996)	Bangladesh	118	Aggregate	Multivariate	Auditor size Foreign parent	Size (TA, S) Leverage (BVD)
Patton & Zelenka (1997)	Czech Repub.	50	Mandatory	Univariate	Auditor size Leverage (BVD/TA) Listing status (UvL) No. of employees Size (TA)	Industry Profitability (RR) Risk (INTG)
				Multivariate	Auditor size Listing status (UvL) No. of employees Profitability (RR)	Industry Leverage (BVD/TA) Risk (INTG) Size (TA)
Lau (1992)	Hong Kong	26	Voluntary	Multivariate	Leverage (BVD/SHF)	Profitability (RR) Size (TA)
Tai <i>et al.</i> (1990)	Hong Kong	76	Mandatory	Univariate	Size (SHF)	Auditor size Industry
Wallace & Naser (1995)	Hong Kong	80	Aggregate	Multivariate	Size (TA, S) Diversification	Auditor size Leverage (BVLTD/SHF) Liquidity Location of reg. office Ownership structure (PUB) Profitability (RR, EM) Size (MVE)
Marston & Robson (1997)	India	58	Aggregate	Univariate	Size (S)	
Singhvi (1968)	India	45	Aggregate	Univariate	Ownership Structure (SH) Profitability (RR) Size (TA) Type of Management	Auditor size Profitability (EM)
Cooke (1991)	Japan	48	Voluntary	Multivariate	Industry Listing status (UvLvML) Size (TA, S, SH)	
Cooke (1992)	Japan	35	Aggregate	Multivariate	Industry Listing status (LvML) Size (FACT)	
Cooke (1993)	Japan	48	Aggregate	Univariate	Listing status (LvML, UvML)	Listing status (UvL)
Hossain <i>et al.</i> (1994)	Malaysia	67	Voluntary	Univariate	Auditor size Leverage (BVLTD/SHF) Listing status (LvML) Ownership structure (TOP10) Size (MVE)	Assets in place
				Multivariate	Listing status (LvML) Ownership structure (TOP10) Size (MVE)	Assets in place Auditor size Leverage (BVLTD/SHF)
Chow & Wong-Boren (1987)	Mexico	52	Voluntary	Multivariate	Size (MVE + BVD)	Assets in place Leverage (BVD/Size)
Fekrat <i>et al.</i> (1996)	Multinational	168	Aggregate	Univariate	Country Industry	

Table 1 (Continued): Description of disclosure studies

Author(s)	Country	No. of Firms	Dependent Variable (Disclosure index)	Type of Analysis	Hypothesised Independent Variables*	
					Significant influence (p<0.1)	Not significant
Courtis (1979)	New Zealand	126	Aggregate	Univariate	Capital market access Industry Leverage (DISS, EE) Ownership Structure (SH) Profitability (RR, EM, ANI) Report resource alloc. (PC, PT, PG) Size (TA, S, SHF, EMP, DIR, SUB)	Age Auditor size Profitability (DR, DP) Report timeliness
Hossain <i>et al.</i> (1995)	New Zealand	55	Voluntary	Multivariate	Leverage (BVLTD/SHF) Listing status (LvML) Size (TA)	Assets in place Auditor size
McNally <i>et al.</i> (1982)	New Zealand	103	Voluntary	Univariate	Industry Size (TA)	Auditor size Growth (TA) Profitability (RR)
Inchausti (1997)	Spain	138	Aggregate	Multivariate	Auditor size Listing status Size (TA)	Dividend pay-out ratio Profitability (EM) Leverage (BVD/SHF) Size (S)
Wallace <i>et al.</i> (1994)	Spain	50	Mandatory	Multivariate	Liquidity Listing status (LvU) Size (TA, S)	Auditor size Industry Leverage (BVD/SHF) Profitability (RR, EM)
Cooke (1989a)	Sweden	90	Aggregate	Multivariate	Industry Listing status (UvLvML) Size (TA, S, SH)	
Cooke (1989b)	Sweden	90	Voluntary	Multivariate	Listing status (UvLvML) Size (TA, S, SH)	
Raffournier (1995)	Switzerland	161	Voluntary	Univariate	Assets in place Auditor size Industry Internationality Profitability (RR) Size (S) Auditor size Internationality Profitability (RR) Size (S)	Leverage (BVD/TA) Ownership structure (USH) Size (TA) Assets in Place Industry Leverage (BVD/TA) Ownership structure (USH) Size (TA)
Firth (1979)	UK	180	Voluntary	Univariate	Listing status (UvL) Size (S, CE)	Auditor size
Buzby (1975)	USA	88	Aggregate	Univariate	Size (TA)	Listing status (UvL)
Malone <i>et al.</i> (1993)	USA	125	Aggregate	Multivariate	Leverage (BVD/SHF) Listing status (UvL) Ownership Structure (SH)	Auditor size Diversification Foreign operations Profitability (RR, EM) Proptn. of outside directors Size (TA)

Table 1 (Continued): Description of disclosure studies

Author(s)	Country	No. of Firms	Dependent Variable (Disclosure index)	Type of Analysis	Hypothesised Independent Variables*	
					Significant influence (p<0.1)	Not significant
Singhvi & Desai (1971)	USA	155	Aggregate	Univariate	Auditor size Listing status (UvL) Ownership Structure (SH) Profitability (RR, EM) Size (TA)	
				Multivariate	Listing status (UvL) Profitability (EM)	Auditor size Ownership Structure (SH) Size (TA)
Owusu-Ansah (1998)	Zimbabwe	49	Mandatory	Multivariate	Age Foreign parent Ownership structure (1-PUB) Profitability (RR) Size (TA)	Auditor size Liquidity

* ANI = Absolute net income; BVD = Book value of debt; BVLTD = Book value of long term debt; CE = Capital employed; DIR = Number of directors; DISS = Public issues of long term debt; DP = Dividend pay-out ratio; DR = Dividend rate; EE = Percent external equities; EM = Earnings Management; EMP = Number of employees; FACT = Composite variable comprising eight variables; INTG = Proportion of intangible assets to total assets; L = Listed; ML = Multilisted; PC = Preparation cost; PG = Pages; PUB = Proportion of shares owned by the public; PT = Preparation time; MVE = Market value of equity; S = Sales; SH = Number of shareholders; SHF = Shareholders' funds; SUB = Number of subsidiaries; RR = Rate of Return; REP = Report Recipients; TA = Total assets; TOP10 = Proportion of shares owned by top 10 shareholders; U = Unlisted; USH = Proportion of shares owned by 'unknown' shareholders.

Table 2
Distribution of Website- and Non website-owning Companies by Industry and Overseas listing

Industrial Sector (NZ)	Total		No Website		Yes Website	
	<i>Count</i>	<i>%*</i>	<i>Count</i>	<i>%*</i>	<i>Count</i>	<i>%* (of industry total)</i>
Primary (G01)	58	25.3	18	17.0	40	32.5 (70)
Energy (G02)	14	6.1	3	2.8	11	8.9 (79)
Goods (G03)	28	12.2	8	7.5	20	16.3 (71)
Property (G04)	20	8.7	12	11.3	8	6.5 (40)
Services (G05)	58	25.3	24	22.6	34	27.6 (59)
Investment (G06)	51	22.3	41	38.7	10	8.1 (20)
Total	229	100.0	106	100.0	123	100.0 (n/a)

Overseas-Listing status

	<i>Count</i>	<i>%*</i>	<i>Count</i>	<i>%*</i>	<i>Count</i>	<i>%* (of listed? total)</i>
Not listed overseas	155	67.7	76	71.7	79	64.2 (51)
Listed overseas	74	32.3	30	28.3	44	35.8 (60)
Total	229	100.0	106	100.0	123	100.0

* Percentages may not add up to 100 due to rounding

Table 3
Research Variables

Variables	Research code	Definition*
<i>Size</i>		
Market capitalisation	MCAP	Market value of companies as measured by their total capitalisation as at the end of 1998
Total assets	TASS	Average total assets
Turnover	SALE	Average net turnover
Number of employees	NEMP	Average number of full time equivalent employees
<i>Profitability</i>		
Growth	GRWT	Growth in firm value as measured by the difference increase in share price between 1996 and 1998
Profit before interest and tax	PBIT	Average net profit for the year before interest and tax
Profit after tax	PATX	Average net profit for the year after tax but before after-tax items and dividends.
Return on equity	ROEQ	$\frac{\text{Profit after tax} \times 100}{\text{Shareholder equity}}$
Return on total asset	ROTA	$\frac{\text{Profit after tax} \times 100}{\text{Total assets}}$
<i>Efficiency</i>		
Operating expenses	OPEX	Average total operating expenses
Operating expenses to sales	OEXS	$\frac{\text{Operating expenses} \times 100}{\text{Sales (to 3}^{\text{rd}} \text{ parties only)}}$
<i>Liquidity</i>		
Cash Assets	LIQD	Average ending balance of cash and similar items
Cash assets by total assets	LQTS	$\frac{\text{Cash and similar items}}{\text{Total assets}}$
<i>Others</i>		
Overseas listing?	OLST	Establishing whether or not a company is listed overseas in addition to the availability of its securities on the NZSE
Website?	SITE	Establishing whether or not a company has got a website
Financial Information?	FINF	Identifying websites with financial information on their sites, that is, IF reporters
Type of financial information	TYPE	Financial highlights, financial statements or both
Presentation format of financial information	PRST	HTML, pdf, both or other formats
Industrial sector	SECT	Main industrial group sector
Location of control	OWNS	Foreign or New Zealand-controlled company
Share spread	SPRD	The proportion of shares owned by the top 40% of shareholders

* Averages are for the three years 1996 to 1998.

Table 4
Descriptive Statistics

Panel A: Websters versus Non-websters				
Variable	Statistic	All Companies	Non-websters	Websters
<i>Size</i>				
Market capitalisation (\$'000)	Mean	4,928,743.17	69,167.79	7,995,465.50
	Median	61,587.68	28,188.00	148,404.88
	Std Deviation	57,348,276.58	102,662.27	73,212,648.43
	Percentile 25	14,500.21	7,532.76	23,370.81
	Percentile 75	277,459.53	78,057.36	617,455.00
Total assets (\$'000)	Mean	1,584,219.04	151,612.04	2,489,023.45
	Median	101,546.77	47,463.50	218,826.83
	Std Deviation	5,302,146.81	290,031.16	6,621,091.10
	Percentile 25	30,986.00	14,006.33	56,805.82
	Percentile 75	521,811.33	139,669.42	1,852,495.33
Turnover (\$'000)	Mean	799,778.53	106,564.63	1,235,337.70
	Median	58,552.33	24,334.96	148,928.00
	Std Deviation	2,842,712.97	285,000.03	3,557,668.03
	Percentile 25	6,772.33	238.00	20,465.67
	Percentile 75	369,583.42	87,960.33	875,213.08
Number of employees	Mean	1574	614	2222
	Median	301	89	587
	Std Deviation	5374	1523	6783
	Percentile 25	61	25	155
	Percentile 75	1119	450	1768
<i>Profitability</i>				
Growth	Mean	-.03	-.02	-.04
	Median	-.03	-.07	.00
	Std Deviation	1.65	1.86	1.48
	Percentile 25	-.40	-.41	-.34
	Percentile 75	.33	.09	.41
Profit before interest and tax (\$'000)	Mean	79,802.27	8,770.64	124,432.77
	Median	10,083.83	1,743.67	18,604.33
	Std Deviation	221,489.62	27,221.95	272,920.14
	Percentile 25	.00	-136.33	3,170.17
	Percentile 75	52,477.75	11,443.00	95,000.31
Profit after tax (\$'000)	Mean	38,808.98	3,688.14	60,990.57
	Median	5,563.83	48.33	10,978.33
	Std Deviation	96,090.15	24,525.83	116,001.04
	Percentile 25	-162.11	-573.10	812.33
	Percentile 75	23,609.00	6,370.83	58,327.89
Return on equity	Mean	.09	.00	.15
	Median	.06	.02	.07
	Std Deviation	.81	.23	1.00
	Percentile 25	-.01	-.08	.02
	Percentile 75	.12	.10	.13
Return on total asset	Mean	.02	.01	.02
	Median	.03	.01	.04
	Std Deviation	.17	.21	.13
	Percentile 25	-.01	-.04	.01
	Percentile 75	.07	.06	.07

Table 4 (Continued) Descriptive statistics

Panel A: Websiters versus Non-websiters				
Variable	Statistic	All Companies	Non-websiters	Websiters
Efficiency				
Operating expenses (\$'000)	Mean	492765.69	90189.10	745712.05
	Median	11116.67	12286.97	9880.33
	Std Deviation	2566974.10	275716.95	3248342.97
	Percentile 25	1588.14	1404.00	1615.05
	Percentile 75	54653.00	54677.00	49336.42
Operating expenses to sales	Mean	1.23	1.65	.99
	Median	.31	.90	.08
	Std Deviation	5.03	5.07	5.01
	Percentile 25	.05	.69	.03
	Percentile 75	.94	.99	.51
Liquidity				
Cash Assets	Mean	97,193.89	3,193.97	156,255.78
	Median	2,418.95	428.00	5,613.67
	Std Deviation	515,446.87	9,402.80	651,870.39
	Percentile 25	55.58	-296.33	827.92
	Percentile 75	14,967.29	3,555.33	33,237.47
Cash assets by total assets	Mean	.13	.06	.17
	Median	.02	.01	.03
	Std Deviation	.43	.17	.52
	Percentile 25	.00	-.01	.00
	Percentile 75	.10	.06	.10
Others				
Overseas listing?	Count: Yes	74	30	44
	No	155	76	79
Location of control	Count: Foreign	84	31	53
	NZ	128	59	69
Share spread	Mean	72.81	73.02	72.68
	Median	79.06	79.88	78.97
	Std Deviation	20.60	23.15	19.00
	Percentile 25	60.70	62.77	58.32
	Percentile 75	88.66	90.53	86.35

Table 4 (Continued): Descriptive statistics

Panel B: IFRC versus N-IFRC			
Variable	Statistics	Non-IF Reporters	IF Reporters
<i>Size</i>			
Market capitalisation (\$'000)	Mean	\$375,772.58	\$11,421,350.40
	Median	\$98,147.37	\$176,251.15
	Std Deviation	\$806,199.36	\$87,063,190.04
	Percentile 25	\$10,837.73	\$50,049.25
	Percentile 75	\$410,915.80	\$783,505.63
	Total assets (\$'000)	Mean	\$795,884.68
Median		\$126,097.00	\$264,802.68
Std Deviation		\$1,946,654.64	\$7,704,659.75
Percentile 25		\$49,982.17	\$58,381.64
Percentile 75		\$462,610.08	\$2,792,091.67
Turnover (\$'000)		Mean	\$424,747.68
	Median	\$136,269.33	\$155,924.33
	Std Deviation	\$814,561.66	\$4,180,434.37
	Percentile 25	\$19,359.00	\$21,756.67
	Percentile 75	\$372,416.58	\$1,282,366.89
	Number of employees	Mean	797.14
Median		315.17	765.00
Std Deviation		1089.38	8019.75
Percentile 25		190.50	120.75
Percentile 75		915.00	2978.08
<i>Profitability</i>			
Growth	Mean	-.15	.09
	Median	-.05	.00
	Std Deviation	1.47	1.34
	Percentile 25	-.60	-.28
	Percentile 75	.46	.44
	Profit before interest and tax (\$'000)	Mean	\$46,976.13
Median		\$12,397.00	\$24,177.28
Std Deviation		\$92,654.08	\$315,470.19
Percentile 25		\$4,477.92	\$2,408.33
Percentile 75		\$52,069.25	\$187,307.50
Profit after tax (\$'000)		Mean	\$24,502.98
	Median	\$6,964.00	\$17,240.68
	Std Deviation	\$50,070.63	\$131,802.83
	Percentile 25	\$768.83	\$1,692.50
	Percentile 75	\$22,664.42	\$95,892.17
	Return on equity	Mean	.07
Median		.07	.08
Std Deviation		.16	1.20
Percentile 25		.04	.01
Percentile 75		.13	.12

Return on total asset	Mean	.04	.01
	Median	.04	.04
	Std Deviation	.12	.14
	Percentile 25	.01	.01
	Percentile 75	.08	.06

Panel B: IFRC versus N-IFRC

Variable	Statistics	Non-IF Reporters	IF Reporters
<i>Efficiency</i>			
Operating expenses (\$'000)	Mean	90498.82	1028827.55
	Median	3896.33	15970.00
	Std Deviation	406361.59	3848837.54
	Percentile 25	770.33	2434.06
	Percentile 75	15295.83	200209.51
Operating expenses to sales	Mean	.09	1.36
	Median	.04	.12
	Std Deviation	.17	5.96
	Percentile 25	.02	.04
	Percentile 75	.07	.80
<i>Liquidity</i>			
Cash Assets	Mean	\$136,078.71	\$166,553.35
	Median	\$1,217.63	\$10,915.33
	Std Deviation	\$670,201.87	\$652,172.36
	Percentile 25	-\$38.25	\$1,480.13
	Percentile 75	\$9,871.67	\$49,082.67
Cash assets by total assets	Mean	.06	.21
	Median	.01	.03
	Std Deviation	.10	.61
	Percentile 25	.00	.01
	Percentile 75	.06	.13
<i>Others</i>			
Overseas listing?	Count: Yes	4	39
	No	31	48
Location of control	Count: Foreign	9	43
	NZ	25	44
Share spread	Mean	82.15	68.37
	Median	84.39	73.92
	Std Deviation	13.34	19.79
	Percentile 25	76.79	51.80
	Percentile 75	93.20	84.13

Table 5
Univariate Sample T-Test of Independent Research Variables for N-IFRC and IFRC listed Companies

Research Variable	Mean Difference (Standard errors of mean)	t-value	Significance (2-tailed)
<i>Size</i>			
MCAP	-\$11,045,577.82 (\$10,407,017.44)	-1.06	.292
TASS	-\$2,421,830.79 (\$925,664.37)	-2.616	.010**
SALE	-\$1,165,233.67 (\$491,245.33)	2.372	.020**
NEMP	-2035.12 (1094.51)	-1.859	.068*
<i>Profitability</i>			
GRWT	-.25 (.30)	0.812	.420
PBIT	-\$111,409.35 (\$38,986.02)	2.858	.005***
PATX	-\$52,323.82 (\$17,120.79)	3.056	.003***
ROEQ	-0.12 (0.14)	.869	.387
ROTA	0.02 (0.03)	.946	.347
<i>Efficiency</i>			
OPEX	-938328.72 (438767.85)	2.139	.035**
OEXS	-1.27 (0.69)	1.846	.069*
<i>Liquidity</i>			
LIQD	-\$30,474.64 (\$137,822.85)	-.221	.826
LQTS	-0.15 (0.071)	-2.186	.031**
<i>Others</i>			
SPRD	13.78 (3.28)	4.203	.000***

*, ** and *** indicate significance at the 10, 5 and 1% levels respectively.

Table 6
Multivariate Logistic Regression Results

Research Variable [#]	Expected Sign	Model [#]			
		A1	A2	B1	B2
Constant		-0.6289 (2.2504)	-1.8638 (2.9250)	0.5758 (2.4121)	-1.4469 (3.0631)
Size	+	0.9271*** (0.3594)	1.7074*** (0.5883)	0.6362* (0.3519)	1.0401** (0.4668)
Industry	?	0.2025 (0.1905)	0.5407** (0.2682)	0.0961 (0.1704)	0.2518 (0.2025)
Profitability	+/-	-0.9302 (2.2536)	-1.0118 (2.5851)	0.0003 (0.0035)	-0.0015 (0.0045)
Efficiency	+/-	2.5761* (1.5404)	5.0303* (2.8362)	2.6833* (1.4698)	6.9369* (3.8010)
Growth	+/-	0.2830 (0.2223)	0.0702 (0.2348)	0.3179 (0.2235)	0.4480 (0.2870)
Ownership Spread	-	-0.0566** (0.0254)	-0.1089*** (0.0391)	-0.0499** (0.0217)	-0.0642** (0.0250)
Internationalisation	+	0.1214 (0.9023)	1.7377 (1.4241)	-0.7681 (0.6484)	-1.4033* (0.8458)
Liquidity	+	-0.0447 (0.0694)	1.9558 (1.6635)	-0.0334 (0.0638)	2.8989 (2.5646)
Log likelihood		84.45%	63.50%	89.45%	71.91%
Goodness of fit		81.71%	59.37%	77.90%	65.34%
<i>Chi</i> ² statistics		30.125***	44.267***	29.042***	41.16
Number of observations		90 ²	87	95	92
Degrees of freedom		8	8	8	8
Correctly predicted: N-IFR		56.67%	59.26%	50.00%	64.29%
IFR		<u>85.00%</u>	<u>86.67%</u>	<u>86.15%</u>	<u>87.50%</u>
Overall		<u>75.56%</u>	<u>78.16%</u>	<u>74.74%</u>	<u>80.43%</u>

*, ** and *** indicate significance at the 10, 5 and 1% levels respectively.

Explanatory variables for the models are: Size = log of market capitalisation (A1 and A2), log of total assets (B1 and B2); Industry = industrial sector; Profitability = return on equity (A1 and A2), earnings per share (B1 and B2); Efficiency = operating expenses to sales; Growth = increase in share value; Ownership spread = Proportion of shares held by top 40% of shareholders; Internationalisation = overseas listing (A1 and A2), Foreign or New Zealand-controlled (B1 and B2); Liquidity = cash assets by total assets.