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**COMPANY CHARACTERISTICS AND
OCCUPATIONAL HEALTH AND SAFETY DISCLOSURES:
A QUANTITATIVE REVIEW OF AUSTRALIAN ANNUAL REPORTS**

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ABSTRACT

This paper uses binary logistic regression to develop two models of firms' Occupational Health and Safety disclosures, one based on disclosure / non-disclosure, the other based on above / below the median levels of disclosure. Industry and auditor are found to be important components of both models, whilst operating revenue contributes to the former and company age to the latter. These findings support to some extent previous studies into Corporate Social and Environmental Disclosure, but also identify new factors that need to be further investigated. The paper contributes to our current understanding of Corporate Social Disclosure through its focus on the little considered area of Occupational Health and Safety and also raising the possibility of non-parametric statistics as a better statistical methodology for such research.

INTRODUCTION

This paper develops and examines a statistical model, based on firm characteristics, which explains to some extent the existence and level of Occupational Health and Safety (OH&S) disclosures in the annual reports of Australian Listed Companies. It is intended to be an exploratory study which increases the understanding of OH&S disclosures in a broad sense, but also provides some insight into possible future directions for broader Corporate Social Disclosure (CSD) research.

OH&S is a key element of any organisational sustainability, having a significant impact in both human and economic terms (Financial Review, 2004). This paper is intended to begin to open a dialogue on the OH&S disclosure practices of large Australian corporations, and may have practical ramifications that can be used to improve future practices.

CSD has developed over the last four decades or so and has provided another way to view the firm and its place in society. It has drawn a range of researchers, with a range of methods and approaches to considering the issues that arise. This paper builds on these previous studies but adds to them in a number of ways.

First, the paper is unique at present in focusing on the factors related to OH&S disclosures in the annual report. Traditionally studies have either considered CSD as a whole, or focussed almost exclusively on Environmental Disclosures. This delivers an opportunity to re-examine previous research in a new light.

Second, the paper takes the quantitative analysis in a different direction. Previous studies have generally either been of a descriptive nature or the analysis has drawn on traditional parametric statistics. This paper uses non-parametric statistics, and particularly binary logistic regression, an approach that has to date not been widely used in accounting research despite obvious advantages. This approach, while losing some apparent finer resolution, gains in a much more robust and reliable analysis.

The results found and discussed in later sections have a number of consequences for further research in CSD. The research also lays the foundation for a number of future research projects.

CORPORATE SOCIAL DISCLOSURE RESEARCH - A BRIEF BACKGROUND

Much has been written outlining the history of Corporate Social Disclosure (also sometimes referred to as Corporate Social Reporting (CSR)) and it is not the intention of this paper to revisit in detail the history (an interested reader would find a good start in Mathews, M. (1997)). However some overview of the developments will provide a useful contextualization.

It has been noted that there has been a slow but steady change in the annual reports of companies. No longer is it a repository for solely financial information. Increasingly disclosures of a social and environmental nature have been included. The accounting firm Ernst and Ernst were the first to really document this change, over a six year period, 1972 – 1978 (Mathews, M., 1997). Their surveys showed an increase in the numbers of companies disclosing information of a social and environmental nature over this period. Australian

academics began to take notice of CSD later in the 1970's. One of the earliest studies in Australia, undertaken by Trotman (1979), concluded that across a number of areas of social concern (including environmental, human resource, and community categories) the numbers of firms disclosing information had increased markedly over the 10 year period, 1967 to 1977. It was also noted however that the actual amount of disclosure within reports was minimal. This supported the trends being reported in the US. Abbott and Monsen (1979) concluded, based on a review of companies on the Fortune 500 list, that the firms reporting some form of social disclosure increased from 51.4% in 1971 to 85.7% in 1975.

Having established that increasing numbers of companies were disclosing information of a social and environmental nature, researchers began to focus on the actual amount of disclosures within the annual reports themselves. Cowen et al. (1987) examined the average amount of disclosure made in the 1978 Annual Reports of various US based companies. They found, once categorised into various industry groupings, levels of disclosure ranging from an average of 0.4 up to 1.25 pages. One of the most detailed studies in Australia was conducted by Deegan and Gordon (1996) which focussed on environmental disclosure practices. They concluded that the "amount of voluntary environmental disclosures in Australia is typically low" but that a "general increase in environmental disclosures occurred" over the 11 year period 1980 to 1991 (Deegan and Gordon, 1996, p. 198). Harte and Owen (1991) reached an almost identical conclusion after they examined the annual reports of 30 UK based companies, though this was over a much shorter time period (1989 to 1990). In another study, Gray et al. (1995a) found that for various categories of social disclosure (including Environmental, Community, and Health and Safety) the average amount of disclosure had steadily increased from 1979 to 1991. However they note "The rise in social disclosure from a little over one page to nearly four-and-a-half pages, it could be argued, may not be something we should get too excited about" (Gray et al., 1995a, p. 68). This upward trend has continued to be noted, particularly for environmental disclosures (see for example Campbell, 2004 and Cerin, 2002).

More recently researchers have begun to consider what factors may be driving corporations to disclose Social and Environmental information. This is considered in the next section.

QUANTITATIVE CONSIDERATIONS - DETERMINANTS OF LEVELS OF DISCLOSURE BETWEEN FIRMS

A number of authors have considered the underlying factors that affect the amount of Corporate Social Disclosure made by firms. Numerous statistical approaches have been taken, generally an Ordinary Least Squares regression correlating various measures of disclosure levels with a range of possible determinants. A variety of factors have been concluded to influence Corporate Social Disclosure to varying degrees. The following sections introduce the factors that have been most commonly concluded to have a significant impact.

Size

One of the most consistently addressed determinants is the size of the organisation. Size is a very nebulous measure and as been variously defined, most commonly in terms of revenue, but also based on assets and other physical characteristics. Cowen et al. (1987, p. 121) concluded that "Corporate size appears to have significant impact". It should be noted, however, that they determined this did not hold true for human resource information, which presumably included OH&S. It has been suggested that size is an important factor because it

is related to 'political visibility'. Belkaoui and Karpik (1989, p. 47) comment that "large firms are more politically sensitive than small firms and face differential incentives in their choice of accounting procedures" (see also Hagerman and Zmijewski, 1979; Watts and Zimmerman, 1990; Adams et al., 1998). A "significant and positive relationship between firm size and the amount of positive environmental disclosures" was found by Deegan and Gordon (1996, p. 197) for Australian firms. In the case of New Zealand firms Hackston and Milne (1996, p. 9) found that size is "highly positively correlated with the actual measured page amount of social disclosure". It should be noted that Gray et al. (1995a, p. 49) feel that the importance perceived of size "is not the most reliable of results, when no allowance is taken of other factors". This view is supported in a study by Freedman and Jaggi (1988) who found that large firms are more likely to disclose environmental information if they have poor economic performance. A possible explanation was that "information on pollution performance is used to rationalise the relatively poor economic performance resulting from heavy pollution-related expenses" (p. 54). Also, it should be noted that Roberts (1992) found no correlation between size and levels of disclosure in a sample of US companies.

Industry Category

Industry category is also often cited as a significant factor when considering CSR. As early as the late 1970's Dierkes and Preston (1977) hypothesised that the environmental disclosure of firms involved in environmentally sensitive industries would likely be higher. This contention has been supported in the Australian context by Deegan and Gordon (1996). Roberts (1992) and Hackston and Milne (1996) have found a positive relationship between certain 'high-profile' industries and the amount of CSD (also Adams et al., 1998). Cowen et al. (1987) concluded that industry type only influenced the disclosure of energy and community related disclosures.

Economic Performance

The possibility that better economic performance leads to increased CSD has been considered by a number of authors. Most have concluded that this is not a significant determinant of social disclosure (see Abbott and Monsen, 1979; Cowen et al., 1987; Belkaoui and Karpik, 1989; Hackston and Milne, 1996) although Roberts (1992) has found evidence that it may be linked to 'lagged' (previous year's) profits. This conclusion is not supported by Patten (1992), who failed to find any relationship between profit and CSD, even though a number of measures of profitability, including lagged, were used. Cormier and Magnan (1999, p. 444) however concluded that firms "showing good financial results tend to increase their level of environmental disclosure, while poorly performing firms minimize the level of environmental information contained in their annual reports". This is interesting, perhaps suggesting levels of disclosure are not directly correlated to financial performance, but changes in disclosure are related to changes in performance.

Other Factors

A number of other factors have also been considered. One is the presence of some form of "Corporate Social Responsibility" committee. Cowen et al. (1987) found this to be a significant factor when related particularly to the disclosure of human resource information. Another factor has been 'actual social performance'. Belkaoui and Karpik (1989, p. 46) found a "significant and positive association of social disclosure with social performance". Cormier and Magnan (1999) support this conclusion with regard to environmental disclosures. In another study Coffey and Fryxell (1991) looked at the links between levels of institutional ownership and CSR. They conclude "institutional investors were fairly indifferent to social criteria... [and] we must remain sceptical of arguments that the advent of institutional

ownership is obviating the need for legislation, education or other measures aimed at securing better corporate performance” (p. 443). Auditor is another factor that has been identified as possibly influencing firms’ CSD (Wallace et al., 1994) as has the age of the firm (Haniffa and Cooke, 2002). It should also be noted that country of origin has been identified as having an affect on the amount of CSD (Gamble et al., 1996; Adams et al., 1998) along with culture of directors (Haniffa and Cooke, 2002). Due to various constraints on both time and availability of information of the factors mentioned in this section only auditor and age will be considered in this study. In addition, as this study will focus on one country, Australia, the country of origin will obviously not be relevant.

OCCUPATIONAL HEALTH AND SAFETY

The fact that OH&S disclosures have been largely overlooked in accounting research should not be taken as an indication that it is an unimportant or uninteresting subject. The subject has received increasing attention in the broader community over the last few years throughout the developed world. Occupational Health and Safety continues to have an important impact on a range of stakeholders, such as “Federal and State governments, employers, workers, a growing group of small business and self-employed people (whose businesses often last only a short time) and taxpayers” (Mayhew and Peterson, 1999, p. 1) not to forget society at large. “[E]ven within the most industrially advanced societies OHS is a significant and resilient problem. It is a problem that needs to be examined and understood in both a national and international context” (Bohle and Quinlan, 2000, p. 6).

What Is OH&S

An important part of undertaking research in any field is to delineate the area of interest by defining that which falls within the appropriate scope, generally through definition. OH&S defies easy definition. Textbooks and journals proceed on the assumption that the reader is acquainted with the term and understands its intrinsic meaning. Commonwealth legislation (which is closely mirrored by State legislation) perhaps comes the closest in defining OH&S in terms of its objectives:

- “(a) to secure the health, safety and welfare at work of employees of the Commonwealth and of Commonwealth authorities; and
- (b) to protect persons at or near workplaces from risks to health and safety arising out of the activities of such employees at work; and
- (c) to ensure that expert advice is available on occupational health and safety matters affecting employers, employees and contractors; and
- (d) to promote an occupational environment for such employees at work that is adapted to their needs relating to health and safety; and
- (e) to foster a co-operative consultative relationship between employers and employees on the health, safety and welfare of such employees at work.”

[\(Occupational Health and Safety \(Commonwealth Employment\) Act 1991, Part 1, Sec. 3\).](#)

This definition has been used to inform the study presented.

Why is OH&S Important

The most obvious answer to the question of why is OH&S important is because the human cost is too high to ignore. In Australia around 2900 people are killed by their work each year (Mayhew and Peterson, 1999, p. 1), about 500 of these involve traumatic accidents (Mathews, J., 1997, p. 320) the remainder are work related illnesses such as cancer. This is in addition to the around 164,500 workers’ compensation claims each year for injuries that

require five or more days off work (Industrial Commission, 1995). It should be noted that this finding must be read in light of “The finding by a recent Australian Bureau of Statistics Survey in New South Wales that 48% of people with serious work-related injury did not apply for workers compensation” (Calzoni, 1997, p. 48). “At any one time, the accumulated effects of work-related injury and health mean that up to 140,000 workers cannot work at full capacity; over 270,000 workers have had to reduce permanently their hours at work, or change their jobs; and about 200,000 workers are prevented from working at all” (Mathews, J., 1997, p. 320). On a global scale “the World Health Organisation estimates that there are 200 000 fatalities, 120 million injuries and 68 - 157 million new cases of disease each year from work” (World Health Organisation cited in Mayhew and Peterson, 1999, p. 5).

The connection between accounting and OH&S has been recognised by Occupational Health and Safety professionals as two-fold. On the one hand the relationship is characterised as negative. “Costs are seen through the filter of accounting systems; how they are measured makes all the difference. One place to start in changing workplace approaches to OHS improvement is to tackle the underlying management cost accounting and budget systems so that they no longer bias decisions against effective OHS measures” (Mathews, J., 1997, p. 324). Accounting, with its focus on immediately measurable costs and revenues fails to capture benefits associated good OH&S practice and therefore relegates it to a lesser importance. On the other hand, there exists the potential for a positive relationship. “We believe 'what gets measured gets done' and that accurate measurement of safety benefits can clearly demonstrate that excellent safety programs are good business” (Dotson, 1996, p. 670). Accounting for OH&S is important and reporting the information has the potential to play a significant role in a business.

METHODS

Data Gathering

The Annual Report Sample

This initial analysis involved 201 annual reports from the Connect Four database for the year 2000. This database contains an electronic (text) copy of the annual reports of the top 500 Australian listed companies based on market capitalisation. The sample was not statistically random, but was the first 201 companies listed alphabetically (covering those with names starting with the letter ‘A’ through ‘F’) which reported in Australian dollars. This approach, though not ideal, was in fact a convenience sample in that this forms a pilot analysis of what is expected to be a much larger study of all 500 companies at a later date.

Dependent Variable – OH&S Disclosure

A form of content analysis was used to identify the amount of Occupational Health and Safety Disclosure made by companies in their annual reports. As Connect Four is able to output annual reports in Word format the opportunity is provided to automate the process to some extent, greatly speeding the gathering of data, allowing many more reports to be sampled. In this case the process involved a number of steps.

Document Preparation

The first step involved taking the Word document and reformatting it. This meant removing all white space from the document, placing each sentence on a new line, and converting all tables to text, where a row was treated as a sentence. The Word document was then exported

to an Excel document. This is slightly easier to search, but is also to facilitate further qualitative analysis as part of another research project.

Document Searching

A review of a number of annual reports allowed key words to be identified that were consistently associated with OH&S disclosures. These revolved around the words: 'Health', 'Safe*'1, 'Rehab*', 'Injur*'. In addition the words 'Death' and 'Accident' were also searched for, the former not appearing at all in an OH&S context, the latter only appearing a few times, always in association with one of the other searched words. This review established that although the specified words did not appear in every sentence related to OH&S they did consistently appear at the very least in each block of text associated with OH&S.

The search function was undertaken sequentially. Each sentence identified by the search was examined to establish whether its context was appropriate to the study, this was a relatively straight forward process of seeing if the statutory definition of OH&S already discussed applied. Also sentences either side of the hit were examined to establish their context and if appropriate also included in the sentence count. In addition a number of annual reports were reviewed in totality to establish whether any OH&S related sentences had been omitted in the word search procedure. None were found. The final figure derived is the number of sentences relating to OH&S found in the annual report.

Words, Sentences or Pages

Gray *et al.* (1995b, p. 83) note that "There is some, not inconsequential, debate around the 'unit of analysis'" which should be used in content analysis. They go on to identify the three main units used in CSD research: the word, the sentence, and, the page. This paper uses sentences as it has been argued (Ingram and Frazier, 1980) that this measure allows for the best determination of what material should be included in the analysis. With regard to the quantitative considerations it should be noted that Hackston and Milne (1996, p. 10) have concluded that there exists "extremely high correlations between the three measures of disclosure amount (measured pages, derived pages and number of sentences)" in CSD research of Annual Reports. So it would seem that the one Unit of Analysis (in this case sentences) will be adequate for quantitative conclusions and be equally valid as the use of either words or pages.

Independent Variables

Selection of variables was based upon the previous research discussed in the earlier section. Table 1 lists these variables and how they were obtained.

Insert Table 1: Independent Variables Included in the Study Here

Statistical Analysis

The question of statistical analysis deserves more attention than it perhaps has had in previous papers. Unfortunately there is not space in this paper for a full discussion of the appropriate statistical techniques to use in Corporate Social Disclosure research, however at some future date this would be beneficial. This study, in contrast to the majority of other studies, is undertaken using exclusively non-parametric statistics. This frees the research

¹ The '*' identifies in the search function that any word starting with these letters be identified, in this example words such as 'Safe', 'Safety', 'Safely' etc. would be selected.

from the underlying assumptions associated with parametric statistics, such as the data being normally distributed, which is clearly not the case as Table 2 shows for those variables which are interval/ratio in this study. In addition non-parametric statistics allows the inclusion of variables that are measured at the nominal and ordinal level.

Insert Table 2: Descriptive Statistics of Scalar Variables Here

Though it may appear that the use of non-parametric statistics is less sensitive to the data, the reality is the measures of variables employed in Corporate Social Disclosure research are often based on proxies, and are at such a coarse level themselves that the use of parametric statistics delivers a result that only has a veneer of precision.

This paper employs three non-parametric statistical methods. The first two, Spearman's Rho (Siegal and Castellan, 1988, p. 235) and Kruskal-Wallis (Siegal and Castellan, 1988, p. 206) are used to identify those factors which are significant in determining OH&S disclosure. The third technique is Binary Logistic Regression (Hosmer and Lemeshow, 1989), used to develop a model predicting the disclosure patterns of firms based on relevant characteristics.

RESULTS AND ANALYSIS

The nature of Binary Logistic Regression is that only two alternative outcomes can be examined at a time. This paper undertakes two such regressions, the first on the whole sample looking at the disclose / don't disclose dichotomy. The second examining only those firms which disclose OH&S information and looking at the above / below median disclosure dichotomy.

Disclose/Don't Disclose Dichotomy

Of the 201 companies examined 85 (42%) had some kind of disclosure relating to OH&S in their annual report. This first model attempts to find firm specific characteristics which can be used to accurately classify the firm as either disclosing or non-disclosing.

Significant Factors

The Spearman's Rho analysis of the continuous variables is presented in Table 3 on the following page. It can be noted that for OH&S disclosure three factors are significant, Operating Revenue at less than the 0.1% level and Total Assets, along with Number of Employees, at less than the 5% level.

The categorical variables are tested for significance using a Kruskal-Wallis one-way analysis of variance by ranks. Industry is determined to be significant at the less than 0.001 level, auditor is not identified as significant with an R2 of 0.138.

Insert Table 3: Spearman's Rho of Scalar Variables Here

Model Building

Having established the factors to start the logistic regression, SPSS is used to develop the model. The factors identified as significant in the previous analyses provide the starting point for the regression, however previously insignificant factors may become significant when combined with other factors, so possible plausible combinations should still be tested to find the best model. Also multi-collinearity can mean that variables identified as significant may add little to the model's predictive power. A detailed discussion of the general approaches to variable selection can be found in Hair et al. (1998, p. 176 - 187), and although this

discussion is generally about Multiple Regression Analysis, it also applies to Binary Logistic Regression (which is just a special case). Defining the best model in a Binary Logistic Regression depends on the intention of the researcher in creating the model. For example a medical researcher may want a model with a very low false negative rate, but may not be so concerned about a false positive rate. In the case of this research a good model is defined as one that maximises both correct positive and correct negative results whilst minimizing the difference between the two. In addition, to keep the model simpler, for the inclusion of each additional factor the model must improve by more than a single case. For example using only industry, as in table 4, gives a reasonable overall average, with a low (16) false positive however the high (35) false negative makes this model undesirable despite its simplicity. It should be noted that in table 4 and 5 '0' means don't disclose and '1' means disclose.

Insert Table 4: Classification Results of Simple Model Here

The best model, shown in Table 5, would appear to be given by the inclusion of four factors: Industry, which has the most significant influence; Auditor and Revenue, both of some influence; and Change in Profit which is of minor significance in the model.

Insert Table 5: Classification Results of Full Model Here

The model itself is given by the following equation:

$$g(x) = 0.0000002301 * \text{Revenue} + 0.0000023663 * \text{Change in Profit} + (\text{Industry Value}) + (\text{Auditor Value}) - 0.6334072331 \text{ (Constant)}$$

Where $g > 0$ = Disclose, $g < 0$ = does not disclose and the Industry and Auditor values come from table 6.

Insert Table 6: Values Table for Industry and Auditor Here

High Disclosure/Low Disclosure Dichotomy

There are 85 companies in the sample that disclose some amount of OH&S information in their annual report. The majority (62) of these disclosing companies had between 1 and 10 sentences, and of these 62, 22 had just a single sentence. A histogram of disclosure is provided in Graph 1.

Insert Graph 1: Levels of Disclosure Here

The 85 disclosing companies can be split into those which report above the median and those that report below the median. The same process used in the previous model is followed to develop a model for high / low levels of disclosure.

Significant Factors

The Spearman's Rho analysis of the continuous variables is presented in Table 6. It can be noted none of the variables appears to be significant, the closest being Age at $p = 0.054$. Again the categorical variables are tested for significance using a Kruskal-Wallis one-way analysis of variance by ranks. Industry is determined to be significant at the less than 0.04 level, auditor is again determined as not significant with an R^2 of 0.261.

Insert Table 7: Spearman's Rho of Scalar Variables Here

Model Building

In the case of low / high levels of disclosure the best model appears to be based on Industry, Auditor, and Company age, as shown in Table 7. It should be noted that this model is based on only 74 cases, as age information was not able to be obtained for all companies. It should be noted that in Table 8 '0' means below median disclosure, '1' means above median disclosure.

Insert Table 8: Classification Results of Full Model Here

Model for Logistic Regression is given by the following equation:

$$g(x) = 0.0190093887 * \text{Age} + (\text{Industry Value}) + (\text{Auditor Value}) - 0.9509630619 \text{ (Constant)}$$

again the values for Auditor and Industry are given in table 9.

Table 9: Values Table for Industry and Auditor

It should be noted that only those industries that had disclosure in the original sample have been included in this model.

ANALYSIS OF RESULTS

The models indicate that a number of factors identified in previous studies do appear to be significantly related to firms' disclosure practices for OH&S. This would appear to support the unsurprising notion that there is a strong relationship between OH&S disclosure and other CSD. The models themselves appear to be relatively robust, offering a reasonably high level of predictive power. However it needs to be remembered that these models are important really only in that they identify what may be significant factors that influence both the decision to disclose and the level of disclosure.

One of the most important results is that different factors appear to be driving the decision to disclose as compared with the decision of how much to disclose. This would have serious implications for those trying to develop a linear model for disclosure if shown to hold across other forms of CSDs. This may also go some way to explaining the mixed results of past studies as discussed in a previous section.

In both models industry is by far the most significant factor. This supports the research by Deegan and Gordon (1996) in the Australian context for environmental disclosures. It will be interesting to establish the underlying context of this phenomenon, particularly to investigate the relationship between disclosure levels and relative 'danger' of each industry (as Dierkes and Preston (1977) have done for environmental sensitivity and disclosure). Early indications are that there is a very strong relationship between the actual 'danger' of an industry and the amount of OH&S disclosure.

In both studies the auditor variable appeared to be somewhat significant. This has had little consideration in previous papers, but supports the findings of Wallace et al. (1994) and Haniffa and Cooke (2002). However this factor may need to be treated with a deal of caution. It is not possible from the analysis to determine the direction of influence, nor why it exists at all. It may be that certain auditing firms are pushing organisations down this path either directly or indirectly through their additional services, or possibly firms that disclose this

information may be attracted to auditors with specific reputation or knowledge. The nature of this relationship deserves further examination.

Revenue has a positive relationship with the decision to disclose but not the level of disclosure. This mixed relationship may be the reason why this variable has been much debated in the academic literature (see earlier discussion of size). Age of the company has received little attention and in the one previous study (Haniffa and Cooke, 2002) in which it was considered it was found to be of no importance, however this study did identify it as being related to the amount of CSD. Why this should be so is not immediately obvious and further investigation needs to be undertaken.

The absence of profit as a driver for OH&S disclosure would support previous conclusions for CSD and environmental disclosure (see Abbott and Monsen, 1979; Cowen et al., 1987; Belkaoui and Karpik, 1989; Hackston and Milne, 1996). Neither Patten's (1992) assertions about lagged profits nor Cormier and Gordon's (2001) assertions about changes in profit were supported by the analysis.

Finally the fact that number of employees did not seem to be significant in either model is cause for consideration. According to stakeholder theory (if not legitimacy theory as well) it would seem fair to assume that employees are an important group that "needs to be managed in order to further the interests of the organisation" and that the annual report would be used "by the organisation to manage (or manipulate) [employees] in order to gain their support and approval, or to distract their opposition and disapproval" (Gray et al., 1996, p. 45). Yet this does not appear to be prima facie the situation for the annual report based on this research. It may be that management does not see the annual report as an important communication device when it comes to employees. If so this would have considerable ramifications for authors who argue for the importance of the annual report to CSD such as Gray et al. (1995b) and Mangos and Lewis (1995).

LIMITATIONS

As with most research, there are a number of significant limitations in this study. The sample was not ideal, and further research is required to ensure that this did not significantly impact on the models developed. The measures for age and number of employees were both incomplete; a better source of information for these factors needs to be determined. A significant limitation is that the paper has not focused on the nature of the OH&S disclosures. This would certainly be useful and it is intended that this will form the basis of a future paper.

CONCLUSIONS

This paper has examined firm characteristics and their relationship to OH&S disclosure using a binary logistic regression based model. It admittedly raises more questions than it necessarily answers, but this is the nature of exploratory quantitative research. These results strongly suggest that there are intrinsic features that are related to firms' disclosure practices, particularly the industry group and the company's external auditor, also the company's operating revenue and age appear to play some role. The findings of this paper are on the whole comparable with previous research into CSD and/or environmental disclosures and would indicate an amount of transferability from these other studies to OH&S.

Again, however, the results are mostly interesting not in and of themselves but because they indicate the need to develop the understanding of Corporate Social Disclosure and its underlying theory. Why these various factors are important in determining a firm's likelihood to disclose, and/or how much to disclose, needs to be examined further. How these results fit in with the broader underlying theories of firm disclosure, such as stakeholder, legitimacy and agency theory also needs to be considered. The examination of a specific type of CSD is relevant at the very least in providing us the opportunity to consider the predicted outcomes of these theories.

Finally this research is intended to start two dialogues. The first is about the appropriate methodology to be used in undertaking CSD research. It is unfortunate that this paper has not been able to fully explore the ramifications of methodological choice, but at the very least it is hoped that by identifying alternative approaches future research may be better grounded in the appropriate statistical techniques.

The second dialogue relates to Occupational Health and Safety disclosures by companies. OH&S is an important topic for society as a whole to consider with a high economic and social cost. Any effort to improve understanding in the area may lead to better performance and presumably therefore better social outcomes.

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Table 1: Independent Variables Included in the Study

Independent Variable	Source of Information	Nature of Variable
Size		
Total Assets	Annual Report	Scale
Number of Employees	Various*	Scale
Operating Revenue	Annual Report	Scale
Profitability		
Profit after Tax	Annual Report	Scale
Previous Profit	Annual Report	Scale
Change in Profit	Calculated	Scale
Others		
Age	Various*	Scale
Industry	Connect Four Database	Categorical
Auditor	Annual Report	Categorical

* It should be noted that this information was not readily available in one location, the annual report was searched, along with the Dun and Bradstreet Database to obtain the information, but it is still incomplete.

Table 2: Descriptive Statistics of Scalar Variables

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
Descriptive Statistics							
Company age	184	1	164	26.35	32.6	1.866	3.071
Total Assets	201	0	217,671,000	4,037,318.50	23,218,771.5	7.963	64.079
Change in profit	200	-814,485	3,902,000	31,502.05	306,183.8	10.630	131.430
Number of employees	128	1	167,000	4,140.36	15,758.4	8.984	91.360
Previous period's profit	200	-2,309,000	1,486,000	29,156.61	232,468.9	-2.783	64.872
Number of OH&S sentences	201	0	59	4.64	10.4	3.103	9.792
Profit	201	-600,114	2,738,000	60,260.42	270,239.3	7.057	60.154
Operating revenue	201	4	27,601,000	1,040,832.61	3,363,114.4	6.049	40.964

Table 3: Spearman's Rho of Scalar Variables

Spearman's rho			Presence of OH&S Disclosure	Number of Employees	Total Assets	Operating Revenue	Profit	Previous Period's Profit	Change in Profit	Company Age
		Correlation Coefficient	1.000							
	Sig. (1-tailed)									
Number of Employees	Correlation Coefficient	0.167	1.000							
	Sig. (1-tailed)	0.030 *								
Total Assets	Correlation Coefficient	0.157	0.702	1.000						
	Sig. (1-tailed)	0.013 *	0.000 **							
Operating Revenue	Correlation Coefficient	0.301	0.837	0.691	1.000					
	Sig. (1-tailed)	0.000 **	0.000 **	0.000 **						
Profit	Correlation Coefficient	-0.006	0.603	0.727	0.581	1.000				
	Sig. (1-tailed)	0.466	0.000 **	0.000 **	0.000 **					
Previous Period's Profit	Correlation Coefficient	0.021	0.578	0.688	0.572	0.762	1.000			
	Sig. (1-tailed)	0.382	0.000 **	0.000 **	0.000 **	0.000 **				
Change in Profit	Correlation Coefficient	-0.007	0.249	0.303	0.210	0.560	0.112	1.000		
	Sig. (1-tailed)	0.460	0.002 **	0.000 **	0.001 **	0.000 **	0.057 *			
Company Age	Correlation Coefficient	0.107	0.301	0.122	0.263	0.153	0.181	0.057	1.000	
	Sig. (1-tailed)	0.075	0.000 **	0.049 *	0.000 **	0.019 *	0.007 **	0.221		
*	Correlation is significant at the .05 level (1-tailed).									
**	Correlation is significant at the .01 level (1-tailed).									

Table 4: Classification Results of Simple Model

Logistic Regression	Observed OH&S Present	Predicted OH&S Present		% Correct
		0	1	
		0	100	16
1	35	50	58.82	
Overall Percentage				74.63

Factors: Industry

Table 5: Classification Results of Full Model

Logistic Regression	Observed OH&S Present	Predicted OH&S Present		% Correct
		0	1	
		0	98	17
1	25	60	70.59	
Overall Percentage				79.00

Factors: Industry; Auditor; Revenue; and, Change in Profit

Table 6: Values Table for Industry and Auditor

Industry Values	
1 Alcohol & Tobacco	-7.7149838434
2 Banks & Finance	-10.8827743469
3 Building Materials	-7.3262066404
4 Chemicals	0.1863575270
5 Developers & Contractors	-10.2550919831
6 Diversified Industrial	-8.3733949278
7 Diversified Resources	-15.7539452235
8 Engineering	0.3573826565
9 Entrepreneurial Investors	-17.5056277055
10 Household & Food	-19.0282274320
11 Gold	-7.9888841512
12 Insurance	-25.7459056455
13 Investment & Financial Services	-10.8774931679
14 Media	-8.8624146806
15 Miscellaneous Industrial	-8.7304806796
16 Miscellaneous Services	-9.5849012291
17 Oil & Gas	-9.0650561574
18 Other Metals	-7.3489728709
19 Paper & Packing	-0.0283827182
20 Property Trusts	-18.2388938762
21 Retail	-9.9545518460
22 Solid Fuels	-7.9125575731
23 Transport	0.0000000000

Auditor Values	
1 PriceWaterhouse Coop	0.7034704943
2 KPMG	0.4820334741
3 Authur Anderson	-0.2436910507
4 Deloitte	1.7929544089
5 Ernst & Young	0.8086325366
6 PKS	1.1252636993
7 Other	0.0000000000

Graph 1: Levels of Disclosure

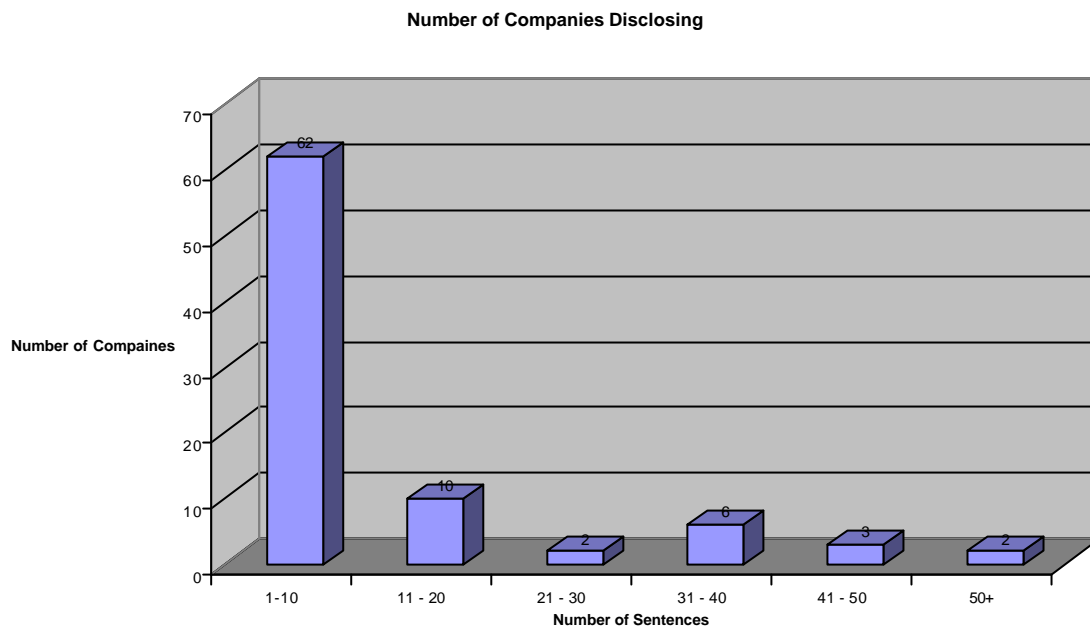


Table 7: Spearman's Rho of Scalar Variables

Spearman's rho		Level of OH&S Disclosure	Number of Employees	Total Assets	Operating Revenue	Profit	Previous Period's Profit	Change in Profit	Company Age	
	Level of OH&S Disclosure	Correlation Coefficient	1.000							
		Sig. (1-tailed)								
	Number of Employees	Correlation Coefficient	-0.107	1.000						
		Sig. (1-tailed)	0.407							
	Total Assets	Correlation Coefficient	-0.084	0.225	1.000					
		Sig. (1-tailed)	0.444	0.079						
	Operating Revenue	Correlation Coefficient	0.017	0.808	0.251	1.000				
		Sig. (1-tailed)	0.880	0.000 **	0.021 *					
	Profit	Correlation Coefficient	-0.031	0.325	0.893	0.535	1.000			
Sig. (1-tailed)		0.775	0.010 **	0.000 **	0.000 **					
Previous Period's Profit	Correlation Coefficient	-0.171	0.129	0.399	-0.275	0.097	1.000			
	Sig. (1-tailed)	0.117	0.319	0.000 **	0.011 **	0.378				
Change in Profit	Correlation Coefficient	0.094	0.165	0.428	0.614	0.723	-0.618	1.000		
	Sig. (1-tailed)	0.391	0.201	0.000 **	0.000 *	0.000 **	0.000 **			
Company Age	Correlation Coefficient	0.225	0.253	0.001	0.450	0.233	-0.146	0.283	1.000	
	Sig. (1-tailed)	0.054	0.050 *	0.994	0.000 **	0.046 *	0.213	0.014 *		
*	Correlation is significant at the .05 level (1-tailed).									
**	Correlation is significant at the .01 level (1-tailed).									

Table 8: Classification Results of Full Model

Logistic Regression	Observed OH&S Present	Predicted OH&S Present		% Correct	
			0	1	
		0	31	7	81.58
		1	7	29	80.56
		Overall Percentage			81.08

Factors: Industry; Auditor; and, Age.

Table 9: Values Table for Industry and Auditor

Industry Values	
1 Alcohol & Tobacco	1.1500823624
2 Banks & Finance	-0.5927385344
3 Building Materials	12.0428549711
4 Chemicals	21.1220731112
5 Developers and Contractors	10.1139255847
6 Diversified Industrial	21.2039823264
7 Diversified Resources	20.3284301342
8 Engineering	12.6520866671
9 Gold	20.7588573194
10 Investment & Financial Services	0.9764877776
11 Media	1.2295241562
12 Miscellaneous Industrial	11.2845724635
13 Miscellaneous Services	9.9873205305
14 Oil & Gas	10.4498739172
15 Other Metals	11.8015905994
16 Paper and Packaging	8.9196121509
17 Retail	9.9975069841
18 Solid Fuels	11.3821368840
19 Transport	0.0000000000

Auditor Values	
1 PriceWaterhouse Coopers	0.8004087599
2 KPMG	1.3838281495
3 Arthur Anderson	0.1683475838
4 Deloitte	1.8995218533
5 Ernst & Young	1.4297593866
6 PKS	3.3831730164
7 Other	0.0000000000