

**BENEFITS OF MIXED METHODS
IN ENVIRONMENTAL REPORTING RESEARCH**

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Abstract

Purpose – The purpose of this paper is to illustrate the benefits of using mixed methods in environmental reporting research.

Design/methodology/approach – This is achieved through a discussion of a study employing two commonly used research methods – content analysis and interviews. Each method is introduced, with selected findings from the study presented, and plausible conclusions drawn. Key aspects of voluntary environmental reporting practices and processes understood and overlooked from the use of each method separately are highlighted. This is followed by a discussion of the confirmation, contradiction, and enrichment of the content analysis results achieved from using mixed methods research.

Findings – Each research method tells its own and different story, answering research questions that the other cannot. Our understanding of voluntary environmental reporting is enriched through a number of specific insights into reporting practices and processes. These would have been speculative, potentially ill-informed, and easily mis-interpreted, if known at all, had content analysis been employed as a single research method.

Research limitations/implications – Through illustrating the benefits achieved from employing mixed methods in environmental reporting research this paper highlights the need for more research in this area to use alternative and additional methods to the popular content analysis in order to provide a fuller and richer understanding of environmental reporting practices and processes.

Originality/value – Selected aspects of one of few environmental reporting studies to employ mixed methods research are detailed, and unlike other work this paper uses the study to highlight the additional insights that can be achieved from using such an approach.

Keywords Mixed methods, content analysis, semi-structured interviews, environmental reporting

Paper type Research paper

Introduction

The aim of this paper is to illustrate the benefits of using mixed methods in environmental reporting research. In doing so, this paper uses two commonly applied research methods – content analysis and interviews – in a study examining the voluntary environmental reporting practices and processes of New Zealand and Australian publicly listed companies. The use of a single research method is compared to the use of mixed methods research, and it can be seen that each research method tells its own and different story, answering research questions that the other cannot. The paper concludes that the use of a single method, while leaving us with plausible conclusions overlooks a number of key aspects of environmental reporting.

Mixed methods research is recognised as a *mixing* of approaches or methods and includes combining “qualitative *and* quantitative viewpoints, data collection, analysis, [and/or] inference techniques” [emphasis added] in a single study (Johnson, Onwuegbuzie and Turner, 2007, p. 123, Tashakkori and Creswell, 2007, Teddlie and Tashakkori, 2003). It is increasingly being recognised as the third major research approach and has become popular in a number of disciplines (Johnson et al., 2007, Leech and Onwuegbuzie, 2009). Using mixed methods research will present numerous challenges to the researcher, including the development of new skills, additional time needed to complete the research, research design issues (i.e. sampling, participant selection, potential bias in the data, and data integration), logistical issues in conducting the research, demonstrating the rigour of the supplemental data, the integration of findings, and addressing any contradictory findings (Brannen, 2005, Bryman, 2007, Creswell and Plano Clark, 2007, Creswell, Plano Clark and Garrett, 2008, Morse, 2003, Slonim-Nevo and Nevo, 2009, Tashakkori and Teddlie, 2003). However, there are many opportunities to be gained. Teddlie and Tashakkori (2003, pp. 14-15) give “three areas in which mixed methods are superior to single approach designs:

- Mixed methods research can answer research questions that the other methodologies cannot
- Mixed methods research provides better (stronger) inferences
- Mixed methods provide the opportunity for presenting a greater diversity of divergent views.”

Additionally, Brannen (2005, p. 12) identifies four functions, besides corroboration, of mixed methods research. These include: (1) elaboration or expansion – “the use of one type of data analysis adds to the understanding being gained by another”; (2) initiation – “the use of a first method sparks new hypotheses or research questions that can be pursued using a different method”; (3) complementarity – “together the data analyses from the two methods are juxtaposed and generate complementary insights that together create a bigger picture”; and (4) contradictions – “simply juxtapose the contradictions for others to explore in further research”. Thus, employing mixed methods research allows the researcher to explore and capture, enrich or explain, confirm, contradict or even refute (Jones and Summer, 2009), providing a fuller and richer picture of the research phenomenon.

The focus of accounting disclosure research, specifically environmental reporting research, on examining what environmental information is being reported and by whom (see Gray, Kouhy and Lavers, 1995, Mathews, 1997, Mathews, 2000) has led to the dominance of content analysis – a quantitative research method using secondary

data sources (i.e. annual reports)[1] (Guthrie and Abeysekera, 2006, Milne and Adler, 1999, Ng, 1985, Parker, 2005). A disparity between environmental reporting practices and theoretical perspectives has long been identified and acknowledged (Adler and Milne, 1997), as has a gap between environmental performance and environmental reporting (Adams, 2004). While environmental reporting research employing a single quantitative research method can, and does, provide some understanding of environmental reporting, it also overlooks numerous aspects of environmental reporting, with much of the research being developed without any engagement with organisations (Adams, 2002).

Yet despite calls from researchers to critically examine environmental reporting practices (e.g. Larrinaga-González, Carrasco-Fenech, Caro-González, Correa-Ruiz and Páez-Sandubete, 2001) and engage with organisations and/or stakeholders (e.g. Adams, 2002, 2008, Bebbington, Brown, Frame and Thomson, 2007, Gray, 2002) only some increase in the use of qualitative research methods has been seen (e.g. Farneti and Guthrie, 2009, O'Dwyer, 2002, Solomon and Darby, 2005). Following an examination of the top four interdisciplinary research journals[2], Parker (2005) found that during the 1988-2003 period content analysis was more widely used than any other research method, however from 1999 to 2003 the balance changed and an approximately equal number of articles published in the top four interdisciplinary research journals employed the content analysis, case/field/interview study, or survey research methods. The increased use of qualitative research methods has contributed to closing the gap between practice and theory through increasing the level of engagement with organisations. However, like much prior environmental reporting research only a single research method has been employed.

The dominance of one quantitative research method (i.e. content analysis), the limited use of qualitative research methods, and the primary focus on the use of single research methods in corporate social responsibility research appears to be attributable to a few similar factors. These include previous popularity and identification as an accepted research method, ability to judge rigour[3] (i.e. reliability, replicability, generalisability, and validity), data accessibility, timeframe and time constraints, generalisability, and researcher independence (Brannen, 2005, Johnson and Onwuegbuzie, 2004). Despite the benefits of employing only a single research method, it must be acknowledged that all research methods have their limitations including bias, errors, subjectivity, and an inability to fully engage in the research phenomena. While some of these can be minimised through various techniques, the methodological weaknesses inherent in using a single research method “neutralize or cancel” when mixed methods research is employed (Creswell, 2003, p. 15) and increased confidence can be placed in the results (Singleton and Straits, 1999).

The need for alternative and additional research methods to the popular content analysis has been recognised by numerous accounting disclosure and corporate social responsibility researchers (e.g. Holcomb, Upchurch and Okumus, 2007, Lee, 2009, Whiting and Miller, 2008). Including qualitative research methods would not only aid in answering the call for increased engagement with organisations, but would also add power of analysis to the often small sample sizes used in accounting disclosure research. However, the uptake of mixed methods research has been slow. Intellectual capital reporting studies have recognised the opportunities to be gained from using mixed methods research, with prior work successfully combining content analysis and

semi-structured interviews (e.g. April, Bosma and Deglon, 2003, Guthrie and Abeysekera, 2006, Guthrie, Farneti and Steane, 2009). While some corporate social responsibility studies have employed mixed methods research – i.e. Steger, Ionescu-Somers and Salzmann (2007) used semi-structured interviews and self-completion questionnaires to examine corporate sustainability management – the use of mixed methods research in environmental reporting has been limited. In line with the intellectual capital reporting studies using mixed methods research, environmental reporting studies that have employed mixed methods research have combined content analysis with interviews. However, while Wilmshurst and Frost (2000) used a large sample in their research, other mixed methods environmental reporting research has primarily been limited to one case study organisation (e.g. Buhr, 1998, Islam and Deegan, 2008) or has used quite different samples (e.g. Deegan and Gordon, 1996).

This section of the paper has outlined the benefits of mixed methods research and identified its use in accounting disclosure and corporate social responsibility research. The remainder of the paper illustrates the benefits of using mixed methods research to examine environmental reporting through a discussion of a study employing two commonly used research methods in environmental reporting research – content analysis and interviews. An introduction to each research method is given, followed by a brief discussion of the application of each method in the study. Selected findings for each research method are presented with plausible conclusions drawn. The paper highlights which aspects of voluntary environmental reporting each method contributed to understanding, and which aspects were overlooked. The use of mixed methods research significantly contributed to understanding and interpreting voluntary environmental reporting and this is highlighted through explaining the confirmation, contradiction, and enrichment of the content analysis results achieved from using mixed methods research. The paper then concludes on the benefits of using mixed methods research to examine and explore voluntary environmental reporting practices and processes.

Content analysis

One of the most popular research methods employed in environmental reporting research is content analysis (Guthrie and Abeysekera, 2006, Milne and Adler, 1999, Ng, 1985, Parker, 2005). Content analysis[4] – a form of textual analysis that identifies the disclosure and its specific components for scoring – is a subjective assessment of disclosure and is made as objective as possible through the establishment of detailed coding procedures and instruments. These procedures and instruments should be examined for reliability and replicability (Holsti, 1969, Krippendorff, 1980). However, despite the method’s popularity, many researchers have failed to discuss these issues (Hackston and Milne, 1996, Milne and Adler, 1999), leaving the validity of the findings of content analysis research open for criticism.

Additionally, one of the main debates in the literature about content analysis continues to be “how best to code and count the [disclosures]” (see Campbell, Moore and Shrivs, 2006, p. 97 for a brief discussion). The importance and necessity of considering the *quality* of the environmental information reported has been recognised, as has the need not to overlook the distinction between reporting quantity and reporting quality (Adams, Hill and Roberts, 1998, Hall, 2002, Solomon, 2000, Wheeler and Elkington, 2001). Yet, “the problem of measuring *what* is said ... is one

which most researchers have found it convenient to dismiss” (Campbell, 2000, p. 87). Wiseman (1982) concluded “that the length of the environmental disclosure is not representative of its quality” (p. 60), while Walden and Schwartz (1997) developed their quality measure so that they could “understand and evaluate the meaning of the disclosures, rather than just the volume” (p. 147). Yet reporting quantity (i.e. the level of environmental reporting) – measured by the number of words, sentences, and/or pages used to report environmental information – has dominated prior research. Using content analysis to examine reporting quality in addition to quantity goes some way to enhancing the usefulness of this research method.

To examine the voluntary environmental reporting practices and processes of New Zealand and Australian publicly listed companies, the study used content analysis to identify (1) what, if any, voluntary environmental reporting differences exist between country, environmental theme, and year; and (2) to what extent public pressure affects the content-quality of voluntary environmental reporting. In acknowledging that “the critical attribute is the meaning of the words” (Freedman and Stagliano, 1992, p. 115) the study focused on examining the type of environmental information voluntarily reported and what the information was communicating through the use of a content-quality construct. In undertaking this examination, quantitative content-analysis was applied to 623 annual reports[5] over a two-year period, and quantitative data analysis techniques, including correlations, regressions and interaction plots were employed. The content analysis identified a range of results and insights into the voluntary environmental reporting practices of New Zealand and Australian publicly listed companies and some of these are discussed below.

In identifying key differences in voluntary environmental reporting practices between New Zealand and Australian publicly listed companies the content analysis found a higher voluntary environmental reporting incidence for Australian companies, a greater level of voluntary environmental reporting for Australian companies, higher content-quality voluntary environmental reporting for New Zealand companies, five dominant reporting themes for each country of which three were the same across both countries, and more content-quality improvements for New Zealand companies. Additionally, the low level of voluntary environmental reporting by Australian companies (over half of the reporting companies reported on only 1-2 themes) and the dominant themes of their reporting (Regulation and Regulatory Compliance were reported by over 75 percent of companies) provides strong evidence that Australian companies are reporting environmental information in response to their mandatory reporting requirements, as specified by the *Corporations Act 2001* (Cth) s 299(1)(f)[6]. These findings support the view by some researchers (e.g. Campbell, 2000, Hall, 2002, Solomon, 2000) that reporting quantity does not align with reporting quality. Further, they indicate that while the introduction of mandatory reporting requirements may lead to an increase in voluntary environmental reporting incidence they do not necessarily lead to an increase in the reporting of meaningful information (see Bubna-Litic, 2008).

Possibly linked to the influence of s 299(1)(f) is the lack of commitment to developing and reporting meaningful environmental information seen by the high level of similarity between some of the environmental information reported from one year to the next. A large number of companies provided statements that were a verbatim copy of either (1) the previous year’s reporting or (2) another company’s

reporting. A logistic regression stepwise procedure identified the prior year's content-quality and company size as significant to the decision to report voluntary environmental information of good versus poor content-quality. Further, the content-quality of the prior year's voluntary environmental reporting has a statistically significantly positive correlation with the content-quality of the following year's voluntary environmental reporting.

Examining the content analysis results in more depth revealed that the content-quality of voluntary environmental reporting is poor due to reporting being limited to a few themes, often with multiple statements, and focussed on qualitative information related to the past or present. A more meaningful approach would be to quantify or monetise information, relate it to the future, and report few statements across multiple themes. Additionally, the analysis reveals that the proxies for public pressure – company size, sector sensitivity, and specific media coverage – have a statistically significantly positive correlation with content-quality. However, general media coverage has a negative correlation with content-quality. Company size and sector sensitivity do not individually significantly influence the content-quality of voluntary environmental reporting. However media coverage and its interdependent relationship with these proxy measures is a key factor influencing content-quality. The interdependent effects of the proxy measures are stronger than the direct effects, indicating that public pressure (rather than any of the individual proxy measures) is the dominant factor influencing content-quality. This suggests that the reasons for reporting environmental information are related to the public pressure felt by organisations as measured by company size, sector sensitivity, and media coverage.

These results of the content analysis - specifically those related to the level of voluntary environmental reporting, the themes reported, and the content-quality constructs of evidence, timeframe and specificity – enable the following plausible conclusions to be drawn: (1) New Zealand and Australian publicly listed companies are not strongly committed to voluntarily reporting meaningful environmental information; (2) key reporting differences exist between country, with strong evidence that Australian companies are reporting in response to their mandatory reporting requirements; (3) voluntary environmental reporting is significantly influenced by prior reporting; (4) the content-quality of voluntary environmental reporting is poor; and (5) the content-quality of voluntary environmental reporting is significantly positively related to public pressure.

As expected, and in line with prior research, the content analysis results of the study provide useful insights into what environmental information is being reported and by whom. Further, some knowledge about the reasons for voluntary environmental reporting engagement is obtained. However, the use of a single communication medium (i.e. the annual report), the focus on specific company characteristics, and the use of a single quantitative research method results in this examination of voluntary environmental reporting practices and processes overlooking key aspects. Specifically, the content analysis findings fail to develop a detailed understanding of the reasons for engaging or not engaging in voluntary environmental reporting or the use of various communication media.

Interviews

Another research method gaining popularity in accounting disclosure research, particularly research examining the motivations for reporting, including environmental reporting and intellectual capital reporting, is interviews (e.g. Adams, 2002, Farneti and Guthrie, 2009, O'Dwyer, 2002). Interviews are “a dynamic vehicle for exploring the rich and complex body of information possessed by an individual” (Cavana, Delahaye and Sekaran, 2001, p. 150) and as with content analysis have their limitations. A primary risk of interviews is interviewer bias and its associated subjectivity. Dependence on the skills of the interviewer and the structure of the interview may lead to comparability issues due to quite different lines of questioning. The use of a semi-structured interview technique, allowing for free-thinking by interviewees and avoiding programmed answers (Cavana et al., 2001), helps to mitigate this problem. Furthermore, face-to-face interviews, which allow the interviewer to pick up on verbal cues given by the interviewee and more easily clarify any doubts and rephrase questions during the interview, aid in developing a greater rapport and trust between the interviewer and interviewee. The latter should be an important aspect of environmental reporting research if the underlying reasons for reporting practices and processes are to be discovered.

In exploring the voluntary environmental reporting practices and processes of New Zealand and Australian publicly listed companies the study used semi-structured interviews to identify the factors influencing a company's voluntary environmental reporting decisions. Eleven face-to-face semi-structured interviews were undertaken with New Zealand and Australian publicly listed companies, with the interviews focusing on reporting responsibilities and the considerations made with respect to voluntary environmental reporting practices and processes. A selection of responses from the interview process is discussed below.

During the interview process it became evident that companies do not willingly acknowledge their environmental impact, and not all companies know how to manage, and subsequently report on, their environmental impacts. A number of companies – operating in both environmentally sensitive and non-environmentally sensitive sectors – declined to participate believing the study was not relevant to them because they had little, or no, environmental impact. This attitude to voluntary environmental reporting was also picked up through comments from interviewees about who needs to report environmental information. Interviewees identified organisations that are seen to have an environmental impact, i.e. those operating in “dirty industries”, manufacturers, farmers, mining companies, and local bodies.

Despite a general lack of willingness and commitment to inform stakeholders about environmental issues, most interviewees believed their companies had individuals committed to discussing and/or reporting environmental interactions to stakeholders. Comments were also made about the need to be “a good corporate citizen” and report environmental issues because it is “simply good business”, creating a certain “image”. Further, it was acknowledged by Australian companies that they consider s 299(1)(f) of the *Corporations Act 2001* (Cth) merely for compliance purposes, commenting about information in the Directors' Report that “we're obliged to put it in, so that has to go in”.

Thus, for Australian companies regulation and the threat of regulation, was one of the main drivers of voluntary environmental reporting content. Stakeholders, and

memberships and accreditations appear to have little impact on voluntary environmental reporting content, and both New Zealand and Australian companies agreed that while they look at and consider various reporting guidelines (such as the Global Reporting Initiative) these also do not have much influence on voluntary environmental reporting content. Companies are more likely to refer to what has previously been reported – either by themselves, peers receiving reporting awards, or competitors – for guidance. The interviewees also made reference to the importance of feedback (from other companies as well as environmentally-involved organisations and groups) and recognition (i.e. reporting awards).

Companies appear to be utilising a range of internal reporting mechanisms (including environmental policies, intranets, business newsletters, health safety and environment reporting systems, and green office systems). However, external reporting is mainly limited to the annual report – modified in some cases to reflect a triple bottom line reporting approach – and/or stand-alone report. A few companies also provide environmental information on their websites, and to stock exchanges (including the FTSE4Good Index), the GRI website, and environmentally-related programmes.

From this selection of results from the interview process it can be plausibly concluded that there remains an overall lack of commitment from New Zealand and Australian companies to develop and voluntarily report meaningful environmental information due primarily to a belief that (1) the company has little, or no, environmental impact; and (2) s 299(1)(f) of the *Corporations Act 2001* (Cth) is a compliance tool. Contrastingly, companies are choosing to engage in voluntary environmental reporting because of (1) the presence of a (perceived) environmental impact; (2) the presence of environmental reporting and/or environmental performance champions; and (3) recognition of the business case associated with voluntary environmental reporting. The interviews also highlighted the use of various communication media.

Thus as predicted, key factors influencing voluntary environmental reporting engagement, not identifiable via content analysis, were identified through the use of semi-structured interviews. In particular, the interviews highlighted key factors influencing voluntary environmental reporting engagement. Some knowledge of the communication media used, both internally and externally, was also obtained. Although a general understanding of what environmental information is, and is not reported and why this is the case can be developed from interviews, detailed conclusions cannot be made about voluntary environmental reporting practices, particularly the quantity and quality of environmental information.

Benefits of using mixed methods

The discussion above has focused on the two research methods used in the study – content analysis and interviews – as single research methods. These methods were both considered appropriate for the study due to their ability to examine reporting practices and processes as well as their accepted use in environmental reporting research. This section of the paper discusses the nature of the mixed methods research undertaken in the study and the benefits received from doing so. Before commencing the study, considerations were made about (1) whether the research will be partially or fully mixed; (2) which research method will dominate the mixed methods research; and (3) whether the research was to be mixed simultaneously or sequentially (Brannen, 2005, Creswell and Plano Clark, 2007, Jones and Summer, 2009, Leech

and Onwuegbuzie, 2009, Teddlie and Tashakkori, 2003). Morse (2003, p. 191) comments that mixed methods research is “about using supplemental research strategies to collect data that would not otherwise be obtainable by using the main method”. Thus, mixed methods research was used to enable the results of the content analysis to be confirmed, enriched, and even refuted by engaging with organisations and answering questions that the use of a single research method would not (Creswell, 2003, Thomas, 2003). The primary objective of the study was to examine environmental reporting practices, including what is being reported and by whom, and the secondary objective was to examine environmental reporting processes, including reasons for engagement. Thus, it was determined that content analysis should be used as the dominant research approach, and semi-structured interviews should be employed using a sequential approach. That is, the study is of a QUAN→qual sequential design (Johnson and Onwuegbuzie, 2004, Leech and Onwuegbuzie, 2009).

As discussed earlier in the paper, the results and plausible conclusions of the content analysis and semi-structured interviews as single research methods leave aspects of New Zealand and Australia’s voluntary environmental reporting practices and processes unanswered. In particular, the use of content-analysis as a single research method results in a lack of understanding of the communication media used to report environmental information. Further, conclusions about environmental reporting engagement will continue to be speculative, potentially ill-informed, and easily misinterpreted if we fail to engage with organisations through the use of qualitative research methods. The use of semi-structured interviews as a single research method, while helping to resolve the oversights of content analysis, results in detailed information about what is reported and by whom being overlooked. We can see that each research method tells its own and different story, and together the results provide a fuller and richer picture of the research phenomenon. The remainder of this section of the paper focuses on highlighting the benefits of employing mixed methods research to examine and explore voluntary environmental reporting practices and processes. This is accomplished by outlining some of the confirmation, contradiction, and enrichment of the content analysis results in the study achieved from using mixed methods research.

In support of the content-analysis findings related to the influence of prior reporting on future reporting, interviewees commented that they often referred to what has previously been reported – either by themselves, their peers receiving reporting awards, or their competitors – for guidance. Additionally, the interviews identified that the common areas of voluntary environmental reporting were, in general, in agreement with those identified via content analysis. Although the content analysis suggested that Australian companies are reporting environmental information in response to, and for perceived compliance with, their environmental reporting regulations this could not be confirmed without engaging with organisations. After discussing the effect of reporting regulations with the interviewees, strong supporting evidence was obtained that some Australian companies are indeed undertaking compliance-based, rather than meaningful, voluntary environmental reporting.

The sequential use of semi-structured interviews also identified results contradicting those obtained from the content analysis. For example, the semi-structured interviews suggest that the preference of most companies is “to do away with the narrative” and include quantifiable but not monetised data wherever possible. However, the content

analysis indicates that quantifiable and/or monetised data is not widely reported and most environmental information is reported in narrative, qualitative form.

More beneficial to our understanding of voluntary environmental reporting practices and processes than the confirmation and contradiction outlined above is the enrichment of the content analysis results achieved through the use of mixed methods research. The content analysis suggests that a lot of companies are taking a general approach to environmental reporting, with few environmental themes reported, a selection of dominating themes, and the information seldom future orientated. In contributing to our understanding of this voluntary environmental reporting approach the interview responses indicate that if companies have nothing specific to say their environmentally-related comments will be general at best. Further, it was discovered that a lot of environmental information is only included in the annual report if it added value or was specific. This reporting approach results in a large amount of voluntary environmental information going unreported or reported internally only.

A positive relationship between public pressure (measured by company size, sector sensitivity, and media coverage) and the content-quality of voluntary environmental reporting was identified through the content analysis and associated data analysis techniques. However, more detailed insights are necessary if we are to significantly improve our knowledge of why organisations choose to engage, and why they choose not to engage (Martin and Hadley, 2008), in voluntary environmental reporting. In addition to identifying key factors affecting reporting engagement, the interviews also signalled that the latter were not those identified by the content analysis in either the study or other prior corporate social responsibility reporting research[7].

The use of all forms of publicly available company information (Zeghal and Ahmed, 1990) was considered inconsistent and impractical for the study, creating an unnecessary bias among the sample companies. Thus, the content analysis focussed solely on annual reports with the assumption that companies publishing stand-alone reports also published a concise summary in their annual report. Examining voluntary environmental reporting in annual reports using content analysis alone cannot confirm this assumption, nor can it identify reasons for the use or non-use of particular communication media. The latter is only achievable by engaging with companies through qualitative research. From the semi-structured interviews it was found that in contrast to companies using annual reports, companies publishing stand-alone reports view environmental information and environmental performance as distinct from the more traditional financial information published in the annual report. For these companies, the annual report is merely a summary of the stand-alone report – often reporting the “good news stories” and limited to one page. Further, environmental information was not seen to be significant enough to be published in the annual report, was viewed as being written for a different audience, and/or was seen as “stealing the thunder” from the stand-alone report.

These examples of confirmation, contradiction and enrichment of the content analysis results from the sequential use of semi-structured interviews illustrate the fuller and richer picture of voluntary environmental reporting practices and processes that can be gained from using mixed methods research. The additional knowledge obtained is critical to our understanding of voluntary environmental reporting, yet is not identifiable through the use of content analysis (or other quantitative research

methods) as a single research method. Hence, to confirm, enrich, and even refute our knowledge of voluntary environmental reporting practices and processes we must engage in mixed methods research.

Conclusions

Reasons for employing mixed methods research including providing a richer and fuller picture of the research phenomenon, along with the use of mixed methods research in accounting disclosure and corporate social responsibility research, were highlighted in the introductory section of this paper. The benefits of using mixed methods research to examine environmental reporting were then illustrated by discussing aspects of a mixed methods study employing quantitative content analysis and semi-structured interviews in a QUAN→qual sequential design. This illustration also highlighted weaknesses associated with using a single research method, particularly content analysis, to examine environmental reporting.

Results of the study show that each research method tells its own and different story, answering research questions that the other cannot. Through discussing the findings, plausible conclusions, and aspects understood and overlooked through the use of content analysis and semi-structured interviews as single research methods, it was evident that employing mixed methods research to examine and explore voluntary environmental reporting practices and processes enriches our understanding.

Specific areas where the latter occurred include (1) the influence of prior reporting on future reporting; (2) the effect of reporting regulations on the level of, and desire to undertake, meaningful rather than compliance-based reporting; (3) the lack of concern from reporters about the content-quality of environmental information; (4) the value-adding approach to voluntary environmental reporting; (5) the key reasons for voluntary environmental reporting engagement, or lack of; and (6) the reasons for using stand-alone reports instead of annual reports to disclose environmental information.

These specific insights reflect the confirmation, contradiction, and enrichment of the content analysis results that were achieved from using semi-structured interviews in a sequential design, and would have been speculative, potentially ill-informed, and easily mis-interpreted, if known at all, had content analysis been employed as a single research method. Thus, employing mixed methods in environmental reporting research allows additional aspects of environmental reporting practices and processes to be examined and explored, encourages engagement with organisations, and enriches our understanding.

Endnotes

1. The use of content analysis in corporate social responsibility research is viewed as a quantitative research method due to the “numerical translation, transformation, or conversion of qualitative data” that is undertaken through the assigning of codes, and often scores, to the disclosure being analysed. Refer to Sandelowski, Voils and Knafl (2009) for a discussion on the process of quantitizing.
2. The top four interdisciplinary journals examined by Parker (2005) were *AAAJ* (Accounting, Auditing & Accountability Journal), *AF* (Accounting Forum), *CPA* (Critical Perspectives on Accounting), and *AOS* (Accounting, Organizations and Society).
3. See Samkin and Schneider (2008) for a discussion on how to add scientific rigour to qualitative data analysis.
4. Content analysis is a multipurpose research method that is well-established in the social science literature (Beattie, McInnes and Fearnley, 2004) and readers are directed to Carney (1972), Holsti (1969), Krippendorff (1980) and Weber (1990) for a good general discussion on the application of content analysis.
5. In line with the majority of prior environmental reporting research (e.g. Campbell, 2004, Holland and Foo, 2003, Raar, 2002) the study chose to use the annual report. Preliminary investigations showed that, consistent with prior studies (e.g. Frost, Jones, Loftus and Van Der Laan, 2005, Tilt, 2008), few listed companies issue stand-alone reports, and the majority of companies publishing stand-alone reports also published a concise summary in their annual report. Thus, their environmental reporting would be identified by the constructs used in the study.
6. Australia’s mandatory reporting requirements are detailed by the *Corporations Act 2001* (Cth) s 299(1)(f) which requires that a company’s directors’ report for a financial year “if the entity's operations are subject to any particular and significant environmental regulation under a law of the Commonwealth or of a State or Territory--give details of the entity's performance in relation to environmental regulation.”
7. Findings of prior corporate social responsibility reporting research indicate that reporting engagement is influenced by company-specific and/or industry-specific factors such as company size, industry, corporate profitability, listing status, financial leverage, country of origin, country of reporting, manager perception, media coverage, and the presence of a social responsibility committee (e.g. Adams et al., 1998, Adler and Milne, 1997, Brown and Deegan, 1998, Cormier and Gordon, 2001, Cowen, Ferreri and Parker, 1987, Hackston and Milne, 1996).

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