

**Intellectual Capital Reporting in New
Zealand: Refining content analysis as a
research method**

by

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**A thesis submitted in fulfilment of the requirement for the degree
of Doctor of Philosophy
at the Auckland University of Technology,
Auckland, New Zealand**

March 2007

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Attestation of authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

Acknowledgements

The completion of this research has been challenging and testing, but enjoyable. As with all such endeavours, without the support of many other people and institutions, this would not have been possible. The first of these are my supervisors: Keith Hooper and Deryl Northcott. Their support, willingness to help and advice at all levels, both theoretical and analytical, are highly valued. Their all-round knowledge and insight have been hugely beneficial to the process.

Many colleagues and staff at the AUT University have given me help and support. They are too numerous to name individually, but they are appreciated and remembered.

The New Zealand Institute of Chartered Accountants supported me financially, which was a great help. They provided a Ph.D. scholarship and travel grants, enabling me to attend international conferences.

A special thank you to Sue Osborne for proofreading the thesis. Her excellence exceeded the fee paid by far.

My mother and sisters have encouraged me immensely. Thank you for believing in me. I was also blessed by having a special companion, who motivated me through the various phases of doing a Ph.D. Oskar, without your financial support and inspiration this journey would have been much longer and harder. Last, but foremost, I honour God that His faithfulness never ceases. Without God's mercy, I would not have been able to meet this challenge.

Abstract

This study examines voluntary intellectual capital reporting (ICR) in New Zealand firms' annual reports, with a view to contributing to understanding ICR practice. This study also reflects on content analysis with a view to refining the methodology when applied to investigating ICR.

The literature includes widespread claims that intellectual capital (IC) resources are important value drivers and assets, and that IC information should be reported externally. However, complexities relating to identifying IC prevent it from being recognised as an asset under current accounting regulations. Consequently, the traditional financial reporting system is being criticised as out-of-date, giving deficient and irrelevant information, and having lost its value relevance. Numerous scholars have investigated voluntary ICR in several countries, but have presented different results and findings. The literature argues that the results of many ICR studies cannot be meaningfully compared because inconsistent data collection instruments have been applied. To advance ICR research, further refining and developing of the methodology is advocated; problems relating to applying methodological issues need to be resolved. Moreover, to establish consensus about ICR, more research and evidence is needed concerning exactly what and how IC is reported.

The 2004 annual reports of the 30 largest (by market capitalisation) New Zealand firms listed on the New Zealand Stock Exchange were analysed. Content analysis was applied to determine what and how IC is reported. Inferences about what IC is communicated were made based on an analysis of the content of texts and visual representations. To determine how IC is reported, voluntary reporting was categorised according to the form, nature and location of the disclosure. Frequencies of mention were recorded. Hence, each incidence of occurrence was coded and counted.

This study reflected on content analysis methodology by searching the literature for guidance on how to apply this approach and how to deal with the challenges and problems it poses. The thesis discusses methodological issues that could be applied differently, and hence hinder the replicability and comparability of ICR studies. Moreover, the ICR literature provided limited guidance about how to deal with

methodological challenges and problems, and revealed an absence of explicit recording instructions. Therefore, explicating this study's recording instructions should enhance replicability and comparability of future ICR research and hence further refine the methodology.

Some results of this content analysis study disconfirm those of prior research: New Zealand firms show high levels of ICR, the most reported IC category is human capital, and the most reported IC item is employees. In line with prior research, this study showed that most ICR is presented in declarative terms. Moreover, more than one-third of New Zealand firms' ICR is disclosed as pictures. This indicates the importance of pictorial information as a means of reporting IC and the need to include graphics when conducting ICR research. This study's findings also indicate a narrative approach, similar to the European notion of story telling, to voluntarily report IC information. This approach suggests that narratives have possible potential for voluntary ICR, as an approach that departs from a measurement and quantification approach.

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Abbreviations

AICPA	American Institute of Certified Public Accountants
CSR	Corporate social reporting
FASB	Financial Accounting Standards Board (U.S.A.)
IC	Intellectual capital
ICD	Intellectual capital disclosure
ICR	Intellectual capital reporting
ICS	Intellectual capital statement
KM	Knowledge management
NZSX	New Zealand Stock Exchange
SER	Social and environmental reporting

CHAPTER 1: INTRODUCTION

1.1 Overview

This thesis has two aims: to gain a better understanding of voluntary intellectual capital reporting (ICR) practices in annual reports; and to critically reflect on content analysis methodology with a view to strengthening its application for such investigations.

This chapter provides an introduction to the research. First, the background to conceptualising the intellectual capital (IC) notion is discussed. Second, the research gaps identifiable in extant literature and the research questions are delineated. The research is then justified, indicating its intended contributions. Then the scope of the research is provided, followed by the outline of the thesis and a chapter summary.

The definition of IC is elucidated in Chapter 2. For clarity about the meaning of IC in this chapter though, Edvinsson and Sullivan's (1996) definition will suffice: IC is "knowledge that can be converted into value" (p. 357).

1.2 Background to researching IC

The IC movement is grounded in practice (Mouritsen, 1998; Roos, Roos, Dragonetti, & Edvinsson, 1997). According to Bontis (1998), IC research has primarily evolved from the desires of practitioners. Developments in IC first appeared largely in the form of popular press articles in business magazines and national newspapers. In recent years the IC topic has attracted increasing interest (Bernhut, 2001; Fincham & Roslender, 2003a, 2003b), including academic interest. Consequently, an extensive literature has evolved. The background to prior research coalesces many perspectives from numerous fields of study in an attempt to raise the understanding and importance of the IC phenomenon. Primary issues that received attention in the IC discourse pertain to the disparity that exists between the information needs of "new economy" companies and what is provided by "old economy" financial reporting (Elliot, 2000b; FASB, 2002; Rimerman, 1990; Young, 2000). Hence, this introduction to IC first explores the meaning of the "new economy". Then some concerns about the traditional financial reporting system, relating to IC, are considered. Thereafter the intersection between IC, the new economy and financial reporting is elucidated.

1.2.1 The new economy

“Descriptions of the new economy vary from one writer to the next” (Upton, 2001, p. 6). It is variously described as the post-industrial economy; knowledge-based economy; service economy; knowledge society; knowledge intensive economy; knowledge economy; new industrial age; information age; or information era. These descriptions pertain to an economy driven by information and knowledge, which is fundamentally different from the so-called “old economy”. In the old economy or industrial era, labour, capital and land were regarded as the primary production factors determining corporate well-being (Drucker, 1993; Firer & Williams, 2003). The general corner-stone of the dominant theoretical paradigms in business disciplines was then neoclassical economic principles. However, the traditional underlying factors of production underwent change and began to be replaced around the 1950s by a great wave of change – the information revolutions (Bontis, Dragonetti, Jacobsen, & Roos, 1999; Elliot, 1992). The logic of business is now shifting from mass-production to knowledge-intensiveness (Hussi, 2004). The shift towards a knowledge-intensive economy is transforming the dynamics of the business environment (Boedker, Guthrie, & Cuganesan, 2005b), and the emphasis of the post-industrial economy is on the value of the intangible aspects of products and services (B. Robertson, 1999). According to Drucker (1993), in this “new” economy, knowledge is not just another resource alongside the traditional factors of production, but is the only meaningful resource.

The information-age is principally concerned with the production or use of information (Elliot, 1992). Entities in the primary information sector comprise computer manufacturers, universities, law firms, accounting firms, publishers, and entertainment. Entities in the secondary information sector comprise those parts of non-information businesses that produce or use information. Examples are the engineering and marketing departments in an industrial firm. Added recently is modern information technology (IT), pervading every aspect of the economy and changing the way business is done (Elliot, 1992). “This progression applies to both modern industries, such as information and communication technology, and more traditional ones, such as the forest industry” (Hussi, 2004, p. 36).

Furthermore, new knowledge-based firms have emerged (Bontis, 1998). These firms typically have few, if any, tangible assets, hence IC supersedes physical capital as the

principal source of value (Fincham & Roslender, 2003b; Lev, 2001). Other general descriptions of these “new businesses” are knowledge organisations, information-age companies, knowledge-intensive companies, and intangible-intensive companies. In addition, it is argued that the nature of corporations and the nature of assets have changed (Bernhut, 2001; Lev & Zarowin, 1999; Rimerman, 1990; Stewart, 1998). An example of the change in the nature of businesses is Ford Motor Co., which was an asset-intensive manufacturing company for decades. However, fundamental changes are taking place or are planned by Ford, outsourcing “core” activities, and emphasising services over manufacturing (Lev, 2001).

Moreover, it is claimed that one of the main drivers for the increased prominence of IC as a research topic is the move from a product to a flourishing service economy or industry (Bontis, 1998; Davies & Waddington, 1999; Fincham & Roslender, 2003b).

The next section considers concerns about the old economy financial reporting system not meeting the information needs of new economy firms.

1.2.2 Concerns about the traditional financial reporting system

General concerns about the traditional financial reporting system not meeting the information needs of the new economy relate to the omission of new economy assets and value drivers. Consequently, the system is criticised as being outmoded and producing financial statements that are irrelevant and deficient, because they do not reflect the real value of a business. Hence an improved system is required. These concerns are now elaborated.

Entire categories of assets being omitted

It is frequently argued that new economy companies depend more heavily on intangible assets (meaning IC here) in their value-creation processes than on physical and financial assets (Clikeman, 2002; Mouritsen, 2003; Palacios-Marques & Garrigos-Simon, 2003; Vandemaele, Vergauwen, & Smits, 2005). Human capital, thus people, their creativity, knowledge, capabilities and brains, are regarded as critical assets nowadays despite difficulties with control and ownership (Mooney, 2000; Reed, 2001). Consequently, it is stated frequently that entire categories of assets are currently omitted from financial statements (Anonymous, 2002; Clikeman, 2002; Dyckman & Zeff, 2000; Gallego & Rodriguez, 2005; Rimerman, 1990; D. A. Robertson & Lanfranconi, 2001; Samek, 2000; Wallison, 2000). According to

Canibano et al. (2000) evidence reported by Eccles and Mavrinac (1995) indicated that investors seem to be demanding increased non-financial disclosure. Hence, it is argued, accounting for intellectual assets is an important issue for corporate financial reporting (D. A. Robertson & Lanfranconi, 2001), and that intangible investments should be considered as assets and reflected in annual accounts (Canibano, Garcia-Ayuso, & Sanchez, 2000).

Value drivers not being captured

Added to the above claims are concerns that traditional financial statements do not capture – and may not be able to capture – the value drivers that dominate modern businesses (Bontis, 2001; Bontis et al., 1999; Canibano et al., 2000; Clikeman, 2002; Edvinsson & Malone, 1997b; Firer & Williams, 2003; D. A. Robertson & Lanfranconi, 2001; Sharma, 2000; Stewart, 1997; Sveiby, 1997; Upton, 2001; Wallison, 2000). Value drivers are defined as generators or drivers of revenue, drivers of corporate success, wealth and corporate growth, and as wealth creators and engines of modern economic growth. The literature widely claims that IC resources are major wealth creators and significant value drivers (Allen, 2002; Bontis et al., 1999; Elliot, 2000a; Guthrie, 2001; Lev & Zambon, 2003; Reed, 2001; D. A. Robertson & Lanfranconi, 2001; Rylander & Peppard, 2003; Samek, 2000; Vandemaele et al., 2005; Wallison, 2000). IC resources that produce wealth and are key value drivers include people’s knowledge, creativity and brains (referred to as people-based assets), brands, reputation, organisational capabilities, relationships with customers and suppliers, and information technology (Andriessen, 2006; Lev, 2001; Mouritsen, Bukh, & Marr, 2004; Reed, 2001). Hence, it has been suggested that the accounting profession should account for these value drivers. Reed (2001) claimed: “A profession which fails to acknowledge, let alone measure, the core people-based assets of many companies, has become cumbersome in its ability to adapt to a changing environment” (p. 12). A claim has even been made that accounting is failing the business world (Fox & Schiff, 1996).

“The power of intellectual capital is the ability to breed ideas that ignite value” (Stewart, 2001, p. 192). Many observers have commented that a company’s IC is a key contributor to secure a sustainable competitive advantage and hence takes precedence over traditional physical resources in the pursuit of competitive advantage (Boedker et al., 2005b; Firer & Williams, 2003; Gallego & Rodriguez, 2005; Holland,

2004; Marr, Schiuma, & Neely, 2004; D. A. Robertson & Lanfranconi, 2001). Furthermore, claims have been made that physical and financial assets are rapidly becoming commodities and are not primary drivers of the expanding service sector (Lev, 2001; Rimerman, 1990).

Outmoded system

The traditional financial reporting system has been described as being outmoded (Galli, 2002), and as an outdated 1930's vintage financial reporting system (Rankin, 2000). It accounts for the traditional physical and financial assets of the industrial age, based on historical information, which is regarded as being out-of-date (Batchelor, 1999; Dyckman & Zeff, 2000; Galli, 2002; Lev, 1997). Mouritsen (2003) argued: "the conventional balance-sheet is unable to present a convincing account of the resource value of firms that navigate in the knowledge economy and draw heavily on intangibles ... rather than tangible traditional resources" (p. 18). According to Bernhut (2001), three types of assets generate the earnings of a firm: physical assets, financial assets and intellectual (knowledge) capital. Consequently, the literature reveals a concern that the traditional financial reporting system grants absolute pre-eminence to tangible assets over intangible ones (Gallego & Rodriguez, 2005; Rimerman, 1990; Rogozinski, 2002). Powell (2003) claimed the financial reporting system struggles to handle the economic properties of IC.

Irrelevant and deficient financial statements

Since IC is currently not recognised and disclosed as an asset, many observers have expressed concerns that traditional annual reports have lost their value relevance and that financial statements are irrelevant and deficient (Canibano et al., 2000; Dyckman & Zeff, 2000; Lev, 1997; Lev & Zarowin, 1999; Lundholm, 1999; Mouritsen et al., 2004; Rankin, 2000; Reed, 2001; Zairi & Letza, 1994). Traditional financial statements do not reflect economic reality in terms of intangible assets and hence are not a very valuable source of information about a company's investments in intellectual assets (Dyckman & Zeff, 2000; D. A. Robertson & Lanfranconi, 2001; Ruth, 1999). Furthermore, IC is complementary, not subordinate, to financial information (Hussi, 2004). Omitting intangibles or IC as assets detracts from the quality of information provided in the balance sheet (Lev, 2001) and gives rise to information deficiencies (Mooney, 2000; Vandemaele et al., 2005).

In addition, it is argued that traditional financial statements are becoming less informative, because they provide reliable, but not relevant, information to understand how their resources – many of which are intangible – create value in the future (Canibano et al., 2000; Mouritsen et al., 2004). Lev (2001) considered several harms caused by an accounting system that fails to reflect important attributes of intangibles. There is high suspicion whether the type of information given is of much benefit to the end-users (Lev, 2001). The usefulness of historical information such as reported earnings, cash flows, and book values has been deteriorating over the period between 1977 and 1996 (Lev & Zarowin, 1999).

Financial statements do not reflect real value

There is widespread concern that accountancy and the financial statements are no longer reflecting the real value or worth of a business (Allen, 2002; Batchelor, 1999; Elliot, 2000b; Fox & Schiff, 1996; Guthrie, 2001; Reed, 2001; D. A. Robertson & Lanfranconi, 2001; Samek, 2000). Indeed, it has been suggested that the numbers in financial statements distort and misrepresent reality (Condon, 1999; Fox & Schiff, 1996; Hutcheson, 1999; Ruth, 1999). “Today an entire industry—accountancy—is based on a fiction: that the valuation auditors produce reflects the real value of the companies they audit. They simply do not” (Reed, 2001, p. 12). Reed argued annual reports fail to tell investors the true value of a company, as accounting does not put a value on people. According to a senior audit partner¹: “The accounts don’t show a true and fair value, they don’t show a true picture of the business” (cited by Reed, 2001). The “true” value of the firm is its financial value supplemented with a value of the firm’s intellectual capital” (Edvinsson & Malone, 1997a). Know-how adds significantly to the value of a business in financial markets (Canibano et al., 2000). Yongvanich and Guthrie further noted that the widening gap between the companies’ market value and book value of equity suggests that the traditional financial reporting framework presents an incomplete account of firms’ value. Hence, it is argued that accounting information has lost its relevance (Canibano et al., 2000; Yongvanich & Guthrie, 2004).

¹ Andrew Dinsdale, senior audit partner at KPMG New Zealand.

The need for an improved system

According to Canibano et al. (2000), the need for an improvement of the current financial reporting system, in particular relating to IC, has been pointed out by both the professional and academic communities (see, for example, Davis, 1992; Lev & Sougiannis, 1996; Tollington, 1997; Wallman, 1995). This seems to have led some of the world's most influential standard-setting bodies to undertake efforts to enhance the relevance of the accounting numbers for efficient decision making. The American Institute of Certified Public Accountants (AICPA) appointed a special committee in 1991 to address concerns about the usefulness and relevance of business reporting (Jenkins, 1994a). During this project the AICPA committee found that issues related to business reporting elicit strong views – and often, conflicting ones (Jenkins, 1994b). They also learned that profound, accelerated changes affecting business threaten the continued relevance of business reporting. To stay relevant, business reporting must change in response to user's evolving needs for information. The AICPA suggested that corporate annual reports should include forward-looking information and discussions of the non-financial performance factors, thus IC, that create longer-term value.

The concerns discussed above, coupled with suggestions that there is a disconnect between new economy companies and old economy financial reporting (Upton, 2001) attracted research interest into the intersection between IC, the new economy and financial reporting. This is discussed next.

1.2.3 Intersection between IC, the new economy and financial reporting

Two major reports were published in the United States of America during 2001, discussing the perceived intersection between IC and the new economy on the one hand, and traditional financial reporting in particular on the other hand. Both publications are from an accounting perspective hence the term intangibles or intangible assets are used when referring to IC.

The first of the two projects is that of The Financial Accounting Standards Board (FASB) in the United States. Members of the FASB and its staff published a *Special Report, Business and Financial Reporting, Challenges from the New Economy* (Upton, 2001). Two aspects investigated were particularly relevant to this study: The

recognition and measurement of intangible assets in the balance sheet, and the intersection between the new economy and business and financial reporting (Upton, 2001). In this review, works by nine organisations that have studied the “new economy problem” were examined. Moreover, a range of studies and articles by academics, standard setters, professional bodies, government agencies, and consultants that compare accounting treatments for traditional assets and challenges of the new economy notions of intangible assets were reviewed.

Baruch Lev conducted the second project². Bernhut (2001) described Lev as one of the recognised authorities on IC and “perhaps the leading exponent of a new, knowledge-based approach to accounting “ (p. 16). Lev’s work evolved into a book: *Intangibles: Management, Measurement and Reporting* (Lev, 2001).

Both the FASB and Lev projects found that there is continual debate between economists, business people, and policy analysts about what is “new” about the so-called new economy and whether the new economy is really as “new” or as significant as claimed (Lev, 2001; Upton, 2001). The debatable value drivers of the new economy are not as new as they are perceived to be. “Many of the new economy’s value drivers have the look of old wine in new bottles” (Upton, 2001, p. vii), the boundaries between the old and the new economy, are increasingly blurred (Lev, 2000). Therefore, it appears that the new economy and IC are merely new notions that revisit the concerns of an old phenomenon. Higson (2003) agreed and stated that the concern about financial reporting being left behind as the business world develops is not a new phenomenon. Similarly, others argued that the issue of IC is not new, since it has been around since the first vendor established a good relationship with a customer: then it was called goodwill (Brooking, 1996; Holland, 2004; Lev, 2001; Upton, 2001). However, what *is* new is its global impact.

The FASB reported that the labels and slogans that abound in discussions of “intellectual capital” and the “new economies” do not help, and may hinder, any effort to improve business and financial reporting (Anonymous, 2001; Upton, 2001).

² Baruch Lev is described as a radical insider, an indefatigable, controversial critic of the accounting profession’s failure to measure intangibles (Stewart, 2001). Lev is the Philip Bardes Professor of Accounting and Finance with the Stern School of Business at New York University, director of the Vincent C. Ross Center for Research, and a consultant to numerous corporations and investors. He is the author of several books and various research studies published in leading accounting, finance, and economic journals.

The fundamentals of a firm's competitive survival and success do not depend on whether the economy is perceived as new or old (Lev, 2000). According to the FASB, the more important question is whether business and financial reporting should change, and if so, how? (Upton, 2001).

In sum, these discussions indicate that IC resources are considered to be important value drivers and need to be accounted for in the financial reporting system.

1.3 Research gaps and questions

The literature review presented in Chapter 2 will illustrate that the identification of IC is complex, which makes recognising IC as an asset in the traditional financial reporting system problematic. One of the main reasons why IC cannot be recognised within financial statements currently is because it does not meet the accounting definition of an asset (Guthrie, Petty, & Ricceri, 2006). In the absence of mandatory requirements though, it is argued that information about IC value drivers can be reported voluntarily in the meantime.

Mouritsen (2003) asked: "Why is it that intellectual capital information does not circulate freely and far? Why is it that the story about intellectual capital reporting does not have a happy ending?" (Mouritsen, 2003, p. 19). This study seeks to contribute to understanding external voluntary ICR practices. Enhancing such understanding might eventually promote a "happy ending" for the IC story.

Gaps in ICR research are indicated next.

1.3.1 Gaps in ICR research

Voluntary ICR practices, both internal and external, have attracted great research interest globally. From the time of formulating a research proposal for this study to the time of completing this thesis, apart from a small number of professional journal articles, there was little evidence of an interest in IC and ICR among the New Zealand accounting profession. It is acknowledged that the absence of evidence about IC developments in New Zealand per se does not necessarily indicate that none exist. Rather they may not, as yet, have been identified and publicised. To date, no evidence has been published to provide an understanding of where New Zealand firms are situated in relative international terms when it comes to the reporting of their IC. This study addresses this gap.

This research explored IC information voluntarily disclosed in annual reports of New Zealand firms to gain a better understanding of voluntary ICR practices in annual reports, and to get insight into further ICR possibilities. Recent research into ICR practices has highlighted several issues that need to be resolved in order to improve ICR research (Abeysekera, 2006). The following gaps identified in the ICR literature were attended to: the challenge of establishing a consensus about what IC to report and how to report it (Guthrie, 2001; Guthrie, Petty, & Ricceri, 2005); the efforts still needed in researching how to report IC and providing more evidence on what companies are reporting (Yongvanich & Guthrie, 2004); the limited understanding of how organisations report important value drivers (Boedker, Guthrie, & Cuganesan, 2005a; Guthrie, 2001; Mouritsen et al., 2004); the growing need to provide practical examples illustrating how organisations report their knowledge resources (Boedker et al., 2005a); and the major obstacle to further progress presented by the collective lack of understanding about the possibilities for ICR (Fincham & Roslender, 2003b).

The methodology applied for this New Zealand study is content analysis, one of the methods most widely used by researchers seeking to understand ICR (Guthrie, Petty, Yongvanich, & Ricceri, 2004). During the application of the methodology in a pilot study, several challenges pertaining to methodological issues were found. An in-depth analysis of how prior ICR content analysis studies have handled these challenges was undertaken, but limited guidance was found. In addition, such an analysis revealed that the application of several methodological issues has not been explained, and that the results of some previous ICR content analysis studies showed obvious differences in, for example, quantities presented for average and maximum number of IC items reported (see Table 8.1). Chapter 2 will also indicate that findings on ICR practices in annual reports in the extant literature are inconsistent (see section 2.6.3). The fact that prior studies have obviously different results makes it difficult to accept the credibility of comparisons drawn between them (Abeysekera, 2006). Differences in results could hinder and possibly flaw our understanding of voluntary ICR practices.

There are several reasons why results and findings could differ. First, the literature review in Chapter 2 will show the wide array of terminologies used, some with ambiguous meanings, in the IC discourse. This suggests that different inferences about the IC metaphor and its various components could have been made between previous ICR studies. Second, different results could be attributable to different

political, economical, social and cultural situations in different countries. Third, results could differ because of different applications of research methodologies. This research focused on the third point, discussed next.

1.3.2 Issues in applying content analysis to research ICR

According to Guthrie et al. (2004), content analysis methodology is “in need of further refinement and development if research advances are to be made in the field of ICR” (p. 290). Abeysekera (2006) added there is a need to improve the credibility of the research process and its outcome for stakeholders. He claimed there is inconsistency in how operational issues are dealt with and hence operational issues arising from the use of content analysis methodology need to be resolved. According to Abeysekera, few ICR studies using content methodology “have addressed the methodological problems associated with content analysis that can distort the findings of such analysis, or indeed, the credibility of its original textual source” (p. 66).

This study attended to the issue of further refining and developing content analysis methodology when applied to ICR research by reflecting on operational issues and methodological problems.

A general observation in the IC discourse is that terminologies are used in inconsistent and often ambiguous ways. Moreover, inconsistent and ambiguous terminologies are used when describing the application of methodological issues in ICR content analysis studies in particular. It appears that IC researchers embrace Humpty Dumpty’s scornful response to the idiosyncratic interpretation given to a word: “When *I* use a word, it means just what I choose it to mean, neither more nor less” (Graber, 1989, p. 150). Applying content analysis methodological issues in inconsistent and ambiguous ways may obstruct our understanding of ICR practices, which may impede further advances in the IC discourse. This study therefore also attended to delineating the meanings of terminologies. Descriptive accounts of how several important methodological issues were applied are illuminated throughout the thesis, delineating terminologies’ meanings.

1.3.3 Research questions

Given the study’s descriptive and mainly exploratory nature, no formal hypotheses were formed. Instead, two research questions were designed. The first question was

aimed at advancing understanding of voluntary ICR practices in annual reports. The second was designed to strengthen content analysis methodology when applied for ICR research. The two research questions are:

Question 1

What IC is voluntarily reported in New Zealand firms' annual reports, and how?

Question 2

How could the application of content analysis methodology be refined as a means to enhance the replicability of ICR studies and to make their results more comparable?

In the next two sections, separate discussions of issues relating to the two research questions are presented. Issues relating to research question 1 are denoted as "ICR investigation", and those pertaining to research question 2 as "content analysis as a methodology for ICR research". The next section presents a justification for this research.

1.4 Justification for the research

"The embryonic stage of research into IC offers the potential for researchers to make meaningful contributions that are either theoretical, methodological, or empirical in nature" (Guthrie et al., 2005). In attending to the first research question, this research aims to make empirical and theoretical contributions. These intended contributions might enhance the current understanding of voluntary ICR practices, and could indicate possibilities for ICR. In attending to the second research question, this research aims to make methodological contributions. The latter contributions might add significant insights into understanding the intricate nuances of the critical components of content analysis methodology when applied to investigating ICR.

This section discusses the importance of attending to the research gaps identified earlier, and indicates the intended contributions to the body of knowledge.

1.4.1 ICR investigation

According to Powell (2003), the role that intangible assets (meaning IC here) play in the global economy is only going to increase in the future. This suggests that the concerns discussed in section 1.2 will continue to be raised, possibly intensify in the future, and thus cannot be ignored. This supports the claim that companies,

government policy makers and the accountancy profession must take action to embrace ICR (Fincham & Roslender, 2003b). From this perspective, attending to the gaps in ICR research discussed in section 1.3.1 is pivotal to further progress ICR research.

Providing evidence of *what* and *how* New Zealand firms currently report IC information will enhance our understanding of voluntary ICR, and understanding possibilities for ICR. Evidence of what IC is reported is important for understanding which IC resources firms consider to be important value drivers. Providing evidence and practical examples of how IC is reported in New Zealand firms' annual reports is important for understanding how IC information could be communicated outside audited financial statements. Such evidence could help the accountancy profession, as suggested by Fincham and Roslender (2003b), to become more receptive to ideas, approaches and procedures that depart from the certainties that their traditional reliance on hard financial information represents.

Enhancing our understanding of voluntary ICR practices is also important to advancing the following research areas in IC, as identified in the literature: providing a consistent basis for the development of a set of guidelines for the identification, measurement, reporting and management of value relevant intangibles (Canibano et al., 2000; Ordonez de Pablos, 2005); assisting policymakers to establish a comprehensive information standard (Lev, 2001); establishing a generally accepted reporting framework and present a strong case for reporting IC to the public (Yongvanich & Guthrie, 2004); and expanding accounting systems to enable companies to optimise, manage and report on their real value creating activities and processes (Lev & Daum, 2004).

In sum, evidence of *what* and *how* IC is reported is important to gain a better understanding of voluntary ICR, which is pivotal to the accounting profession, standard setters and policy makers for identifying current international best practice, when establishing guidelines for firms willing to report.

1.4.2 Content analysis as a methodology for ICR research

Refining and further developing the methodology by critically reflecting on operational issues and methodological problems associated with it is important to promote *consistency* in the application of data collection instruments when

replicating ICR studies, and to enhance the *comparability* between ICR studies. A review of the literature on ICR content-analysis-in-accounting revealed: “many of the [ICR] studies that use content methodology cannot be meaningfully compared because of the use of inconsistent data collection instruments” (Guthrie et al., 2004, p. 290). Abeysekera (2006) claimed the real problem of comparability between ICR studies should be addressed. “Consistency in the application and framework, and understanding the limitations of the method is key to generating meaningful results” (Guthrie et al., 2004, p. 290).

Comparability of results is important for enhancing our understanding of ICR practices, which is important for advancing the ICR research project. Further refining and developing the methodology for use in ICR research is therefore important to strengthen and improve its credibility. Without meaningful comparisons it is highly likely that our understanding of ICR practices could be incomplete and thus flawed. Therefore, having more comparable results is important for gaining a better understanding of voluntary ICR practices in annual reports.

One of this study’s methodological contributions pertains to explicating how it applied operational issues in investigating voluntary ICR practices. Being explicit is important for enhancing consistency in application of the methodology when replicating ICR studies. Another methodological contribution is the presentation of guidelines for how this study dealt with methodological challenges and problems.

1.5 The scope of the research

The literature reveals IC has been the subject of a rapidly expanding research effort (Brennan & Connell, 2000; Fincham & Roslender, 2003b; Guthrie, 2001; Lev, 2001). This research identifies four interlocking streams of interest in the IC literature: identifying, managing, measuring and reporting of IC. This research is concerned with the reporting of IC. However, to detect the reporting of IC in annual reports, it is necessary to understand what IC is. Hence, the literature relating to identifying IC is also reviewed.

IC accounting has close affinities with a range of influential new concepts (Fincham & Roslender, 2003a), such as being strongly linked³ to the phenomenon of knowledge management (KM) (Hussi, 2004). However, because KM falls within the “managing” stream (Bounfour, 2003), it is beyond the scope of this study.

The scope of investigating ICR practices is elucidated next, followed by the scope of reflecting on content analysis as a methodology for ICR research.

1.5.1 ICR investigation

The investigation of ICR in this thesis has an exploratory nature. Only one research method is applied to explore ICR practices in New Zealand firms’ annual reports: content analysis methodology. Annual reports for the 2003 and 2004 financial years, of the 10 and 30 largest (by market capitalisation), New Zealand firms listed on the New Zealand Stock Exchange (NZSX) were selected for a pilot and an extended study respectively. The content of annual reports is analysed and inferences about messages conveyed are made in the context of IC. This study is only concerned with the content of messages. Inferences about ICR are based on the researcher’s interpretations of the meanings of the content of messages. The content of annual reports is coded for several categories relating to “what” and “how” IC is reported. Inferences of “what” IC is disclosed are made according to 3 IC categories and 17 IC items contained in the IC framework attached in Appendix A. Results are reported as frequencies.

1.5.2 Content analysis as a methodology for ICR research

The examination of researching content analysis methodology in this study is exploratory and descriptive. It is exploratory in the sense of discovering and dealing with practical challenges that arise from applying the methodology and in devising rules of inferences while investigating ICR practices in New Zealand firms’ annual reports. The scope is limited to issues that may arise from analysing the sampled annual reports.

³ According to Boedker et al. (2005b), the disclosure of information on organisational knowledge resources and related KM activities in annual reports has become a much debated issue within the IC discourse. Guthrie and Petty (2000) too, wrote there is a proposition that KM is an important strategy to large companies and that this will be shown in the annual reports via reporting of IC items.

The consideration of content analysis as a methodology for ICR research is also descriptive in that it describes the guidelines found in the extant literature. This study drew on the extant literature for guidelines about how to: (i) apply the methodology; (ii) deal with methodological challenges and problems; and (iii) devise rules of inference. The scope of this search is limited to content analysis literature, ICR content analysis literature, and to a lesser extent the literature on social and environmental reporting (SER) that uses content analysis as a method to gather data and to evaluate the extent of disclosure of various items in annual reports (for example, Cowen, Ferren, & Parker, 1987; Gray, Kouhy, & Lavers, 1995b; Guthrie & Mathews, 1985; Guthrie & Parker, 1990; Hackston & Milne, 1996; Mathews, 1997). SER content analysis literature is reviewed because of its affinity to ICR, being concerned with how organisations interact with society at large via voluntary disclosure in annual reports and other mechanisms. Although some reference is made to the content-analysis-in-accounting literature, the huge swathe of this literature is not searched for guidelines in reflecting on content analysis methodology. A brief examination of the latter literature revealed that discussions of how the methodology has been applied are almost identical to that of the ICR content analysis literature: inconsistent application; and a lack of detailed and transparent explanations.

1.6 Outline of the thesis

Chapter 2 reviews the IC literature. It considers the historical development of the IC notion, the identification and reporting of IC. Problems pertaining to identifying and recognising IC are acknowledged. The chapter draws on theoretical and empirical literature to identify research gaps in ICR that could be investigated in this research. Chapter 2 therefore provides the theoretical underpinnings for the empirical enquiries reported in Chapter 8 of the thesis.

Chapters 3 to 7 relate to content analysis methodological issues and how they were applied to investigate ICR practices in New Zealand firm's annual reports. Chapter 3 outlines issues pertaining to methodology and method, and also discusses the theory applied to understand and interpret the results of the analysis. Chapter 4 discusses issues pertaining to content analysis as a technique of data analysis. Chapter 5 deals with the requirements of reliability and validity. Chapter 6 outlines the research design and processes for generating data. In Chapter 7 the making of valid and

replicable inferences is discussed. Challenges relating to ambiguous and covert meanings, and subjective interpretations are also elucidated in Chapter 7. Chapter 8 reports the results and interprets the findings of the content analysis study conducted to investigate ICR practices in New Zealand firms' annual reports. The final chapter summarises and concludes the study, and outlines the research's contributions to the body of knowledge.

The thesis also includes three appendices. Appendix A comprises the IC framework used during the content analysis. This framework contains definitions of IC, ICR, IC categories, and operational definitions and search words for IC items. Appendix B provides examples of IC items from the sampled annual reports. Appendix C is the coding sheet used during the recording process.

1.7 Summary

This chapter has introduced the research issues, problems, and questions addressed in this thesis. The justification for the research was outlined, the intended contributions were indicated and the scope of the research was clarified. This provides a basis for proceeding to the next chapter, which presents a detailed review of the IC literature.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

“The theory on IC is still in its infancy” (van der Meer-Kooistra & Zijlstra, 2001, p. 456). However, the topic of IC and its relationship with accounting practices has given rise to an extensive and fast-growing literature (Fincham & Roslender, 2003b). The literature generally extols the potential of IC to create value and its contribution to an organisation’s economic growth. The IC research field has a wide diversity; it has an interdisciplinary and innovative character (Lev & Zambon, 2003). Literature in the accounting discipline generally discusses issues relating to identifying, measuring, reporting and managing IC.

To provide a conceptual framework for understanding IC, this chapter reviews and synthesises the IC literature that discusses accounting for IC, and in particular the identification and reporting of IC. The chapter first explores IC terminology. Second, the historical development that gave rise to IC accounting is reviewed. Third, the issue of identifying IC is discussed, followed by issues that make recognition of IC problematic. Then the reporting of IC is discussed. The chapter concludes with a summary of research gaps identified in the literature that are explored in this thesis.

2.2 Terminology

A bewildering array of studies and articles were found with an internet search for terms such as “intellectual capital” and “intangible assets”. Participants in the IC discourse include academics, standard setters, professional bodies, government agencies and consultants. The geographic range of the authors included in this literature review affirms the widespread interest in this field by the international scientific community, as reported by Lev and Zambon (2003). Studies are scattered across the economics, organisation, strategy, management, finance and accounting journals. The plethora of terminologies used in these disciplines when informing the discussion of IC illustrates one of the difficulties posed by such a widespread interest.

In general, the terms “intangibles” and “intangible assets” are used in accounting literature, “knowledge assets” by economists, and the term “intellectual capital”, seen as originating in the human resources literature, in the management and legal

literature (Fincham & Roslender, 2003b; Lev, 2001). A host of other terms are added and used frequently in the IC discussion, such as intellectual assets, intellectual resources, intangible resources, human capital, internally generated assets, knowledge capital, knowledge resources, knowledge assets, knowledge-based assets, knowledge-based resources, and organisational knowledge resources. In addition to the plethora of terms are further difficulties in that the terms are used interchangeably and often ambiguously. To minimise ambiguity in this thesis, the term “intellectual capital” is used as far as possible. However, when referring to the work of others, the terms used by them are cited. This chapter discusses mostly accounting literature, and hence the terms “intangibles” and “intangible assets” are used often. However, in the IC literature, intangible assets are defined as: “claims to future benefits that do not have physical or financial embodiments” and “non-physical sources of value generated by innovation, unique organizational designs, brands, and human resources” (Lev, 2001, p. 189). This indicates that “intangibles” in the IC literature has a broader meaning than the accounting term “intangibles”. Therefore, when the terms “intangibles” and “intangible assets” are used in this thesis, they mean IC unless otherwise stated.

2.3 The rise of IC accounting

The term “intellectual capital” was first used by the economist John Kenneth Galbraith in 1969 (Andriessen, 2006; Bontis, 1998; Swart, 2006). Galbraith believed that IC was more than pure intellect but included “intellectual action” (Bontis, 1998; Swart, 2006). In that sense, IC is not only a static intangible asset per se, but an ideological process, a means to an end. Stewart (2001) claimed that it dates back at least to 1958, while Marr, Gupta, Pike and Roos (2003) suggest that it goes even further back to 1836 when the economist Nassau William Snr. used it.

The first appearance in the business press was in an article by Stewart (1991) in *Fortune* entitled “Brainpower.” In that article, IC is highlighted as the most valuable asset of a business. The first books on IC were published in languages other than English (Yongvanich & Guthrie, 2004). Sullivan (2000 cited by Yongvanich & Guthrie, 2004) considers *Mobilizing Invisible Assets*, a book published in Japanese in 1980, as the groundbreaking work on the importance of intangible assets to the corporation. This book was published in English in 1987. Moreover, Sveiby — described as the first leading thinker who proposed how to create, leverage and

measure IC — (Yongvanich & Guthrie, 2004), published *The Knowhow Company* in 1986 (Sveiby, 2001 cited by Yongvanich & Guthrie, 2004); and the three-family theory of “Intangible Assets” (Sveiby et al., 1988) in: “Den nya Arsredovisningen”, translated as *The New Annual Report*, and subsequently in the Swedish book *The Invisible Balance Sheet* (Sveiby, 2001a) in 1989. This theory also underpins the concept of IC. Translating these books into English could have contributed to the plethora of terminologies and/or their ambiguous use. Schaffhauser-Linzatti (2004) comments:

English terms used in intellectual capital accounting are often not consistent with the established terminology, for example, “intellectual capital” should actually be called “intellectual asset” due to its characteristics. Moreover, translations of basic terms from English to other languages are misleading and include similar, but not identical contents, causing linguistic and contextual confusion (p. 9).

Along similar lines Andriessen (2006), describing the IC concept as a complex metaphor, asks whether translation difficulties influence the choice of metaphors used. Furthermore, he questions the influence of culture on metaphors, as he argues that different cultures use different metaphors to conceptualise even basic concepts such as time and cause and effect. Andriessen argues that the metaphorical nature of the IC concept has far-reaching consequences.

In the early 1990s a lot of interest in researching IC was initiated from European countries and a number of popular management books were published (for example Brooking, 1996; Stewart, 1997; Sveiby, 1997). Since the mid 1990s, IC has become the subject of a rapidly expanding research effort (Fincham & Roslender, 2003b). Before 1994 interest focused on establishing the significance of IC and acknowledging hidden capabilities of IC within the firm (Yongvanich & Guthrie, 2004). Between 1995 and 1999 developments in IC research focused on its measurement and IC frameworks. Several IC frameworks have been developed for the purpose of understanding IC (Brennan & Connell, 2000). Some authors refer to these frameworks as ICR frameworks or as new reporting models (see for example Fincham & Roslender, 2003b; Petty & Guthrie, 2000). Brennan and Connell (2000), however, divide IC frameworks into two broad types: those for classifying IC, and those for managing IC. Brennan and Connell’s approach is adopted in this thesis when considering IC frameworks.

Developments in the early 2000s onwards focus on identification, measurement and reporting of IC. A dialogue on finding new ways to measure and report on a firm's IC evolved, resulting in a plethora of new measurement approaches (Petty & Guthrie, 2000). New types of management and accounting statements also emerged (Fincham & Roslender, 2003b; Guthrie, Petty, & Johanson, 2001). The goal of these statements is to make organisations more aware of, and better able to manage, their knowledge assets and liabilities (Caddy, 2000; Harvey & Lusch, 1999). It is at this stage that the problematic issues pertaining to the measurement and reporting of IC under the traditional financial reporting framework, and to the assigning value to IC, are widely acknowledged.

Significant contributions into IC accounting research were made from projects initiated in European countries and North America in particular. Interestingly, researchers from these two parts of the world have different approaches towards IC accounting. The next section acknowledges several European research initiatives and projects, followed by initiatives from North America and other parts of the world.

2.3.1 European initiatives and projects

According to Fincham and Roslender (2003b), the most renowned contribution to the IC debate emanated from Skandia AFS⁴ (hereafter Skandia). In the early 1990s this Swedish financial services conglomerate started to actively manage their IC (Edvinsson, 1997; Edvinsson & Malone, 1997b), and developed the Skandia Navigator to do this (Brennan & Connell, 2000; Fincham & Roslender, 2003b). The Skandia Navigator was published for the purpose of internal management use, to provide a more balanced overall picture of the firm's operations, which includes accounting for IC (Gallego & Rodriguez, 2005; Ordonez de Pablos, 2005). The approach to measuring intangibles developed by Sveiby et al. (1988) is the theoretical foundation of Skandia's Navigator. Skandia published the first IC report in 1994 (Gallego & Rodriguez, 2005; Ordonez de Pablos, 2005), reporting the "hidden" IC assets of the business (Brennan & Connell, 2000). A descriptive account of the format of reporting IC in the Skandia Navigator is given later in this chapter (see section 2.6.2).

⁴ Edvinsson was Skandia's first Director of IC, and was involved in many of the pioneering efforts on IC management (Brennan & Connell, 2000).

As well as the Skandia Navigator development, two frequently cited projects — the Meritum and DATI projects — contributed, among others, to the development of IC reports and IC Statements (ICS). It appears that these two projects influenced and shaped the IC research area considerably. University researchers were involved in both projects (see Bukh, 2003; Gallego & Rodriguez, 2005; Guthrie et al., 2001). The Meritum project involved academics from nine European universities (Guthrie et al., 2001), and six European countries: Spain (coordinator), Denmark, Finland, France, Norway, and Sweden (Brennan & Connell, 2000; Fincham & Roslender, 2003b; Gallego & Rodriguez, 2005). Many journal papers published by members of the DATI and Meritum projects are cited throughout this thesis. For particular contributions made by several members of these projects see, for example, Gallego and Rodriguez (2005, p. 110). The overall purposes and objectives of these two projects are now briefly described.

MERITUM project

The “Measuring Intangibles to Understand and Improve Innovation Management” (Meritum) project (Meritum, 2002 cited by Fincham & Roslender, 2003) was financed by the European Commission. The project began in November 1998 and ended in April 2001 (Gallego & Rodriguez, 2005) with the principal aim of providing “guidelines” for managing, measuring and disclosing on intangibles (Brennan & Connell, 2000; Fincham & Roslender, 2003b; Petty & Guthrie, 2000). Four main activities were addressed as part of this project: (1) a classification scheme for intangibles; (2) management and control systems for identifying European best practices in measuring intangibles; (3) the assessment of the relevance of intangibles in the functioning of capital markets; and (4) the production of guidelines for the measurement and reporting of intangibles. According to Fincham and Roslender (2003b), the overall outcome of the Meritum project indicated a need to develop some form of IC report, to allow reporting of the majority of elements of IC.

The outcomes of the Meritum project were disseminated and further refined in another two-year project labelled E*KNOW-NET (Guthrie et al., 2001). Garcia-Ayuso (2003) describes this project as a virtual network on intangibles, which was developed in order to provide all persons and institutions in the world with an open

forum for the exchange of knowledge arising either from research or practice (E*Know-Net⁵).

Following a parallel study (DATI), the Danish participants in the Meritum project, developed one formulation of an IC report, an ICS (Fincham & Roslender, 2003b).

DATI project⁶

The Danish Agency for Development of Trade and Industry (DATI) project⁷ (DATI, 1999, cited by Fincham & Roslender, 2003; 2001, and by Bukh, 2003) commenced in 1998 and was undertaken to develop guidelines for dealing with intangibles and for the disclosure of information on intangibles (Bukh, 2003; Fincham & Roslender, 2003a; Guthrie et al., 2001; Lev & Zambon, 2003; Mouritsen et al., 2004; Ordonez de Pablos, 2005; Vergauwen & van Alem, 2005). This Danish initiative links IC explicitly with knowledge management.

According to Boedker, Guthrie and Cuganesan (2005b), Denmark, in particular, is leading the way with regard to the formulation of self-reporting IC guidelines. The contribution of the DATI project most relevant to this thesis is its development of an ICS, and its recommendation that a firm report on its value creation potential and its strategy for knowledge management, through the use of an ICS (Bukh, 2003; Fincham & Roslender, 2003b; Mouritsen et al., 2004). Twenty-three companies participated in the initial phase of the project, and 17 Danish firms eventually published the requisite two annual ICS. The project identifies and illustrates a generic formulation for an ICS in *A Guideline for Intellectual Capital Statements* (Boedker et al., 2005a; Fincham & Roslender, 2003b). As this thesis will draw on the format of reporting IC in the ICS, a descriptive account of a generic ICS is given later in this chapter when discussing the reporting of IC (see section 2.6.2).

⁵ www.eu-know.net

⁶ Also referred to as The Danish Agency for Trade and Industry, Ministry for Trade and Industry (see, for example, Vergauwen & van Alem, 2005; Ordonez de Pablos, 2005), and the Danish Ministry of Science, Technology and Innovation (DMSTI, 2003, cited by Boedker et al., 2005a).

⁷ From 1998 to 2002 Jan Mouritsen led the research team that developed the Danish guideline for intellectual reporting on behalf of the Danish Ministry of Technology, Research and Innovation (Mouritsen et al., 2004).

Other European initiatives

A few, mostly European, authors have cited other research projects and initiatives undertaken in the IC sphere. Cited projects include among others the Nordika Project (Garcia-Ayuso, 2003; Vergauwen & van Alem, 2005), the Global Reporting Initiative (Garcia-Ayuso, 2003), the International Federation of Accountants (IFAC, 1998) (cited by Lev & Zambon, 2003) and the 3R Model (Ordonez de Pablos, 2004).

According to Fincham and Roslender (2003a) there is a discernable distinction between European and North American initiatives. European initiatives tend more towards telling the “story of IC” in firms and interpret IC accounting more as an internal management and reporting technique. The ICS format in particular is characterised by a strong narrative emphasis and the use of many different forms of pictorial representations (Fincham & Roslender, 2003b). However, contributions to the IC debate from North America tend to be associated with an orthodox measurement emphasis and a hard accounting calculus (Fincham & Roslender, 2003a). Another characteristic of these initiatives is their focus on external disclosure and accounting standards. These North American and other global initiatives are briefly outlined next.

2.3.2 North American and other global initiatives

It seems that initiatives that originated in North America and countries other than European, all incorporate the term “value” in their titles. North American initiatives are the Value Chain Scoreboard or Scorecard; the Value Creation Index; and the Value Creation Pyramid (Fincham & Roslender, 2003b), and Lev’s (2001) Value Chain Scorecard. Recently Lev developed his own Knowledge Capital Scoreboard methodology, an approach to valuing intangibles (Bernhut, 2001). Lev rejects the value creation emphasis of the European initiatives in favour of one capable of providing valuations that can be tested in the market (Fincham & Roslender, 2003b). The Cap Gemini Ernst & Young Centre for Business Innovation (Cap Gemini, 2000), pursued the Value Creation Index, which measures the impact of intangible assets on market value and determines a single figure or score (Fincham & Roslender, 2003b). Examples of other global initiatives are the Value Creation Maps (Marr et al., 2004), the Intellectual Capital Value Creation framework (Boedker et al., 2005a), and PricewaterhouseCoopers’ ValueReportingTM (PricewaterhouseCoopers, 2001).

Although Fincham and Roslender (2003b) describe these initiatives as ICR frameworks, they emphasise the measurement of IC and are therefore not further discussed in this thesis.

The European influence in the historical development of IC accounting further manifests itself in issues relating to identifying IC, discussed next.

2.4 Identification of IC

A major concern in the IC sphere is how to identify intellectual assets that do not appear on balance sheets (D. A. Robertson & Lanfranconi, 2001). According to Diefenbach (2006), there has been no serious attempt to define and identify all intangible resources systematically, and there is still no clarity about a general criterion for identifying different types. This section examines these concerns. First, some definitions of the umbrella term “intellectual capital” are given. Then, issues that make identification of IC problematic are discussed, followed by various taxonomies for categorising IC components. Thereafter, prior research findings relating to identifying IC are summarised. The last subsection illuminates the definition and taxonomy adopted for this thesis.

2.4.1 Defining IC

Despite an active debate around IC for some years (Hussi, 2004), there is still no consensus over the concept and no clarity about a general definition (Diefenbach, 2006; Sullivan, 2000; Sveiby, 1997). Consequently, defining IC is problematic, and there is an ongoing definitional debate (Canibano et al., 2000; Guthrie et al., 2001; Holland, 2004; Lev, 2001; van der Meer-Kooistra & Zijlstra, 2001). Van der Meer-Kooistra and Zijlstra (2001) concluded: “The IC concept is still a diffused one. Each author uses his own definition of the concept” (p. 474). Consequently, there is a notable diversity in the way IC is defined in ICR studies (Abeysekera, 2006).

There is a considerable overlap between IC and the category of assets termed intangibles (Fincham & Roslender, 2003b). This illustrates why defining IC is problematic. Many different, and often conflicting, views are held about what IC is. For example the Organisation for Economic Cooperation and Development (OECD) locates IC as a subset of the overall intangible asset base of a business. However, the researchers of the Meritum project regard intangible assets as a subdivision of IC.

According to Petty and Guthrie (2000) the distinction between IC and [conventional] intangible assets has, historically, been vague at best. “Intangibles have been referred to as ‘goodwill’ (APC, 1970; ASB, 1997; IASC, 1998) and intellectual capital as part of this goodwill” (Petty & Guthrie, 2000, p. 158). In contrast, Brooking (1996) describes goodwill as “a catch-all for a variety of monies which don’t quite fit anywhere else” (p. 11). This could be interpreted as meaning goodwill is synonymous to intangibles, or to IC, or to both.

Several papers present thorough discussions and analyses of various IC definitions and definitions of IC components. See, for example, Guthrie and Petty (2000), Johanson, Eklov, Holmgren and Martensson (1999 cited by van der Meer-Kooistra & Zijlstra, 2001), Swart (2006) and Canibano, Garcia-Ayuso and Sanchez (2000). This thesis merely illustrates the diversity in IC definitions by providing some prevalent definitions. A common definition of IC identifies it as the difference between market value and book value. It is reported repeatedly that the difference between market value and book value can be explained by intellectual assets, as an invisible value, which are not recognised in companies’ balance sheets (Adams, 2001; Brennan & Connell, 2000; Davies & Waddington, 1999; Fincham & Roslender, 2003b; Low, Siesfeld, & Larcker, 1999; Ordonez de Pablos, 2005). Also in the Intangible Asset Monitor (IAM), devised by Sveiby (1997; 1998) market value is depicted as consisting of Tangible Assets and Intangible Assets (Sveiby, 2001a). Similarly Brooking (1996) demonstrates “Enterprise [value] = Tangible Assets + Intellectual Capital” (p. 12), and states that IC is the term given to the combined intangible assets that enable the company to function. Nevertheless, describing the entire difference between market capitalisation and book value as intangibles is seen as circular, as this will define intangibles in terms of themselves (Upton, 2001). Such a definition also provides little feedback information to users of financial and business reporting information. For further analysis and critique of the argument that the difference between market value and book value equates to IC, see Bukh, Larsen and Mouritsen (2001).

Moreover, IC is described as a firm’s competencies (van der Meer-Kooistra & Zijlstra, 2001), as “information, knowledge applied to work to create value” (Edvinsson & Malone, 1997b, p. 3), as a matter of “broad organisational knowledge, unique to a firm, which allows it constantly to adapt to changing conditions”

(Mouritsen, 1998, p. 462) and as knowledge-based resources that contribute to creation of a competitive advantage for the firm and are not registered in the financial accounts (Ordenez de Pablos, 2005). Finally, while Swart (2006) claimed IC is regarded purely as an individual level construct akin to knowledge and skills that individuals have, thereby arriving at the idea of human capital, Haanes and Lowendahl (1997 cited by van der Meer-Kooistra & Zijlstra, 2001) claimed knowledge within an organisation exists at both the individual and the organisational level. At the individual level knowledge, skills and aptitudes are included. Knowledge at the organisational level includes client-specific databases, technology, routines, methods, procedures and organisational culture.

As has been shown above, in accord with Gallego and Rodriguez (2005), intangible resources are not generally recognised with a common definition and they are not identifiable in explicit form. Moreover, Johanson (2003) and Mouritsen (2003) claimed that there is a lack of knowledge and understanding of how IC resources work. The difference between IC's nature and that of conventional assets, and problems with framing IC could contribute to this. These two issues are discussed next.

2.4.2 Differences between IC and conventional assets

The nature of many IC resources is very different to those of conventional assets. One difference between IC (excluding human resources) and conventional assets is that physical and financial assets are rival, or scarce, assets (Bernhut, 2001). Conventional assets and human resources cannot be used elsewhere at the same time. However, many intangible assets are non-rival assets, as they can be used simultaneously, for example information systems. Another difference is the phenomenon referred to as "scalability" (Lev, 2001). It is possible to scale an investment in IC endlessly, which will result in increasing returns. If firms want to increase the production of many intangible assets, for example patents, drugs, and software, they do not have to increase the investment in R&D at all. In contrast, if firms want to increase, for example, production of physical assets and they are working relatively close to capacity, they have to substantially increase the investment. The scarcity is reflected by the cost of using the assets.

2.4.3 Problems with framing IC

It is presently highly problematic to construct distinct boundaries around IC (Gallego & Rodriguez, 2005; Lev & Zambon, 2003; Mouritsen, 2003). One problem with framing IC relates to the difficulty of separation. Most intangibles, such as organisational capital and human resource practices, are enablers of corporate resources, rather than stand-alone assets (Lev & Zambon, 2003). When firms embody intangible assets in their production function, the investments are sunk, and not separable from their context of origin. Competencies found in the relationships between human, organisational and customer “capitals” are all entangled resources or assets, and are not separated (Mouritsen, 2003). They have considerable overflows, and cannot be seen in any distinctive way because they function in connection with one another. Thus, they are regarded as not being individually calculable. Many intangible resources only exist in instances of collective performance, in interaction, and only in relation to the firm’s production process. They are complementary to various kinds of assets or resources and are always related to a specific collective purpose. Entangled resources co-exist as bundles of assets and have to be understood in their totality. The problem with framing IC becomes even more acute when boundaries between organisations become increasingly blurred, for example when networks are created (Lev & Zambon, 2003).

The process of disentanglement is a problem for intellectual assets (Mouritsen, 2003). In order for assets to be recognised, they need to be separated from other assets. Accounting rules help to identify assets, by disentangling them. Conventional assets and “new” recognised intellectual assets (e.g. brands and patents) are “made visible by a procedure of inscription through which they are made recognisable and represented by names and numbers on paper” (Mouritsen, 2003, p. 21). However, it is difficult to disentangle many intellectual assets because they are part of the sphere of a firm’s production process and when in use they are complementary to other assets. When assets are “separated”, they are transformed. “The more the resource is disentangled, the more it is transformed into something quite different, governed not by the logic of the complementarity of assets, but by the logic of the institutional rules found outside the *locus* of complementarity” (Mouritsen, 2003, p. 23).

The debate about what falls within the IC concept and how it is defined, is also evident in the variety of taxonomies that have been developed for classifying IC. The most widely used classification schema are acknowledged next.

2.4.4 Taxonomies

There have been a number of attempts to identify the various constituents of IC (Fincham & Roslender, 2003b). One attempt identifies the most prominent categories as human capital, social capital, structural or organisational capital, and client or customer capital (Swart, 2006). Swart showed that each of these categories is riddled with confusion over boundaries, levels of analysis and the function of the sub-component. Another attempt identifies IC traditionally as consisting of three parts covering the human aspects, intra-organisational structures and the external environment (Hussi, 2004). Furthermore, Diefenbach (2006) referred to a categorisation system of intangible resources as human; social; cultural; statutory; inform and legal; and embedded capital. Yet, the pioneering work of accounting for and classifying IC (Fincham & Roslender, 2003a; Palacios-Marques & Garrigos-Simon, 2003) — The Skandia Value Scheme — divides IC into two groups: human capital and structural capital. Edvinsson and Malone (1997) devised the Skandia Value Scheme, described as a founding taxonomy that continues to inform the literature (Brennan & Connell, 2000; Fincham & Roslender, 2003b). Structural capital is divided into customer capital and organisational capital, and in turn, organisational capital is split into innovation capital and process capital. The descriptions of other classification schema are broadly similar to that of the Skandia Value Scheme, but show different interrelationships among the elements of IC (Brennan & Connell, 2000). For example, the OECD also divides IC into human capital and structural capital, but refers to structural capital being equivalent to organisational capital, while Bontis, Keow and Richardson (2000) divide IC into three categories: human capital, structural capital, and relational (or customer) capital. The descriptions of human, structural and relational capital of the Edvinsson and Malone (1997) and Bontis et al. (2000) taxonomies are broadly similar. Human capital represents the value and benefits that can be obtained by utilising the knowledge, experience and skills of the people within the organisation (Ordonez de Pablos, 2005). Human capital is also described as the capital or knowledge that

people take with them when they go home (Roos et al., 1997). Structural capital or organisational capital refers to the supportive structures and procedures within the organisation that can be used by the employees to create knowledge, thus to put their knowledge, skills and abilities to work (Ordonez de Pablos, 2005). It is also described as the knowledge that remains within the firm at the end of the working day (Roos et al., 1997). It comprises organisational routines, procedures, systems, cultures and databases. Relational capital includes all knowledge assets that emerge not only from a firm's marketing channels and relations and connections with customers, but also from relationships with competitors, with current and potential suppliers, shareholders, other agents, and society in general (Ordonez de Pablos, 2005).

The above descriptions of human and structural capital, however, differ to those offered by the OECD, as they only include human resources within the organisation. The OECD describes human capital as including human resources within the organisation (i.e. staff resources) and resources external to the organisation, namely customers and suppliers.

The Intangible Asset Monitor (IAM) is referred to as another framework for classifying IC (Fincham & Roslender, 2003b; Yongvanich & Guthrie, 2004), although Sveiby (2001b) refers to it as a non-financial measurement system for intangible assets based on the concept of the knowledge organisation. In this system, IC is divided into three components: internal structure, external structure, and competence of personnel or individual competence. Internal structure consists of patents, concepts, models, and computer and administrative systems. Employees create this structure, and therefore a firm generally "owns" assets in the internal structure, although sometimes these assets can be acquired from elsewhere. External structure, though, is a broader concept than customer capital used by Edvinsson and Malone (1997) (Hussi, 2004). External structure consists of relationships with customers and suppliers, brand names, trademarks and reputation, or "image". These intangible assets are not particularly liquid and may or may not be owned by the company. The final element of IC in the IAM, individual competence, is people's ability to act in various situations. It includes skill, education, experience, values and social skills. Competence cannot be owned by anyone but the person who possesses them.

According to Sveiby (2001a), people are the only true agents in a business; all assets and structures are the results of human action and depend ultimately on people for their continued existence. Individuals in organisations create external and internal structures to express themselves. When people direct their efforts inwards, they may create intangible structures such as processes or new designs. When they direct attention outwards, they can create, in addition to tangible things, intangible structures, such as customer relationships and new experiences. This “structure” is partly independent of individuals, and some remains even if the most valuable individuals leave a company.

Also, superficially, the IAM is similar to the Balance Scorecard (BSC), developed by Kaplan and Norton (1992; 1993). Sveiby (2001a) lists similarities and differences between the BSC and IAM on his website. The BSC is also referred to as a framework for classifying IC (see for example Brennan & Connell, 2000; Petty & Guthrie, 2000). Furthermore, Fincham and Roslender (2003b) refer to the BSC approach to business reporting as an ICR framework. One explanation for describing the BSC as an IC taxonomy could be because during the last few years some Scandinavian companies, such as Skandia, have disclosed information on IC, using a classification framework that is based on the concept of the BSC (Canibano et al., 2000). At the time of writing this thesis, Kaplan and Norton (1992; 1993) had not yet used the term IC in their work. Therefore, in this thesis the BSC is not considered to be an appropriate framework within which to classify or report IC.

Roos et al. (1997) describe the three components of the IAM as internal capital, external capital, and human capital. Human capital is seen to be a broader issue than individual competence (Hussi, 2004). Although Sveiby and Roos et al. label the three IC constituents differently, their descriptions are similar to that of structural, relational and human capital mentioned in the previous paragraph. Internal capital is akin to structural or organisational capital, and external capital to relational capital. Over recent years the IAM has been modified and used in many ICR studies to classify IC components reported in annual reports. Hence, additional perspectives on the external, internal and human capital categories have appeared in the literature (Abeysekera, 2003; Boedker et al., 2005; Bozzolan et al.; Guthrie & Petty, 1999; Guthrie et al. 2004).

In sum, defining, framing and classifying IC are complex issues in identifying IC. Several scholars have attempted to address these complexities relating to identifying IC, illustrated in the next section.

2.4.5 Prior research into the identification of IC

The prior research findings that attended to complexities relating to identifying IC are summarised in Table 2.1.

Table 2.1: Prior research findings regarding the identification of IC

Author / Year	Findings
(Brennan & Connell, 2000)	Theoretical research has attempted to define and classify IC, but with limited success. A universal definition and classification model has yet to be agreed upon.
(Lev, 2001)	For the discussion of intangibles to go forward it is important to put together a better definition of intangibles and to understand the role of intangible capital in the process of value creation.
(Guthrie et al., 2001)	There is a need for a better understanding and definition of the concept.
(van der Meer-Kooistra & Zijlstra, 2001)	Found confusion about precise meaning of IC. No clear definitions of IC or its components exist. IC components are intertwined. For ICR it is important that the concept of IC should be clear.
(Upton, 2001)	Companies' inability to identify and inventory intangible assets may be the most significant obstacle to any comprehensive recognition of intangible assets.
(Grojer, 2001)	Suggests further development of classification for intangibles can be approached from deductive and empirical methods.
(Leon, 2002)	Saw the challenge within the field of IC as agreeing upon a common language with which to discuss IC, and to establish universally acceptable definitions.
(Bukh, 2003)	There may be a problem that there is no recognised way to interpret information on intangibles and IC.
(Johanson, 2003)	The mentality of the capital market appears to be numbers-oriented. This could explain the apparent lack of understanding of the importance of knowledge and human capital in the value creation process.

Author / Year	Findings
(Fincham & Roslender, 2003b; Roslender & Fincham, 2004)	Expert opinion on IC confirmed that in the UK IC is not yet a widely understood idea. Only a minority of senior managers interviewed were familiar with the term IC, and of those, not all were clear about its meaning.
(Claessen, 2005)	Participants agreed that systematically identifying their IC has enabled them to better manage their companies.
(Guthrie et al., 2005)	One challenge is to get cooperation among researchers, practitioners, industry associations, and the accounting profession in establishing a consensus about what IC is.
(Abeysekera, 2006)	IC definitions have not adequately addressed the details of value creation. There is a need for uniform definitions of IC and ICR.
(Diefenbach, 2006)	Generated a comprehensive categorisation system of all possible types of intangible resources.

Analysis

Table 2.1 shows that any attempts to establish a universal definition of IC between 2000 and 2006 have not yet been successful, and that IC, in the process of value creation, is not understood. Agreeing on a common language to discuss IC and about what the IC concept is, are ongoing challenges. Unless these challenges are addressed, it is highly likely that accounting for IC will continue to be problematic. Therefore, it appears that the identification of IC poses a challenge to practitioners, policy makers, management consultants and researchers.

Thus, even though the identification of IC poses challenges for future research, it is essential that IC is identified and framed for application in this study. The definition and taxonomy of IC adopted in this thesis are discussed next.

2.4.6 Selected IC definition and taxonomy

For the purpose of this thesis, similar to the Meritum project, the accounting term “intangible assets” is regarded as a subset of IC. Furthermore, IC comprises all the invisible, intangible resources, elements and capacities portrayed in the literature, but not included in the definition of conventional intangibles. Boedker et al. (2005b) and Fincham and Roslender (2003b) portray invisible, intangible resources, capacities and

elements as various business relationships, workforces, employee know-how, experience, competencies and expertise, inter-firm alliances, innovation, systems, and the contribution that is made by strong and creative organisational cultures. In accord with definitions identified earlier, IC comprises conventional intangible assets, relationships, and knowledge at both individual and organisational levels, applied to create value or competitive advantage.

In this thesis IC is classified according to the key taxonomy elements devised by Guthrie et al. (2004) and Abeysekera (2003). Many IC items identified in these schema are defined according to the work of Brooking (1996; 1997). Hence, Brooking's descriptions are used to delineate the meanings of IC components of this thesis' classification scheme. Brooking splits IC into four categories: intellectual property assets, infrastructure assets, market assets, and human-centred assets. The first two categories, intellectual property assets and infrastructure assets are combined and described as internal capital in this thesis. Furthermore, the category market assets is described as external capital, and human-centred assets as human capital. Brooking describes the four categories as follows:

Intellectual property (IP) assets are a form of property — protected in law — which is derived from the mind (Brooking, 1996, p. 36). The term usually refers to know-how, trademarks, service marks, trade secrets, copyright, patent, property technology and various design rights. IP assets are important as they represent the legal mechanism for protecting many corporate assets. Patents are of particular value when they are embedded in products as this protects inventions from copying. Copyright protects the written word and is typically used to protect books, music and computer software (Brooking, 1996, p. 14).

Infrastructure assets are the skeleton and sinews of the organisation, they provide strength and cohesion between its people and its processes (Brooking, 1996, p. 61). Infrastructure assets are those technologies, methodologies and processes that enable the organisation to function. Examples include corporate culture, databases of information on the market or customers, methodologies for assessing risk, methods of managing a sales force, financial structure, communication systems such as e-mail and teleconferencing systems. Infrastructure assets are important as they bring order, safety, correctness and quality to the organisation. They also provide a context for the

employees of the organisation to work and communicate with each other (Brooking, 1996, p. 16).

Market assets are the potential an organisation has due to market-related intangibles (p. 13) or those assets that are derived from a company's beneficial relationship with its market and customers (p.19). They comprise various brands, reputation, customers and their loyalty, repeat business, backlog, distribution channels, various contracts and agreements such as licences and franchises. Market assets are important as they give a company a competitive advantage in the market-place (Brooking, 1996, p. 13)

Human-centred assets comprise the collective expertise, creative and problem solving capability, leadership, entrepreneurial, and managerial skills embodied by the employees of the organisation. Human-centred assets are important because they are the qualities that make up people. However, unlike market, intellectual and infrastructure assets, a company cannot own human-centred assets. As employees become proficient and then excel in their employment, they learn more and become more valuable, but the knowledge in the head of the individual belongs to the person – not the company (Brooking, 1996, p. 15).

The next section discusses problems, relating to identifying IC, that prohibit IC from being recognised as an asset in the traditional financial reporting framework.

2.5 Problems with recognising IC

The issue of whether or not IC should be recognised as an asset is contentious among accountants (Guthrie et al., 2005). According to Canibano et al. (2000) there is disagreement on the criteria that should be adopted in recognising IC. At the time of conducting this study, IC resources did not meet prevailing international and New Zealand accounting regulations relating to the definition and criteria of assets (Steenkamp, 2004a, 2004b). This section considers some issues that make recognition of IC as an asset problematic.

2.5.1 Problems relating to control of IC

An accounting criterion that is problematic for recognising IC as an asset is that of control. First, intellectual resources particular to the area of human capital lack ownership (Johanson, 2003). Firms do not own people (Bernhut, 2001), and benefits from an investment in, for example, the training of employees will be lost once the

employee leaves the firm. Second, control is problematic because of the issue that economists call “partial excludability” (Lev, 2001). Others can be completely excluded from enjoying physical and financial assets. However, it is very difficult to secure and to derive all the benefits from IC. Organisational knowledge is tacit and intuitive, which makes control thereof highly problematic (Fincham & Roslender, 2003a). In sum, the presence of a control criterion in the definition of an asset precludes some items (such as customer satisfaction), but not all items (such as customer lists) from recognition (Upton, 2001).

2.5.2 Problems with the traditional accounting system

It is also argued that the traditional accounting system is part of the reason why IC is not recognised and accounted for as an asset. “Intangible determinants of the value of business enterprises are not reported in companies’ financial statements mainly due to the lack of ability of accounting standards issues to date to prescribe how to do so adequately” (Canibano et al., 2000, p. 104). Current generally accepted accounting practices (GAAP) practically denies intangibles from being recognised as assets (Lev, 2001), traditional accounting actually mistreats investments in IC (Hussi, 2004). The costs of IC are written off as expenses, even though they should be seen as essential investments from the new value creation perspective. Excluding IC as assets detracts from the quality of information provided in the balance sheet (Lev, 2001). According to Roslender and Fincham (2001) the traditional financial reporting framework is not likely to be capable of accommodating IC. Therefore, Lev (2001) claimed the most significant and urgent change required in the present accounting system relates to the recognition of assets. A significant broadening of the current rules of asset recognition in financial reports is required, “relaxing to some extent the requirements of reliability and control” (Lev, 2001, p. 123).

2.5.3 Problems with measuring IC reliably

Another accounting requirement that makes recognition of IC problematic is the need for assets to be reliably measured. Because the valuation of IC has become an industry in its own right (Bontis, 1998), the measurement of IC is beyond the scope of this thesis. The problematic valuation issues considered here are, however, relevant in illustrating how the “reliably measured” requirement hinders IC from being recognised as an asset.

The real problem with IC lies in the extremely complicated valuation of intellectual assets (Bernhut, 2001; Gallego & Rodriguez, 2005; Palacios-Marques & Garrigos-Simon, 2003). Valuing IC is challenging and difficult (Holland, 2004; Ruth, 1999; Samek, 2000; Wallison, 2000). It is difficult to determine the economic value of many “invisible” assets, because they do not have a generally accepted definition and are not measured according to a standard (Sveiby, 2001a). One reason why it is complicated and challenging to value IC is because most of the current theories on accounting value are concerned with the value in exchange of resources (Lev & Zambon, 2003). Traditionally the costs of assets in balance sheets have been regarded as a reliable value (Wallison, 2000). However, the cost of many intangibles not recognised in the balance sheet is not regarded as a reliable value. Lev and Zambon (2003) argued intangible assets have a value in use, which is not linked to transactions, but to their idiosyncratic connections with other organisations’ tangible and intangible factors.

A second reason why it is difficult to value IC is a considerable uncertainty with estimating future benefits from intangibles (Bernhut, 2001; Lev, 2001). Bernhut argued that estimating for example the cash flows from a drug under development is very difficult. Hence, he claimed, since estimates of values are really not very reliable, accountants have a strong argument for not valuing individual intangibles.

Another problem with IC is that there are no markets in IC: there are no prices, and no trading of these assets (Bernhut, 2001; Bornemann & Leitner, 2002; Wallison, 2000), making it riskier and more difficult to manage and value them. Thus, it is argued, there is an environment of uncertainty that prevents an objective appraisal of the value of intellectual assets (Gallego & Rodriguez, 2005). Wallison (2000) added, appraisals of the values of internally generated intangibles are thought to be subject to error and manipulation.

Furthermore, it is argued that part of the problem with valuing IC is attributed to the accounting rules and to the institutions setting the requirements (Mouritsen, 2003; Stewart, 1998). The accounting profession is not yet in a position to provide robust and accurate measures of internally generated intangibles (Petty & Guthrie, 1999). Claims are made that there is a reluctance to even attempt to measure and disclose the existence of IC assets, and that the key drivers of financial reporting, management and auditors appear to have a vested interest in preserving the status quo (Johanson,

2003; D. A. Robertson & Lanfranconi, 2001). According to D. A. Robertson and Lanfranconi (2001), auditors would be concerned about the uncertainty surrounding measures that could expose them to greater risk and potential liability. Moreover, managers could be concerned about disclosing information that might be useful to their competitors, because information about IC is often conveyed in the form of narratives and sketches rather than numerically.

However, Ruth (1999) argued the difficulty in valuing intangible assets is not an accounting problem, but a valuation problem. According to Sveiby (2001a) it is good not to account for IC, which he refers to as the invisible value in the market value. One reason is because the share price of a company is a perception about the future and it will fluctuate with the general economy. Bernhut (2001) added that managers are not asked to value physical assets, “why would we ask them to value intangibles? The role of accounting is not to value anything. The role of accounting is to account for investments” (p. 19). Bernhut argued managers should provide vital information about what they have invested in.

Problems with recognising IC illustrate why accounting for IC is debatable. A few scholars have investigated various issues relating to the accounting and recognition of IC, discussed next.

2.5.4 Prior research into accounting and recognition of IC

Some findings and conclusions of prior research into the accounting and recognition of IC are summarised in Table 2.2.

Table 2.2: Findings of prior research into accounting and recognition of IC

Author / Year	Findings and conclusions
(Ruth, 1999)	The valuation profession needs to support the accounting profession in determining the values of intangibles.
(Bernhut, 2001)	IC not meeting the current recognition criteria does not mean that firms cannot voluntarily provide important information about IC to users, anywhere in the financial report.
(Upton, 2001)	For improved business and financial reporting attention to recognition of internally generated intangible assets in financial statements is required.

Author / Year	Findings and conclusions
(Upton, 2001)	Two issues frustrate attempts to recognise intangible assets in financial statements: the relationship between cost incurred, and the time and value of future benefits derived from such cost.
(Lev, 2001)	Measurement and valuation difficulties concerning intangibles should not provide an excuse for nondisclosure of relevant information about intangibles.
(D. A. Robertson & Lanfranconi, 2001)	A main concern is how companies can communicate information about the real value of IC to persons outside the organisation.
(Ordenez de Pablos, 2002)	There is a tremendous call for homogenisation in the field of IC. Future research should focus on developing and harmonising IC guidelines.
(Fincham & Roslender, 2003a)	No consensual view has yet emerged within the accountancy discipline about how IC should be accounted for. Some prefer to contain IC accounting within the orthodox reporting framework while others are concerned with broader internal managerial issues.
(Powell, 2003)	Accounting for intangible assets will require input from standard setters, academics and industry.
(Mouritsen et al., 2004)	It is unlikely that IC will appear in the balance sheet in the near future.

Analysis

The prior research summarised in Table 2.2 confirms that the recognition and valuation of IC are problematic and require attention from standard setters, academics and industry. However, it is also claimed that these difficulties should not be used as apologies for not addressing a main concern in the research field—disclosing information about IC to users. Since it is unlikely that consensus about recognising IC will be reached soon, it is unlikely that accounting for IC would become mandatory soon. Consequently, it appears that there is a need for guidelines on how to voluntarily communicate IC information externally. The next section examines the extent to which the literature addresses the reporting of IC.

2.6 Reporting IC

There is considerable controversy within the accounting academic community as to whether IC *should* be reported in financial statements (Canibano et al., 2000). From the point of view that IC should be reported, Guthrie et al. (2001) argued that one area that holds the greatest potential to impact and change financial accounting practice significantly is the establishment of new ways of reporting that can be used to record and report the value attributable to IC within a firm. In recent years a range of mechanisms has emerged that allows firms to voluntarily report IC (Fincham & Roslender, 2003b). Recent separate IC reporting activity of several firms, mainly in Europe, has caused a rethink of traditional financial practice (Guthrie et al., 2005). Only a few countries have proposed new ways for mandatory IC disclosure (ICD). The latter are mentioned first, followed by illuminating European initiatives for voluntary ICD. Then, prior research into ICR practices is discussed in two subsections: voluntarily ICR practices in annual reports; and perceptions relating to ICR practices.

2.6.1 Mandatory IC disclosure

So far, only three countries have initiated mandatory requirements for ICD: The UK, Austria and Australia. It appears that these are isolated initiatives within each country. According to Boedker et al. (2005b), the UK and Austria are leading the way in regard to public policy legislation requiring organisations to disclose information on their IC. The Austrian University Act 2002, for example, requires all publicly financed universities to implement a complex reporting system. These universities have to publish an IC report (as part of a Performance report) and an IC Statement annually in the Gazette and on their homepages (Schaffhauser-Linzatti, 2004). This act came into force on January 1, 2004. In the UK, the Department of Trade and Industry has proposed a compulsory reporting requirement for UK organisations. The recent Company Law Review requires all public and very large private companies to include an Operating and Financial Review (OFR) section in their annual reports from 2005 (CIPD, 2004 cited by Boedker et al., 2005a). Besides traditional financial measures, the OFR requires companies to include an account as to how the company's intangible assets contribute to its overall value generation. The objective is to highlight the importance of intangible assets, in particular the importance of

human capital. Another objective is to provide a more strategic and forward-looking perspective. The OFR in the UK could be a possible vehicle for identifying the importance of intangible assets (Mouritsen et al., 2004).

Also, the Australian government has set up the Australian Government Consultative Committee on Knowledge Capital (AGCCKC, cited by Boedker et al., 2005a). The purpose of this Committee is to “produce a set of comprehensive knowledge capital standards whose application across the public and private sectors will contribute to the development of Australia as a competitive knowledge economy” (AGCCKC, 2004, p.2, cited by Boedker et al., 2005a). Boedker et al. also report Standards Australia (2003) has released an interim Standard on Knowledge Management (KM), which outlines KM processes and concepts.

According to Boedker et al. (2005a), these Australian initiatives demonstrate that IC (and related KM) activities are becoming increasingly important to organisations in their pursuit of value creation and competitive advantage. These initiatives could suggest that standard setters and government agencies are beginning to acknowledge the importance of IC, and could signal an evolving move towards mandatory, external disclosure of IC. However, considering the challenges present in the identification and recognition of IC discussed earlier, it is unlikely that global requirements for ICR will become mandatory soon. To advance the IC research project in the meantime, voluntarily IC reporting is widely advocated (Bontis, 2002; Eccles & Mavrinac, 1995; Garcia-Ayuso, 2003; Lev, 2001; Roslender & Fincham, 2001; Vergauwen & van Alem, 2005). Lev (2001) proposed a voluntary information structure that complements financial reports, and claims managers should not be expected to disclose values of intangibles. Roslender and Fincham (2001) proposed an emancipatory notion of IC self-accounts as a potentially powerful vehicle of communicating IC accounts via a “yearbook” to extend the narrative content of annual reporting. According to Garcia-Ayuso (2003), companies would undoubtedly benefit from the integration of all ICR efforts, and they claimed it is now necessary to integrate the efforts devoted to guide the voluntary disclosure of corporate information on intangibles.

2.6.2 European initiatives for voluntary IC disclosure

Two European initiatives for voluntary ICR in particular have influenced the field considerably: the Skandia Navigator and the Intellectual Capital Statement (ICS). A background to these initiatives follows.

Skandia Navigator

“The origins of ICR are found in practices pursued by Skandia AFS” (Fincham & Roslender, 2003b, p. 25). Skandia AFS, a Swedish financial services conglomerate, developed the Skandia Navigator⁸ to manage their IC. The Skandia Navigator was published for the purpose of internal management use, to provide a more balanced overall picture of firms’ operations, which includes accounting for IC (Gallego & Rodriguez, 2005; Ordonez de Pablos, 2005). The Skandia Navigator proposes a narrative approach to account for IC. Accounting for IC is conceived as providing information on a business’s efforts to grow its IC for sustained value creation. The Skandia Navigator focuses on five issues in the process of value creation itself: the financial focus (concerned with the past); customer, process, and human focuses (concerned with the present); and the renewal and development focus (concerned with the future). Since Skandia AFS published the first IC report in 1994, several firms have published IC reports in Denmark, India, Spain, Sweden, Austria, Germany, Italy and the UK (Ordonez de Pablos, 2005). Some of these are independent reports that complement the information gathered in the financial statements and some are part of the company’s annual report.

While the Skandia Navigator could justifiably be regarded as an ICS, the term “Intellectual Capital Statement” can usefully be reserved for what emerged from the DATI project in Denmark (Fincham & Roslender, 2003b).

Intellectual capital Statements (ICS)

The influence of the ICS initiative is evident in that around 100 Danish organisations and firms including large firms quoted on the stock exchange, had already followed the ICS approach by the end of 2002 (Bukh, 2003). Lev and Zambon (2003) regard the implementation of ICS in various organisations, particularly in the Nordic

⁸ Ordonez de Pablos (2005) referred to it as an intellectual capital report, and Gallego and Rodriguez (2005) stated it consists of a “kind” of Balanced Scorecard.

countries as one of the most significant responses to IC accounting. ICS are designed to bridge the gap of traditional financial statements by providing information about how intellectual resources create future value (Mouritsen et al., 2004). These reports can also be seen as a tool to help organisations to better understand their intellectual resources. They recommend including a specification of which knowledge resources are vital value drivers. ICS are not designed to calculate the value of a company's knowledge in financial terms, and tend more towards telling the "story" of IC in firms (Fincham & Roslender, 2003a; Mouritsen, Larsen, & Bukh, 2001b). ICS seem to have a fundamental function of self-analysis for the firm (Lev & Zambon, 2003), are used internally as a management tool (Mouritsen et al., 2004), but also have potential to inform external stakeholders (Lev & Zambon, 2003). According to Mouritsen et al. (2004), in response to the perceived decline in value relevance of traditional annual reports, some firms have experimented with an ICS as a means to disclose information about IC to external stakeholders. Thus, ICS can be used as tools to communicate externally how the firm works to develop its knowledge resources in order to generate value (Mouritsen et al., 2004).

There is no final, accepted ICS model yet (Bukh et al., 2001). ICS point toward different things in different firms; are found in various forms; and defining ICS is ambiguous (Mouritsen et al., 2004). Nearly every ICS are based on individual definitions and classifications, reducing the general understandability and interpretability of ICS (Schaffhauser-Linzatti, 2004). However, ICS per se are not of particular interest to this thesis, but the method adopted to report IC is. A generic format of an ICS that emerged from the DATI project (DATI, 1999, 2001; Mouritsen, Larsen, & Bukh, 2001a) illustrates this method.

An ICS typically consists of three elements (Fincham & Roslender, 2003a) or sections and "provides a status of the company's efforts to develop its knowledge resources through knowledge management in text, figures and illustrations" (DATI, 2001, p. 14 cited by Fincham & Roslender, 2003b). The first section is a knowledge narrative that describes the firm's activities as well as its business model, mission, vision and values. Section two consists of management challenges and analyses knowledge management in the firms. Section three focuses on IC reporting. Firms typically give their own definition of IC and its components in this section, and describe activities devoted to create and renew IC. From this perspective, the format

of reporting IC information in an ICS is of interest to this study. IC is communicated through a network of indicators, sketches or visualisations, and stories or narratives (Mouritsen et al., 2001b). This network can be seen as a method of telling stories about how firms implement competence strategies. The broad story is about relationships (Bukh et al., 2001). The format of telling IC stories in an ICS will be explored as a possible approach for voluntary ICR practices in New Zealand firms' annual reports.

Human, structural and relational capital components of IC are measured through indicators or metrics, referred to as “basic” areas. Indicators are objects of measurement (Brennan & Connell, 2000), but many IC indicators cannot be quantified in a monetary form — more than half of indicators in ICS are financial (Mouritsen et al., 2001b). Ordonez de Pablos (2002) prepared an exhaustive list of indicators. Examples of IC indicators are: in the human capital category—employee profile, employee satisfaction, staff turnover, education, gender, and age distribution; in the relational capital category — client profile, customer loyalty index, image, stakeholders, and number of customer national support offices; and in the structural capital category — general infrastructure, innovation and customer support.

It appears that this method of telling IC stories is also surfacing in other means of public and private disclosures. Bukh (2003) examined IC stories in Danish Initial Public Offerings (IPOs) and reported IPOs flow over with information on IC. Holland (2004) performed case studies on private disclosure to fund managers in regular one-to-one meetings, and reported the corporate value creation has changed to a narrative. He found common information themes in these case companies and concluded that three major knowledge-intensive value-creation processes are emerging: hierarchical, horizontal and network. Furthermore, he concluded that it appears the focus of much private disclosure is on connecting these three value-creation processes.

The above discussions “confirm that an approach is evolving here that may eventually pose a strong challenge to the traditional financial statements format” (Fincham & Roslender, 2003b, p. 38).

Of these two initiatives, it appears that the ICS has had the greatest influence in the research area. Contributions and findings of investigations of ICR practices in ICS are summarised in Table 2.3.

Table 2.3: Contributions and findings of investigations into ICR practices in Intellectual Capital Statements (ICS)

Author / Year	Contributions and findings
(Ordenez de Pablos, 2005)	Indian ICS are different to European ones. Indian ICS: have a strong emphasis on a “narrative” style; do not combine a narrative and quantifying style; do not focus on specific indicators; are independent from annual reports; and are much larger than European ones.
(Mouritsen et al., 2004)	Reasons for disclosing IC and elements of ICS are: frustration with traditional financial reporting; capital market may be at a disadvantage (if IC is not reported); and potential advantages for firm in reporting IC.
(Bukh et al., 2001)	Main motives why firms embark on producing ICS are: as support for their strategic activities; show human resources; show and create innovation activities; to attract employees; and to recognise knowledge as an asset.
(Mouritsen et al., 2001b)	The story of IC presented in the ICS of Skandia AFS is a story of coalescence, complementarity and inseparability.
(Ordenez de Pablos, 2002)	Proposes an exhaustive list of indicators for human, structural, and relational capital based on examining IC reports of 13 firms in 6 different countries.
(Mouritsen et al., 2001a)	Introduce a framework for analysing an ICS, which is an extension of the generic three-way ICS model. Show linkages between “external” ICS and “internal” knowledge management activities.
(Mouritsen, 2003)	Capital market participants are often sceptical about ICS or reports on intellectual resources. “Somehow, the circulability of intellectual capital information appears to be limited. It tends not to have a strong readership or understanding in capital markets” (p. 19).
(Bornemann & Leitner, 2002)	IC reports still a weak instrument for measuring tacit knowledge flows.
(Fincham & Roslender, 2003b)	A number of Danish companies have already subjected their ICS to auditor verification.
(Lev & Zambon, 2003)	The verification of information in ICS presents a challenge to the audit profession and financial analysts. Procedures for external assessment, verification and assurance of information in ICS are in their infancy and need to be internationally standardized.

Analysis

The findings summarised in Table 2.3 of prior investigations of ICR practices in ICS indicate that the narrative format enables firms to voluntarily disclose IC information. Since this narrative format departs from the traditional financial statements format, it enables firms to communicate information about IC value drivers, currently not allowed under traditional financial reporting requirements. The findings also indicate that firms are willingly producing ICS, as they enable them to tell comprehensive IC stories.

Investigations of voluntary ICR practices in means other than ICS have also been widespread. Many scholars examined voluntary ICR practices made in the common public domain, namely annual reports. A variety of other research methods have also been used to ascertain perceptions of current ICR and recommendations about future ICR. Among others, case, field, or interview studies; literature and commentary reviews; experimental; and combined methods have been applied. The contributions of prior research into voluntary ICR in annual reports are summarised next. Then perceptions about current ICR practices are summarised, followed by an overview of recommendations about future ICR.

2.6.3 Voluntary ICR practices in annual reports

The accounting profession has shown much interest in investigating the content of voluntary disclosure of IC by organisations in their annual reports (Guthrie et al., 2005). According to Guthrie et al., investigating the extent to which firms currently voluntarily report on their IC could be instructive to policy makers by providing them with an understanding of the reporting that some firms already observe. Such information could be helpful when establishing a potential framework for drafting of future policy prescriptions.

Many studies have investigated annual reports data, attempting to capture the reporting of IC practices of several countries. Table 2.4 summarises contributions of studies that investigated ICR practices of the following countries: Australia (Boedker et al., 2005a, 2005b; Guthrie, Petty, Ferrier, & Wells, 1999); Australia and Hong Kong (Guthrie et al., 2005, 2006); Canada (Bontis, 2002); Ireland (Brennan, 2001); South Africa (April, Bosma, & Deglon, 2003); Sweden, The Netherlands and the UK (Vandemaele et al., 2005); France, The Netherlands and Germany (Vergauwen & van

Alem, 2005); Malaysia (Goh & Lim, 2004); Sri Lanka (Abeysekera, 2003; Abeysekera & Guthrie, 2004a, 2004b); Italy (Bozzolan, Favotto, & Ricceri, 2003); the UK (Williams, 2001); Sweden (Beaulieu, Williams, & Wright, 2001); and Sweden (Olsson, 2001).

Table 2.4: Contributions of investigations into current ICR practices in annual reports

Author / Year	Contributions
(Guthrie et al., 1999; Petty & Guthrie, 2000)	Found little evidence of publicly reported information on IC. Key components of IC are poorly understood, inadequately identified, inefficiently managed and inconsistently and minimally reported.
(Brennan, 2001)	Firms rarely refer to IC, and when referred, then in qualitative terms. Level of disclosure is low.
(Beaulieu et al., 2001)	Results of an IC index show IC does not receive much attention in Swedish annual reports.
(Williams, 2001)	Longitudinal examination shows quantity of ICD increased between 1996 and 2000, and an increase between each year. Results suggest considerable variations in level of ICD between companies.
(Olsson, 2001)	None of the companies uses more than 7 per cent of total information provided to deliver human resource information in annual reports.
(Bontis, 2002)	Among 10,000 annual reports examined, there is no evidence of an ICS, and only 74 counts in total were evident. Most popular term was intellectual property. Five companies used the term IC, generally in the management discussion section.
(April et al., 2003)	Mining companies tend to report on fewer IC attributes than other companies and tend to focus more on external attributes such as business collaboration and favourable contracts.
(Bozzolan et al., 2003)	External capital is the most reported category, with customers, distribution channels, business collaborations and brands most reported. Industry and size are not important in determining the content of information disclosed, but are relevant in explaining the amount of information disclosed.
(Abeysekera & Guthrie, 2004a, 2004b) and (Abeysekera, 2003)	Firms in Sri Lanka emphasise IC and have covered a wide range of IC items. No single annual report has explicitly made reference to the term IC.

Author / Year	Contributions
(Goh & Lim, 2004)	IC mostly reported in external, then internal capital and then employee competence categories. Low disclosure on patents, copyrights, trademarks, franchising agreements, know-how, and vocational qualifications. Mostly reported in qualitative terms.
(Vergauwen & van Alem, 2005)	Voluntary ICD differs significantly between French, Dutch and German companies. Differences could be explained by country-specific regulation and auditor conservatism. There is an increase of overall ICD over the period analysed.
(Vandemaele et al., 2005)	ICD increased over the observation period, but the amount of disclosure is losing its upward momentum. On average, Swedish companies disclose more than The Netherlands, and the UK.
(Boedker et al., 2005a, 2005b)	Found inconsistency between internal IC management issues and practices and external IC reporting practices. Strong emphasis on customers in disclosure in annual reports. Highest reported IC items are information systems and technology, training and education.
(Guthrie et al. 2006, 2005)	Levels of IC disclosure are low. Reporting is inconsistent, varied in nature between different companies, and mainly expressed qualitatively. On average, Australian companies disclose a greater amount of IC information than Hong Kong firms.

Analysis

Table 2.4 reveals several aspects of the current understanding of voluntary ICR practices in annual reports. In particular: inconsistencies exist between countries; differences exist between firms within countries; and the use of the term IC is almost an exception; there are no trends in the most and least frequently reported IC items or in IC categories. Furthermore, the level of IC disclosure is low, and information about IC is mainly disclosed in qualitative terms. One observation from the findings reported in Table 2.4 is a general increase in ICR in annual reports from 2000. Investigating voluntary ICR practices in annual reports of New Zealand firms will advance and/or contribute to the current understanding of voluntary ICR practices in annual reports.

2.6.4 Perceptions relating to ICR practices

Prior research into ICR practice has also been conducted by means of literature and commentary reviews; case, field and interview studies; experimental; and combined methods. The outcomes of such research are described as perceptions relating to ICR

practices in this study. Perceptions of current ICR practices are summarised in Table 2.5, and perceptions of future ICR practices in Table 2.6.

Table 2.5: Perceptions of current ICR practices

Author / Year	Perceptions
(Eccles & Mavrinac, 1995)	Investors and analysts request more reliable information on items relating to IC, such as managerial qualities, expertise, experience and integrity, customer relations and personnel competencies.
(Bontis et al., 2000)	Found evidence in Malaysian industries suggesting the relevance of human, structural and customer capital as determinants of corporate performance.
(Petty & Guthrie, 2000)	Investigate where IC information should be presented: in annual reports, press releases, or promotional material?
(van der Meer-Kooistra & Zijlstra, 2001)	None of three companies investigated intend to report for external purposes on IC. One intends to report for internal purposes. Pivotal IC components are knowledge and experience embodied in people, and the role of network relations.
(O'Regan, O'Donnell, Kennedy, Bontis, & Cleary, 2001)	Irish CEOs claim IC is becoming the key determinant of enterprise value and national economic performance.
(van der Meer-Kooistra & Zijlstra, 2001)	Financial analysts are primarily interested in flow indicators as a supplement to information presented in financial statements. They want user-friendly information that gives a transparent view of the company.
(Fincham & Roslender, 2003b)	Reporting of IC will be a problematic exercise. Linking IC reports with those of a financial nature will not be easy. The major obstacle to further progress is a collective lack of understanding about the possibilities for ICR with its business reporting associations.
(April et al., 2003)	Mining companies rate IC highly. Rate human capital highest, then internal and external capital categories.
(Bukh, 2003)	How could the value creation of intangibles and intellectual capital be disclosed?
(Holland, 2004)	Financial markets participants only employ that part of IC information that fits their valuation models. They also face problems with processing information on intangibles.

Author / Year	Perceptions
(Roslender & Fincham, 2004)	Found limited evidence to suggest IC is presently a major focus of interest in UK. Reporting IC externally is not on the agenda of any of the companies in the sample.
(Gallego & Rodriguez, 2005)	Most financial directors of Spanish firms admit IC is not sufficiently reported in financial statements, and argue IC should be reported separately from financial statements.
(Guthrie et al., 2005)	Majority of financial professionals surveyed are in favour of the accounting profession and/or regulatory authorities imposing additional ICD requirements on listed Hong Kong companies.
(Boedker et al., 2005a)	Limited understanding of how organisations manage, measure and report their knowledge resources.
(Gallego & Rodriguez, 2005)	Financial directors of Spanish firms perceive the most relevant intangible assets of their firms as: customer relationships, employee experience, information and technologies, brand image, procedures and systems.

Analysis

Table 2.5 confirms that inconsistent ICR practices are evident in annual reports. It also illustrates diverse perceptions about ICR. First, there are contradicting views as to whether IC should be reported externally and whether additional ICD requirements should be imposed. Second, some do not currently perceive ICR as a major focus of interest, while others regard ICR as an important issue and are in favour of additional disclosure of IC information. Investors and analysts, in particular, require information that gives a transparent view of a firm and also call for more reliable information about IC.

In conclusion, findings from prior research into ICR practices (in ICS as summarised in Table 2.3, in annual reports as summarised in Table 2.4, and perceptions as collated in Table 2.5), illustrate that voluntarily reporting of IC is problematic. However, Mouritsen et al. (2004) claimed:

Even if we accept that for the time being intangibles are unlikely to appear in published balance sheets, we are still left with a problem of how to report, measure and manage what are undoubtedly important value drivers in today's businesses (p. 49).

Some perceptions as to how the problem of reporting IC could be addressed are summarised in Table 2.6.

Table 2.6: Perceptions of future ICR studies

Author / Year	Perceptions
(Eccles & Mavrinac, 1995)	Investors and analysts do not see a need for increased financial reporting regulations.
(Canibano et al., 2000)	Future research should be aimed at providing a consistent basis for the development of a set of guidelines for the identification, measurement, reporting and management of value relevant intangibles.
(Lev, 2001)	There is a call for a substantial improvement in information disclosure concerning intangibles. Investors, and often managers too, are deprived of intangibles-related information.
(Guthrie, 2001)	Traditional accounting and management reporting needs re-engineering. The challenge is to establish a consensus about the need to report, what to report and how to report.
(van der Meer-Kooistra & Zijlstra, 2001)	Analysts require objectivity and reliability of information through new rules implemented in external reporting. They advocate the importance of independent external bodies, similar to auditors, who can warrant the reliability of information on IC.
(Upton, 2001)	Disclosure would allow companies to begin the identification of intangible assets and collection of information not previously captured in reporting systems.
(Lev, 2001)	The way to induce the release of meaningful information about IC is for policymakers to establish a comprehensive information standard.
(van der Meer-Kooistra & Zijlstra, 2001)	Important building blocks of an IC reporting model are to develop a broad model on a high level of aggregation that includes the various IC components, and to develop relatively few indicators that can give a comprehensive picture of the value creation capacity of IC.
(Fincham & Roslender, 2003b)	Companies, government policy makers and the accountancy profession must take action to embrace ICR. The accountancy profession must become more receptive to ideas, approaches and procedures that depart from the certainties that their traditional reliance on hard financial information produces.
(Bukh, 2003)	Information should be disclosed as an integral part of a framework illuminating the value creation processes of the firm.

Author / Year	Perceptions
(Lev & Zambon, 2003)	A holistic approach, integrating intangibles with tangible and financial assets, and considering both an interpretive and a normative perspective, has the potential to move the field forward.
(Lev & Daum, 2004)	Accounting and control systems must be expanded to enable companies to optimise, manage and report on their real value creating activities and processes. Proposes a holistic enterprise performance measurement system that describes a holistic view for enterprise control.
(Yongvanich & Guthrie, 2004)	It is important to establish generally accepted reporting framework and present a strong case for reporting IC to the public. Greater efforts still needed in researching how to report IC, and providing more evidence on what companies are reporting.
(Ordonez de Pablos, 2005)	There is a clear need to have accepted guidelines for firms willing to report their knowledge-based resources.
(Boedker et al., 2005a)	Provide practical examples illustrating how organisations manage, measure and report their knowledge resources.
(Guthrie et al., 2005)	The format used to report IC is a major challenge. Greater transparency is expected. Users of financial reports want and need more information on IC than what is currently reported voluntarily. Re-emphasise Guthrie's (2001) call for establishing a consensus about the need to report, what to report, and how to report it.

Analysis

Much of the debate about ICR presently focuses on external disclosure aspects. Perceptions summarised in Table 2.6 about how to address the problematic issues relating to ICR in future generally point to establishing guidelines for identifying and reporting IC for firms willing to report. Furthermore, the establishment of generally accepted guidelines for voluntary ICR requires consensus about what and how to report IC. Greater efforts are still needed in researching how to report IC and providing practical examples of how firms report their IC. More evidence on what firms are reporting is needed. It appears that an overall perception pertains to a quest for more disclosure of non-financial information in a structure that complements financial reports. There are calls to expand systems of reporting to enable firms to present a comprehensive picture of their value-creation capacity, activities, processes and performance. It has been suggested that a holistic picture should present

information that goes beyond traditional financial information, and that greater transparency is expected. The accounting profession must be more receptive to ideas and approaches that depart from the traditional approach of merely providing hard financial information. Such an approach would allow firms to begin to identify IC and collect information about IC that is not currently captured in their reporting system.

However, Lev and Zambon (2003) argued it would be almost irrelevant to devise a well thought-out set of common guidelines for reporting on intangibles and IC without these rules and the associated procedures being deeply rooted in organisations' internal systems. Relevant to this study, standard-setting bodies are facing the need to develop new guidelines for the recognition and reporting of IC. By examining the ICR practices revealed in New Zealand firms' annual reports, this study will contribute to establishing consensus about what and how to report IC. Practical examples of how New Zealand firms report IC and more evidence of what IC they report will be provided. These examples and evidence could be of help to standard-setting bodies and policy makers in identifying current international best practice regarding what and how IC is reported voluntarily.

2.7 Summary

This chapter illustrated why Powell (2003) claimed the issue of accounting for intangible assets is very complicated, and with the significant economic consequences that arise, that it remains one of the biggest challenges facing accounting. First, there is no common language for discussing IC. Across various disciplines, a variety of terminologies are used when referring to IC. Moreover, various definitions and classification schemas exist. The nature of IC and the difficulty with framing it further complicates the debate about how to identify it. The absence of a universal IC language coupled with problems of identifying IC makes accounting for IC complex. Second, a brief discussion of problems relating to recognising IC emphasised the importance of addressing the identification of IC. Discussions of the complexities of accounting for IC suggested that it is unlikely that this will become mandatory unless there is consensus about recognising IC as an asset.

The chapter also showed that, despite the absence of mandatory requirements for IC accounting, there is substantial evidence of voluntary ICR in the business world. The

ICS approach is widely used in European countries, while firms in many other countries voluntarily report IC information in annual reports. It appears there is a trend towards adopting the narrative approach of an ICS to communicate IC information to the public. However, there are many divergencies in reporting practices between firms and between countries. Even perceptions about current ICR practices are dissimilar. Perceptions about future ICR are to integrate firms' IC with tangible and financial assets so as to give a comprehensive picture of all the resources of a firm.

This study investigated some of the perceived challenges for future ICR research. It attended to the major challenge of establishing consensus about what and how IC is reported. It provides evidence and practical examples on what and how New Zealand firms report IC in their annual reports. The next chapter discusses the methodology, method and theory applied to investigate voluntary ICR practices in New Zealand firms' annual reports.

CHAPTER 3: METHODOLOGY, METHOD AND THEORY

3.1 Introduction

This study applied content analysis to the investigation of ICR practices in New Zealand firms' annual reports. Content analysis is an accepted method of textual investigation (Silverman, 1993), and "is potentially one of the most important research techniques in the social sciences" (Krippendorff, 2004, p. xviii). The purpose of content analysis is to provide knowledge, new insights, and a representation of "facts" (Krippendorff, 1980). The unobtrusive nature of content analysis (Clatworthy & Jones, 2001; Morris, 1994), in that the researcher is able to evaluate documents without the cognisance of the preparer of the documents, makes it well suited for investigating ICR practices in annual reports. Content analysis is empirically valid, and, although it has been less commonly used in the more conventional areas of accounting research (Gray et al., 1995b), it is one of the more widely used research methods applied in examining ICR (Guthrie et al., 2004). Many scholars conducting social and environmental reporting (SER) and corporate social reporting (CSR) research have also applied this methodology (see, for example, Gray et al., 1995b; Guthrie & Parker, 1990; Guthrie et al., 2004).

The first section in this chapter presents content analysis as a methodology and a method for researching voluntary ICR in annual reports. It illustrates that different types of content analysis could be conducted (by presenting various definitions and categories of content analysis), and introduces a debate as to whether content analysis is a qualitative or quantitative method. Thereafter some strengths, disadvantages and limitations of content analysis are mentioned. The second section attends to the inference-making process undertaken in this study. The third section deals with the theoretical line of inquiry undertaken to understand why voluntary ICR might be important to New Zealand firms.

The most up-to-date and comprehensive guidance on content analysis methodology available at the time of conducting this study was that of Krippendorff (2004). This textbook was insightful for establishing the shared views and approaches of other resources in the content analysis literature. It was also very useful for comprehending differences in some methodological issues of other content analysis accounting

studies and this analysis. Consequently, Krippendorff's approach to applying content analysis methodology is primarily relied on. The thesis therefore contains numerous references and citations from Krippendorff's 2004 *Content analysis: An introduction to its methodology*. Some references to other sources in the content analysis literature are made, either in support of the approach adopted in the thesis or to justify why Krippendorff's approach was followed.

3.2 Methodology and method

According to Krippendorff (2004), methodology is not a value in itself, but:

The purpose of methodology is to enable researchers to plan and examine critically the logic, composition, and protocols of research methods; to evaluate the performance of individual techniques; and to estimate the likelihood of particular research designs to contribute to knowledge (p. xxi).

Methodology provides a language for talking about the process of research, and not about subject matter (Krippendorff, 2004). Content analysts have had to develop a methodology that enables researchers to plan, execute, communicate, reproduce, and critically evaluate their analyses whatever the particular results. The roots of analysing symbolic and textual matter might be regarded as ancient, but today's content analysis is significantly different from that of the past, in both aim and in method (Krippendorff, 2004). Contemporary content analysis has been forced to develop a methodology of its own, because (a) content analysts now face larger contexts; (b) greater numbers of researchers need to collaborate in the pursuit of large-scale content analyses; and (c) the large volumes of electronically available data call for qualitatively different research techniques. Contemporary content analysis is an empirically grounded method. However, there is no simple right way to perform content analysis (Weber, 1990).

3.2.1 Definitions of content analysis

While these are not the only definitions available, they are selected and discussed here because of their importance in justifying the approach adopted in this research. These definitions also serve to illustrate why the particular definition adopted in this study was selected.

In the 1961 edition of the *Webster's Dictionary of the English Language*, the term content analysis is defined as:

analysis of the manifest and latent content of a body of communicate material (as a book or film) through classification, tabulation, and evaluation of its key symbols and themes in order to ascertain its meaning and probable effect (Krippendorff, 2004, p. xvii).

It appears that content analysis definitions generally describe two generic approaches to content analysis. Smith and Taffler (2000) referred to the first approach as a “form oriented” (objective analysis), and to the second approach as a “meaning oriented” (subjective analysis). Definitions of the first generic approach generally included criteria of quantification and/or manifest content. Smith and Taffler (2000) describe these definitions as a word-based content analysis approach. Berelson’s definition is often discussed (1952, cited in Holsti, 1969, p. 3; Krippendorff, 2004, p. 19 and Carney, 1972, p. 23):

Content analysis is a research technique for the objective, systematic and quantitative description of the manifest content of communication (p.18).

A fairly typical definition is that of Kerlinger (2000, cited in Wimmer & Dominick, 2003):

Content analysis is a method of studying and analysing communication in a systematic, objective, and quantitative manner for the purpose of measuring variables (p. 141).

Moreover, the Colorado State University Writing Centre (CSU) (2004) reports that one way of describing content analysis is as a research tool used to determine the presence of certain words or concepts within texts or sets of texts.

Carney (1972) and Krippendorff (2004) have criticised these kinds of definitions as they take content to be inherent in a text and also because the quantitative attribute gives content analysis a dated image of being a glorified frequency count. According to Carney, in the early days of using the technique, content analysis reflected a preoccupation with, or an excessive predilection for, counting, which limited data extraction to quantitative measurement. In addition, Krippendorff (2004) argued that quantification is not a defining criterion for content analysis and stated: “Berelson (1952) justifies his insistence on quantification largely in terms of the need to test statistical hypotheses, but all of his examples concern frequency indicators of other

phenomena – attention, emphasis, and bias” (Krippendorff, 2004, p. 182). Hence, he argued, that quantitative content analysis “simply meant that textual units had to end up being categorized or measured in numerical terms” (Krippendorff, 2004, p. 102), but that a content analysis may well result in verbal answers to a research question.

Definitions of the second generic approach focus on analysis of the underlying themes in the texts under investigation and require judgemental input when analysing meanings (Smith & Taffler, 2000). Hence, they described this approach as a theme-based methodology. According to Carney (1972), the following definition illustrates that the focus of defining content analysis between 1966 and 1969 was on the making of inferences:

Content analysis is any technique for making inferences by objectively and systematically identifying specified characteristics of messages (p. 25).

Carney argued this definition does not limit data extraction to quantitative measurement and attempts the assessment of what is “written between the lines”. The CSU (2004) too wrote that researchers quantify and analyse the presence, meanings and relationships of certain words and concepts, and then make inferences about the messages within the texts. Recent content analysis literature also postulates the making of inferences as the focus of content analysis. Smith (2003) defined content analysis as “a method that uses a set of procedures to make valid inferences from text” (p. 147), and Krippendorff (1980) described content analysis as a “research technique for making replicable and valid inferences from data according to their context” (p. 21). In 2004, Krippendorff refined his definition as follows:

Content analysis is a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use (Krippendorff, 2004, p. 18).

The centrepiece of this definition is on making inferences and “takes content to emerge in the process of a researcher analysing a text relative to a particular context” (emphasis in original p. 19). Content analysts will view and read the same text differently. Hence, the meanings of texts are relative to particular contexts, discourses, or purposes. However, Krippendorff (2004) argued:

Differences in interpretations do not preclude the possibility of agreements within particular contexts. Once content analysts have chosen the context within which they intend to make sense of a given

text, the diversity of interpretations may well be reduced to a manageable number, sometimes to one (p. 24).

The literature revealed that content analysis techniques may be applied to yield inferences from all kinds of verbal, pictorial, symbolic, and communication data such as any book, magazine, or newspaper (Krippendorff, 2004; Liu & Chen, 2005; Preston, Wright, & Young, 1996). Therefore, Krippendorff included the phrase “or other meaningful matter” in parentheses in his 2004 definition, to indicate that the word “text” does not restrict content analysis to written material. Other literature supports this view. Preston, Wright and Young (1996) stated qualities ascribed to the discursive are similar to those ascribed to the visual, and Prior (1988, cited in Preston et al., 1996, p. 131) claimed: “discourses cannot ... be restricted to the analysis of written or spoken language alone, for a discursive regime is spread across many different types of statements only some of which are linguistic” (p. 92). Moreover, Guthrie et al. (2004) acknowledged that there is scope for extending content analysis to capture pictorial information. Since visual images have become an integral part of the annual report (Hooper, Low, & Kearins, 2003), it is important to adopt a definition that will allow making inferences from both texts and visual images when investigating ICR conveyed in annual reports.

The definition of content analysis adopted in this research is Krippendorff’s 2004 definition. This definition allows both texts and visual images to be included in making inferences about the meanings of messages conveyed in annual reports, in the context of the IC theme.

3.2.2 Categories of content analysis

Scholars used a variety of categories to describe the growing diversity of research techniques used under the umbrella of content analysis. The classification offered by Janis (1943/1965) (cited in Krippendorff, 1980; Krippendorff, 2004) is common and adequate for the discussion in this study. To clarify the procedures of the three classifications discussed below, Krippendorff’s (2004) illustrative examples of examining the presentation of Germany in a document are used:

1. *Pragmatical content analysis*. The procedures of a pragmatical content analysis classify signs according to their probable causes or effects. For example: “counting the number of times that something is said which is likely to have the

effect of producing favourable attitudes toward Germany in a given audience” (p. 45).

2. *Semantical content analysis*. The procedures of a semantical content analysis classify signs according to their meanings. Semantical content analysis is about the meanings of words and images (Ahuvia, 2001) and classifies content in the annual reports according to their meanings (Abeysekera, 2003). Krippendorff’s explanation with reference to Germany is: “counting the number of times that Germany is referred to, irrespective of the particular words that may be used to make the reference” (p. 45). Semantical content analysis has three categories:

a) *Designations analysis*, which provides the frequency with which certain *objects*, such as persons, things, groups, or concepts, are *referred to*. Thus roughly speaking, designations analysis is a subject-matter analysis, for example analysing references to German foreign policy.

b) *Attribution analysis*. This type of analysis provides the frequency with which certain *characterisations* are referred to, for example analysing references to dishonesty.

c) *Assertions analysis*, providing the frequency with which certain *objects* are *characterised in a particular way*. Thus roughly speaking, assertions analysis is thematic analysis, for example analysing references to German foreign policy as dishonest.

3. *Sign-vehicle analysis*. The procedures of sign-vehicle analysis classify content according to the psychophysical properties of the signs. For example counting the number of times the word “Germany” appears.

The aim of the content analysis conducted in this research was to classify “signs” according to their meanings, hence it is categorised as a semantical content analysis. Furthermore, the aim was to determine the frequency with which objects (that is IC concepts) are referred to. Hence, this content analysis is classified as a designations semantical content analysis.

3.2.3 Qualitative and quantitative content analysis

The literature revealed different views about whether content analysis is a qualitative or quantitative method (Holsti, 1969; Krippendorff, 2004; Silverman, 1993). Both

descriptions have been criticised. Labelling content analysis as “qualitative” is “somewhat misleading because data coded in this manner may be presented quantitatively” (Holsti, 1969, p. 121). Moreover, describing it as a quantitative method restricts content analysis to numerical counting exercises (Krippendorff, 2004). Furthermore, the literature questions the usefulness of distinguishing between quantitative and qualitative content analysis and claims quantitative and qualitative assessments are not seen to be opposing anymore, but are complementary (Carney, 1972; Krippendorff, 2004). For the analysis of texts, both are indispensable. “Ultimately, all reading of texts is qualitative, even when certain characteristics of a text are later converted into numbers” (Krippendorff, 2004, p. 16).

In view of the above discussion, the content analysis conducted in this study is described as both a quantitative and a qualitative assessment. It is qualitative as the researcher draws inferences about the meanings of messages conveyed through texts and visual images in annual reports, in the context of IC. It is quantitative as every inference made about ICR is counted and the results quantified as frequencies.

3.2.4 Strengths and advantages of content analysis

The main strength of content analysis is that: “It provides a means for quantifying the contents of a text, and it does so by using a method that is clear and, in principle, repeatable by other researchers” (Denscombe, 1998, p. 168). Carney (1972) mentioned two advantages of content analysis for experienced content analysts. First, familiarity with content analysis as a technique widens the range of the questions that can be asked, and second, those familiar with content analysis can be much more clear-headed about drawing inferences. The analyst’s logic of inference can be taken into account right from the time the analysis is constructed. The third advantage mentioned by Carney (1972) is that content analyses result in “sureness about facts”. There is sureness about facts because a content analyst adopts an investigative frame of mind. When an analyst adopts this frame of mind the analyst simply records details, each in itself too insignificant for the analyst to see and therefore be biased by its meaning. Only once the analyst has all the facts, then it is possible to see which are emphasised most, which least; and only when all the facts are in can the analyst see what is *not* there.

According to the CSU (2004), some advantages that content analysis offers are that it: looks directly at communication via texts; can allow for both quantitative and qualitative operations; can be used to interpret texts; is an unobtrusive means of analysing interactions, and provides insight into complex models of human thought and language use.

This study benefited from a few of the advantages considered here. The definition of content analysis adopted allowed the application of both quantitative and qualitative operations in making inferences about the meanings of information communicated through text and visual images in the context of IC. Since the researcher had an investigative frame of mind, this study's results present "sureness of facts" of voluntary ICR practice in New Zealand firms' annual reports.

3.2.5 Disadvantages and limitations of content analysis

According to the CSU (2004), content analysis is often devoid of theoretical base, or attempts too liberally to draw meaningful inferences about the relationships and impacts implied in a study, and is inherently reductive, particularly when dealing with complex texts. However, texts in annual reports dealt with in this study are not considered as being complex in the context of their uses. Firms use annual reports commonly as a mechanism to communicate information to stakeholders. Generally firms' stakeholders have the ability to read information conveyed in annual reports and are not limited to a selected group of language experts. Thus, even though the making of inferences about IC information conveyed in annual reports could be challenging, the expertise of language experts is not necessarily required for making inferences about ICR. Researchers qualified in the accounting field should generally be competent to make inferences about IC. This study did not use a language expert to assist with reading the texts and making inferences.

Some disadvantages are referred to as being inevitable. When human coding systems are used, content analysis is expensive (Morris, 1994; Wimmer & Dominick, 2003) and labour-intensive (Abrahamson & Amir, 1996; Gray et al., 1995b). It can be extremely time consuming (Abrahamson & Amir, 1996; CSU, 2004), and can be difficult to automate or computerise (CSU, 2004).

In addition, according to Carney (1972), the materials on which content analysis must work tell only part of the story behind them. He claimed that content analysis is limited by the following constraints:

- Content analysis will produce data in answer to a question, but it will not produce the question. The technique makes a question “operational”, in other words, capable of being tested in some way that will show whether the data do or do not support a question.
- Content analysis is an art, but it cannot be better than the craftsman who employs it. Thus, the more the content analyst knows about the subject, about the written materials, and about content analysis itself, the better the investigation.
- Content analysis cannot always be used as a research technique. For example when the materials involved are too flimsy or unrepresentative for analysis to have a chance of producing valid results. If the sample is unsound, the findings will be too, however skilfully they are produced.

This research’s approach of managing the second point mentioned above is elaborated in Chapter 7 (see section 7.8). The other two points raised above were not limitations to this study. First, it was not intended to produce a research question from doing the content analysis, but to answer the two research questions posed in Chapter 1 (see section 1.3.3). Second, many other ICR scholars have demonstrated that content analysis is an appropriate technique for investigating voluntarily ICR disclosures in annual reports (see for example Abeysekera, 2003; April et al., 2003; Bozzolan et al., 2003; Brennan, 2001; Guthrie & Petty, 2000; Liu & Chen, 2005).

Moreover, a main limitation of content analysis is that it has an in-built tendency to dislocate the units and their meaning from the context in which they were made, and even the intentions of the writer (CSU, 2004; Denscombe, 1998). This study’s approach to managing the making of inferences in the context of IC is elucidated next.

3.3 Process of making inferences

The reason researchers engage in content analysis rather than in some other kind of investigative method is to recognise meanings (Krippendorff, 2004). Content analysis

could therefore be characterised as a method of inquiry into symbolic meaning of messages. Content analysts do not employ other empirical techniques, but “examine texts such as data, printed matter, images, or sounds in order to understand what they mean to people, what they enable or prevent, and what the information conveyed by them does” (Krippendorff, 2004, p. xviii). The nature of text demands that content analysts draw specific inferences from a body of text to their chosen context. These inferences are based on interpretations of messages’ meanings. Data is viewed as representations “of texts, images, and expressions that are created to be seen, read, interpreted, and acted on for their meanings” (Krippendorff, 2004, p. xiii). More specifically, data is viewed as re-presentations (with a hyphen) so that data does not get confused with picture-like representations.

There is a contention that “content analysis is nothing more than what everyone does when reading a newspaper, except on a larger scale” (Krippendorff, 2004, p. xxi). Holsti (1969) wrote: “nearly all research in the social sciences and humanities depends in one way or another on careful reading of written material” (p. 2). Sless (1981) added: “pictures are associated with seeing and are sensory and the observer simply absorbs the information” (p. 74). However, according to Krippendorff this narrow definition is no longer sufficient today.

As newspaper readers, we are perfectly justified in applying our individual worldviews to texts and enacting our interest in what those texts mean to us. But as content analysis researchers, we must do our best to explicate what we are doing and describe how we derive our judgements, so that others – especially our critics – can replicate our results (Krippendorff, 2004, p. xxi).

To enhance the replicability of this study’s inference-making, the remainder of this section explicates how judgements about ICR were derived. Several aspects of how inferences were made are discussed.

3.3.1 What is inferred?

Inferences could also be made about the sender(s) of messages, the message itself, or the audience of the message (Smith, 2003; Weber, 1990). Making inferences about the sender(s) or the audience of the message relates to the area of impression management. Considerable research has been done to establish the use of impression management in annual reports (Aerts, 2005; Stanton, Stanton, & Pires, 2004).

“The term impression management is an umbrella term within which are found several research traditions concerned with how individuals present themselves and respond to the presentations of others” (Metts & Grohskopf, 2003, p. 358). On the one hand, impression management considers whether management is neutral in its presentation in accounting narratives (Sydserff & Weetman, 1999), and is “the process by which individuals attempt to control the impressions others form of them” (Sydserff & Weetman, 2002, p. 526). The terms self-presentation and strategic self-presentations stem from the early work in psychology and social psychology. These research areas were interested in how the motivations of the “inner” or “private” self are strategically manifested and monitored in public displays. Hence the term impression management “came to be associated with the production of coherent sets of behaviours that would lead others to infer a corresponding private self that may or may not exist” (Metts & Grohskopf, 2003, p. 358).

On the other hand, impression management is an area where meanings are analysed from the perspective of managing readers’ impressions. According to Schlenker and Britt (2004): “Impression management refers to the goal-directed activity of influencing the impressions that audiences form of some person, group, object, or event” (p. 258). They claimed that images could sometimes be false, as they usually represent a “packaged” or edited interpretation of available information that aims to accomplish a goal while remaining reasonable faithful to the evidence.

In this content analysis study, inferences were not made about the senders of messages or the audience of messages. Thus, the area of impression management was beyond the scope of this research. Instead, inferences were made about the messages conveyed through texts and visuals, thus the message itself. More specifically, inferences were made about the message content and not the way in which messages were presented. For example, issues relating to the way in which texts are presented, such as fonts, font styles, font sizes, and colours were ignored. Also, issues relating to the way in which pictures are presented such as size, style, colour or black and white pictures were ignored. Furthermore, issues that relate to images re-presented in pictures, such as whether pictures present images of happy or sad employees, or images relating to customers, such as gender, were ignored. The photograph has an assumed ability to “capture reality” (Preston et al., 1996). Hence, in this study,

inferences about the content of messages conveyed through pictures are made, based on the “reality” seen in a picture.

3.3.2 Perspective of making inferences

To analyse texts and visual images as re-presentations is to “analyse the conceptual structure that a text [and a visual image] invokes in particular readers, the worlds they can imagine, make into their own, and consider real” (Krippendorff, 2004, pp. 62-63). Communications such as texts, messages, and symbols never speak for themselves, but inform their recipients, invoke feelings, cause behavioural changes, or lead to responses of various kinds. Meanings of texts speak to something other than the given texts. “Since meanings exist in people, and people may understand the same text in different ways, researchers face an important issue; whose understanding of the text should be used as the basis for coding?” (Ahuvia, 2001, p. 144) He suggested three possibilities: text’s authors, text’s natural readers, and researchers. In this research, inferences were made from the researcher’s perspective.

3.3.3 Manifest versus latent content and meanings

The aim of early content analysis research was to describe manifest content (Carney, 1972), and has usually been limited to the manifest characteristics of text such as the number of occurrences of words, or the number of words relating to particular themes (Smith, 2003). Restricting content analysis to manifest content is a straightforward, non-interpretive, compounding, semi-clerical recording operation, which a computer can do fast and with accurate extraction (Carney, 1972). However, restricting content analytic procedures to manifest content alone would be of very limited value (Weber, 1990). The validity of analysis of manifest content has been challenged, as “it runs counter to the ways in which people ordinarily interpret content and construct meaning” (Graber, 1989, p. 144). Manifest content implies that there is something inherent to text, but texts and visual images have no objective qualities, which means they are reader-dependent (Krippendorff, 2004). Someone always brings the meanings of a text to it. Without a reader, a text does not exist, without an interpreter, a message does not exist, without an observer, data do not exist.

The focus of recent content analysis research is to interpret the meanings of messages in ways that go beyond the manifest content (Ahuvia, 2001; Graber, 1989), because meaning may reside in absence as much as presence (Burgin, 1982c cited by Preston

et al. 1996). Content analysis rests on the belief that it is possible to go beyond the most straightforward denotative elements in a text, and to infer valid hidden or underlying meanings of interest to the investigator (Ahuvia, 2001; Smith, 2003). Content analysis is, in many ways, a rather crude instrument for dealing with the subtle and intricate ways in which a text conveys meanings (Denscombe, 1998), and

has the potential to disclose many 'hidden' aspects of what is being communicated through the written text. ...The text carries some clues about a deeper rooted and possibly unintentional message that is actually being communicated (p. 168).

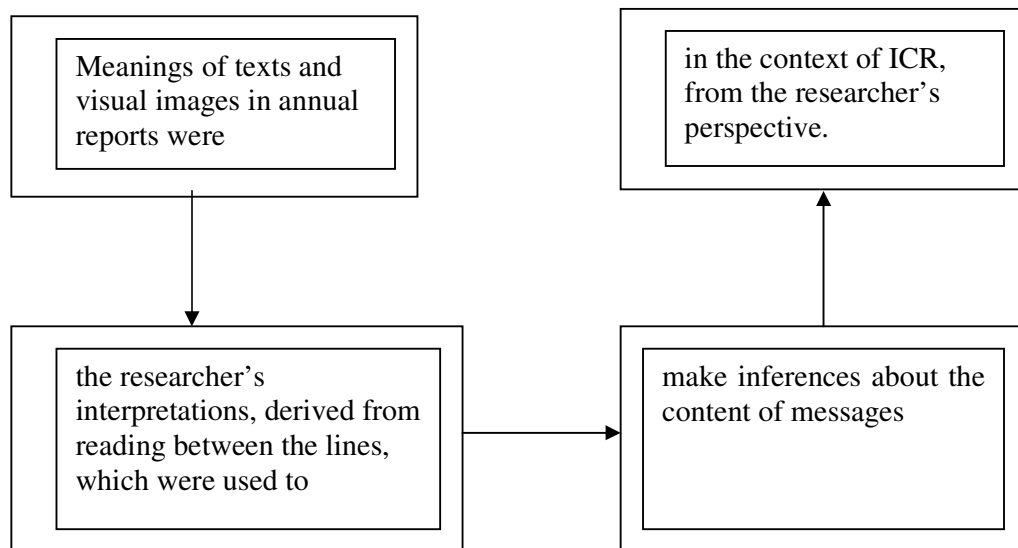
Determining the underlying meanings of hidden messages conveyed in narratives requires user judgement (Smith, 2003), and “reading between the lines” (Carney, 1972). Reading between the lines implies that meanings are “derived from the setting in which the message was expressed, the symbols and connotations embedded in the message, and the experiences of message senders and receivers” (Graber, 1989, p. 144). Thus, reading between the lines will enable an analyst to deal with communications that are very complicated, disingenuous or nebulous. Graber (1989) referred to meanings derived from reading between the lines as latent⁹ meanings, and claimed that such inferences are derived from latent content. The inference-making process is described as being subjective (Unerman, 2000), and that it involves compounding one act of subjective judgements with another (Graber, 1989). Subjective interpretations are required because messages “mean so many different things to diverse perceivers that meaning is totally subjective. The meaning intended by the producer of the message may differ markedly from the meaning perceived by researchers who look for specific content features” (Graber, 1989, pp. 150 - 151). According to Ahuvia (2001), “there is no reason why different readers should agree on the meaning of a text” (p. 147). Moreover, it does not matter how careful the researchers are:

⁹ She used the message: “Astronauts have landed on the moon” to illustrate what latent meaning means. The message itself denotes the event, thus the setting. A symbol embedded in the message is that human science has triumphed. Connotations may range from visions of scientific breakthroughs to the mortification that one has lost a bet that moon landings were impossible. She also claimed that social scientists must improve content analysis techniques so that latent message content can be analysed more systematically.

content analysis is partly an art and depends on the judgement and interpretation of the investigator. ‘Texts do not speak for themselves ... The investigator must do the speaking’ (Weber, 1990, p. 80).

Chapter 2 illustrated that descriptions, definitions and identifications of IC are complicated and nebulous. This suggests that describing manifest content of ICR communicated in annual reports is inappropriate. Illustrations of challenges pertaining to ambiguous meanings and subjective interpretations in Chapter 7 (see sections 7.3 to 7.5) show that, in the context of IC, communications in annual reports cannot be taken at their face meaning. Hence, in this study, the meanings of messages conveyed through texts and visual images were interpreted by “reading between the lines”. The inferred meanings are the researcher’s interpretations of the subjective reality of ICR re-presented in the sampled annual reports. This reality is subjective because it not “the truth”, but only “a truth” of ICR re-presentations, as “there is no single truth” (Graber, 1989, p. 148). Figure 3.1 summarises the process of making inferences undertaken in this research.

Figure 3.1: Process of making inferences



In sum, this content analysis study’s process of making inferences is as follows: the meanings of messages’ content, communicated through texts and visuals in annual reports, were inferred in the context of the IC phenomenon. Meanings inferred are the researcher’s interpretations, which were derived from “reading between the lines”.

3.4 Theory

It appears that there still exists no universally accepted theoretical framework for ICR in the accounting field or of IC accounting. Several accounting researchers have begun to articulate different theoretical perspectives that might explain why firms choose to voluntarily report on their IC. Among others, the political economy of accounting theory (Abeysekera, 2003), agency and signalling theories (Bozzolan et al., 2003), legitimacy and stakeholders theories (Guthrie & Petty, 2000; Guthrie et al., 2005; Guthrie et al., 2004), classical political economy (Guthrie & Petty, 2000), and institutional theories (Guthrie & Petty, 2000; Guthrie et al., 2005) have been suggested. Depoers (2000) stated that agency theory has been the most extensively applied theoretical framework to explain why firms are providing more information than what is mandatory. However, according to Guthrie et al. (2004) legitimacy theory is a better known theoretical line of inquiry that has “profited from the application of content analysis as an approach to data collection and analysis” (p. 283). “Legitimacy theory is closely tied to the reporting of intellectual capital and to the use of content analysis methods as a measure of such reporting. Legitimacy theory, IC and content analysis are intertwined” (Guthrie et al., 2004, p. 285). Many authors have adopted legitimacy theory to explain the practice of corporate social reporting (CSR) (Deegan & Gordon, 1996; Deegan & Rankin, 1996; Deegan, Rankin, & Tobin, 2002; Guthrie & Parker, 1989; Patten, 1991, 1992).

Firms could incur significant costs in order to disclose IC information voluntarily. From an economic standpoint, voluntary disclosure can only be justified if the advantages which are granted outweigh the disadvantages (Depoers, 2000). Firms are more likely to voluntarily report if they have incentives to do so (Depoers, 2000; Guthrie et al., 2006). According to Abeysekera and Guthrie (2004a), past research on voluntary SER has indicated that companies initiate such voluntary reporting for legitimacy reasons. Similarly, it could be argued that firms have incentives to provide voluntary IC information, and hence would voluntarily report for legitimacy reasons. Also, the advantages that firms may derive from disclosing IC information voluntarily would outweigh the disadvantages. Hence, legitimacy theory was chosen to understand why voluntary ICR might be important to New Zealand firms, and hence worth investigating.

“Legitimacy theory relies on the notion that there is a “social contract” between an organisation and the society in which it operates” (Deegan & Samkin, 2001; Guthrie et al., 2006, p. 256). The “social contract” is used to represent the multitude of implicit and explicit expectations that society has about how an organisation should conduct its operations. These societal expectations may change over time as they are not fixed. Legitimacy theory is “a generalized perception or assumption that the actions of any entity are desirable, proper, or appropriate within some socially constructed system of norms, values, belief and definitions” (Suchman, 1995 cited by Guthrie et al., 2005). Legitimacy theory posits that organisations continually seek to ensure that they act, or at least appear to act, “within the bounds and norms of their respective societies” (Deegan et al., 2002; Deegan & Samkin, 2001; Guthrie et al., 2006, p. 256).

Following a legitimacy theory perspective, organisations must continually appear to be operating in a manner that is consistent with societal values (Guthrie & Parker, 1989, 1990). This is often achieved through the medium of company reports (Guthrie et al., 2006). From the perspective of legitimacy theory, firms would voluntarily report on activities if management perceived that the particular activities were expected by the communities in which it operates (Guthrie et al., 2005, 2006). Annual reports are a key communication tool used to legitimise corporate activity (Lang & Lundholm, 1993). The change in annual reports from communicating mainly financial information to including many graphs and illustrations such as glossy, colourful pictures nowadays gives management an opportunity to voluntarily report. Narratives in accounting reports are one of the means by which management can legitimise the company’s activities and outcomes (Aerts, 1994). Thus, narratives enable management to use annual reports strategically to set their own un-audited financial reporting agenda. “Effective communication via narrative components can influence actions taken by shareholders” (Kohut & Segars, 1992). One agenda could be to influence shareholders’ actions in favour of a firm. Assuming that society expects firms to report on their IC activities, firms could use annual reports strategically to report information about IC and hence influence shareholders’ actions. Other general assumptions that could explain voluntary reporting of activities and information that relate to IC are: communities expect firms to be involved in activities other than those relating to physical and financial capital; and management perceives

communities to expect disclosure of information about such activities. It can be assumed that society expects firms to be transparent about all their activities that contribute to firms' value creation processes. From a legitimacy theoretical perspective it could be argued that voluntary ICR is an incentive to ensure that outside parties perceive their activities as being "legitimate". Failure to act in accordance with the social contract is interpreted as being detrimental to the ongoing operations of a firm (Deegan et al., 2002).

Another incentive could be that firms voluntarily report to combat perceptions that their legitimacy is in question. Lindblom (1994, as cited by Guthrie et al., 2006; Guthrie et al., 2004) proposes a number of combative strategies if an organisation observes that its legitimacy is in doubt. A firm can seek to educate and inform its stakeholders about changes in the organisation's activities and performance; seek to change or manipulate perceptions of the stakeholders; and seek to change and influence external expectations of its performance. According to Lindblom, organisations may use public disclosures of information to implement these strategies, to demonstrate management's concerns for societal values, or to divert community attention from the prevailing negative impact of the organisation's activities. Depoers (2000) too reported to have found that managers make strategic disclosure decisions. It could be argued that reporting of IC is a strategy to focus attention on a firm and legitimise its status (Guthrie et al., 2005). Firms are more likely to report on their IC if they feel it will legitimise their status within certain groups. The extent to which firms voluntarily report their IC information may be a proxy measure of how important firms consider IC as a means of establishing their status in the business community and with their relevant public (Dowling & Pfeffer, 1975 cited by Guthrie et al., 2005).

It could also be assumed that, similar to social and environmental (SEA) studies, that there is public pressure to disclose IC information voluntarily. Guthrie et al. (2005; 2004) cited a number of SEA studies that have "examined voluntary annual report disclosures and viewed the reporting of social and environmental information as a method that organisations used to respond to public pressure" (Guthrie et al., 2006, p. 257).

Since organisational legitimacy is important in ensuring continued inflows of capital, labour and customers (Pfeffer & Salancik, 1978 cited by Guthrie et al. 2005), firms

could voluntarily disclose information about their IC resources as a means of attracting investors, employees and customers. A growing number of companies have recognised annual reports' potential as a strategic marketing tool (Hooper et al., 2003). "Executives use [annual reports] as calling cards, salesmen as credentials [and] personnel departments as recruiting tools" (Preston et al., 1996, p. 114). "In the design and advertising literature, annual reports are frequently referred to as marketing tools and as a means of communicating a particular image or message" (Preston et al., 1996, p. 116). Sridhar (2000) wrote: "There is a strong urge to communicate more than mere numbers. There is a realisation that every piece of communication from the corporation goes to build image" (p.1). From this perspective, IC information could be reported strategically to convey a message that will strengthen a particular image or meet the assumed purpose of using annual reports as a particular marketing tool. Preston et al. (1996) reported about suggestions being made to a graphic designer in producing an annual report to employ "images that gave a sense of the company's philosophy and values" (p. 114). They also suggested that annual reports could be a visual medium through which corporations may seek to create and manage their images. By disclosing information, for example about human capital, firms could convey messages that they acknowledge people as important value drivers. This could portray an image that firms do value and respect their employees. Thus, voluntary ICR could be a tool to recruit and also to retain firms' employees.

It could also be argued that firms use annual reports to meet society's diverse assumed expectations about IC information. "The annual report has to be all things to all people" (Simpson, 1997, p. 17). From a legitimacy theoretical perspective firms would disclose wide ranges of IC information and present it in a variety of ways. By doing this, firms could portray a variety of images simultaneously and hence portray themselves as legitimate to society at large.

Prior research suggested that firms are aware of the benefits that may derive from voluntary disclosure, and hence that they do acknowledge the social values in annual reports. For example, Simpson (1997) reported on a company secretary stating that "he always grapples with the degree to which an annual report is informative and how much it is simply public relations" (p. 16) The company secretary remarked that his firm has been trying to show more and more of the total picture. "We put in a lot of

effort because we believe it's necessary. We want to be transparent and open, and this is one of the main vehicles we use to show what we're doing" (Simpson, 1997, p. 16).

In sum, it is clear from the discussions in Chapters 1 and 2 that IC is an important value driver and key in the value creation process. Hence, it could be argued that "relevant publics" expect firms to disclose information about these value drivers. Firms voluntarily report IC information to inform and educate annual report users about firms' value drivers and how IC contributes in a value creation process. They are attempting to legitimise their "actions" and activities, by showing what creates value. From a legitimacy theory perspective one incentive to disclose IC information voluntarily is to meet diverse societal expectations according to an assumed social contract. Other motivations could be as follows: because firms are opposing perceptions that their legitimacy is in question; that they are responding to public pressure; and that they convey images that would attract investors, employees and customers. These incentives suggest that voluntary ICR could be a strategy to illustrate that firms are legitimate. It was therefore assumed that advantages that may derive from voluntary ICR exceed disadvantages as well as significant costs that could be incurred for such reporting. From a legitimacy theory perspective, it seems that ICR is an important part of firms legitimising themselves to society and stakeholders. Therefore, the legitimacy theory was considered appropriate to explain what and how New Zealand firms voluntarily report IC information in annual reports.

3.5 Summary

This chapter presented content analysis methodology as a method to research voluntarily ICR in New Zealand firms' annual reports. The chapter discussed various definitions and categories of content analysis and the different types of content analysis that could be conducted. These discussions indicated that several methodological issues could be applied in different ways, all of which influence results and findings, and could be problematic for making meaningful comparisons between ICR studies. Therefore, the possibility of applying the methodology inconsistently stresses the importance of explicating crucial methodological applications, as a means to enhance replicability and hence make ICR studies' results comparable.

The definition of content analysis adopted in this study allows both texts and visual images to be analysed and interpreted in the context of IC. The type of content analysis performed in this study was described as being both qualitative and quantitative, and classified as a semantical content analysis. More specifically, a designations semantical content analysis was conducted, as this research was concerned with determining the frequency with which objects, in particular IC concepts, were referred to in annual reports. The process of inference making, which requires “reading between the lines”, was described as follows: the content of messages was inferred, from the researcher’s perspective, based on the researcher’s interpretations of meanings of texts and visuals communicated in annual reports, in the context of the IC phenomenon.

The chapter also considered some strengths, disadvantages and limitations of content analysis methodology. Furthermore, it justified why the legitimacy theory was selected to understand why voluntary ICR might be important to New Zealand firms. The next chapter builds on this one, and presents content analysis as a technique to analyse data.

CHAPTER 4: DATA ANALYSIS

4.1 Introduction

“Content analysis is an unobtrusive technique that allows researchers to analyse relatively unstructured data in view of the meanings, symbolic qualities, and expressive contents they have” (Krippendorff, 2004, p. 17). This chapter presents generic discussions of the application of content analysis methodology as a technique for analysing data, when applied to ICR research specifically. Some of this research’s application of methodological issues is explained.

First, unitising is discussed. Second, different kinds and uses of quantities, and different forms of counting are considered. This section also defines the meaning of “frequencies”. Then some methodological issues relating to the recording and coding process are discussed, followed by the technique to analyse and represent results.

4.2 Unitising

Unitising is also referred to as unit(s) of analysis, and is described as one of the smallest, yet one of the most important elements of content analysis (Wimmer & Dominick, 2003), because it may affect an analysis (Holsti, 1969). “Units are wholes that analysts distinguish and treat as independent elements” (Krippendorff, 2004, p. 97). Uniformity is achieved by unitising, as unitising allows the most diverse literary texts to be processed in the same way (Carney, 1972). According to Carney, unitising allows any form of communication to be broken down into uniformly computable pieces.

The literature reveals somewhat dissimilar views about what unitising entails. Carney (1972) claimed: “unitising involves counting, by recording units, context units and categories” (p. 39). However, others made no reference to “counting” when discussing unitising (Holsti, 1969; Krippendorff, 1980), and referred to “counting” as a mere computational process that takes place after the data-making process (Krippendorff, 2004). Moreover, some authors described multiple units when discussing unitising (Carney, 1972; Holsti, 1969; Krippendorff, 2004), while others made no reference to multiple units but merely referred to unitising as if it engages a

singular unit of analysis (see, for example, Gray et al., 1995b; Guthrie et al., 2004; Wimmer & Dominick, 2003).

Generic discussions of three different units of analysis and their different functions follow. The processes of selecting the most appropriate units for this study are discussed in Chapter 6 (see sections 6.5.3 to 6.5.4).

4.2.1 Sampling unit

Sampling units are: “those parts of observed reality that are regarded as independent of each other” (Krippendorff, 1980, p. 57). Sampling units tend to have physically identifiable boundaries, a definite beginning and a definite end. Sampling units are typically distinguished for inclusion in, or exclusion from, an analysis in a way that acknowledges their natural boundaries. Thus, sampling units are “units that are distinguished for selective inclusion in an analysis” (Krippendorff, 2004, p. 99), and are mutually exclusive.

The ICR-content-analysis-literature revealed consistency in the selection of sampling units of prior studies. Many ICR studies selected annual reports as sampling units (Abeysekera, 2003; April et al., 2003; Bozzolan et al., 2003; Brennan, 2001; Guthrie & Petty, 2000; Liu & Chen, 2005). Similarly, the sampling units selected for this study are annual reports.

4.2.2 Recording unit

Generally, recording units are described as specific segments of content that are distinguished for separate description, transcription, recording, or coding, classification and categorising (Holsti, 1969; Krippendorff, 2004; Weber, 1990). Carney (1972) described recording units as “the things to be counted” (p. 39). Many different segments of content in a sampling unit are appropriate recording units. Carney (1972), Weber (1990) and Holsti (1969) suggested the following possibilities specifically for selecting recording units.

- The smallest is a single entity, generally the *single word* or *symbol* or *phrase*. This unit is generally used in content analysis research, but has in the past been avoided in mass media research involving a large volume of data. The term “word” is taken to indicate semantically equivalent textual units, including word synonyms, idioms and phrases (Weber, 1990).

- *Sentences* are coded when the investigator is interested in words or phrases that occur closely together (Weber, 1990).
- *Paragraphs* reduces the effort required, and will be used when computer assistance is not feasible and when resources for human coding are limited (Weber, 1990). Holsti (1969) stated grammatical units such as sentences or paragraphs do not usually lend themselves to classification into a single category, and hence have rarely been used in the past as recording units.
- The *theme* is described as a single assertion about some subject. The term “theme” is taken to mean clusters of words with different meanings or connotations that, taken together, refer to some theme or issue (Weber, 1990). The theme is the most useful unit of content analysis, and is almost indispensable in research on propaganda, values, attitudes, beliefs, and the like (Holsti, 1969). However, coding themes is usually time consuming. Themes’ boundaries are not as easily identified as those of words, paragraphs, or items.
- All three authors suggested that studies in fiction, drama, movies, radio, and other forms of entertainment materials have employed the *character* as the recording unit. Character is used in the context of attitude, skill or trait, or referring to a specific person or stereotype.
- *Whole text* is used as a recording unit when the text is short such as newspaper headlines and editorials (Weber, 1990), but it is difficult to achieve high reliability when whole texts are used as a recording unit.
- The *item* when the entire article, film, book or radio program is characterised (Holsti, 1969). However, “item is too gross for most research and may present problems when items fall between two categories” (p. 117).
- *Interactions* which can be regarded as a complex whole (Carney, 1972). When an interaction unit is used, the analyst focuses on the flow of interactions between people, rather than on actual objects (such as words), or blocs of thought (such as themes).

The three authors are silent as to whether the above list could be used as possibilities for selecting context units. Among the three authors Carney (1972) is the only one who stated that context units may comprise a sentence and a paragraph. However, Wimmer and Dominick's (2003) and Krippendorff's (2004) discussions of unitising are interpreted as suggesting that the above items are possibilities for selecting recording units as well as context units. For example, Wimmer and Dominick (2003) stated: "the unit of analysis might be a single word or symbol, a theme, or an entire article or story" (p. 148). According to Krippendorff (2004), single words, longer text segments, photographic images, minutes of video recordings, scenes in fictional television programmes, Web pages, utterances, and distinct experiences may be units. In fact, he stated, anything that could have distinct meanings to an analyst, could be a unit. "The choice of units is always dictated by the purpose of an analysis" (Krippendorff, 2004, p. 108). Therefore, in this research the above list was regarded as containing possibilities for selecting recording as well as context units.

4.2.3 Context unit

Content analysis literature claims context units are essential in classifying a recording unit (Carney, 1972; Holsti, 1969; Krippendorff, 2004; 1980). Holsti (1969) warned that inferences could not be made solely on the basis of a specific word appearing in the communication. The appearance of the word should be analysed in the context unit. Context units are described as the largest body of content that may be searched to characterize a recording unit" (Holsti, 1969, p. 118), as "the passages in which the recording units are set, the contexts which define their meaning" (Carney, 1972, p. 39), and as "units of textual matter that set limits on the information to be considered in the description of recording units" (Krippendorff, 2004, p. 101). Thus context units are units that delineate the scope of information that coders need to consult to establish the precise meaning of the recording unit.

For counting purposes, the context units have to be specified, and must relate in size to the size of the recording unit concerned (Carney, 1972). For example, when a word is the recording unit, the context unit may comprise a sentence, and when a theme is the recording unit, the context unit may comprise a paragraph, or a page, or a chapter. "Sentences are the minimal context units for individual words, but sentences may not be enough" (Krippendorff, 2004, p. 101), and often a few sentences preceding or

following a particular word have to be examined. Consequently, larger context units yield more specific and semantically more adequate accounts of recording units than do smaller context units. According to Krippendorff, the best content analyses define their context units as large as is meaningful (adding to their validity) and as small as is feasible (adding to their reliability). Table 4.1 summarises the functions and purposes of the three units of analysis relevant to this research.

Table 4.1: Functions and purposes of units of analysis

Units	Functions and purposes
Sampling	Unit of <i>selection</i> and may provide an analyst with the basis for judging the statistical representativeness of data.
Recording	Units of <i>description</i> that collectively bear the information that content analysts process, and provide the basis for statistical accounts.
Context	Units that <i>delineate the scope</i> of information that coders need to consult in characterising the recording units.

The next section discusses a methodological issue that appears to have been applied inconsistently in ICR content analysis studies: quantities and counting.

4.3 Quantities and counting

Quantities and counting are important methodological issues in both the data-generating process, and in determining a study's results. According to Wimmer and Dominick (2003), quantification is important as it aids researchers in the quest for accurate re-presentation, by allowing researchers to summarise results and to report them succinctly. Furthermore, it gives researchers additional statistical tools that can aid in interpretation and analysis. Applying similar kinds of quantities and forms of counting are important for interpreting and analysing results of ICR content analysis studies. The remainder of this section explicates the different kinds and uses of quantities and the different forms of counting that could be applied in ICR content analysis studies. The quantities and counting applied in this research are also explicated.

4.3.1 Different kinds and uses of quantities

Three different kinds and uses of quantities are considered here. Examples used in this discussion are those from pages 102 and 103 in Krippendorff's 2004.

- Quantities of a *descriptive* nature are for example a newspaper's circulation figures or a television show's Nielsen ratings. In both examples the quantities are *descriptive* of the *recording units* that happen to coincide with sampling units. Quantities of a descriptive nature are extraneous to, but associated with, sampling units and are useful in, for example, selecting a sample but "the difference of describing units in numbers or in categories is not important methodologically" (Krippendorff, 2004, p. 102).
- Quantities that measure a recording unit are for example the size of photographs, the column centimetres of an article, or the length of a speech, or enumerate something contained in a recording unit. These kinds of quantities are also *descriptive* of the *recording units* (Krippendorff, 2004). It appears that Holsti (1969) described these kinds of quantities as measures of space (he uses the example of column inches), and of time (he uses the example of the length of a speech) employed by many early content analysis studies.
- Quantities also result from the counting of recording units, and "express the *sizes or magnitudes of classes of units*, whether they are expressed relative to a sample, or within a hierarchy of recording units" (Krippendorff, 2004, p. 103). According to Krippendorff, these kinds of quantities are of no concern during the coding process, as they emerge only after the analyst has put recording units into categories. These quantities are a matter of convenience for summarising data or applying suitable statistical techniques, and are useful computational artefacts.

Only two of the above quantities were relevant to this research: (a) quantities of a descriptive nature were useful in selecting the sampling units (see section 6.4.1); and (b) quantities that result from counting the recording units (see section 4.3.3). In this study counting was regarded as a matter of quantification. The next section discusses different forms of counting, as well as different views in the content analysis literature as to what pertains to counting. These discussions illustrate that inconsistency in counting could hinder meaningful comparisons and hence stress the importance of explicating the form of counting undertaken in ICR studies.

4.3.2 Forms of counting

According to Carney (1972), counting need not be only a matter of quantification. Hence, he claimed “a flexible definition of what constitutes ‘counting’ is needed” (Carney, 1972, p. 150). Carney described four forms of counting. (1) The very simplest kind of counting involves a mere check to see whether something is there or not. This check is also termed “the virginity principle” and is of a non-frequency nature: it simply establishes whether a thing, for example a word, occurs or not. The inquiry stops as soon as one instance turns up. Holsti (1969) referred to this “non-frequency form of counting” as appearance and Krippendorff (2004) referred to it as presence. (2) The next simplest kind of counting is when counting is used as a means of quantitative assessment, which involves frequency. The question involved with frequency counting is: “Is there a lot or a little of a certain ‘something’?” (Carney, 1972, p. 151) Both Krippendorff and Holsti also described this form of counting as frequencies. In contrast, Krippendorff and Holsti did not describe the next two suggestions as forms of counting. However, according to Carney (1972) the third form of counting is (3) using a yardstick to compare “something” with. The question is, in comparison with a yardstick, is “something” high, medium or low. (4) The fourth type of counting was described as follows: “In relation to this yardstick, in aspects A, B and C, how does our ‘something’ compare with theirs?” (Carney, 1972, p. 151) This question involves multivariate analysis. It appears that Krippendorff (2004) described these latter two forms of counting as a ratio metric and that Wimmer and Dominick (2003) also described them as a ratio level of measurement.

It therefore appears that there are different views in the content analysis literature as to various forms of counting. On the one hand counting is described as comprising two forms: determining either the presence of something or determining the frequency of appearance of something. According to this line of thinking, making comparisons with that something, such as determining a ratio, are regarded as measurements or metrics. On the other hand counting is described as comprising four forms, which appears to include levels of measurement. Thus it appears that Carney (1972) regarded “counting” and “metrics” or “measuring” as having the same meaning. This could be interpreted as meaning that quantities resulting from counting are the same as quantities resulting from measuring. Such an interpretation could cause confusion in ICR content analysis studies, similar to confusion reported in SER

literature. According to Milne and Adler (1999) the issues of basis for coding and the basis for measuring or counting the amount of disclosure in SER disclosures literature are confused. They claimed “the two are not the same” (p. 243). It appears that Milne and Adler, however, interpret counting to be synonymous with measuring. They paraphrased “count (measure)” twice in one paragraph, which could be interpreted as meaning that these two words have the same meaning. However, the use of “count (measure)” in the following sentence suggests that they refer to quantities of measure, which have a descriptive nature, and not to quantities resulting from counting, as discussed in section 4.3.1. They reported that many SER content analyses use sentences, or “words, or areas of a page to count (measure) the disclosure” (p. 243).

In this thesis measuring and counting were not regarded as synonymous. Quantities that result from measuring are not similar to quantities that result from counting. Quantities that result from measuring are descriptive in nature, such as measuring the space that ICR takes up in annual reports, or measuring the size of a picture. Moreover, quantities that result from counting express the frequencies of appearance. Not distinguishing between and not explicating the meanings of quantities that result from measuring and from counting could be problematic to ICR content analysis studies’ results in particular. It could cause confusion in interpreting and analysing results, and could hinder making meaningful comparisons between quantities presented.

In sum, this study was not concerned with presenting quantities that result from measuring. Consequently, only quantities that resulted from counting are presented in Chapter 8. The form of counting undertaken in this study is a quantitative assessment, expressed as frequencies. The content analysis literature reveals that the term “frequencies” has several meanings, which are outlined next. The next section also defines the meaning of frequencies as used in this study.

4.3.3 Defining the meaning of frequencies

In content analysis, frequencies are used in two ways: as indices for magnitudes and as bases for testing the significance of hypotheses (Krippendorff, 2004). Two indices discussed in the literature were relevant to this study. The first is an index of the presence or absence of a reference or concept (Krippendorff, 2004), which Holsti (1969) described as appearance. According to Holsti, when appearance is considered,

the researcher is concerned with whether a particular recording unit appears. Here “the coder is faced with a simple dichotomous decision: does the content unit appear or not?” (p. 121). The second index is an index of frequency. An index of frequency is taken to indicate for example concern, intensity, the importance of, attention to, or emphasis with which an attribute appears in messages (Denscombe, 1998; Holsti, 1969; Krippendorff, 2004). According to Holsti (1969), the most widely used method of measuring characteristics of content is frequency. A measure of frequency indicates how many times a recording unit appears, as “every occurrence of a given attribute is tallied” (Holsti, 1969, p. 122).

Moreover, Krippendorff (2004) referred to “frequencies of mentions”, which are ways to count for example (1) the number of mentions of a particular phenomenon, and (2) the numbers of chapters, pages, and paragraphs in which each phenomenon is mentioned, and to count the number of sentences devoted to a particular phenomenon. This study was concerned with the number of mentions of the IC phenomenon only.

The above descriptions indicate that an index of presence is not equal to an index of frequency. Thus, that frequencies and appearance have different meanings. However, it appears that some ICR content analyses studies use the term “frequencies” when describing “appearance” (see Steenkamp, 2005). Not delineating the meaning of the term frequencies and quantities that result from counting makes interpretation of results difficult. This further hinders the comparability between studies.

This research was interested in how many times the IC phenomenon is reported, thus in frequencies. In this study, the term “frequencies” is used to indicate an index of frequency and not an index of presence. When discussing this study’s results, the term “frequencies” means the quantities that resulted from counting every occurrence of the IC phenomenon and the term “appearance” means whether the IC phenomenon appears.

The next section discusses what the “recording and coding process” entails and considers some of the requirements relevant to this process.

4.4 Recording/coding process

The recording/coding process is described as bridging “the gap between unitised texts and someone’s reading of them, between distinct images and what people see in

them” (Krippendorff, 2004, p. 84). “Recording takes place when observers, readers, or analysts interpret what they see, read, or find and then state their experiences in the formal terms of an analysis” (p. 126), while coding is the transcribing, recording, categorizing, or interpreting of given units of analysis into the terms of the phenomenon under investigation. When discussing the recording/coding process in the remainder of this thesis, the word “recording” is used. The literature revealed a few requirements relevant to the recording process, discussed in the next four subsections.

4.4.1 Requirement for explicit written instructions

The literature generally advocates transparent, explicit, written instructions or rules about the data capture processes (Carney, 1972; Gray et al., 1995b; Krippendorff, 2004; Morris, 1994; Wimmer & Dominick, 2003). Carney (1972) argued if the content analyst is explicit about the procedures of the content analysis, then the reader can check on how the facts were obtained, on the care with which the analysis was conducted, and can deal with the inference-making separately. Moreover, Krippendorff (2004) claimed researchers should explain clearly what they have done so as to convince others that their research was sound and that their results should be accepted. Wimmer and Dominick (2003) added:

Unless a clear set of criteria and procedures is established that fully explains the sampling and categorization method, the researcher does not meet the requirement of objectivity and the reliability of the results may be called into question (p. 141).

Coders relying on extraneous sources of information will undermine the governance of the recording instructions, and communication among coders will challenge the independence of individual coders (Krippendorff, 2004).

Furthermore, the literature generally advocates that written instructions should be sufficiently comprehensive and as replicable as possible so that others could use them as their sole guide to obtain the same answer as that obtained from an analysis (Carney, 1972; Gray, Kouhy, & Lavers, 1995a; Krippendorff, 2004; Wimmer & Dominick, 2003). “It would be impossible to convey all that is involved in reading, observing, and understanding in a document or instruction” (Krippendorff, 2004, p. 128), but the researcher’s descriptive account of the analysis must be complete enough to serve as a set of instructions to coders, fellow researchers, and critics.

This study's descriptive accounts of how methodological issues have been applied are referred to as "recording instructions" and are presented in Chapters 6 and 7. Although the term "instructions" is used, these are mere guidelines, and are not black and white rules. They include all feasible information the researcher can communicate in writing so that they are as replicable as possible and so that others can use them to verify this study's results. Descriptive accounts of how methodological issues pertaining to sampling, unitising, recording, and reducing data to manageable representations (thus the data-making processes) were applied are explicated in Chapter 6. Descriptive accounts of how this study dealt with the methodological issue of "inference making" are presented in Chapter 7. These recording instructions are explicated with a view to addressing the second research question: refining content analysis methodology when applied to investigate ICR (see section 1.3.3).

4.4.2 Importance of categories

Most descriptions of the recording process in the content analysis literature focus on categorising. Hence the recording process is generally described as: classifying the recording units into selected content categories (Carney, 1972; Holsti, 1969; Weber, 1990; Wimmer & Dominick, 2003). Carney (1972) stated that classifications sort out the things being counted into categories, which he referred to as pigeonholes. However, there is no set of categories that will work in all circumstances, as "there are no rules for forming categories" (Carney, 1972, p. 40). It is very difficult to develop a reliable coding scheme (Abrahamson & Amir, 1996). Researchers must exercise subjective choice in the precise makeup and definition of relevant categories (Wimmer & Dominick, 2003), and select a combination that suits a particular problem. Consequently, the literature claims that the categories are sufficiently precise to be reliable in terms of consistency and reproducibility (Morris, 1994; Silverman, 2000).

The next two subsections discuss some requirements relating specifically to categories.

4.4.3 Requirement for operational definitions of categories

To eliminate confusion, vagueness and ambiguity and to ensure that the research is effective, the categories of classification must be clearly and operationally defined

(Guthrie et al., 2004; Wimmer & Dominick, 2003). According to Wimmer and Dominick (2003) a group of vague or ambiguously defined categories make reliability extremely difficult to achieve. Hence, category boundaries should be defined with maximum detail so as to achieve acceptable levels of reliability. However, they acknowledged that there is no single foolproof method for operationally defining categories, and that “no operational definition satisfies everybody” (p. 46).

The operational definitions of this study’s categories of classification pertaining to what IC is reported are presented in Appendix A, and those of categories pertaining to how IC is disclosed are presented in section 6.3 (see Tables 6.9, 6.10 and 6.11).

4.4.4 Requirements to be exhaustive, mutually exclusive and equal

The literature mostly discusses requirements relating to categories being exhaustive and mutually exclusive (Carney, 1972; Gray et al., 1995b; Krippendorff, 2004; Weber, 1990). The criterion that a content analysis should be systematic requires a set of exhaustive rules which will determine the category of the phenomena researched, in a mutually exclusive and all-embracing manner (Gray et al., 1995b). The requirements of mutual exclusiveness and exhaustiveness assure that the resulting records represent texts completely and unambiguously (Krippendorff, 2004). No recording unit may fall between two categories, and no recording unit must be excluded because of a lack of descriptive terms. All categories have to be related to one uniform system of classification and categories have to be such that an item can be classified under only one of them, not under several (Carney, 1972). In addition to the requirements of exhaustiveness and mutual exclusiveness Wimmer and Dominick (2003) added that each item must have an equal chance of being included in the analysis.

This study’s system of categories was devised in accordance with these requirements. All categories are mutually exclusive and have an equal chance of being included in the analysis. Categories pertaining to what IC are reported are exhaustive of the IC theme, in accord with the IC framework adopted (see Table 6.3). Categories pertaining to how IC is reported are exhaustive of the content of the annual reports (see section 6.6.2).

The next section deals with the technique applied to represent the results from recording and counting of IC disclosures.

4.5 Analytical and representational technique

Because of the large volumes of text that content analysts typically consider, the most common technique used in content analysis to render data comprehensible is tabulation (Krippendorff, 2004). “Tabulation refers to collecting same or similar recording units in categories and presenting counts of how many instances are found in each” (Krippendorff, 2004, p. 192). Most prior ICR content analysis studies applied this technique to represent their results (Abeysekera, 2003; Brennan, 2001; Goh & Lim, 2004; Guthrie & Petty, 2000; Vandemaele et al., 2005; Vergauwen & van Alem, 2005). Since tabulation is appropriate for rendering the data generated during this study comprehensible, it has been applied. The tabulation tables presented in Chapter 8 comprise the results from coding and counting every occurrence of IC disclosure quantified as frequencies. Most results are presented as absolute or as relative frequencies.

4.6 Summary

This chapter illustrated the diverse views in content analysis literature about two methodological issues, which have been discussed inadequately and applied inconsistently in previous ICR content analysis literature: unitising, and quantities and counting. The chapter also explicated the type of counting undertaken and delineated the meaning for how results were quantified in this study. Every occurrence of ICR was counted, hence results quantified as frequencies. The chapter also presented the numerous possibilities that are available for selecting recording and context units. This study’s selection of the most appropriate units is elucidated in Chapter 6.

This chapter’s generic discussions of these two methodological issues illustrate that inconsistent application thereof could hinder replicability and comparability of ICR research. These discussions emphasise the importance of explicating how methodological issues have been applied in analysing content of annual reports in ICR research. Without transparent and detailed explanations, it is unlikely that ICR

content analysis studies will be replicable. Without replicating ICR studies, it is unlikely that meaningful comparisons will result.

This chapter also described what the recording process entails and considered several requirements pertaining to this process. Tabulation was identified as an appropriate technique for analysing and representing this content analysis study's results. The next chapter addresses the requirements of reliability and validity relating to content analysis methodology.

CHAPTER 5: REQUIREMENTS OF RELIABILITY AND VALIDITY

5.1 Introduction

Two methodological requirements make particular demands on content analysis: reliability and validity. These two requirements are widely referred to in discussions of content analysis methodology (Bozzolan et al., 2003; Colorado State University Writing Centre, 2004; Guthrie & Parker, 1990; Guthrie et al., 2004; Holsti, 1969; Krippendorff, 2004; McKinnon, 1988; Milne & Adler, 1999; Silverman, 1993). Krippendorff (2004) and the CSU (2004) agree that these two requirements are not unique to content analysis, but are concurrent with reliability and validity addressed in other research methods. Although some references used in this chapter fall outside the content analysis literature, this chapter focuses on the concepts of reliability and validity as they relate to content analysis methodology specifically.

To permit replicable and valid inferences to be drawn from data derived from content analysis, researchers conducting content analysis need to demonstrate the reliability of the instruments and/or the reliability of the data collected using those instruments (Guthrie et al., 2004; Milne & Adler, 1999). It is difficult and perhaps inappropriate to try to distinguish issues of validity and reliability too rigidly in field research (McKinnon, 1988). However, to discuss the different tests that could be performed to demonstrate reliability and validity in this study, these two issues are considered separately in this chapter. Also, an analysis of prior ICR content analysis studies' discussions about the reliability and validity tests of their investigations is presented. Thereafter the approach undertaken to manage reliability and validity of the content analysis conducted in this study is clarified. Important issues pertaining to reliability and validity raised in this chapter are summarised in the final section.

5.2 Reliability

In general terms for qualitative research “reliability is concerned with the question of whether the researcher is obtaining data on which she or he can rely” (McKinnon, 1988, p. 36). Researchers make subjective choices when choosing criteria of reliability that they consider appropriate to their particular studies (Unerman, 2000). “Defining an acceptable level of reliability is one of the many problems in content

analysis for which there is no single solution” (Holsti, 1969, p. 248). “There is no well-developed theoretical framework for choosing appropriate reliability measures (Rust & Cooil, 1994, p. 2). “Any attempt to establish a single criterion value of acceptable coding reliability is problematic” (Milne & Adler, 1999, p. 251).

Reliability is defined as “the ability of an instrument to consistently measure the phenomenon it is designed to measure” (Black & Champion, 1976, p. 234). “A study is reliable when repeated measurement of the same material results in similar decisions or conclusions” (Wimmer & Dominick, 2003, p. 156). Krippendorff (2004) reported reliability is important as it provides assurance “that the data are obtained independent of the measuring event, instrument or person. Reliable data, by definition, are data that remain constant throughout variations in the measuring process” (p. 211). Silverman (1993) gave the following description of reliability:

Reliability refers to the degree of consistency with which instances are assigned to the same category by different observers or by the same observer on different occasions (Hammersley, 1992, p. 67, cited in Silverman, 1993, (p. 175).

Content analysis pays particular attention to the reliability of its measures, particularly ensuring that different researchers use them in the same way (Silverman, 1993). It is expected that content analysis techniques are reliable and result in findings that are replicable (Krippendorff, 2004). For a content analysis to be objective the procedures must be reliable (Wimmer & Dominick, 2003). According to Milne and Adler (1999) reliability in content analysis involves two separate but related issues. First, content analysts can seek to attest that the coded data set that they have produced from their analysis is, in fact, reliable. A second issue is the reliability associated with the coding instruments themselves. They depict coding instruments as the particular tools/methods used, and well-specified decision categories, with well-specified decision rules. Some authors also refer to a reliable coder (Guthrie et al., 2004; Krippendorff, 1980), discussed in section 7.8.

According to Silverman (1993), when text is dealt with in research, the data are already available and hence are already reliable. The issues of reliability then only arise through the categories used in the method to analyse each text. However, this viewpoint was not adopted in this study. Instead the viewpoint that “data are made, not found” (Carney, 1972; Krippendorff, 2004), was adopted. Therefore, this study’s data are the products of the procedures chosen to generate such data. These

procedures are referred to as data-making processes, and are discussed in Chapter 6. Therefore, texts and visual images in annual reports are not regarded as data, but as information. Because data are made in this study, the reliability requirement discussed here relate to both data and the processes that yield results.

The literature generally describes three types of reliability: stability, reproducibility, and accuracy (Carney, 1972; Colorado State University Writing Centre, 2004; Krippendorff, 2004; Silverman, 1993; Weber, 1990; Wimmer & Dominick, 2003). Most content analysis scholars used these terms when discussing reliability (see for example Abeysekera, 2003; Bozzolan et al., 2003; Guthrie et al., 2004; Milne & Adler, 1999). For clarity about discussions of how prior ICR studies (see section 5.4) and this study (see section 5.5.2) have assessed reliability, generic discussions of these three types of reliabilities are provided next.

5.2.1 Stability

Stability is the degree to which a process is unchanging over time (Krippendorff, 2004). “It is measured as the extent to which a measuring or coding procedure yields the same results on repeated trials” (p. 215). Stability refers to the consistency of results when re-coding the same data in the same way at different points in time (CSU, 2004; Wimmer & Dominick, 2003). Moreover, Milne and Adler (1999) stated: “stability refers to the ability of a judge to code data the same way over time” (p. 239). In sum, stability refers to consistent application of processes so as to yield stable results.

To assess stability, data is created under test-retest conditions, which is where the same individual rereads, re-categorises, or re-analyses the same texts after some time has elapsed (Krippendorff, 2004; Wimmer & Dominick, 2003). Reliability statistics are then computed using the two sets of results. This test-retest is also described as intra-coder reliability (Wimmer & Dominick, 2003). According to the CSU (2004), stability will be achieved when inter-temporal coding differences by the same coder is insignificant. However, Milne and Adler (1999) stated if the coding in a test-retest procedure “was the same each time, then the stability of the content analysis would be perfect” (p. 239). In the context of ICR content analysis studies using annual reports, a test-retest can be performed when the same coder applies the same procedures consistently to make reliability data from using the same annual reports after a time

interval. Stability will be achieved when differences between the two sets' results are insignificant.

Unreliability under test-retest conditions is manifest in variations in the performance of an observer, generally referred to as intra-observer disagreement. Intra-observer disagreement may occur due to carelessness, openness to distractions, or difficulties in comprehending written instructions (Krippendorff, 2004); because of ambiguities in the coding rules, ambiguities in the text, and errors resulting from fatigue or simple errors, such as recording the wrong numeric code for a category (CSU, 2004); or because people can change over time (Wimmer & Dominick, 2003). A variation caused by a change in a person resulting from an improvement in that person's coding ability is not regarded to indicate instability though, as they believe actual change occurred.

Researchers should exercise caution when using stability as a measure of reliability, as it is the weakest form of reliability, and is insufficient as the sole criterion for accepting data as reliable (Krippendorff, 2004; Wimmer & Dominick, 2003).

5.2.2 Reproducibility

Compared with stability, reproducibility is a far stronger measure of reliability and is a minimum standard for content analysis (Krippendorff, 2004; Weber, 1990). Reproducibility makes a study and its subsequent conclusions, and results sounder (CSU, 2004). "Reproducibility is the degree to which a process can be replicated by different analysts working under varying conditions, at different locations, or using different but functionally equivalent measuring instruments" (Krippendorff, 2004, p. 215). Reproducibility is also variously called inter-coder and inter-rater reliability, inter-subjective agreement, and parallel-forms reliability (Krippendorff, 2004; Silverman, 1993; Wimmer & Dominick, 2003).

To demonstrate reproducibility, reliability data must be obtained under test-test conditions (Krippendorff, 2004). Test-test conditions are when "for example, two or more individuals, working independently of each other, apply the same recording instructions to the same units of analysis" (p. 215). In the context of the ICR content analysis studies test-test conditions are interpreted as enabling independent coders, working under varying conditions, and at different locations to replicate procedures for making data and for making inferences. To enable independent coders to apply the

same recording instructions to the same units of analysis, explicit recording instructions are required. Many authors claim reproducibility can be achieved by using multiple coders to do the coding (Carney, 1972; CSU, 2004; Milne & Adler, 1999; Silverman, 1993; Wimmer & Dominick, 2003). The issue of using multiple coders to assess reliability is elucidated in section 5.4.2.

Observers' performances may disagree because of intra-observer inconsistencies and inter-observer differences in the interpretation and application of given recording instructions, ambiguous coding instructions or from random recording errors (Krippendorff, 2004; Weber, 1990).

5.2.3 Accuracy

Accuracy is the strongest reliability test available and is "the degree to which a process conforms to its specifications and yields what it is designed to yield" (Krippendorff, 2004, p. 215). To establish accuracy analysts must obtain data under test-standard conditions, which means the performance of one or more data-making procedures should correspond with the performance of a procedure that is regarded as being correct or a standard or norm (Carney, 1972; CSU, 2004; Krippendorff, 2004; Weber, 1990). "Without a norm against which to compare [data], individual sets of data are meaningless. Data elicited by one person's analysis gain meaning only when set against some outside criterion" (Carney, 1972, p. 40). Similarly, Milne and Adler (1999) stated "the accuracy measure of reliability involves assessing coding performance against a predetermined standard set by a panel of experts, or known from previous experiments and studies" (p. 239). Disagreements between the performances of a data-making procedure with that of a standard procedure are due to intra-observer inconsistencies, inter-observer differences, and deviations from a given standard (Krippendorff, 2004).

According to Krippendorff (1980), it is often impossible to assess accuracy in practice, and that accuracy in content analysis will be achieved when the performance of coders largely comply with a known "right" answer. Therefore, he commented that the use of the "accuracy" reliability criteria is limited to coder training and other areas where objective standards are readily available.

5.3 Validity

“The validity of a content analysis study refers to the correspondence of the categories to the conclusions, and the generalizability of results to a theory” (CSU, 2004). Both Krippendorff and Silverman referred to “truths” when describing validity. Krippendorff (2004) claimed “validity is the quality of research results that leads us to accept them as true” (p. 313), and Silverman (1993) reported “by validity, I mean truth: interpreted as the extent to which an account accurately represents the social phenomena to which it refers” (cited from Hammersley, 1990, p. 57) (p. 149). In contrast, Graber (1989) stated: “There is no single truth” (p. 148).

Other descriptions of validity pertain to a reality, which analysts construct. According to Gray et al. (1995b), quoting Hines (1988):

all methods of data collection must, of necessity, impose some structure on, and involve some simplification of, the phenomena being examined. In doing so, the researcher effectively constructs some (new) ... reality which, while it may be able to claim some significant correspondence with “facts”, nevertheless may say more about the researcher’s conception of reality than about any potentially objective reality which underlies it (pp. 79-80).

Carney (1972) agreed that analysts do not present “the reality” but only “a reality” which presents their pictures of the phenomenon, and stated: “Indeed, content analysis is the technique to use if the task is to assess someone’s image of reality” (p. 195). Other authors too share the view that such “a reality” is the perspective of the researcher, which is only a representation (see for example Black & Champion, 1976; McKinnon, 1988; Silverman, 1993).

Validity is almost never an all-or-none proposition; it is usually a matter of degree (Wimmer & Dominick, 2003). Similarly, McKinnon (1988) claimed that because of constraints, “researchers in the social sciences can never attain perfect validity and can speak only of degrees of validity” (p. 41).

Some authors also refer to the validity of inferences and interpretations (Krippendorff, 2004; Weber, 1990). In addition, Wimmer and Dominick (2003) stated validity of research findings is influenced by interpretations, and hence validity depends at least in part on the judgment of the researcher. Furthermore, Morris (1994) stated “if valid inferences about the symbolic content of the message are to be drawn,

the content analysis classification scheme must be reliable in terms of consistency and reproducibility” (p. 905).

This study’s data is generated by making inferences, which are influenced by the researcher’s interpretations of ICR practices. Therefore, in the light of the above views about validity, the results of this content analysis are subtle forms of realism. The validity of the results is only considered as accurately representing a reality that the researcher constructed. Such reality is the researcher’s conception of what IC and how IC information is disclosed in New Zealand firms’ annual reports. The researcher’s insight could only be regarded as “a truth” and not “the truth” about ICR practices in New Zealand. Issues relating to how inferences and interpretations were made are discussed in Chapter 7 (see sections 7.3 to 7.6).

The next section examines how prior ICR content analyses have discussed and assessed the two important requirements of reliability and validity.

5.4 Reliability and validity tests of prior ICR content analyses

McKinnon (1988) reported that document analyses “are frequently subjected to common and global criticisms of their apparent inability to attend to such research criteria as validity and reliability” (p. 34). According to McKinnon, failure to report how reliability and validity were attended to prejudices the dissemination and communication of the research, and restricts the audience who will read or accept the results. Similar to McKinnon’s findings, little evidence was found in prior ICR content analysis studies about how these studies dealt with reliability and validity criteria. Hence, not discussing the issues of reliability and validity could be interpreted as indicating an inability to attend to these issues. This could negatively influence the credibility of ICR content analysis research. The next section illustrates the extent to which prior ICR content analysis studies discuss these issues.

5.4.1 Extent of discussing reliability and validity

Gardner and Wong (2005) reported that most ICR disclosure content analysis studies have not focussed on reliability. Only one ICR content analysis study has discussed the important methodological requirements of reliability and validity (Abeysekera, 2003). Moreover, the two studies that have expressed concern with the particular study’s reliability, focussed almost exclusively on the reliability of the classification

procedure, and disregard the reliability of other data-making procedures (see for example Bozzolan et al., 2003; Gardner & Wong, 2005). However, no published studies appear to exist that demonstrate the validity of the research results. The extent to which Bozzolan et al. (2003) and Gardner and Wong (2005) have discussed the issue of reliability is now discussed.

Bozzolan et al. (2003) acknowledged reliability is a major concern in using content analysis as a research method. They claimed to have used a defined coding procedure, comprising three components, to ensure accuracy. The first component comprises explanatory notes on the content of each category-item and examples of sentences to be coded, which were prepared and discussed before the start of the analysis. Secondly, two coders analysed five annual reports simultaneously so as to identify potential differences and to standardise the coding classification. Thirdly, each coder codified 15 annual reports. Some observations regarding the way in which Bozzolan et al. assessed reliability follow: (1) It appears that the two coders assessed each other's accuracy of coding under test-test conditions. This is not interpreted as being similar to assessing accuracy under test-standard conditions, as discussed earlier in section 5.2.3. (2) Following on from this interpretation, it appears that they regard the IC framework used for classifying IC items as the objective standard to assess accuracy under test-standard conditions. (3) Bozzolan et al. (2003) assessed reproducibility by using the Krippendorff alpha (a measure of the agreement between observers). By citing results of the Krippendorff alpha at the category level and at the element level, it appears that they only assessed the reproducibility of the classification procedure of the IC categories and the IC elements (items). It is not clear if and how the reproducibility of other data-making procedures was assessed. (4) It appears that the test-test assessment of the classification procedure was performed only on the five annual reports the two coders analysed simultaneously. (5) They reported that stability was assessed by verifying the coding of *the* annual report a week later in a second round of coding. Reference to a singular annual report implies that one annual report was used to perform a test-retest. (6) Issues pertaining to reliability of inferences and interpretations were not attended to. Finally, no reference was made to the validity of their results.

Gardner and Wong (2005) claimed they undertook a rigorous coding procedure to achieve reliability. One aspect of this rigorous procedure is using two coders to code

annual reports as a trial sample, testing reliability between the two coders and analysing discrepancies. Similar to Bozzolan et al. (2003), they assessed reproducibility by using Krippendorff's alpha (a coefficient agreement). Krippendorff's alpha was used again during the stability assessment. They assessed stability by repeating five content analyses three weeks after the initial coding, and "at the completion of the content analysis, two further annual reports were analysed by the coders to ensure that they were still coding with a high level of agreement" (Gardner & Wong, 2005, p. 13). Furthermore, they claimed that they have carried out stringent reliability tests, which were designed to reduce: (1) subjectivity involved in interpretation in what a sentence is, and (2) content analysis' overemphasis of quantity over quality of disclosure. The latter was achieved by having decision rules that clearly show "that coders [had] not simply recorded every time certain words come up, but code[d] for meaning" (Gardner & Wong, 2005, p. 13). They also claimed that the unit of analysis, sentences rather than words, *ensured this*. It is not clear how this last claim was achieved, and also how the very brief seven decision rules, "show" that coders code for meaning. The seven decision rules of Gardner and Wong (2005) are presented in Table 5.1.

Table 5.1: Decision rules of Gardner and Wong (2005)

Do not code for graphs, pictures and diagrams
Do not code for tables, one row = one sentence
Some concepts are broad so code for meaning rather than look for exact words
Do not code if concept is implied
Code only for positive and negative meanings
Only code for voluntary disclosures
Only code for meaning, merely stating the word may not be enough

Source: Gardner and Wong (2005, p. 14)

It is assumed that Gardner and Wong referred to the third and/or the last decision rule in claiming that they coded for meaning. However, they did not explain how inferences were made, or how they dealt with subjective interpretations. Also it is not convincing that this brief seventh rule, or any of the other six rules, "clearly show" that they coded for meaning, and "not simply recorded every time certain words come up". Gardner and Wong did not discuss if and how they assessed accuracy, and

similar to Bozzolan et al. (2003), they were silent about the validity of their research results.

Although Gardner and Wong made a good attempt to explicate their decision rules, these rules are not detailed and comprehensive enough to enable an independent researcher to replicate their study. It is debatable whether these seven brief decision rules give an independent researcher enough information to replicate the data-making processes and the inferences, and hence to replicate their study. As a matter of interest, three of the annual reports that they have analysed were also analysed in the pilot study of this thesis. However, very different results were obtained. It is virtually impossible to ascertain where and why the results are different.

One possible reason why ICR content analysis studies do not (a) discuss the issues of validity and reliability and (b) document their instructions for making data and inferences in their papers is due to the constraint of publication space. McKinnon (1988) states when issues of reliability and validity “compete for the scarce resource of publication space with other aspects and findings of the research” they “are frequently omitted or reported in a way which does not do them justice” (p. 35). However, there is no reason why these issues and instructions are not documented in attachments. Decision rules applied in CSR content analysis studies are explicated as attachments when papers are published (see, for example, Gray et al., 1995b; Hackston & Milne, 1996). When the publication space of attachments is a constraint, these issues could at least be acknowledged and made available, as Guthrie et al. (2004) did.

The third ICR content analysis study discussed here, that of Abeysekera (2003), attended to reliability and validity, and documented the operational definitions used to classify the various IC items. Since the study had only one coder, the conventional reliability test that requires a measure of consensus between different coders, could not be used. Abeysekera devised two methods to increase objectivity in recording and analysing data. Each IC item was defined before the analysis, and the annual reports re-examined after a time interval to confirm the consistent identification of content in the annual reports. Moreover, due to research domain restrictions several other techniques to test reliability could not be used. One such restriction, that is relevant to this thesis, is the use of multiple coders as a means to assess reliability. However, it

appears that using multiple coders to assess reliability may not be as effective as perceived. This issue is discussed next.

5.4.2 Comments on using multiple coders to assess reliability

Guthrie and Petty (2000) did not discuss the issues of reliability and validity in particular, but merely reported using multiple coders. The method employed was for one researcher to read the annual reports and record information on to a coding sheet. A second researcher independently confirmed the coding of each item. Most content analyses report using multiple coders, and suggest that high levels of inter-coder agreement demonstrate the reliability of results (see for example Bozzolan et al., 2003; Gardner & Wong, 2005; Guthrie et al., 2004; Hackston & Milne, 1996; Milne & Adler, 1999). While using multiple coders could be an effective means to assess stability and to a certain extent, reproducibility, it is questionable whether high levels of inter-coder agreement of content analysis studies meet the test-standard conditions as discussed earlier (see section 5.2.3). An inter-coder agreement could be interpreted as meaning that the accuracy of the performance of one coder is compared with the accuracy of another coder. Such assessment is interpreted as a test of stability, and not accuracy according to an accepted norm.

Morris (1994) is sceptical about studies using human coders and relying upon multiple coders to deal with reliability concerns permitting a quantitative assessment to achieve inter-rater reliability. “Although the use of multiple coders may provide an acceptable solution to reliability issues, the costs involved (in time, tediousness and perhaps monetary compensation) may result in sacrifices to research design and rigor” (Morris, 1994, p. 907). Moreover, Morris suggests that the reliability of the inferences made is a more important issue.

Inter-coder agreement, referred to as consensus coefficients, also have some weaknesses (Abeysekera, 2003). A low coefficient can create doubt upon reliable data, and “a high coefficient can seem trustworthy even if it is unreliable because there is a high frequency of false data” (p. 90). Similarly, Krippendorff (2004) explained this phenomenon as follows:

Two coders in the same event who hold the same conceptual system, prejudice, or interest may well agree on what they see but still be objectively wrong. Because content analysts have acquired a language and concepts that make them see the world from the unique perspective

of their academic discipline, their observations and readings are based in a consensus that is not likely shared by many people outside of their scholarly community (p. 213).

Thus it appears that inter-coder agreements could be misleading regarding the reliability of a particular piece of research, and also that a reliable process may or may not lead to valid outcomes.

The reliability and validity of inter-rater agreement have been criticised. Ahuvia (2001) argued inter-rater reliability indicates in no way that the coding reflects a popular or widespread interpretation of the texts. Even when referring to “independent” replicability, he argued that inter-rater assessment merely provides evidence that the coding rules were followed. When coders have received training in how they should code the texts, then they are following coding rules and not their own intuitions. Moreover, he argued that multiple coders work cooperatively rather than independently, which may defeat the purpose. Krippendorff (2004 added: “Even though most investigators publish respectable indices of inter-rater agreement in categorising the responses, these are open to serious questions. Usually the published inter-rater agreement is based on two people who have worked together intimately in the development of a coding scheme, and who have engaged in much discussion of definitions and disagreements” (p. 130).

Some observers argue that in principle a single coder is sufficient (Ahuvia, 2001). Well-specified decision categories with well-specified decision rules reduce the need for multiple coders (Milne & Adler, 1999). “The results of the sole researcher’s judgment should be trusted in semantic analysis, as this seems to be the only feasible way of attaining a measurement of the veracity of data concerning semantic content” (Abeysekera, 2003, p. 90). This comment could be interpreted as meaning that the reliability and validity of a single content analyst’s data, processes and the research results are not inferior to those of multiple coders.

This discussion illustrates that the substance of reliability and validity does not depend on the number of people doing the coding. More important are the quality and validity of inferences made. Since no prior ICR content analysis studies have attended to the issue of making valid inferences, it appears that this is a research gap in the ICR area. This study therefore attends to this gap and discusses in Chapter 7 how inferences were made.

5.5 Reliability and validity of this study

Demonstrating how reliability and validity were managed in this content analysis study is important, because (a) unreliability limits the chance of validity, and (b) reliability does not guarantee validity. Thus reliability is a necessary, but not a sufficient, condition for validity (Krippendorff, 2004). According to Krippendorff, in the pursuit of high reliability, validity tends to get lost. In this study it is equally important to demonstrate the reliability of the data and the data-making processes, as it is to demonstrate that the research results are valid, and not merely a product of chance. When results are a product of chance, then a valid account of what was observed or read would probably result, but researchers would not be able to identify that account to a degree better than chance (Krippendorff, 2004). Consequently, he stated the more unreliable a procedure, the less likely it is to result in data that lead to valid conclusions. The next two subsections explain how the validity and reliability of this content analysis study could be assessed.

5.5.1 Assessment of validity

Because content analysis “is concerned with bodies of texts that are meaningful in relation to a chosen context” (Krippendorff, 2004, p. 318), content analysts must empirically demonstrate the context sensitivity of their research to validate their evidence. This study’s context sensitivity is demonstrated by providing descriptive accounts that support its structural and semantic validity. The structural validity is demonstrated by descriptive accounts of the data making processes presented in Chapter 6, and of the process of making inferences presented in Chapter 7. In particular, the treatment of texts and visual images is presented in section 6.6, the rules of inferences devised in section 7.6, and the semantic validity of terminologies used are explained when discussing methodological issues throughout the thesis. The operational definitions of IC concepts used to make inferences about *what* IC is reported, are presented in section 6.3, and those of variables categorising *how* IC is reported in section 6.6.2. Semantic validity is described as “the degree to which the analytical categories of texts [and visuals] correspond to the meanings these texts [and visual images] have for particular readers or the roles they play within a chosen context” (Krippendorff, 2004, p. 323).

5.5.2 Assessment of reliability

The first stage of the content analysis research was a preliminary analysis used as an experiment to develop well-specified instructions. The aim of developing these instructions was to enhance the reliability of the data and processes, as well as the validity of the results of the extended study. The reliability of the pilot study was therefore not assessed. Assessing the reliability of the extended study has research domain restrictions similar to those mentioned by Abeysekera (2003). Techniques such as a test-test for assessing the reproducibility and a test-standard for assessing the accuracy could not be used. It is not clear whether a standard “right answer” exists yet that could be used to assess the accuracy of ICR content analysis studies. Thus the only reliability test performed is the test-retest to assess stability. An approach similar to that of Bozzolan et al. (2003) was adopted to assess stability. One annual report was coded a second time after all the other firms in the sample were analysed. That allows the second coding to take place after a considerable time interval. No significant inter-temporal coding differences between the first and second round of coding were found. Hence no other annual reports in the selection were coded twice.

Ahuvia (2001) argued public justifiability is just as scientifically legitimate as inter-rater reliability, and suggested that it is an alternative way of assessing the reliability of a study performed by a single coder. To achieve public justifiability, this research relied on the explicated descriptive accounts of how data and inferences were made, illustrated with examples from annual reports (see sections 6.4 to 6.7, 7.3 to 7.6 and Appendix B).

5.6 Summary

This chapter discussed the importance of attending to the reliability of data as well as the reliability of the data making-processes, and the validity of research results. Also, various means of assessing the reliability of ICR content analyses research were considered. The discussion of how prior ICR content analysis studies attended to reliability and validity revealed an absence of reference to the validity requirement. Carney (1972) claimed that without some check on its findings, “the results of a content analysis must be regarded merely as probable” (p. 42). Krippendorff (2004) added that content analysis may be in trouble if content analysts fail to spell out the criteria for validating their results. Moreover, this chapter indicated that the reliability

of data-making processes and of making inferences has been overlooked. These studies presented limited explicit and detailed descriptive accounts of how they dealt with methodological issues during the data-making processes. Moreover, prior studies are silent about how they have managed the making of inferences.

This chapter discussed the reliability tests undertaken for the reliability of this study's data and suggested how the validity of this study's results could be assessed. Descriptive accounts of this study's data-making and inference-making processes are presented in chapters 6 and 7. These accounts serve two purposes: as instruments for assessing this study's validity and reproducibility, and to further refine and develop content analysis methodology when applied to ICR research. The next chapter discusses this study's data-making processes.

CHAPTER 6: DATA-MAKING PROCESSES

6.1 Introduction

The purpose of giving descriptive accounts of the data-making processes of this study in this chapter is twofold. First, these accounts serve as a means to further refine and develop the methodology when applied to ICR research. It gives detailed and explicit explanations as to how this study has dealt with operational issues and methodological problems relating to the data-making processes. These explanations are guidelines that other ICR scholars can use to arrive at the same results when repeating the processes. Second, these descriptive accounts should enable independent observers to assess the replicability and the validity of this ICR content analysis study. According to Krippendorff (2004) “replicability is the most important form of reliability” (p. 18). As discussed in the previous chapter, to meet the test-test condition of assessing a study’s reproducibility, a set of reliability data is required. Therefore the descriptive accounts also serve as guidelines on how to make a set of reliability data.

This content analysis’ research design is outlined first. Second, the semantics of the components of the IC framework are delineated. Thereafter, descriptive accounts of data-making processes are presented in four sections. The first of these explains the sampling units and the sampling process. A discussion and examples of how the recording and context units were selected follow this. Then methodological issues of how texts and visuals were handled during the recording and coding process are considered. The last section discusses how the data that was made was reduced to manageable representations.

6.2 Research design

In general when conducting a content analysis a research design is described as the network of steps a researcher takes to conduct a research project, which takes simultaneous consideration of sampling, unitising, standards of assessment for data analysed, and inferential procedures, as well as their interrelationships (Carney, 1972; Krippendorff, 2004; Wimmer & Dominick, 2003). However, Carney claimed, there is no one ideal or best way of carrying out a content analysis. A research technique

involves various components and various ways of putting these together. An analyst should pick that combination which suits the particular problem.

The design of this content analysis research seeks to analyse published information in a systematic, objective and reliable way, as described in the literature (Guthrie & Parker, 1990; Holsti, 1969; Krippendorff, 1980). The components selected for conducting this designation's semantical content analysis is based on the steps¹⁰ listed by Wimmer and Dominick (2003) as well as those recommended by the CSU (2004)¹¹. To suit the particular problems of investigating ICR in this study, additional steps are added. The research strategy for this study has the following 16 steps.

1. Delineate the semantics of the data language.
2. Define the population in question and select an appropriate sample from the population. #
3. Select and define a unit of analysis. #
4. Construct the categories of content to be analysed. #
5. Decide on doing human-coded or computer-aided text analysis.
6. Decide whether to code for existence or frequency. *
7. Develop rules for coding your texts. *
8. Develop a coding sheet. #
9. Decide what to do with "irrelevant" information. *
10. Pre-test the research design by doing a pilot study.
11. Revise the units of analysis, categories, coding rules and coding sheet.
12. Analyse the content of annual reports selected for the extended study.
13. Test-retest some of the annual reports in the extended study.
14. Reduce the data to manageable representations onto the coding sheet.
15. Compute and tabulate the data recorded on the coding sheet.
16. Analyse and interpret the results. *

¹⁰ Exact wording of the step recommended by Wimmer & Dominick (2003) is indicated with a #.

¹¹ Exact wording of the step recommended by the CSU (2004) is indicated with an *.

The definitions of the IC components are discussed in the next section. The remainder of the chapter discusses how methodological issues pertaining to the data-making processes have been applied in this study in terms of: sampling, unitising, recording, and reducing data to manageable representations.

6.3 Semantics of components of IC framework

The IC framework of this study contains several definitions (see Appendix A). The definitions of IC and ICR were devised in this thesis. No IC definition discussed in Chapter 2 (see section 2.4.1) acknowledged the details of value creation. According to Abeysekera (2006), it is important that IC definitions should address the details of value creation adequately. Moreover, the ICR content analysis literature revealed only one attempt at defining ICR. Martensson (2000 cited by Abeysekera, 2006) claimed that without a uniform definition, firms are able to define IC and ICR in an ad-hoc fashion for disclosure purposes. This could limit making meaningful comparisons between ICR studies. Uniform IC and ICR definitions would strengthen the research project of ICR (Abeysekera, 2006). Hence, this research attempted to address the details of value creation in defining IC and in defining ICR accordingly, discussed next.

6.3.1 Defining intellectual capital (IC)

The meaning of “value creation” is considered first. The IC literature generally distinguishes between value realisation and value creation (Fincham & Roslender, 2003b), also referred to as the stock and flow approaches (Collier, 2001; Guthrie et al., 2005; Yongvanich & Guthrie, 2004). It is argued that traditional accounting principles are concerned with value realisation, as they are concerned with sustainable and measurable performance, and with historical value generated by an organisation (Collier, 2001; Fincham & Roslender, 2003b; Roslender & Fincham, 2004). The stock approach is concerned with calculating a monetary value of an organisation’s stock of IC, and has attracted a lot of research interest (see Bontis, 2001; Bontis et al., 1999; Martin, 2004; Yongvanich & Guthrie, 2004). However, it is argued that the stock approach is inappropriate to account for the value created by IC (Collier, 2001; Fincham & Roslender, 2003b; Guthrie et al., 2005; Mouritsen, 2003). Conversely, it is argued that the value of IC is a process of value creation, a process of discovery and development, it is in construction and remoulding all the time, and that the value

of IC lies in the utilisation of intellectual capacity (Collier, 2001; Mouritsen, 1998, 2003; Mouritsen et al., 2001a). The value creation approach does not seek to assign a specific dollar value to the resources and to incorporate value into the balance sheet using traditional financial measures (Fincham & Roslender, 2003b). It is concerned with identifying the knowledge resources and providing information that drives a firm's value creation capacity to deliver sustainable competitive advantage now and in the future (Fincham & Roslender, 2003b; Guthrie et al., 2005). This in itself emphasises the difficulty with valuing IC, in particular in financial terms. "Given intellectual capital's associations with value creation and sustainable competitive advantage, a value creation approach to accounting for, and reporting on, intellectual capital would seem appropriate" (Fincham & Roslender, 2003b, p. 12). Consequently, the flow approach was adopted in this study. In the context of value creation IC is defined as follows:

- Invisible investments in and utilisation of a firm's current and future intellectual resources and capacities, representing knowledge resources to enhance a firm's innovation capabilities, processes and performance as part of its value creation processes.

6.3.2 Defining intellectual capital reporting (ICR)

The definition of IC disclosure has hardly been debated in the literature (Abeysekera, 2006). Only one attempt was made to define ICR. Abeysekera (2003) defined ICR as:

A report intended to meet the information needs common to users who are unable to command the preparation of reports about IC tailored so as to satisfy, specifically, all of their information needs (p.16).

This definition is extended. The details of value creation in defining IC are considered and ICR in annual reports are explained from a legitimacy theoretical perspective. In this thesis ICR is defined as follows:

- Reporting IC information through textual and visual forms with the intention to meet societal expectations of making IC visible.

The IC and ICR definitions devised above were applied in conducting this content analysis study.

6.3.3 Defining IC categories and IC items

As stated in Chapter 2 (see section 2.4.6) the IC categories and IC items applied in this study were not devised by the researcher, but were drawn from those developed by expert practitioners in the IC field. This study applied the taxonomies devised by Guthrie et al. (2004) and Abeysekera (2003) to classify IC into three categories: internal, external and human capital. Each category is subdivided into IC items.

To interpret the codes left behind in the annual reports relating to the IC category and IC item, the coding system devised is discussed later in this chapter (see section 6.6.4). Furthermore, Carney (1972) claimed: “some kind of operational definition of what constitutes a theme may be required. It may be required as it may be necessary to decide what are the kinds of parts, the sub-units, into which to split the theme” (Carney, 1972, p. 162). Furthermore, the operational definitions of the IC categories and IC items presented in Appendix A are those of leading practitioners and experts in the IC area. According to Carney (1972), using externally established categories and operational definitions is essential for the reliability of a study, as they avoid bias in the approach to a study and in generating data in favour of a researcher’s own case. Moreover, they are an important means to minimise the subjectivity relating to categories.

The definitions of the IC items attached in Appendix A are those of the extended study. There were, however, slight differences between the IC frameworks used for the pilot and the extended studies. The well-developed and defined IC framework applied by the pioneering ICR content analysis research team (Guthrie et al., 1999) was used in the pilot study. Prior ICR content analysis studies have also applied this IC framework (see, for example, April et al., 2003; Brennan, 2001), while Bozzolan et al. (2003) made slight modifications in their application of it. This framework is a modified version of Karl Erik Sveiby’s¹² intangible assets monitor. It categorises 24 IC items across three IC categories, as illustrated in Table 6.1:

¹² One of the best-known models for understanding and reporting on intellectual capital is the intangible asset monitor, developed by the Konrad Group, a group formed by managers of Swedish knowledge-intensive companies during the mid 1980s (Sveiby, 1997).

Table 6.1: IC categories and IC items of pilot study

Internal capital (organisational / structural)	External capital (customer / relational)	Human capital (employee competence)
Intellectual property 1. Patents 2. Copyrights 3. Trademarks Infrastructure assets 4. Management philosophy 5. Corporate culture 6. Management processes 7. Information systems 8. Networking systems 9. Financial relations	10. Brands 11. Customers 12. Customer loyalty 13. Company names 14. Distribution channels 15. Business collaborations 16. Licensing agreements 17. Favourable contracts 18. Franchising agreements	19. Know-how 20. Education 21. Vocational qualification 22. Work-related knowledge 23. Work-related competencies 24. Entrepreneurial spirit, innovativeness, proactive and reactive abilities, changeability

Subsequently, Guthrie et al. (2004) modified the above IC framework to include only 18 IC items, shown in Table 6.2.

Table 6.2: Guthrie et al.'s (2004) modified IC framework

Internal capital	External capital	Human capital
1. Intellectual property	7. Brands	14. Employee
2. Management philosophy	8. Customers	15. Education
3. Corporate culture	9. Customer satisfaction	16. Training
4. Management processes	10. Company names	17. Work-related knowledge
5. Information/networking systems	11. Distribution channels	18. Entrepreneurial spirit
6. Financial relations	12. Business collaborations	
	13. Licensing agreements	

However, some of the IC items presented in Table 6.2 were found to be too generalised and inadequate for specific instances in New Zealand. Hence, to bring more rigour to the extended New Zealand study, slight amendments were made. The IC framework used in the extended study of the thesis comprises only 17 IC items, as shown in Table 6.3.

Table 6.3: IC categories and IC items of extended study

Internal capital	External capital	Human capital
1. Intellectual property	6. Financial relations	13. Employee
2. Management philosophy	7. Brands	14. Education
3. Corporate culture	8. Customers/ Customer satisfaction	15. Training
4. Management and technological processes	9. Corporate image building	16. Work-related knowledge
5. Information/networking systems	10. Distribution channels	17. Entrepreneurial spirit
	11. Business collaborations	
	12. Licensing and franchising agreements	

Amendments to Guthrie et al.'s (2004) modified IC framework were made by combining IC items, reclassifying one IC item, and by adding IC attributes to already existing IC items. In essence, the modifications pertain to the IC items in boxes 4, 6, 8, 9 and 12 in Table 6.3. The modification to box 4 is adding the IC item 'technological processes'¹³ as found in the IC framework used by Abeysekera (2003). The IC item in box 6 'financial relations' was reclassified to the external capital category. In the New Zealand study the description of external capital is a better fit for IC messages about 'financial relations'. In box 8 the two IC items 'customer' and 'customer satisfaction' (being separate IC items in boxes 8 and 9 in Table 6.2) were combined, as the operational definitions of these two items overlap. Furthermore, it was found during the pilot study that it was frequently difficult to decide whether to

¹³ All references to IC items are denoted with single quotation marks in the remainder of this thesis.

classify an IC message as either ‘customer’ or as ‘customer loyalty’. Messages about these two IC items were often vague. In box 9 the name of the IC item is changed from ‘company names’ to ‘corporate image building’, similar to the description of Abeysekera (2003). The IC attribute ‘favourable contracts’ was added to the operational definition of the latter IC item. The change to box 12 resulted from adding ‘franchising agreements’ (found in Abeysekera’s (2003) framework) to the IC item ‘licensing agreements’.

The next section discusses the first of four data-making processes explicated in this chapter. The sampling units and the sampling process are discussed next.

6.4 Sampling

This section first explains the selection of sampling units. Secondly, the samples for the pilot and for the extended studies are explicated.

6.4.1 Sampling units for this study

In this study the relevant boundaries of the body of content to be considered (Wimmer & Dominick, 2003) for examining ICR disclosure was defined as all the available sources of written material that firms could use to communicate IC information. These sources include among others: websites, newspaper reports, triple bottom line reports, environmental reports, interim reports and annual reports. However, Silverman (2000) stated that doing textual analysis depends upon very detailed data analysis, and hence claimed that, to make an analysis effective: “it is imperative to have a limited body of data with which to work” (p. 42). To make this analysis as effective as possible, the content worked with was limited to information communicated in annual reports. Thus, this study’s sampling units were defined as annual reports.

Selecting annual reports as the sampling units ensures consistency with many prior ICR content analysis studies (Abeysekera, 2003; April et al., 2003; Bozzolan et al., 2003; Brennan, 2001; Guthrie et al., 1999; Liu & Chen, 2005). Annual reports were also used in CSR content analysis studies (Gray et al., 1995b). Several reasons are given, and are numbered here for clarity. Gray et al. (1995b) argued that annual reports are used because: (1) all forms of data that reach the public domain can be considered as being part of the accountability-discharge activity of an organisation,

(2) they are statutory documents, produced regularly, and (3) they represent what is probably the most important document in terms of the organisation's construction of its own social imagery. Some authors claimed that a company's annual report is a highly useful source of information about a company. Liu and Chan (2005) stated a company's annual report is a means by which a company tries to convey its image to the public, and Guthrie et al. (2004) and April et al. (2003) claimed that (4) annual reports are highly useful sources of information, because managers commonly signal to stakeholders what is important through the reporting mechanism. Liu and Chan (2005) also claimed that (5) a company's management has a complete control of the discretionary disclosure of information in the report. Guthrie et al. (2004) added (6) annual reports are viewed as a communication device that allows a corporation to connect with various external and internal stakeholders. Abeysekera and Guthrie (2005) wrote (7) annual reports represent the concerns and interests of corporations in a comprehensive and compact manner. Bozzolan et al. (2003) added (8) "the disclosure level in annual reports is positively correlated with the amount of corporate information communicated to the market and to stakeholders using other media" (p. 548). Furthermore, Simpson (1997) claimed the annual report is a vital instrument designed – ideally – to tell the story of a company. (Boedker et al., 2005a) stated annual reports are viewed as communication devices, which relate how the organisation and its resources are enacted, utilised, developed and disposed of. These reasons were persuasive for selecting annual reports as the means to collect data about the voluntary IC disclosure in this research, in both the pilot and extended studies.

In the selection process, annual reports were first narrowed down to those of firms listed on the New Zealand Stock Exchange only, and second, to domestic firms. Stratified sampling was then done to narrow the firms down to the largest (based on market capitalisation) domestic firms. The largest firms were selected in accordance with the view that they are characterised by greater public visibility, and attach more importance to the annual reports as an external communication device (Abeysekera & Guthrie, 2005; Aerts, 1994). Furthermore, it is argued that large firms are likely to possess more IC because they typically have the financial resources that enable them to be more innovative and progressive, and hence be active in the area of ICR (Abeysekera & Guthrie, 2005; Guthrie et al., 2006). Selecting the largest firms is also

consistent with prior ICR content analysis studies (Abeysekera & Guthrie, 2005; April et al., 2003; Guthrie & Petty, 2000; Guthrie et al., 2006). Bozzolan et al. (2003) added that social accounting literature provides evidence that size is a main factor in explaining different reporting behaviours. They reported that, even though no systematic examination of the relationship between size and the content of disclosure has yet been provided, it is commonly accepted that larger companies are more inclined to a more thorough disclosure. It was expected that large New Zealand firms may possess more IC and hence would voluntarily disclose more information. Also large firms possess a variety of IC resources and hence they might be expected to disclose a wide range of IC information. Hence it was expected that large firms would disclose comprehensive IC stories in a variety of forms.

As discussed earlier (see section 4.3.1), in this study, quantities of a descriptive nature are associated with the sampling units. Financial years were useful in deciding which annual reports to select as the sampling units. Annual reports for the 2003 and 2004 financial years respectively were selected for the pilot and the extended studies. These years were chosen because they were the most recent years for which annual reports were available at the time of data collection.

6.4.2 Sample firms of the pilot study

The 10 largest domestic firms were selected to pre-test the data-making instructions. The sizes of firms were determined by ranking their market capitalisation as on 22 January 2004, using the National Business Review (NBR) of 23 January 2004 (National Business Review, 2004a 23 January 2004). The 10 firms selected and analysed in the pilot study are shown in Table 6.4, and are the same as those included on the NZSX 10 index at that time.

Table 6.4: Sample firms for pilot study

Code	Company	Sector	Date of annual report
AIA	Auckland International Airport Ltd ¹⁴	Ports	30/6/2003
CAH	Carter Holt Harvey Ltd	Forestry	31/12/2003
CEN	Contact Energy Ltd	Energy (Single)	30/9/2003
FBU	Fletcher Building Ltd	Building	30/6/2003
FPA	Fisher & Paykel Appliances Holdings Ltd	Intermediate & Durables	31/3/2003
FPH	Fisher & Paykel Healthcare Corporation Ltd	Intermediate & Durables	31/3/2003
INL	Independent Newspapers Ltd	Media & Communications	30/6/2003
SKC	Sky City Entertainment Group Ltd	Leisure & Tourism	30/6/2003
TEL	Telecom Corporation of New Zealand Ltd	Media & Communications	30/6/2003
WHS	The Warehouse Group Ltd	Consumer	31/7/2003

6.4.3 Sample firms for the extended study

Since content analysis is an extremely labour-intensive and time-consuming technique most content analysis studies use small sample sizes (Abrahamson & Amir, 1996). Prior ICR content analysis studies, that used a comprehensive IC framework to investigate ICR in annual reports, selected 20 (April et al., 2003; Guthrie & Petty, 2000) and 30 (Abeysekera & Guthrie, 2005; Bozzolan et al., 2003) companies in their samples. In this study, the 30 largest New Zealand domestic firms were selected. The size of the firms was based on their market capitalisation as on 24 June 2004, as published in the NBR of 25 June 2004 (National Business Review, 2004b 25 June 2004). The NBR was used because it revealed the market capitalisation of 180 firms

¹⁴ Limited

listed on the NZSX Market, including 62 international firms. The market capitalisations of the remaining 118 firms were ranked at that date, and the 30 firms with the largest market capitalisations selected. To ensure that only domestic firms were selected, these 30 firms were verified with the NZSX index as at 6 April 2005, the date of selection. The NZSX All index was used for this purpose, as it comprises only domestic firms listed on the NZSX. The NZSX All index is divided into the NZSX 15, the NZSX MidCap, and the NZSX SCI indices. The NZSX 15 index provides information regarding New Zealand's top 15 listed firms. As this is a "country" index, overseas stocks traded on the NZSX are not eligible for inclusion. The NZSX MidCap index provides information on New Zealand's medium-sized firms, excluding those firms included in the NZSX 15 index. The NZSX SCI index comprises small domestic equity securities listed on the NZSX Market. The 15 largest domestic firms selected corresponded with those on the NZSX 15 index as at 6 April 2005. Twelve of the next 15 largest domestic firms selected appeared on the NZSX MidCap index as at 6 April 2005, and the other 3 firms appeared on the NZXS SCI index. Thus all 30 firms selected are domestic. Even though 3 firms appeared on the NZSX SCI index on 6 April 2005, they were included in the sample as their market capitalisation as at 24 June 2004 exceeded those of other domestic firms at that time. In conclusion, the 30 firms selected in the extended study are the largest domestic firms as at 24 June 2004. Table 6.5 shows the 30 firms selected and analysed in the extended study.

Table 6.5: Sample firms for extended study

Code	Company	Sector	Date of annual report	Number of pages¹⁵
AIA	Auckland International Airport Ltd	Ports	30 June 2004	67
AIR	Air New Zealand Ltd	Transport	30 June 2004	105
APT	AMP NZ Office Trust	Property (Single)	30 June 2004	53
BGR	Briscoe Group Ltd	Consumer	31 January 2004	38
CAH	Carter Holt Harvey Ltd	Forestry	31 Dec. 2004	81
CAV	Cavalier Corporation Ltd	Textiles & Apparel	30 June 2004	61
CEN	Contact Energy Ltd	Energy (Single)	30 Sept. 2004	73
FBU	Fletcher Building Ltd	Building	30 June 2004	88
FPA	Fisher & Paykel Appliances Holdings Ltd	Intermed & Durables	31 March 2004	77
FPH	Fisher & Paykel Healthcare Corporation Ltd	Intermed & Durables	31 March 2004	64
FRE	Freightways Ltd	Transport	30 June 2004	57
IFT	Infratil Ltd	Energy (Single)	31 March 2004	81
INL	Independent Newspapers Ltd	Media & Comms	30 June 2004	76
KIP	Kiwi Income Property Trust	Property (Single)	31 March 2004	77
NGC	NGC Holdings Ltd	Energy (Single)	30 June 2004	70

¹⁵ Excluding cover page

Code	Company	Sector	Date of annual report	Number of pages¹⁶
NPX	NuPlex Industries Ltd	Building	30 June 2004	77
NZR	The NZ Refining Company Ltd	Energy (Single)	31 Dec. 2004	62
POA	Port of Auckland Ltd	Ports	30 June 2004	81
POT	Port of Tauranga Ltd	Ports	30 June 2004	56
SAN	Sanford Ltd	Agriculture & Fishing	30 Sept. 2004	75
SKC	Sky City Entertainment Group Ltd	Leisure & Tourism	30 June 2004	96
SKY	Sky Network Television Ltd	Media & Comms	30 June 2004	80
STU	Steel & Tube Holdings Ltd	Building	30 June 2004	33
TEL	Telecom Corporation of New Zealand Ltd	Media & Comms	30 June 2004	117
TPW	TrustPower Ltd	Energy (Single)	31 March 2004	47
TRH	Toll New Zealand Ltd	Transport	30 June 2004	66
TWR	Tower Ltd	Finance & Other Services	30 Sept. 2004	17 A3 size, 36 A4 size
WAM	Waste Management NZ Ltd	Finance & Other Services	31 Dec. 2004	68
WHS	The Warehouse Group Ltd	Consumer	31 July 2004	80
WPT	Westpac Banking Corporation NZ	Finance & Other Services	30 Sept. 2004	208

¹⁶ Excluding cover page

The 30 firms shown in Table 6.5 comprise a representational sample. The aggregate dollar value of the market capitalisation of the 118 domestic firms included in the NBR on 24 June 2004 was \$50,996.10m. The aggregate dollar value of the selected 30 firms represents a significant 85.227 per cent of this base. The aggregate market capitalisation of the 30 firms still represents 22.9 per cent of the base, even when the market capitalisation of international companies listed on the NZSX is included in the base (thus using the total market capitalisation of the 180 companies mentioned in the NBR on 24 June 2004). Furthermore, selecting 30 of the 118 domestic firms represents 25 per cent of the number of domestic firms listed at that date.

The numbers of pages given in Table 6.5 indicate the length of the documents, and signal that coding annual reports manually can be time consuming and tedious, and hence requires coders being able to pay attention to detail.

6.5 Unitising

While experimenting with the application of content methodology during the pilot study, numerous practical challenges pertaining to selecting appropriate recording units were found (Steenkamp, 2005). An investigation into prior published ICR content analysis studies (see for example Abeysekera & Guthrie, 2005; April et al., 2003; Bozzolan et al., 2003; Brennan, 2001; Goh & Lim, 2004; Guthrie & Petty, 2000; Guthrie et al., 1999) revealed most studies are not explicit about unitising, some refer to a singular unit of analysis, and that references to the practical applications of recording and context units are inconsistent. Not explicating which units are selected as recording and context units could hinder the replication of ICR studies, be problematic for understanding how data was made, for interpreting results, and consequently, make comparability of results problematic. Along similar lines, Milne and Adler (1999) reported that there is much confusion in the social and environmental disclosures literature, about the “unit of analysis”. The confusion is about the issues of what should form the basis for coding with what should form the basis for measuring or counting the amount of disclosure. They claimed that these two bases are not the same.

To guide the researcher with selecting appropriate recording and context units from the list of possibilities shown in Chapter 4 (see section 4.2.2), prior ICR and CSR content analysis accounting studies investigating voluntarily disclosures in annual

reports were examined. Hereafter in short, prior ICR studies and CSR studies are referred to. Findings of how prior ICR studies discussed their applications of these methodological issues are discussed first, followed by those of CSR studies.

6.5.1 Other ICR content analysis studies

Krippendorff (2004) claimed: “Content analysts must justify their methods of unitising and must show that the information they need for their analyses is represented in the collection of units” (p. 83). Despite claims such as these, many published ICR studies are silent about which units of analysis were selected and applied (see, for example, April et al., 2003; Brennan, 2001; Guthrie & Petty, 2000). Moreover, published ICR studies revealed a considerable unevenness in regard to dealing with the matter of unitising.

Some authors do not justify their methods and do not explicitly define their recording and context units. Assumptions, therefore, had to be made about which units of analysis were selected and applied. For example April et al. (2003) reported:

It was frequently difficult to decide whether a paragraph in an annual report contained a specific reference to an intellectual capital attribute (p. 169).

Based on this sentence it was assumed that annual reports were the sampling units, paragraphs the context units, and IC attributes the recording units.

The examination of other ICR studies literature also revealed that some authors only refer to a singular unit of analysis (see, for example, Abeysekera & Guthrie, 2005; Gardner & Wong, 2005; Guthrie et al., 2004). These references required interpretation, mostly whether researchers referred to the recording or the context unit. Furthermore, the investigation revealed that scholars of different studies selected the same unit, but that this unit had different functions in these studies. For example, Bozzolan et al. (2003), Vandemaele et al. (2005), Guthrie et al. (2006), and Abeysekera and Guthrie (2005) reported using sentences as units of analysis. Bozzolan et al. and Guthrie et al. used sentences as the recording unit whereas Abeysekera and Guthrie used lines (sentences) as the context unit. It appears that Vandemaele et al. also used sentences as context units. They wrote: “[Sentences] are deemed far more reliable than any other unit of analysis as individual words lack

meaning without the context of the sentence” (p. 420). This could be interpreted as meaning that words were used as recording units.

The lack of clarity and transparency about unitising complicates the interpretation of quantities, in particular frequencies, cited by prior ICR studies. It also suggests that the importance of explicating how methodological issues pertaining to unitising were applied has been overlooked. The context units in particular are important as they play an essential role when making data and making inferences. They influence counting and hence the results of an analysis. Carney (1972) claimed that, for counting purposes, the context units must be specified. It is likely that when units selected as recording and context units are not specified, inconsistent units will be applied between studies, and consequently that quantities will differ, as observed and reported by Abeysekera (2006), which will limit meaningful comparisons between studies’ results (Guthrie et al., 2004). Therefore, not explaining how essential methodological issues pertaining to recording and context units are applied may hinder the replication of ICR studies, and hence limit their comparability.

6.5.2 CSR content analysis studies

As limited guidance was found about unitising in the ICR studies literature, the CSR studies literature was investigated. Gray et al. (1995b) reported that there is some debate around the “unit of analysis” in CSR content analysis. The preferred units of analysis in written communications tend to be words, sentences and pages. According to them, the advantage of using words is that they lend themselves to easy categorisation, but to infer meaning, sentences are preferred. Moreover, since pages reflect the amount of total space given to a topic and, by inference, the importance of that topic, pages tend to be the preferred unit in CSR studies. In contrast, Milne and Adler (1999) reported that the most reliable basis for coding is sentences, and that most SER content analyses use sentences as the basis for coding. They stated that individual words have no meaning to provide a sound basis for coding SER disclosures without a sentence or sentences for context. Milne and Adler claimed that it is likely that complete, reliable and meaningful data for further analysis will result when sentences are used for both coding and measurement. It therefore appears that Milne and Adler’s (1999) reference to “basis for coding” means context unit.

Insights gained from examining both ICR and CSR studies were experimented with in selecting the most appropriate recording and context units for this research. According to Wimmer and Dominick (2003) clear-cut and thorough operational definitions of units of analysis cannot be met without effort and some trial and error. The trial process for selecting the reporting units for the current study is discussed next.

6.5.3 Recording units for this study

The IC categories and IC items referred to in this discussion are those contained in the IC frameworks that were applied in the pilot and extended studies (see Tables 6.1 and 6.3). Examples 1 to 6 relate to the pilot study, and hence the IC framework presented in Table 6.1. Examples 7 and 8 relate to the extended study, and hence the IC framework presented in Table 6.3.

6.5.3.1 Experiment with paragraphs

Guthrie et al. (2004) stated the “paragraph method is generally preferred to the sentence or word methods” (p. 290). It is not clear whether they meant that paragraphs are the preferred recording units or context units. Paragraphs were experimented with as the recording units in the pilot study. However, the requirement that recording units should be mutually exclusive (Carney, 1972, p. 168; Krippendorff, 2004, p. 155; Weber, 1990, p. 23) posed some challenges. Examples 1 and 2 illustrate that in many paragraphs more than one IC item could be coded.

Example 1: Challenge with mutual exclusiveness requirement in paragraphs
<i>\$25m EBIT gain through extra efficiencies in Forests during 2003. This included a willingness of our key suppliers to work with us to achieve efficiencies in harvesting and distribution operations. Project Canopy, a powerful integrated forest information systems coming on stream in March 2004, will help identify further savings.</i>
(Carter Holt Harvey Annual Report 2003, p.5)

The extract in Example 1 was interpreted as being one paragraph. Using the IC framework and operational definitions at least two IC items could have been inferred and coded in this paragraph. The first is the statement regarding the relationship with key suppliers, which could have been coded as external capital – ‘business

collaboration’. The second is the statement about *Project Canopy*, which could have been coded as internal capital – ‘information systems’.

<p>Example 2: Challenge with mutual exclusiveness requirement in paragraphs</p>
<p><i>Looking ahead</i></p> <p><i>Carter Holt Harvey is a very strong player in the mature New Zealand packaging market and a niche player in the much larger Australian market. The business works closely with its partners in the meat, seafood and horticulture sectors.</i></p>
<p>(Carter Holt Harvey Annual Report 2003, p.10)</p>

In the paragraph (an overview of the company’s packaging activities) in Example 2 two different IC items could have been coded. The first sentence could have been coded as external capital – ‘company name’, and the second sentence as external capital – ‘business collaboration’.

The requirement of mutually exclusive classes also posed a challenge when defining a paragraph. Many presentations of texts in annual reports do not comply with the typographical conventions of a paragraph, namely being identified as text fragments bracketed by carriage controls (§). It was frequently difficult to identify the beginning and end of a paragraph, posing a challenge as to how many counts to record. One particular challenge with defining a paragraph was when information was presented as bullet points or dashes. The challenge was whether each point represents a sentence or a paragraph, and hence how many counts to record. Examples 3 and 4 illustrate.

<p>Example 3: Challenge with mutually exclusive classes and counting when defining a paragraph</p>
<p><i>Highlights & Key Figures</i></p>
<p><i>Record 1 million appliances sold in one year</i></p> <hr/> <p><i>Commenced business with European Distributors and OEM partner</i></p> <hr/> <p><i>Continued as leading “continental” brand in Singapore</i></p>
<p>(Fisher & Paykel Appliances Ltd Annual Report 2003, p.4)</p>

Seven points are mentioned in the annual report, but only three were used to illustrate the challenges in Example 3. Messages inferred in these three points could have been coded differently: the first point as external capital – ‘customer satisfaction’, the second as external capital – ‘distribution channel’, and the third as external capital – ‘brand’.

Example 4 illustrates the challenge regarding how many counts to record when the same IC item is inferred in a few bullet points. Seven points are given in the annual report, but for the illustration, only three are mentioned here.

<p>Example 4: Challenge with counting posed by defining a paragraph</p>
<p><i>Contact’s vision is to be “the most respected integrated energy business in Australasia”. To achieve this, Contact (in no particular order) strives to:</i></p> <ul style="list-style-type: none"> • <i>Provide quality service and fair treatment to customers</i> • <i>Deliver value to shareholders, and</i> • <i>Provide a safe and rewarding work environment</i>
<p>(Contact Energy Ltd Annual Report 2003, p.23)</p>

All three points in Example 4 were interpreted as conveying messages about Contact Energy’s set of key values, beliefs and understanding shared by members of the firm, and were coded internal capital – ‘corporate culture’. If each bullet point is defined as a paragraph, then three counts will be recorded. However, if each bullet point is defined as a sentence, then only one count will be recorded.

6.5.3.2 Experiment with sentences

In Examples 1 to 4 only one IC item was inferred in any one sentence. Hence, it appears that the challenge regarding mutually exclusiveness posed in paragraphs could be resolved by using sentences instead of paragraphs as the recording units. According to Milne and Adler (1999) sentences are the preferred unit in CSR and sentences were also used as the recording units by Bozzolan et al. (2003) for their ICR study. However, Examples 5 and 6 illustrate that mutual exclusiveness is also a challenge when sentences are used as the recording units.

Example 5: Challenge with mutual exclusiveness requirement in sentences

Our strong performance and our continued good prospects for growth in the 2004 financial year are the result of the daily efforts of our sales and marketing staff worldwide, the innovations of our research and development teams, the dedication of our manufacturing and operations staff, our excellent relationships with our distributors, suppliers, clinical partners and of course, the confidence of our customers.

(Fisher & Paykel Healthcare Annual Report 2003, p.7)

The sentence in Example 5, presented in the Chairman’s report, contains messages about at least two different IC categories and multiple IC items. Reference to the efforts of sales and marketing staff, R&D teams, and manufacturing and operations staff can be coded as human capital – ‘know-how’. Relationships with distributors, suppliers and clinical partners can be coded as external capital – ‘business collaboration’, and confidence of customers can be coded as external capital – ‘customers’.

Example 6: Challenge with mutual exclusiveness requirement in sentences

Staff, suppliers and customers

That so much was achieved in the year is a tribute to the management and employees of the company. Fletcher Building was also well served by its suppliers, subcontractors, bankers, advisors and its loyal customer base. On behalf of the board, I extend our thanks to all of these stakeholders for their valued contribution to our success.

(Fletcher Building Ltd Annual Report 2003, p.3)

Example 6 is an excerpt from the Chairman’s review. The second sentence in Example 6 can be interpreted as conveying messages about at least three different IC items. Reference to the suppliers and subcontractors can be coded as external capital – ‘business collaboration’; bankers and advisors as internal capital – ‘financial relations’; and loyal customer base as external capital – ‘customers’, or ‘customer loyalty’.

Examples 1 to 6 illustrate that the requirement of mutual exclusiveness poses coding difficulties when the preferred units of CSR, sentences, and Guthrie et al.’s (2004) suggested units, paragraphs, are selected as recording units. Only one author in the content analysis literature offered guidance regarding how to manage the requirement

of mutually exclusive classes when using paragraphs or sentences as recording units. Holsti (1969) claimed that sentences and paragraphs were rarely used as recording units, because they do not usually lend themselves to classification into a single category. It therefore appears that paragraphs and sentences are not appropriate recording units when user judgement is required for inferring messages. The next step in experimenting with selecting the most appropriate recording unit for this study was to explore other units as suggested in the list of possibilities discussed in section 4.2.2.

6.5.3.3 Experiment with words

“Words are the smallest, and as far as reliability is concerned, the safest recording unit for written documents” (Krippendorff, 2004, p. 104). According to Smith and Taffler (2000) doing a word-based content analysis (form oriented) has some benefits: relative simplicity; automatic computer coding of text; and much reduced need for researcher intervention and judgement. In addition to these benefits it appeared that the difficulty with coding caused by the requirement of mutual exclusiveness would be eliminated when selecting words as the recording unit for the current study. Hence, the words used to name the IC items in the IC framework were selected as the recording units. However, using words as recording units posed difficulties and limitations to this study, of which some are discussed next.

One difficulty relates to the meanings of words and hence the messages conveyed by words. According to Carney (1972), “a word always carries a number of messages simultaneously. It is multidimensional. There are shades of meaning and levels of applicability” (p. 84). Language is multidimensional, which means language is both instrumental (fraught with inner meanings), and representational (simply meaning what it states). He also claimed it is difficult to define words, as words are “slippery things”. The “meaning” of words shifts and changes for a person, for example as a person matures. Thus, Carney claimed “there is no ‘ideal reality’, no ‘basic essence’, no ‘inner picture’ of which the word is a label” (p. 85). Similarly, Krippendorff (2004) argued, to identify the meaning of words, “typically depends on its syntactical role within a sentence” (p. 101), and illustrated that the dictionary meanings of the word *go* denote a game, an action, or a command. In this study using words as recording units was inappropriate, as explained below.

One of the reasons why words were inappropriate recording units is because words may or may not be used in the context of conveying IC information. For example, when words, such as the names of IC items, are used as the recording unit, incorrect coding may result, illustrated in Examples 7 and 8. Example 7 illustrates that coding the word “customer” could result in incorrect recording.

Example 7: Challenge with meanings of words

Our corporate and medium enterprise customers already have dedicated account managers who contact them on a monthly or quarterly basis to make sure we stay in sync with their rapidly changing needs. In the next year we will also proactively contact residential customers in New Zealand voice-to-voice. They'll get a phone call from a Telecom person who will invite them to tell us, at their convenience about their communication needs, and then we can suggest the options that will best suit them. We've trialed this with 6,000 customers and it's been really successful.

(Telecom Corporation of New Zealand Ltd Annual Report 2004, p.6)

The paragraph in Example 7 refers to Telecom’s customers. The word “customers” appear three times in this paragraph. However, it was not interpreted as conveying a message about the firm’s IC item ‘customer and customer satisfaction’. The word “customers” was interpreted as being used in the context of merely referring to the customers, and not in the context of telling a story that the customers are intellectual resources or capacities, and hence being knowledge resources. The word “customers” was interpreted being used neither in a context meeting the definition of IC nor that meets the operational definition of the IC item, and therefore not coded.

Another reason why words were inappropriate recording units is because they could limit a study to coding of manifest meanings. Such coding will exclude many covert messages from being recorded. As discussed in Chapter 3 (see section 3.3.3), to make inferences about the meanings of messages of IC information requires reading between the lines. It is highly likely that messages about IC items may be missed when words (used to name IC items) do not appear in texts. Example 8 illustrates how the IC item ‘brand’ would not have been coded.

Example 8: Missed coding when using words as recording units

We were delighted to announce that we had become the Premier sponsors for Netball New Zealand. Our association with this high profile women's sport affords us to profile around which a good deal of advertising can be built. The Flippers sponsorship – of the elite youth swimming squad in Australia – also provides an association with a high profile sport.

(Fisher & Paykel Appliances Annual Report 2004, p.15)

When applying human intelligence and 'reading between the lines', the paragraph in Example 8 was interpreted as telling an IC story about the firm's brands. The paragraph tells a story about the corporate brand that speaks for the value in the market place in association with the name of the firm, which is reminding customers to buy products and services in preference to another firm. This latent meaning meets the operational definition of the IC item 'brand'. However, since the word "brand" does not appear in this paragraph, it is highly likely that the message about this IC item could have been missed, when using words as recording units.

Example 8 indicates that IC stories could be hidden and are communicated as abstract ideas and concepts. Thus to infer messages about an IC story, it is necessary to go beyond manifest meanings of words. Morris (1994) argued words are inappropriate recording units to capture the meanings of concepts. Wimmer and Dominick (2003) described a concept as: "A term that expresses an abstract idea formed by generalizing from particulars and summarizing related observations" (p. 42). According to Morris (1994), validity problems are created by the attempt to retrieve concepts through the use of imperfect surrogates for those concepts – words or strings of words. "Because concepts can be represented by many different words and words have different meanings in different contexts, valid content analysis schemes must incorporate rules which specify the pertinent connotations of the context under investigation" (Morris, 1994, p. 907). Andriessen (2006) stated the IC concept is metaphorical and wrote: "We use metaphor to conceptualise phenomena, structure our thinking, and create abstract concepts" (p. 93). Since themes can be represented by many words, it appears that themes could be appropriate recording units to express abstract IC ideas and concepts. The use of themes is discussed next.

6.5.3.4 Experiment with themes

According to Carney (1972), a theme is a conceptual entity: a viewpoint which can be seen as a coherent whole. Moreover, Weber (1990) reported: “Theme” is taken to indicate semantically equivalent clusters of words with different meanings or connotations that taken together refer to some theme or issue, and Krippendorff (2004) suggested using thematic units when user judgement is required to determine hidden messages conveyed in narratives. An experiment was done with applying themes as recording units. It was found that the challenges and difficulties illustrated in Examples 1 to 8 above, relating to mutually exclusive classes, counting, and limitations of words used to name IC items, were eliminated when applying themes as recording units for making inferences about IC disclosure. Therefore the recording unit selected for the extended study was themes.

When dealing with a theme some kind of operational definition of what constitutes the theme will be wanted (Carney, 1972). In addition, it is easier to define a theme by giving illustrations than by defining it in generalised, abstract terms. The operational definitions of the IC constituents are presented in Appendix A and the meanings of the IC concepts are further illuminated with illustrations from annual reports, attached in Appendix B.

6.5.4 Context units for this study

The centrepiece of the definition of content analysis adopted in this research is to make replicable and valid inferences from texts and visuals to the context of their use. In making inferences about *what* IC were conveyed in texts and visual images in annual reports, the context in which messages were communicated was considered. To characterise IC themes the symbolic materials that give them their precise shade of meaning were examined. The setting in which the message was expressed, and the symbols and connotations embedded in the message – summarily described as the context units – were considered when making inferences about ICR. Since the reporting units applied in the pilot study differ from those of the extended study, different context units were also selected.

6.5.4.1 Pilot study

As stated in Chapter 3 “the context unit is the largest body of content that may be searched to characterize a recording unit” (Holsti, 1969, p. 118). Since paragraphs were initially selected as recording units in the pilot study, the context units selected were five sections of the annual report. The five sections were: vision, directors, business, financial and remaining, as recommended by Guthrie et al. (2004).

6.5.4.2 Extended study

The largest body of content considered to characterise themes in the extended study was paragraphs. Guthrie et al. (2004) claimed that the paragraph method is more appropriate in drawing inferences from narrative statements. This is because meaning is commonly established with paragraphs rather than through the reporting of a word or sentence. Their comment that using paragraphs is the preferred method to the sentence method was interpreted as referring to context units. Therefore paragraphs, instead of sentences as applied by Abeysekera and Guthrie (2005), were selected as appropriate context units. Another reason for selecting paragraphs is to manage the dislocation of meanings, as described by Denscombe (1998). He stated there is a tendency to dislocate meanings of recording units, because it is difficult to establish the implied meanings, how the meaning draws on what has just been said, what follows and even what is left unsaid. Paragraphs allow implied or latent meanings to be drawn from what has been said in previous sentences and what follows in sentences within a paragraph. Thus the tendency to dislocate IC meanings should be less when using paragraphs than when using sentences as context units.

However, paragraphs were appropriate context units for coding written texts only, but visual images do not have the natural grammatical paragraphs of written texts. Visuals such as pictures, charts, tables, figures, diagrams, and graphs are not typically and exclusively presented as written material. Therefore the symbolic materials examined to make inferences about *what* IC messages are conveyed through visuals, were the visual itself as well as its surrounding texts. The surrounding texts of visuals include, among other, captions of visuals, references to visuals in written texts, and notes given inside or across a particular visual.

Abeysekera and Guthrie (2004a) also coded visuals and had a similar challenge in defining their context unit. They used lines [sentences] as the context unit for

narrative statements. They have chosen the line count method as “it makes the quantification of charts, tables and photographs easier, by simply converting them into equivalent lines” (p. 157). Stated differently in another of their papers, they wrote: “the line count method provides a more appropriate starting point from which to convert charts, tables and photographs into equivalent lines so that the text, charts, tables, and photographs can be compared on a common basis” (Abeysekera & Guthrie, 2005).

Even though the context units for coding IC messages inferred in texts and visuals were different in this study, there were no differences in how methodological issues were dealt with in these context units. Holsti (1969) stated when frequency assessments are employed, each unit of content should be given equal weight, permitting aggregation or direct comparison. In this study when counting the frequencies, the two context units were given the same weight. Thus the context units of visuals are equivalent to those of texts.

In sum the extended study had two context units. The context units for making inferences about *what* IC messages were conveyed through texts were paragraphs. The context units for making inferences about *what* IC messages were conveyed through visual images were the visual itself and its surroundings.

The next section discusses how this study applied methodological issues pertaining to the recording and coding process.

6.6 Recording and coding process

Recording represents a major problem for analysts in practice (Krippendorff, 2004). According to Abeysekera (2003) the process of coding raw data in annual reports in terms of IC items can pose a threat to validity and/or reliability in using content analysis. Weber (1990) stated the central problems of content analysis originate mainly in the data-reduction process by which the many words of texts are classified into much fewer content categories. One set of problems concerns the consistency or reliability of text classification. It appears that SER disclosures content analysis manages difficulties relating to recording by “devising a set of rules about ‘what’ and ‘how’ to code, measure and record the data to be classified” (Milne & Adler, 1999, p. 241). Morris (1994) claimed reliability problems in text classification are typically due to the ambiguity of: (1) word meanings, (2) category definitions, or (3) other

coding rules. To manage difficulties that may arise from these ambiguities analysts “must formulate recording instructions that they and other researchers can reliably execute” (Krippendorff, 2004, p. 125). One function of such instructions is to specify the recording process. Except for the brief seven decision rules of Gardner and Wong (2005) discussed in section 5.4.1, no prior ICR study revealed how methodological issues pertaining to the recording process were dealt with.

The first research question of this research is concerned about *what* IC and *how* IC is reported. Thus, in broad terms this study’s variables pertain to the variations of instances as to *what* IC, and as to *how* IC is disclosed. Section 6.3.3 discussed the categories for *what* IC are reported. Therefore, the remainder of this section discusses how the many words and visual images in annual reports were classified into much fewer content categories pertaining to *how* IC is reported. First, the decision scheme of this study is discussed. Then various categories of variables for *how* IC is reported are considered, followed by considering how to deal with irrelevant information. Thereafter this study’s coding scheme is devised.

6.6.1 Decision scheme for this study

When several alternatives have to be considered during the coding process, Krippendorff (2004) advocated devising a decision scheme. Decision schemes help coders to organise complex judgements in terms of what has to be decided first, second, third, and so on. Decision schemes are uniformly reliable, because they: (1) minimise criteria confusion, (2) reduce large numbers of alternatives drastically to numbers that coders can conceptualise simultaneously, and (3) can prevent unreliability due to categories that overlap in meaning. Table 6.6 indicates the fairly large number of alternatives that had to be considered when making inferences about *what* IC is disclosed during the coding process.

Table 6.6: Alternatives for what IC is disclosed

Division of IC theme	IC category	IC category	IC category	Number of categories
IC category	External	Internal	Human	3
IC items	5	7	5	17
IC attributes	10	11	17	38
Total number of categories in IC theme				58

Table 6.6 shows when coding *what* IC is disclosed, a fairly large number of alternatives were considered in accord with this study's IC framework (attached in Appendix A): three IC categories, a total of 17 IC items, and 38 IC attributes. The IC attributes are the components of the operational definitions of the IC items. Operational definitions of some IC items have more than one component, explaining the 38 IC attributes.

Table 6.7 indicates the number of alternatives that had to be considered for recording *how* IC is reported. These alternatives relate to variables for form, nature and location of disclosure.

Table 6.7: Alternatives for how IC is disclosed

Variable	Number of categories
Form of disclosure	3
Nature of disclosure	3
Location of disclosure	5
Total number of categories	11

The total number of categories depicted in Tables 6.6 and 6.7 demonstrate that several alternatives had to be considered when coding *what* and *how* IC are reported in annual reports. Hence, the decision scheme devised in this research was useful to manage the forming of coding habits and preferences. It also guided the researcher

with labelling and categorising information read in texts and visuals within the established definitions of the IC framework, and the categories of variables.

In this study, decisions related to *what* and *how* IC is reported, were made. In deciding whether IC was reported, it was considered whether information relates to the IC theme or not. When information was not interpreted as relating to the IC theme, it was considered as irrelevant. Hence, a category for “irrelevant information” was formed, discussed in section 6.6.3. When information was inferred as relating to the IC theme, the issue of *what* IC is disclosed was addressed first. In accord with the IC framework attached in Appendix A, it was first decided which of the three IC categories an inferred message related to: internal, external or human capital. Then to code for the relevant IC item, the IC items and IC attributes within each category were considered. Codes for IC categories and IC items were then recorded in the annual report. The codes and numbers developed as part of a coding scheme are discussed in the section 6.6.4. In deciding *how* IC is reported, possibilities for the categories of variables depicted in Table 6.7 were considered. The categories of these variables are discussed next.

6.6.2 Categories for variables of how IC is reported

Categories for variables devised of *how* IC is reported relate to form, nature and location of disclosure, depicted in Table 6.8.

Table 6.8: Categories for variables of how IC is reported

Variable	Categories within variable
Form	Written texts and visual images
Nature	Declarative, numerical, and fiscal value
Location	Five sections

The alternative variables presented in Table 6.8 meet the requirements pertaining to categories discussed in section 4.4.4. The categories of variables are exhaustive of the content of annual reports, and the categories within each variable are mutually exclusive, and equal. These variables are, however, limited. According to Krippendorff (2004), when variables are limited “analysts may define them *implicitly*, by *specifying their range*, or *explicitly*, by *listing all alternative values*” (p. 156

emphasis in original). The alternative values (categories) of this study's three variables pertaining to *how* IC is reported are defined explicitly in the following three subsections.

6.6.2.1 Categories pertaining to form of disclosure

Categories pertaining to the form of disclosure were formed to indicate whether IC information is reported in texts or as visuals in annual reports. By texts it is meant presentations made in written narrative forms, and by visuals it is meant presentations of charts, diagrams, tables, graphs, and figures, and pictures and photographs. Two subcategories of visuals were created. Visuals presented as charts, diagrams, tables, graphs, and figures, were categorised, defined and referred to as charts. Information disclosed in pictures and photographs were classified and referred to as pictures. Thus two groupings were created for the form of disclosure: texts and visuals, and two subcategories were created for visuals: charts and pictures. The operational definitions of the categories within the variable "form of disclosure" are given in Table 6.9.

Table 6.9: Definitions of categories pertaining to form of disclosure

Category	Subcategory	Operational definition
Texts		Presentations made in narrative written form
Visuals	Charts	Presentations made as charts, diagrams, tables, graphs, and figures
	Pictures	Presentations made as pictures and photographs

It appears that most prior ICR content analysis studies only analysed information disclosed in texts. Most prior studies are silent about whether pictures were coded (see for example April et al., 2003; Bozzolan et al., 2003; Brennan, 2001; Guthrie & Petty, 2000; Guthrie et al., 2006). Only one prior study explicitly stated that pictures were coded (Abeysekera, 2003), and one other study stated pictures were not coded as such coding is too subjective (Gardner & Wong, 2005). Guthrie et al. (2004) reported there is scope for extending content analysis to capture pictorial information, but found current attempts to do so too subjective.

Because of the subjectivity involved when coding pictorial information, pictures were not captured during the pilot study. However, the discussion of challenges with ambiguous meanings and subjective interpretations in section 7.3 illustrates that subjectivity involved in coding texts is no different to subjectivity involved in coding pictures. The discussion of subjectivity in coding pictures (see section 7.4) justifies including pictorial information in this study.

6.6.2.2 Categories pertaining to nature of disclosure

It appears that “nature of disclosure” is referred to as “type of disclosure” in CSR literature (see for example Gray et al., 1995b). The categories pertaining to the nature of disclosure, and their operational definitions for this study are given in Table 6.10.

Table 6.10: Definitions of categories pertaining to nature of disclosure

Category	Operational definition
Declarative terms	Information expressed in terms other than quantitative terms
Numerical terms	Information that relates primarily to actual numbers of a non-financial nature
Fiscal values	Information that relates primarily to actual financial numbers

Different terms are used in prior ICR content analysis studies when referring to the categories regarding the nature of disclosure. For example, the term “discursive” is used in ICR literature when describing information disclosed in declarative terms information (Brennan, 2001; Guthrie et al., 1999). Also, Guthrie et al. (2004) wrote that the nature of disclosure is categorised as either qualitative or quantitative. These two terms were, however, avoided in this thesis. Quantitative information could be disclosed in qualitative terms, which could be confusing. Table 6.10 indicates that the term “declarative” was used when referring to information disclosed in a qualitative nature, and “numerical terms” and “fiscal values” were used when referring to information disclosed in quantitative terms. The term declarative is adopted from the CSR literature, used to describe qualitative information (Andrew, Gul, Guthrie, & Teoh, 1989; Gray et al., 1995b; Guthrie & Mathews, 1985; Guthrie & Parker, 1990; Milne & Adler, 1999). However, the terms used in CSR literature classifying quantitative disclosures as “monetary quantitative” and “other quantitative” were not applied (Andrew et al., 1989; Gray et al., 1995b; Guthrie & Mathews, 1985; Guthrie

& Parker, 1990; Milne & Adler, 1999). Gray et al. (1995) for example, used the term “other quantitative” when content “contained and was primarily related to actual numbers of a non-financial nature”, and the term “monetary quantitative” when content “contained and was related primarily to actual financial numbers” (p. 99). Instead, the terms and approach used by prior ICR studies (Abeysekera, 2003; Guthrie et al., 1999) were preferred. Therefore, when information is reported in quantitative terms, they were classified as being disclosed in numerical terms or in monetary values.

6.6.2.3 Categories pertaining to location of disclosure

Guthrie et al. (2004) suggested five sections to indicate location: the vision/strategy section; the director’s section; the business/operational section; the financial section; and the remaining sections. One other ICR content analysis study has applied these five sections (see Guthrie et al., 2006). The only other ICR content analysis study that analysed annual reports to find out how its different sections communicate IC is the Sri Lankan study (Abeysekera, 2003). Eight sections were identified: (1) vision, mission and goals; (2) chairman’s report; (3) directors’ report; (4) operations; (5) financial statements; (6) auditors’ report; (7) cover, inner cover and outer cover; and (8) sundry report containing information not covered by the other sections (Abeysekera, 2003; Abeysekera & Guthrie, 2004a). Because of the already large number of alternatives to consider (discussed in section 6.6.1), combined with insights gained about the location of ICR in the pilot study, the five sections suggested by Guthrie et al. (2004) were adopted. Effectively, Abeysekera’s chairman and directors’ sections were combined, and referred to as the directors’ section. Moreover, the financial and auditors’ sections were combined and referred to as the financial section; and the cover and sundry sections were combined and referred to as “the remaining sections”. The five sections for location in this study are defined operationally by describing what is typically represented in a particular section. These descriptions are based on the definitions given by Abeysekera (2003), with slight modifications. The operational definitions of the five sections, indicating the location of disclosure in this study are given in Table 6.11.

Table 6.11: Definitions of the sections in the annual reports

Section	What represents the section
Vision/strategy	Vision statement Mission statement Goals and objectives
Directors	Chairman section and any comments made by chairman Director's review, director's report, director's letter, BOD section Corporate governance report
Business/operational	CEO or CE review and or report ¹⁷ MD review Operational review and comments directly related to operations of the firm, e.g. highlights
Financial	Financial overview/commentary Financial highlights and financial trend statements Financial statements and any comments adjunct to the financial review and statements Auditors' report
Remaining	Outer and inner cover pages Any comments and/or reports not included by previous sections (e.g. Sustainability and Environment reports)

The variable relating to location of disclosure contributes to understanding *how* IC information is disclosed, because it helps to understand firms' approaches to ICR, discussed in Chapter 2 (see sections 2.3.1 and 2.3.2). Firms could adopt a narrative approach of telling IC stories or a quantitative approach. When adopting a narrative approach, information will be disclosed in the sections that lend themselves more to disclosures of a narrative form and nature, described as the narrative portions. Conversely, when adopting a quantitative approach, information will be disclosed in sections that lend themselves more to disclosure of a quantitative form and nature.

¹⁷ Abeysekera (2003) included this as part of the Directors' section. However, most CEO reviews and reports in the New Zealand sample emphasised issues relating to the business and or operations, and hence are included here.

The financial section typically lends itself to an orthodox measurement approach whereas disclosures in the other four sections typically lend themselves to a story-telling approach.

6.6.3 Irrelevant information

The alternatives of “what” IC is disclosed meet the requirements pertaining to categories discussed in section 4.4.4. The aggregate of the IC categories, IC items and IC attributes are exhaustive of the overall IC theme. The three IC categories are mutually exclusive and equal. The 17 IC items are also mutually exclusive and equal. In contrast, the categories of “what” IC are disclosed are not exhaustive of all the information contained in annual reports. For example mandatory disclosure of intangibles and physical and financial capital were excluded. Krippendorff (2004) stated that “a set of categories that lacks exhaustiveness may be rendered exhaustive through the addition of a new category that represents all units not describable by the existing ones” (p. 132). Hence, a category “other” was formed in this study, representing other information communicated in annual reports but not describable by IC. Carney (1972) referred to this “other” category as a “rag-bag category”, containing all irrelevant information. As this study coded only voluntarily reported IC information, all information disclosed relating to physical and financial capital, and mandatory disclosure of intangibles was irrelevant. Most information contained in annual reports was therefore classified in this “other” category. Since this “other” category was defined by its negation of all informative categories, this “other” category contributes nothing to answering the research question about what and how IC is reported in New Zealand firms’ annual reports. For example, the research was not concerned with the ratio of voluntary ICR relative to physical and/or financial capital disclosures. Thus, information that falls into this “other” category, that means all irrelevant information, was ignored and not noted in the annual reports. Coding of irrelevant information will make a voluntarily ICR content analysis more tedious, arduous and time-consuming. Such coding has no value and will be meaningless to such analyses. Writing codes in the annual reports for irrelevant information will furthermore clutter the annual reports. Unnecessary cluttering will make the identification and transfer of coded IC items from the annual reports a tiresome, laborious and strenuous task, which may increase the risk of potential errors. It is much easier to spot codes and numbers noted in the annual reports when such writing

is limited. Therefore, this “other” category is fabricated and is not included on the data sheet.

In accord with Krippendorff’s (2004) view, not coding irrelevant information and not recording the coding in this “other” category on the data sheet is not a violation of but a mere relaxation in the requirement for exhaustiveness.

6.6.4 Coding scheme

The coding scheme devised in this study consists of codes and numbers and was used in both the pilot and the extended studies. The codes and numbers created for the categories of variables pertaining to *how* IC is reported are discussed first, followed by demonstrating the codes designed for coding *what* IC categories and IC items are reported.

6.6.4.1 Codes and numbers for categories of how IC is reported

Table 6.12 depicts the codes and numbers devised for coding the form, nature and location of disclosures.

Table 6.12: Codes and numbers for categories of variables of how IC is disclosed

Form of disclosure	Code	Nature of disclosure	Number	Location of disclosure	Code
Texts	T	Declarative	1	Vision section	V
Charts	C	Numerical	2	Directors’ section	D
Pictures	P	Fiscal value	3	Business section	B
				Financial section	F
				Remaining section	R

Some prior ICR studies included a number “0” in their coding scheme to indicate that no item appeared in the annual report (Abeysekera & Guthrie, 2005; Guthrie et al., 1999). The coding scheme of this study does not include a “0”. When no information was recorded for any particular category, the computational records show no counts. Furthermore, the coding scheme of Abeysekera and Guthrie (2005) included a “-1”

representing an intellectual liability item, but because this study did not record intellectual liabilities, the coding scheme does not include a “-1”.

6.6.4.2 Codes for what IC is reported

Codes created for coding *what* IC is reported pertain to the IC categories and IC items used in the pilot and extended studies. Table 6.13 denotes the codes of the extended study. The codes for IC items are acronyms, representing the first and (if necessary) second letters of the word(s) describing the item.

Table 6.13: Codes for what IC is disclosed

	Code		Code		Code
Internal capital	IntC	External capital	ExtC	Human capital	HumC
1. Intellectual property	IP	6. Financial relations	FR	13. Employee	Em
2. Management philosophy	MP	7. Brands	B	14. Education	Ed
3. Corporate culture	CC	8. Customers/ customer satisfaction	C	15. Training	T
4. Management and technological processes	MTP	9. Corporate image building	CIB	16. Work-related knowledge	WRK
5. Information/networking systems	INS	10. Distribution channels	DC	17. Entrepreneurial spirit	ES
		11. Business collaborations	BC		
		12. Licensing and franchising agreements	LFA		

The next section discusses how this study applied methodological issues pertaining to reducing data, made from coding IC information during the recording process, to manageable representations.

6.7 Reducing data to manageable representations

Content analysts need to develop their recording instructions to ensure that the meanings of the resulting records are available to others (Krippendorff, 2004). This is because such records provide for the interpretability of the research findings. “Records are the most basic and explicit representations of the phenomena analysed” (Abeysekera & Guthrie, 2005; , p. 143). First, the two sets of records produced during the data-making process are addressed. According to Krippendorff (2004) the computational part of content analysis starts where recording stops, thus the distinction between two sets of records. Recording records are those that resulted from the recording process. Computational records are those that resulted from the computational part of the analysis. The last subsection deals with the tabulation tables produced to present the results of this content analysis study.

6.7.1 Recording records

The recording records are the annual reports sampled and analysed to generate data. These annual reports are annotated with hand-written codes and numbers as described in section 6.6.4 above. These codes and numbers indicate the categories of *what* and of *how* IC is reported, which were recorded during the data-making and inference-making processes. Annual reports analysed for both the pilot and the extended studies were kept.

6.7.2 Computational records

The computational records produced are also referred to as data sheets and as coding sheets (Abeysekera, 2003; Guthrie et al., 2004; Wimmer & Dominick, 2003). The computational records of this study can therefore be described as the data sheets used for entering the hand-written codes and numbers recorded in the annual reports into a computational system. Excel spreadsheets were used for computation purposes and are hence the products of the computational part of the content analysis. The data generated from analysing the 30 firms were entered into 30 individual Excel spreadsheets, which were retained. No computational records for the pilot study were created. The pilot study was conducted merely to develop, modify and refine the data collection instruments of the extended study.

The computational records of this study are spreadsheets of the categories of *what* IC and *how* IC is reported. These categories are located in the co-ordinates of rows and columns. Categories of *how* IC is reported are located as columns and categories of *what* IC are reported are located as rows. An example of the data sheet is attached in Appendix C. A descriptive account of how the data sheets were used follows.

A classification scheme is “a set of boxes into which to put the data” (Milne & Adler, 1999, p. 241). The columns and rows of the data sheets are therefore described as the boxes into which data were entered. Separate boxes were created on the spreadsheet so as to make them countable. Each recording noted in the annual reports was entered in the relevant boxes of the spreadsheets, which enabled counting the frequencies of ICR. Counting took place after the recording process and the numbers contained in the cells of the spreadsheets are accumulated numbers. The frequencies recorded on the 30 individual spreadsheets were added together to determine the overall results of this study.

In addition to the various categories, the data sheets also contain the name, financial year-end and sector of the firm to which the data belong, as well as the date the data was entered into the spreadsheet. Moreover, the data sheets also contain explanations and descriptions of the codes and numbers used for coding devised in the coding scheme. The tabulation tables produced of the frequencies recorded on the spreadsheets, that represent the results of this study, are discussed next.

6.7.3 Tabulation tables of results

A variety of tabulation tables were produced and are presented in Chapter 8, showing the results of the overall study. Tables presented in section 8.3 show *what* IC is disclosed and tables presented in section 8.5 show *how* IC is reported. Most tables show absolute and relative frequencies, and some include relative frequencies, which indicate the ranking of information presented in the particular table.

6.8 Summary

This chapter considered the research design of this content analysis study and delineated the semantics of the components of the IC framework. The main focus of this chapter was, however, to give descriptive accounts of how this study has dealt with operational issues and methodological problems associated with four data-

making processes: sampling, unitising, recording, and reducing data to manageable representations. These descriptive accounts are part of the explicit recording instructions provided in this thesis as a means to further refine and develop the methodology when applied to ICR research. Consistency in application of operational issues elucidated in this chapter should enhance the making of meaningful comparisons between ICR studies' results. Furthermore, these descriptive accounts serve as means that independent observers could use to assess this study's reproducibility, which is part of the reliability criteria discussed in section 5.5.2, and hence to assess the validity of this study's results. Chapter 7 builds on this chapter. It gives descriptive accounts of how this study has dealt with making of valid and replicable inferences while generating data in this content analysis.

CHAPTER 7: MAKING VALID AND REPLICABLE INFERENCES

7.1 Introduction

This chapter is part of this thesis' methodological contribution of further refining and developing content analysis methodology when applied to ICR research. The descriptive accounts presented in this chapter on how inferences were made, are part of the explicit recording instructions provided in this thesis. Moreover, they serve as means to assess the replicability and validity of inferences made. "For a content analysis to be replicable, the analysts must explicate the context that guides their inferences. Without such clarification, anything would go" (Krippendorff, 2004, p. 24). Furthermore, according to Carney (1972), improving the quality of a content analysis "also provides strategies for checking on the validity of the inferences finally made" (p. 26).

First, the chapter outlines why inference-making processes need to be explained. Second, it attends to challenges with ambiguous meanings and subjective interpretations, illustrated with examples from annual reports. Third, the chapter deals with the subjectivity involved in coding pictures. Then this study's approach to managing the making of inferences from ambiguous and covert meanings is illustrated with examples from annual reports. Thereafter, rules of inferences devised during the practical application of content analysis methodology are discussed. This is followed by discussions and illustrations concerning why computer-aided text analysis is inappropriate for making inferences about IC themes conveyed through annual reports. The final section considers issues related to the reliability of the coder.

7.2 The need to explain inference making processes

"Not all content analysts have explicated the logic of their inferences as we would hope they would" (Krippendorff, 2004, p. 47). According to Krippendorff, in some cases, this logic is embedded in the notions of meaning that the analysts have subscribed to. In others, the logic can be found in the more or less explicit assumptions that the researchers have made regarding the context of their data. Often, this logic remains hidden because researchers take it for granted, presuming that their own tacit knowledge should be obvious to everyone. Therefore, he claimed, analysts

need to render their assumptions, and the logic they employ, examinable. It appears that prior ICR content analysts took the logic of their inference-making for granted. While experimenting with the application of content methodology during the pilot study, practical challenges pertaining to making valid and replicable inferences were found (Steenkamp, 2005). An investigation into prior published ICR content analysis studies (see for example Abeysekera & Guthrie, 2005; April et al., 2003; Bozzolan et al., 2003; Brennan, 2001; Goh & Lim, 2004; Guthrie & Petty, 2000; Guthrie et al., 1999) revealed that no prior study has explained how methodological issues and/or other challenges with making inferences were dealt with. This chapter attends to this gap and explains the assumptions and logic of how inferences were made about ICR practices in New Zealand firms' annual reports.

The importance of explaining how inferences about ICR are made is related to the difficulties with conceptualising IC while reading annual reports. Mouritsen (2003) argued business schools and universities train people in becoming readers of financial statements. People thus obtain an ability to read a balance sheet in a “natural” way. However, according to Mouritsen (2003), people who can read conventional assets cannot read the “new” intellectual assets, with similar confidence yet. Consequently, the inscriptions made about IC will be weak. This inability to read IC with confidence could be caused by the lack of a recognised way to interpret information on intangibles and IC (Bukh, 2003). Without clarity about how inferences about ICR conveyed in annual reports are made, anything would go (Krippendorff, 2004).

7.3 Challenges with ambiguous meanings and subjective interpretations

According to the CSU (2004), the overarching problem of content analysis research is the challengeable nature of the conclusions reached by its inferential procedures. Moreover, they claimed that the validity of the conclusions lies in the level of implication allowed. “A good content analysis is one that is as objective as the constraints of text upon it allow it to be” (Carney, 1972, p. 48). However, because interpretations are not objective, observer bias poses a threat to studies' validity and reliability (Ahuvia, 2001; McKinnon, 1988). Simon and Burstein (1985, p.224, as cited by McKinnon, 1988) described observer bias as the: “tendency to observe the phenomenon in a manner that differs from the ‘true’ observation in some consistent

fashion” (p. 37). According to McKinnon, the concern with observer bias is what the observers see and hear (or think they see and hear). Moreover, the researcher’s “selective perception and interpretation” can have distorted effects. She claimed: “Each researcher comes complete with a unique set of biases which means that the way in which an event is seen, interpreted and recorded may differ from one observer to another” (McKinnon, 1988, p. 38). Observer bias may occur at three stages of “registering, interpreting and recording” events (Schwartz and Schwartz, 1955, p.91 as cited by McKinnon, 1988, p. 37). McKinnon stated each of these steps involve the discretion of the observer, and are potentially shaped by a range of factors unique to the observer. Included in these factors are cultural background, occupational, and general training. Moreover, she argued that political and philosophical views as well as background experiences are inextricable parts of an individual’s psychological make-up. The making of inferences about ICR is reliant on interpretations, and hence observer bias is an inherent part of ICR research.

Two features of texts, relating to problematic connotations about interpreting meanings of texts and visuals in annual reports posed practical challenges for making inferences about ICR messages. First, texts and visual images do not have single meanings that could be “found”, “identified,” and “described” for what they are (Krippendorff, 2004). Texts and data can be viewed from numerous perspectives. The ambiguity of texts leads a single reader to alternative and equally valid interpretations. Hence, a message does not have only one content, as it may convey a multitude of contents even to a single receiver. As a result, messages may have deviant or subjective meanings. Many meanings of texts and visuals in annual reports were interpreted as being vague and ambiguous, which complicated the making of inferences. The ambiguity of word meanings typically creates reliability problems in text classification (Morris, 1994; Weber, 1990). Moreover, the ambiguity of word meanings also cause a problem with validity (Weber, 1990).

Second, meanings invoked by texts and visuals need not be shared (Krippendorff, 2004). Messages convey different things to different people. Texts typically provide multiple interpretations, as readers with different backgrounds and interests may have unique but divergent interpretations. Graber (1989) also found this phenomenon in her research about “content and meaning” of television news and journalism, reporting: “Past research has shown that shaping stories from the raw material of

events is a subjective, ideology-tinged process. Different reporters, given the same events, usually vary substantially in the news images they convey” (pp. 147-148). In addition, messages “mean so many different things to diverse perceivers that meaning is totally subjective. The meaning intended by the producer of the message may differ markedly from the meaning perceived by researchers who look for specific content features” (pp. 150-151). These views were supported in the content-analysis-in-accounting literature. Aerts (1994) reported accounting explanations are open to multiple interpretation. “Their message is inherently ambiguous” (p. 340), and Staw, McKechnie and Puffer (1983) reported ambiguities involved in coding shareholders letters. Because messages are generally about phenomena other than those directly observed, Krippendorff (1980) claimed it is important that the inferences be performed relative to, and justified in terms of, the context of the data. Inter-subjective agreement as to what a given text means or as to what an author meant to say would simplify a content analysis tremendously, but he claimed such consensus rarely exists.

A commonality shared by these two problematic connotations about meanings is the issue of subjectivity. Carney (1972) stated subjectivity in content analysis is inevitable as “there is no such thing as the ‘content’ of a document, that means ‘content’ that is independent of the person examining the document. The same document can mean wholly different things to different users” (p. 197). Similarly, Krippendorff (2004) claimed: “Text typically affords multiple interpretations, whether because readers with different backgrounds and interests come up with unique but, in the aggregate, divergent interpretations or because ambiguity leads a single reader to alternative and equally valid interpretations” (p. 156). Naturally, due to the metaphoric nature of IC, interpretations about IC captured in various narratives as representations of ICR practices, will be subjective. April et al. (2003) reported that content analysis proved practical and useful for investigating ICR in South African companies’ annual reports, but involved a large number of subjective “judgement calls”. They reported:

It was frequently difficult to decide whether a paragraph in an annual report contained a specific reference to an intellectual capital attribute, or whether it was just a pro forma corporate statement, e.g. ‘our employees are our greatest asset’ (p. 169).

They also reported potential errors in the results of their study may, in part, be due to errors of judgement. The potential errors in judgement were exacerbated as annual reports are often hundreds of pages long and contain an enormous amount of information. Moreover, errors and omissions could also have been made due to reader fatigue and information desensitisation. Milne and Adler (1999) found by far the greatest proportion of disagreements between three coders in their CSR study concerned whether or not a particular sentence was a social disclosure, regardless of the coder. Similarly, Zeghal and Ahmed (1990) claimed: “there is a necessary element of subjectivity involved in determining what constitutes a particular type of disclosure in each case” (cited by Deegan & Rankin, 1996, p. 56).

Subjectivity in coding has been referred to as the major limitation associated with the use of content analysis (Guthrie et al., 2004). In this research, however, multiple interpretations and subjectivity were regarded as mere inherent difficulties of the methodology, in the same way that they are part of other research methods. Along similar lines, Krippendorff (2004) argued that multiple interpretations may present problems for coding and for the analytical technique for handling such data. One of the problems that ambiguous meanings and subjective interpretations presented relates to the requirement of mutual exclusiveness of categories (discussed in section 4.4.4). This presented a problem because overlapping units cannot be enumerated (Krippendorff, 2004). Graber (1989) described overlap meanings as chameleon-like data and expressed a concern about “how social science can cope with chameleon-like data that are in constant flux so that a given message has multiple identities simultaneously?” (p. 145).

Challenges posed by ambiguous meanings and subjective interpretations in written texts are illustrated next, followed by illustrations of these challenges with making inferences in pictures.

7.3.1 Challenges in written texts

Examples 1 to 3 below illustrate the challenges posed by ambiguous meanings and subjective interpretations in written texts, which were problematic for making inferences.

Example 1: Ambiguous meanings in written texts

This consolidated Contact's position as New Zealand's largest electricity retailer, increasing our retail electricity customer base by 16 per cent.

(Contact Energy Ltd Annual Report 2003, p.6)

The statement in Example 1 could be interpreted in two different ways. First, as conveying a message about the company's name and reputation, namely that Contact Energy is New Zealand's largest electricity retailer. Such interpretation can be coded as external capital – 'corporate image building'. Second, it could be seen as conveying a message about an increase in the firm's relationship with its customers, and be coded as external capital – 'customer and customer satisfaction'.

Example 2: Ambiguous meanings in written texts

We also signed a shared primary purchasing agreement with Apria Healthcare Group, the United States' largest provider of home healthcare services. The US home care market, which is where the majority of our OSA products are sold, is spread across more than 4,000 dealers. This new agreement with Apria gives us access to their 425 stores.

(Fisher & Paykel Healthcare Corporation Ltd Annual Report 2004, p.17)

It appears that the centrepiece of the statement in Example 2, made in the Chief Executive's Report, is about the agreement with Apria. If this statement is interpreted as conveying a message about the firm's business collaboration with Apria then it could be coded as external capital – 'business collaboration'. If it is interpreted as conveying how the firm distributes products to the US market then it could be coded external capital – 'distribution channel'. The latter approach was taken, since this statement was interpreted as conveying how the Apria agreement will help the firm to distribute its products into the US market.

Example 3: Ambiguous meanings in written texts

This side of Christmas we're also launching the new T3G mobile service that downloads up to 15 times faster than the current network. T3G will mean (among many other things) you can video message or download and enjoy essential viewing (like newsclips showing your team's historic cup-winning goals) on your mobile. Basically, this new technology means all the choice in the world.

We will be working in the field of Information Technology (IT) and entertainment provision just as much as in traditional telecommunications and we realise there's lots of competition out there, offering the latest bits and pieces. We bring them all together, in integrated, customised packages that actually make people's lives easier, rather than complicate them.

(Telecom Corporation of New Zealand Ltd Annual Report 2004, p.3)

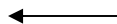
Meanings of messages conveyed in the two paragraphs in Example 3 could be interpreted in at least two ways. Messages in both paragraphs fit the operational definition of 'brands', namely 'powerfully reminding customers to buy products and services in preference to another firm'. However, they could also be interpreted as referring to the innovativeness of the firm's employees. Thus they could also be coded as human capital – 'entrepreneurial spirit'.

7.3.2 Challenges in pictures

Examples 4 and 5 illustrate the challenges posed by ambiguous meanings and subjective interpretations, which were problematic for coding pictures.

Example 4

The picture in Example 4, from the Fisher & Paykel Healthcare Ltd, Annual report 2003, page 11, illustrates subjective interpretations about the IC item to be coded.



The company name “Fisher & Paykel” on the respiratory system (indicated by an arrow in Example 4) it is not that clear in this picture. The name appears prominently and quite clearly in the hard copy of the annual report. One interpretation could be that the picture in Example 4 conveys a message about the company name and could be coded as external capital – ‘corporate image building’. Another interpretation could be that the picture conveys a message about the customer (either the patient or the hospital staff). Then the picture could be coded as external capital – ‘customer and customer satisfaction’.

Example 5

The picture in Example 5 is from the Auckland International Airport Ltd, Annual report 2003, page 7.

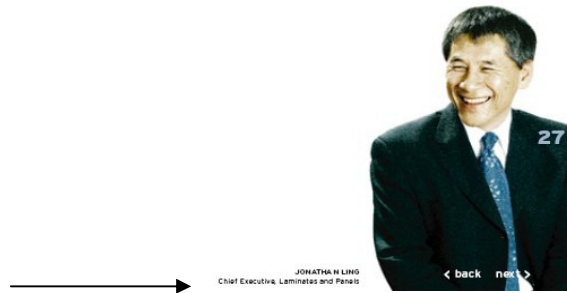


Similarly, the name “Auckland” on the building (pointed to with an arrow in Example 5) is not clear in this replication. However, the name “Qantas” is evident in this picture. The challenge in coding this picture was whether the message is about the company name (“Auckland”) or about the company’s collaboration with “Qantas”. If the image in this picture is interpreted as conveying a message about “Auckland”, then it would be coded as external capital – ‘corporate image building’. However, if interpreted as conveying a message about “Qantas”, then the picture would be coded as external capital – ‘business collaboration’.

Although Examples 4 and 5 illustrate that coding of messages conveyed through pictures might be subjective, the meanings of ICR messages conveyed through some pictures were not interpreted as being subjective at all, illustrated in Examples 6 and 7.

Example 6

The picture in Example 6 is from Fletcher Building Annual report 2004, page 17.



The caption (pointed to with an arrow) of the picture gives the name and designation of the employee. It is unlikely that subjective interpretations will be made about how to code the picture in Example 6.

Example 7

The photograph presented in Example 7 is from The Warehouse Annual report 2004, page 16.



The prominent image displayed in the picture in Example 7 is the brand name *Warehouse Stationery*. The message conveyed in this picture is therefore not interpreted as being ambiguous or covert.

7.4 Subjectivity in coding pictures

Visual images have been largely ignored in accounting research (Preston et al., 1996). As stated earlier, Guthrie et al. (2004) suggested that current attempts to code pictures are too subjective, but that there is scope for extending content analysis to capture pictorial information. Pictures have been excluded from most prior ICR content analysis studies. Abeysekera (2003) is the only ICR content analysis researcher stating explicitly that pictures were analysed. Although Vergauwen and van Alem (2005) made claims of “researching the entire annual report” (p. 94) and investigating

“the annual report in full”, it appears they did not include pictures in their study. They replicated Bontis’ study, which was a computer-aided text analysis. Claiming that an electronic format of annual reports was a requirement for their study implies that the analysis was done electronically. They also reported that “search terms” were found or not found. This suggests that they used computer-aided text analysis to search for the 38 search terms in their list, which also suggests their study was concerned with manifest meanings. Since it appears that they did not interpret meanings of messages by making inferences, and since search terms are not typically displayed in pictures, and finally considering the inability of computer software to code pictures (discussed in section 7.7) it is unlikely that Vergauwen and van Alem included pictorial information in their investigation. Therefore it appears that they did not investigate the entire annual report. The subjectivity involved in coding pictures raises the question of whether pictures should be included in ICR content analysis studies.

Including visual images and, in particular, pictures, in content analysis studies, is justified in the literature. Visual images are integral elements within corporate annual reports (Preston et al., 1996). Images are a transparent medium of communication through which corporations send messages to investors and the public. According to Preston et al., the favoured visual medium in annual reports is a photograph. The following view of an annual report designer also supports including pictures in content analysis studies: “The photograph is very important in an annual report. It is the most effective, real, believable way of telling a story” (quoted in Squiers, 1989, p. 209 and cited by Preston et al., 1996, p.121). Similarly, Gray et al. (1995b) stated that annual reports:

represent what is probably the most important document in terms of the organisation’s construction of its own social imagery. The construction of the financial image of the organisation is critical in terms of how the organisation is seen and judged (p. 82).

Guthrie et al. (2004) also claimed that annual reports are highly useful sources of information, as managers use annual reports as a reporting mechanism to signal what is important. The following excerpt from an annual report from the extended study (Stanford Limited Annual report 2004) illustrates the importance of including visual images in ICR studies:

From your feedback we know that the characteristic of the report that ranks highest with our audience is the use of pictures, tables and graphs to convey information to the reader (p.72).

Along similar lines of thinking, Graber (1989) stated: “Research has shown that audiences report visual content more accurately than verbal content and retention rates are much higher for visual information” (p. 149). Furthermore, Unerman (2000) argued that any content analysis study that ignores pictures is likely to result in an incomplete representation. He wrote:

photographs are sometimes a more powerful tool than narrative disclosures for stakeholders who do not have either the time or inclination to read every word in the annual report and just flick through it, looking at pictures and possibly reading the chairman’s statement (p. 672).

Frost and Wilmshurst (2000) claimed it is possible that management might use pictures to impress on stakeholders their approach towards the management of environmental issues. Graber (1989) substantiated this and stated that focussing on only the verbal portions of messages coders “not only miss the information contained in pictures and non-verbal sounds, they even fail to interpret the verbal content appropriately because that content is modified by its combination with picture messages” (p. 145).

Weber (1990) was quoted in an earlier chapter as stating that content analysis is partly an art, as the meanings of texts depend on the judgement and interpretation of the investigator. Hooper and Low (2001) went further and asserted that the metaphoric nature of narratives show accounting to be more of an art than a science. The challenges posed by ambiguous meanings and subjective interpretations illustrated in Examples 1 to 5 above demonstrated that judgement and interpretation are required when making inferences about messages conveyed in both written texts and pictures. Since judgement and interpretation are required it could be argued that “art created” when making inferences from texts is similar to “art created” when making inferences from pictures.

The above arguments support this study’s view that excluding pictorial information from ICR content analysis is considered to be a considerable limitation to the methodology. Similar to the findings of Abeysekera (2003), many sampled annual reports in New Zealand contain numerous pictures. This study confirmed the findings

of Hooper et al. (2003) that “the annual report of decades past, traditionally used to communicate financial information, has now been surpassed by glossy, colourful pictorial reports” (p.84). Moreover, as Hooper and Low (2001) found, this study notes that big pictorial spreads were the eye-catching items in the sampled annual reports. Stanton et al. (2004) also found numerous pictures in conducting an experimental study of impressions of an annual report from readers’ perceptions. Except for four pages, text makes up less than 50 per cent of page space in what they refer to as the “glossy” section of the annual report, and this “glossy” section contains 10 graphs and charts, and 22 photographs. Many pictures in annual reports in the New Zealand study present powerful images that can be interpreted as conveying powerful messages or signals to readers. Therefore, pictures were included in the extended study. As expected, including pictorial information influenced the results considerably. These results are discussed in Chapter 8 (see sections 8.5.1 and 8.6.1).

7.5 Managing ambiguous and covert meanings

As stated in section 3.3.3, the approach adopted to manage making inferences from ambiguous and covert meanings is “reading between the lines”. This approach was also helpful in making inferences when ICR messages were created in bits and pieces. Krippendorff (2004) ascribed this phenomenon to the nature of narratives, and stated the text included in any one recording unit need not be contiguous. Recording units “tend to interact and evolve over the course of the narrative, and information about them emerges in bits and pieces, often becoming clear only toward the end. Information about a recording unit may be distributed throughout a text” (Krippendorff, 2004, p. 100). Thus, he argued, the analyst cannot possibly identify one unit of text with each recording unit.

It appears that Abeysekera and Guthrie (2005) also experienced messages being conveyed in bits and pieces. The results reported as line counts for their content analysis study were typically four times that of the frequency counts. Abeysekera explained the results as follows (personal communication, 8 November 2004):

Frequency is the number of times an intellectual capital item is mentioned and the line count is the number of lines devoted to it. When intellectual capital items are reported predominantly in a narrative form, there is a tendency that the line count exceeds the frequency. This is because an intellectual capital item is mentioned

but it is described in one or more sentences to communicate the meaning to the stakeholder.

Reading between the lines was applied to manage making inferences of ICR messages when meanings are interpreted as being ambiguous and covert, as well as when messages are made in bits and pieces. The next section illustrates how reading between the lines was applied to manage making inferences from written texts. The section following illustrates how it was applied to manage making inferences from pictures. Discussions in both sections are illuminated with examples from annual reports.

7.5.1 Managing ambiguous and covert meanings in written text

Reading between the lines as a means to manage making inferences from ambiguous and covert meanings and messages interwoven through written texts, means to read between the sentences within a context unit as well as between context units. This study's context unit for written texts was defined in section 6.5.4.2 as a paragraph. Thus, to manage these kinds of inferences "reading between the lines" was necessary between sentences in a paragraph, but also between paragraphs. Example 8 illustrates how reading between sentences within a paragraph was applied to manage ambiguous and covert meanings in inference making.

Example 8: Reading between the lines when ambiguous and covert meanings appear in one paragraph
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<i>The Information Technology function has ensured that our business is transacted in a simple and timely manner around the world. As we extend our partnerships with organisations throughout New Zealand Australia and the USA we need systems in place to minimise our costs. In Australia, the IT function and our Customer Services team have worked to install a state of the art system that allows for remote scheduling, inventory control and invoicing of work carried out by our service franchisees. After some refinement, this system is providing more timely service to our customers.</i>

(Fisher & Paykel Appliances Holdings Ltd Annual Report 2004, p.5)
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The meaning(s) of the IC message(s) conveyed in Example 8 was interpreted as being ambiguous. Three IC items could be inferred in this paragraph: (1) 'information technology' is a search word for the IC item 'information systems' in the internal capital category, (2) 'partnership' is a search word for 'business collaborations' in the

external capital category and, (3) ‘customer’ is a search word for ‘customer and customer satisfaction’ in the internal capital category. However, it also appeared that (a) covert message(s) about (the) ICR message(s) might be distributed in bits and pieces throughout the text, which only became clear towards the end of the paragraph. The proposition interpreted when reading between the sentences of the paragraph was that only one ICR message was conveyed. This paragraph was interpreted as expressing the firm’s need of IT systems. Using the word “partnerships” was interpreted as merely stating that the firm’s business is expanding, and not as conveying a message about the firm’s business collaboration. Also the use of the word “customers” was interpreted merely because the IT systems are improving the service to customers. Hence, reading between the lines revealed that meanings in this paragraph were not ambiguous. Also, it revealed that the covert meaning of one IC item is spread over the context unit. The meaning of the message conveyed in this paragraph was interpreted as ‘information/networking systems’ in the internal capital category.

7.5.2 Managing ambiguous and covert meanings in pictures

The context unit for pictures was defined in section 6.5.4.2 as the picture and its surroundings. The surroundings of pictures include any caption to the picture, any words or phrases interspersed over the picture or over the page in which the picture is presented, and any text devoted or referring to the picture. The following three examples illustrate how reading between the lines of the context unit for pictures was used to make inferences when meanings are interpreted as being ambiguous and covert.

Example 9

It is likely that the meaning of a photograph featuring a crumpled up telephone bill could be interpreted negatively. Such a picture appears in the Telecom Corporation Annual report 2004, p. 5. The name “Telecom” appears clearly on the bill. However, reading between the lines of the context unit of this picture suggests Telecom is portraying a positive message about their name. This picture is one of six presented in the vision section of the annual report. Telecom used an interesting methodology to convey messages about their vision through these six pictures. On the cover page of the annual report, a dialogue box is shown, pointing to a mobile phone. The message

in the dialogue box says: “You have ... six ... new messages ...”. These six messages are “received” in six pictures presented over the six pages that immediately follow the cover page. The pictures are each presented over more than two-thirds of the particular page. In a box at the top of each page the words “Message received” appear. Each message received is then presented in a dialogue box, made over the photograph. The text at the bottom of each page reveals how the firm has dealt with or plans to deal with the received message. Since Telecom operates in the telecommunications sector, communicating information about “received messages” is an effective method to get readers’ attention. The method is also quite an effective way to convey messages about the firm’s vision over the next few pages.

To illustrate how reading between the lines was applied to manage making an inference about an ICR message portrayed in the picture featuring the crumpled up telephone bill, detail about the context unit of this particular picture follow. The “received message” is: “This is Rory Miller from Telecom here, I understand you’ve cancelled your account with us ...”. Four paragraphs of text devoted to this picture reveal how ferocious the competition for customers is. Explicit statements are made about ways how the firm would retain and attract customers. The interpreted meaning of the picture, the dialogue box caption and the text is that Telecom regards current and new customers as important. Moreover, that Telecom is concerned about customer satisfaction and customer service. Hence, the image represented in this picture was inferred as conveying a message about the IC item ‘customer and customer satisfaction’ in the external capital category. The picture was coded accordingly.

Example 10

Examples 10 and 11 are from the Fletcher Building Ltd Annual report 2004. Fletcher Building Ltd had the highest frequencies of the 30 firms analysed in the extended study. The relative high number of pictures presented — 65 pictures — explains part of the high counts recorded. Many of the 65 pictures were coded and recorded as conveying ICR messages. The firm presents separate Chief Executive reports for six divisions in a Business Review section. On the first page of all six reports five pictures of the division’s activities are presented. Examples 10 and 11 deal with pictures presented in two Chief Executive reports of two divisions.

The five pictures presented on the first page of the Fletcher Building Ltd Annual report 2004, p. 13 (the Chief Executive's report of the Distribution division) are used as Example 10. These five pictures are useful illustrations of how reading between the lines of the context unit was used to make inferences. If these five pictures are looked at in isolation, different inferences could be made than those inferred when reading between the lines of the context unit. In three of these pictures people are featured, appearing to be either employees or customers, which could be coded accordingly. In one picture the brand name PlaceMakers® appears prominently on the podium of a V8 international car-racing event, and the fifth picture shows the firm's products. However, making inferences by reading between the lines suggest all five pictures portray messages relating to the firm's brands. One caption for the five pictures is given: "Scenes from PlaceMakers New Lynn". Then a paragraph in a different colour and bigger font than the rest of the text in the report educates the reader about PlaceMakers®:

PlaceMakers distributes building materials and related products to trade and DIY customers throughout New Zealand. It has 52 outlets, most of which are operated in joint venture with local store managers. PlaceMakers is the market leader and provides an important distribution channel for a number of other Fletcher Building companies. It has more than 2,000 employees (Fletcher Building Ltd Annual report 2004, p.13)

When reading between the lines, the meanings of these five pictures are interpreted as portraying messages to remind customers to buy the firm's products. The interpreted meanings of these pictures meet the operational definition of 'brands' in the external capital category, and hence coded accordingly.

Example 11

The interpretations of the meanings of the five pictures presented on the first page of the Fletcher Building Ltd Annual report, p.10 (the Chief Executive's report of the Concrete division) could also be different if the pictures are looked at in isolation rather than when seen in the context unit. Even when the five pictures are seen in isolation, it appears that they could have ambiguous and covert meanings. In four of these photographs employees appear. In two of these four pictures the firm's products also appear, and, in the other two, parts of the plant of the firm are also shown. This could also be interpreted as ambiguity in meanings. The fifth picture shows concrete being delivered to a site of one of the firm's projects. To make inferences about the

assumed covert meanings of these pictures, reading between the lines was applied. Five captions to these pictures all refer to specific projects and some refer to brand names such as “Golden Bay” cement plant and “Readymix” concrete. The content of the Chief Executive’s report serves mainly to communicate information about the activities and products of the Concrete division. Considering the context unit, the meanings of these five pictures were interpreted as sending messages to remind customers to buy products and services at Fletcher Building’s company in preference to another firm. These meanings meet the operational definition of the IC item ‘brands’ in the external capital category, and were coded accordingly.

In sum, this section illustrated that coding manifest content and manifest meanings is inappropriate for ICR messages conveyed in annual reports. Instead, this section illustrated how this study has applied “reading between the lines” to manage the making of inferences, when ICR messages conveyed through both texts and pictures, are perceived as being ambiguous and covert.

7.6 Rules of inferences

“Content analyses succeed or fail based on the validity (or invalidity) of the analytical constructs that inform their inferences” (Krippendorff, 2004, p. 89). Procedurally, analytical constructs take the form of more or less complex “if-then” statements, similar to those used in computer programs. “These “if-then” statements amount to *rules of inference* that guide the analyst, in steps, from the texts to the answers to the research questions” (Krippendorff, 2004, p. 35, emphasis in original). They also render knowledge of the context portable to other content analyses of similar contexts and make it possible for students and critics to examine the procedures that a content analyst has been using. Carney (1972, p. 41) stated that there are no rules to tell anyone how to make the inferential leap in what he calls “theoretically informed” content analysis. However, he stated, strategies have been evolved for telling how well it has been made. These strategies involve the matter of reliability and validity.

Rules of inferences evolved as the data-making processes unfolded during the pilot and extended studies. Most rules were developed during the pilot study, relating to issues that posed practical challenges in several annual reports. Some modifications and refinements were made during the extended study. Krippendorff (2004) stated it is a common practice to expand the written coding instructions by adopting new and

written rules as the process unfolds. Even though referred to as “rules of inferences” they are merely guidelines to inform others how inferential leaps were made.

7.6.1 Challenge with recording charts

The category “charts”, categorising *how* IC is reported, was defined in section 6.6.2.1 as including tables, figures, graphs, charts, and diagrams. A challenge posed by recording charts was how many counts should be recorded per chart? The rule developed is illustrated in Example 12.

Example 12: Rule of inference — number of counts to record per chart		
RESEARCH AND DEVELOPMENT		
INVESTMENT IN R&D	2004 NZ\$14.1 MILLION	2003 NZ\$11.5 MILLION
R&D investment as % of revenue	6.6%	5.5%
R&D staff	150	130
Patents as at 31 March:		
US granted	45	32
US applications	58	53
Rest of world granted	52	48
Rest of world applications	214	158
New Zealand provisional patents	21	28
(Fisher & Paykel Healthcare Corporation Ltd Annual Report 2004, p.14)		

Only the information about the patents shown in the five lines in Example 12 was interpreted as conveying a message about the firm’s IC. The challenge posed was whether to record five counts or one count for the information shown in these five lines. In this particular example, only one count was recorded. All five lines convey messages about one IC item – ‘patents’. However, if the five lines conveyed messages about five different IC items for example ‘patents’, ‘copyrights’, ‘trademarks’, ‘brands’ and ‘licensing agreements’, then five counts would have been recorded.

Rule of inference: If information in a chart refers to multiple IC items, record one count per IC item. If information contained in a chart refers to one specific IC item, record one count per chart.

7.6.2 Challenge with implied messages

Gardner and Wong (2005) stated that no coding should be done if concepts are implied. However, in this study, the meanings of many texts and visuals were interpreted as conveying ICR messages, even though no explicit references to IC were made. Coding implied messages is in accord with Krippendorff's (2004) claim that "much ordinary writings contain implicitness" (p. 139). The results of a study that excludes implied ICR messages will be very different to that of a study that includes implied ICR messages. For example, 29 of the 30 firms sampled in the extended study present information relating to the knowledge, experience and expertise of their directors. Most of these firms also mention directors' qualifications. On average each firm has between six and eight directors. None of these firms explicitly state that the knowledge, experience, expertise, and qualifications of the directors relate to IC. However, these disclosures were interpreted as implying that the firms are conveying messages about their directors' work-related knowledge and education. The information disclosed meets the operational definitions of these two IC items in the human capital category.

Examples 13 and 14 illustrate messages in texts that were interpreted as implied ICR disclosures.

Example 13: Rule of inference — implied ICR message
<i>Marko joined Telecom in May 2000 and has held a number of senior financial, operational and sales roles with Lion Nathan, Ansett, Elders Finance Group and PricewaterhouseCoopers. A Wellingtonian, he graduated from Victoria University with a Bachelor of Commerce and Administration. He also has a Masters of Business Administration from the Harvard Graduate School of Business.</i>
(Telecom Corporation of New Zealand Ltd Annual Report 2004, p.18)

The information in Example 13 is about the firm's Chief Financial Officer, Marko Bogoevski. The firm disclosed similar information about eight individual members of the Executive Team, and presented individual pictures of these members. None of these disclosures conveys explicit ICR messages, but they were interpreted as implied ICR messages. The first sentence in Example 13 reveals information about Marko's experience. This was interpreted as signalling that Marko has individual knowledge, know-how, skill, competencies and capabilities that the firm values. The meaning was

interpreted as an implicit message about the IC item ‘work-related knowledge’ in the human capital category. The information disclosed in the second sentence in Example 13 regarding Marko’s qualifications and education was interpreted as an implied message of the IC item ‘education’ in the human capital category.

Example 14: Rule of inference — implied ICR message

We encourage job rotation to accelerate the development of our people and we have also launched a management development programme (MDP). This programme supports managers in developing their skills and knowledge in all aspects of management.

(Telecom Corporation of New Zealand Ltd Annual Report 2004, p.20)

The information revealed in Example 14 was not interpreted as an explicit ICR message, but as an implied ICR message. This paragraph contains IC attributes of ‘training’ and ‘career planning and development’, and meets the operational definition of the IC item ‘training’ in the human capital category.

Example 15 is given merely to illustrate what types of disclosures were regarded as being explicit ICR messages.

Example 15: Illustration of an explicit ICR message

For residential customers, that means we have put a lot of extra focus, and more staff, into our contact centres. We have highly trained staff in our centres because we know that their contact with a customer may determine that customer’s view of Telecom for years to come.

(Telecom Corporation of New Zealand Ltd Annual Report 2004, p.14)

In the two paragraphs prior to the excerpt given in Example 15 the Chief Executive reports how the firm has been “walking in the customers’ shoes”. The word “that” in the first sentence in Example 15 refers to what the firm has been doing in trying to understand what their customers want.

The first sentence in the paragraph in Example 15 was not inferred as conveying an ICR message. Merely stating that the firm put more staff into the contact centres is not interpreted as referring to IC. In the second sentence, however, the firm claims they have IC vested in their trained staff, implying that the knowledge of these trained employees can be converted into value. This information was interpreted an implied

IC message. The covert meaning interpreted in Example 15 was inferred as conveying a message about an IC item in the human capital category – ‘employees’.

7.6.3 Challenge with repetitive messages in text

The challenge posed by repetitive messages in text was how many counts to record when messages are repeated (a) in different context units, and (b) within a context unit. The excerpts in Examples 16 and 17 are from annual reports in the pilot study where the section of the annual report was the context unit. Example 16 illustrates the challenge with counting when messages are repeated in two different context units.

Example 16(a): Challenge with counting repetitive messages in different context units
<i>Auckland Airport is New Zealand’s international gateway and premier airport.</i>
(Auckland International Airport Ltd Annual Report 2003, p.1)

The statement quoted in example 16(a) was made in the remaining section of the annual report. The message was repeated in the directors’ section, as illustrated in example 16(b):

Example 16(b): Challenge with counting repetitive messages in different context units
<i>Auckland Airport is New Zealand’s main gateway handling over 70 per cent of all international visitors.</i>
(Auckland International Airport Ltd Annual Report 2003, p.5)

Statements in Examples 16(a) and (b) were interpreted as conveying messages about the company name and reputation and coded as external capital – ‘corporate image building’. The challenge was whether to record one or two counts.

Example 17 illustrates the challenge with counting when statements are repeated within a context unit. The statement in Example 17 was made twice in the Directors’ section of the annual report. Once emphasised as a stand-alone paragraph at the top of the Directors’ report, and then as a paragraph in the written text of the Directors’ report.

Example 17: Challenge with counting repetitive messages made within a context unit

Auckland Airport is New Zealand's main gateway handling over 70 per cent of all international visitors. This, along with its diversified revenue base, has enabled the company to continue to achieve record results.

(Auckland International Airport Ltd Annual Report 2003, p.5)

The challenge was whether to record one or two counts for the IC item 'corporate image building' in the external capital category.

The literature offers limited guidance regarding how many counts to record when messages are repeated. April et al. (2003) stated they ignored multiple mentions of IC attributes, as they were mostly repetitions of the same basic attribute. However, it should be noted that April et al. were concerned only with determining whether an IC attribute was mentioned at least once. Similarly, Bozzolan et al. (2003) reported: "if the same information was repeated in the report, we only considered this information once." Holsti (1969) suggested:

The size of the context unit determines the frequency with which repeated items occurring in close proximity to each other are counted separately. Depending on the context unit, repetition of a given attribute within a sentence, paragraph, or item does not change the tally (p. 121).

Holsti also claimed when frequency is used as a method of measuring characteristics of content, every occurrence of a given attribute is tallied. Based on Holsti's guidance, the following rule of inference was developed:

Rule of inference: When concerned with determining frequencies, record repetitive messages in different context units as separate counts, and record repetitive messages within a context unit once.

When the above rule of inference was applied to Examples 16 and 17, the number of counts recorded would have differed between the pilot and extended studies. In the pilot study two counts would have been recorded for Example 16 and one count for Example 17. In the extended study, where themes were the recording units and

paragraphs the context units, two counts would have been recorded for both Examples 16 and 17.

7.6.4 Multiple IC items in the context unit

As discussed earlier, ambiguous meanings and hence subjective interpretations posed challenges during the recording process. Many messages conveyed in paragraphs in annual reports could be interpreted as having ambiguous meanings and hence, multiple IC items could be inferred and recorded. Finding multiple recording units in a context unit is common in a typical narrative (Krippendorff, 2004). Recording units are rarely dealt with one at a time, or one per paragraph. The challenges here were which IC item(s) to infer and how many counts to record per context unit. Example 18 illustrates these challenges.

Example 18: Rule of inference — multiple IC items within context unit
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<i>The Board appreciates that our strong performance and our continued good prospects for growth in the 2005 financial year are the results of the daily efforts of our sales and marketing staff worldwide, the innovations of our research and development teams, the dedication of our manufacturing and operations staff, our excellent relationships with our distributors, suppliers and clinical partners and, of course, the confidence of our customers. We thank them all for their contributions to our positive results.</i>
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(Fisher & Paykel Healthcare Corporation Ltd Annual Report 2004, p.7)

The paragraph in Example 18 is an excerpt from the Chairman's report. Four different IC items could have been inferred in this paragraph and thus four counts could have been recorded in the context unit. The four IC items inferred were: (1) 'employees' in the human capital category for the message about the sales and marketing staff, research and development teams and manufacturing and operations staff. (2) The relationship with the distributors could be inferred as relating to the firm's 'distribution channels' in the external capital category. (3) The relationships with suppliers and clinical partners could be inferred as 'business collaboration' in the external capital category, and (4) the confidence of the customers as 'customers and customer satisfaction' in the external capital category.

Prior content-analysis-in-accounting literature reported about finding multiple referents embedded within context units (Aerts, 1994; Short & Palmer, 2003). Aerts

(1994) and Krippendorff (2004) offered guidance as to how to handle the challenges posed by multiple referents as illustrated in Example 18. Aerts (1994) analysed annual reports for attributional content. He wrote: “if a sentence or phrase included more than one cause or reason for a certain effect, each cause or reason was treated as a separate attribution” (p.342). Moreover, Krippendorff (2004) stated: “Unlike sampling units and recording units, context units are not counted, need not be independent of each other, can overlap, and may be consulted in the description of several recording units” (p. 101). These challenges were also discussed with Abeysekera during a personal visit (March 2005). Following this discussion a rule of inference was devised. Based on this rule four IC items and hence four counts were recorded for Example 18 as discussed above.

Rule of inference: When messages about multiple IC items are interpreted in a context unit, record each IC item as a separate count.

7.6.5 Multiple counts for an IC item appear in the context unit

Furthermore, many statements in annual reports were interpreted as conveying multiple messages about a particular IC item. Multiple messages of a particular IC item appear to be conveyed either (1) in several sentences in the context unit, or (2) in one sentence in a context unit. The challenge here was how many counts to record for the particular IC item, illustrated in Example 19.

Example 19: Rule of inference — multiple counts of IC item appear in context unit

It has also been another year of external recognition of our environmental and safety performance. Among these are our Construction operations, which have been a party to the Nation Environmental Award 2004 from the Institute of Professional Engineers for the rehabilitation of the Mangere oxidation ponds and the Arthur Mead Environmental Award 2004 for the Central Auckland Motorway Upgrade project. The latter project also won the Supreme Safety Award in the Auckland Branch Contractors Federation competition, which is assessed by the Department of Labour.

(Fletcher Building Ltd Annual Report 2004, p.8)

The focus of information transmitted in Example 19 was interpreted as the various awards the firm received. The meanings of the messages in the paragraph were interpreted as relating to stakeholders' evaluation of the firm in terms of its affect, esteem, and knowledge. As these meanings meet the operational definition of 'company name', the message conveyed in this paragraph was inferred as 'corporate image building' in the external capital category. The challenge was how many counts to record for the several awards mentioned in the paragraph. Awards for two different projects are mentioned in one sentence, and one project received two awards, which are mentioned in two sentences. The two awards for the two projects (1) the rehabilitation of the Mangere oxidation ponds and (2) the Central Auckland Motorway Upgrade project mentioned in one sentence were recorded as two counts. And the second award, the Supreme Safety Award, received by the Central Auckland Motorway Upgrade project was recorded as another count. Hence three counts were recorded in this particular paragraph.

No guidance was found in the literature about how to handle this issue. In this study, multiple messages about a particular IC item were interpreted as signalling what firms perceive as being of value and important. By sending multiple messages firms are emphasising the particular IC item(s), almost as if they want to ensure that readers do not miss the message. In the illustrated Example 19 above, it appeared that the firm regards the several awards as valuable and important. The firm emphasises this perceived importance by mentioning the different awards, almost ensuring that readers will retain the information. Alternatively, the firm could have simply mentioned that they received awards, without giving any specifics.

Rule of inference: When multiple messages about an IC item are conveyed in a context unit, which are interpreted as emphasising a perceived importance of the IC item, record multiple counts.

7.6.6 Number of counts recorded per picture

As stated in section 3.3.1, no attempt was made in this study to examine and quantify pictures in terms of their visual impact, as advertising and communication studies do (see for example Preston et al., 1996). Frost and Wilmshurst (2000) reported

complications in attempting to quantify the impact that pictures have. Also, no attempt was made to analyse the images presented in pictures, as in Hooper and Low (2001). They analysed photo images portrayed in terms of power, wealth, good taste and high culture among others. For example, they reported the image presented by a particular picture of the board of directors is that the board is an energetic, motivated team. This study was concerned with the message content of the picture i.e., which IC item is presented in the picture? However, some unusual ways of presenting pictures complicated the issue of quantifying pictures, illustrated in Example 21.

Example 21

Due to the requirement of mutual exclusiveness, only one IC item is coded per picture, and hence only one count recorded. However, the unusual way in which the picture in Example 21 (from Fletcher Building Ltd Annual report 2004, pp. 30-31) is presented posed a challenge as to how many counts to record for the inferred IC item.



Although framed and presented as one picture, it is obvious that eight individual pictures are captured as one in Example 21. Twenty-four firms in the New Zealand sample presented stand-alone pictures of their directors, which were coded and counted individually. To enhance consistency in application, eight counts were recorded for the picture presented in Example 21. These pictures presented in Example 21 were interpreted as being stand-alone pictures of the eight directors. Although this company presented this picture in an unusual way, they applied an approach similar to that of the other 24 firms to disclose other information about the directors. This implies that the pictures of the firms' directors should be handled in a way similar to that of the other 24 firms.

Example 22

Only two firms in the sample presented group pictures of ten and six directors respectively (see The New Zealand Refining Company Ltd Annual report, p.7, and Auckland International Airport Annual report, pp.12-13). These firms presented information regarding the skills, experience and expertise of directors in a similar way as the other firms in the sample. Therefore, presenting one picture only of the directors presented a challenge as to how many counts to record. Should one count per individual or one count per picture be recorded?

The meanings of group pictures were interpreted as conveying messages about the Board of Directors – a group of people. Even though 10 and six people respectively are seen in these pictures, only one count was recorded for each picture.

Example 23

Example 23 addresses how the issue relating to sizes of pictures was handled during inference making.

The sizes of pictures presented in the sampled annual reports varied greatly. Some pictures were presented over two full A4 size pages (see, for example, Air New Zealand Annual report 2004, pp.2-11, where five pictures are presented each over two pages). Some pictures took up all the space on an A4 size page (see, for example, Auckland International Airport Annual report 2004, p.20, and Sky Network Television Ltd Annual report 2004, p.16) while others took up most of the space on an A4 size page (see, for example, Telecom Corporation Ltd Annual report 2004, pp.2-7). However, many passport-size photos and photos slightly bigger than passport-size photos were presented. Moreover, often, a few small photos are presented on part of a page and even sometimes take up all the space on an A4 size page (see, for example, Fletcher Building Ltd Annual report, p.23 where five small pictures are presented on part of a page, and p.38 where 12 pictures are presented taking up all the space on an A4 size page).

The variety in sizes of pictures indicates that quantifying pictures can be complicated. However, in this study a simple rule of inference was made:

Rule of inference: Record one count per picture regardless of how many times a particular inferred IC item appears in the picture, and regardless of the size of the picture.

The methodological problems and challenges illustrated thus far in the chapter point to the need for judgement when making inferences about voluntary ICR in annual reports. They also suggest that the validity of a study's results may be severely impaired when using computer-aided text analysis. This limitation, and other limitations of computer-aided text analysis discussed in the next section, justify why this content analysis was conducted manually.

7.7 Computer-aided text analysis

Morris (1994) argued computerised content analysis approaches have several advantages over human-coded content analysis techniques. Some advantages are: perfect stability of the coding scheme; perfect coder reliability; easy manipulation of text to create word-frequency counts; and the ability to process larger volumes of qualitative data at lower cost. However, the limitations of computer-aided text analysis for ICR research outweigh these advantages. Some limitations identified in the literature are considered after outlining the difficulty of converting annual reports into a computer-readable document, next.

7.7.1 Difficulty of converting annual reports

While conducting the pilot study, the use of computer software packages such as Nudist and NVivo was investigated as a means to either do the analysis or assist with the analysis or to check the human-coded analysis. The researcher attended a two-day training workshop investigating the possibility of using NVivo. This is a powerful software package for doing content analysis when the information is available in, for example, a Microsoft Word format. Unfortunately, the annual reports analysed in this study were available only in portable document format (pdf), and only part of it could have been converted into a computer-readable document. Valuable information, in particular all IC stories conveyed through pictures, would have been excluded, as they cannot be converted into a computer-readable format. Furthermore, it appeared that it would have been more time-consuming to convert the texts in annual reports into a

format that NVivo could read than the time it took to do the analysis manually. NVivo was therefore regarded as inappropriate for conducting the analysis.

7.7.2 Limitations of computer-aided text analysis

Krippendorff (2004) claimed the key hurdle of computer-aided text analysis is the difficulty of programming computers to respond to the meanings of texts. Morris (1994) also discussed several limitations relating to the methodological problems, which require human judgement. She claimed these limitations may impact on the validity of a content analysis when using a computerised approach: lack of natural language processing capabilities in the software; inability of the software to recognise the communicative intent of word usage; inability of the researcher to provide an exhaustive listing of key words for a category that is by nature indeterminate; and inability of software to resolve references back or forward to words appearing elsewhere in the text. Morris (1994) claimed computers lack human intelligence in making value judgments. Krippendorff (2004) supported this and claimed where text and images are involved, “only culturally competent humans can overcome” (p. 126) the serious shortcomings of mechanical measurements. According to Krippendorff, in most recent content analyses where researchers used computer-aided text analysis, at some point found they had to fall back on human interpretive abilities. Another limitation of using computer-aided text analysis for ICR relates to the difficulty of defining the abstract IC themes to a computer’s satisfaction (Carney, 1972). The CSU (2004) added that it is possible that invalid conclusions may result when computer programs are used in content analysis, as computers do not have the ability to distinguish between synonyms and homonyms.

Though the use of computers in content analysis may increase reliability, their use has highlighted a conjecture about content analysis (Krippendorff, 2004). In the pursuit of high reliability, validity tends to get lost. This is because computers process character strings, not meanings. Krippendorff argued when analysts rely on computers rather than on intelligent readers, they run the risk of trivialising the meanings of texts, and stated computers “sort volumes of words without making sense of them” (p. 214). Similarly, Carney (1972) argued that humans are better at noticing things about language meaning than are computerised dictionaries or search procedures. He stated: “the meaning of a sentence can be more than just the sum of the words which

compose it” (p. 172). A few examples are given to illustrate how computers’ inability to make valid inferences would have limited the validity of this study.

7.7.2.1 Code words in inappropriate context

Example 24 illustrates the difficulty computer aids could have had with finding the most appropriate context in which words are used.

Example 24: Difficulty with coding words in the appropriate context
<i>International</i>
<i>Calling and managed data network services between New Zealand, Australia and other countries worldwide. These services, provided to New Zealand and Australian customers, are based on direct network links to 60 other national telecommunications providers and a further 200 bilateral relationships. Telecom operates exchanges in Sydney, Los Angeles, Tokyo, New York, Miami, Frankfurt and London, supporting international traffic including “transit” traffic where Telecom is an intermediary carrier of international calls. Telecom owns 50% of Southern Cross Cable linking Australia, New Zealand, Hawaii and the United States.</i>
(Telecom Annual Report 2004, p.17)

The words “data network” appear in the operational definition of the IC item ‘information and networking systems’. However, the word “network” also appears as a search word for the IC item ‘business collaboration’. A computer would have had difficulty with knowing which IC item to code for in Example 24. One option is that it would have coded this paragraph as ‘information and networking systems’. However, when applying human intelligence and hence considering the context in which this statement was made, this paragraph will not be coded this way. In the context of Telecom’s nature of business, this paragraph was interpreted as conveying an IC story about Telecom’s relationships and networks with other businesses. Furthermore, a computer would probably have coded the word “customers” as the IC item ‘customer’. However, in the context used in this paragraph, no inference relating to such an IC item was made. Instead, the word “customer” was interpreted as telling a story about the IC item ‘business collaboration’.

7.7.2.2 Code words that do not convey IC messages

Example 25 illustrates the difficulty computer aids could have had when coding search words. Search words of at least three different IC items are highlighted in bold face in the following paragraph.

Example 25: Difficulty with coding words that do not convey IC messages

*The **Information Technology** function has ensured that our business is transacted in a simple and timely manner around the world. As we extend our **partnerships** with organisations throughout New Zealand Australia and the USA we need systems in place to minimise our costs. In Australia, the IT function and our Customer Services team have worked to install a state of the art system that allows for remote scheduling, inventory control and invoicing of work carried out by our service franchisees. After some refinement, this system is providing more timely service to our **customers**.*

(Fisher & Paykel Appliances Ltd Annual Report 2004, p.5)

It is highly likely that three counts would have been coded for the search words indicated in the paragraph in Example 25. However, in the context of the paragraph, only one IC story was inferred, that relating to the IC item ‘information and networking systems’. This example illustrates that if the search words ‘partnership’ and ‘customer’ were coded, then the frequencies would have been overstated by two counts.

7.7.2.3 Overstatement of frequency counts

Example 26 illustrates how the frequency counts could have been overstated if a computer-aided text analysis was done.

Example 26: Overstatement of frequency counts

*We’ve already started by expanding and upgrading our contact centres and **training** staff to be able to address not just some, but all of a **customer’s** needs. And as a **culture** we’re moving from being somewhat reactive to being proactive. That’s an important differentiation, as being proactive requires us to take a leadership role and to make the extra effort to anticipate and understand what a **customer** might need, like, or not like, before they are forced to tell us.*

(Telecom Annual Report 2004, p.5)

The words highlighted in bold in the paragraph in Example 26 are search words shown with the operational definitions of the IC items (attached in Appendix A). It is highly likely that without human judgement, three counts could have been recorded. However, in the context of this paragraph these search words were all inferred as conveying an IC story about human capital – about the IC item ‘entrepreneurial spirit’. This whole paragraph pertains to the proactive and reactive abilities of the employees, and hence, only one count was recorded accordingly.

7.7.2.4 Missed coding

Probably the biggest limitation of using computer aids to analyse information in annual reports relate to computers’ inability to make valid inferences. Example 27 illustrates.

Example 27: Missed coding
<i>We were delighted to announce that we had become the Premier sponsors for Netball New Zealand. Our association with this high profile women’s sport affords us to profile around which a good deal of advertising can be built. The Flippers sponsorship – of the elite youth swimming squad in Australia – also provides an association with a high profile sport.</i>
(Fisher & Paykel Appliances Ltd Annual Report 2004, p.15)

To make an inference about an IC item in the paragraph in Example 27 requires “reading between the lines”, because in this paragraph, the IC message is hidden. When applying human intelligence to make an inference about IC, the IC item ‘brands’ is inferred. The message conveyed in this paragraph meets the operational definition of ‘brands’, namely a corporate brand that speaks for the value in the market-place in association with the name of the firm, which is reminding customers to buy their products and services in preference to those of another firm. However, it is unlikely that this paragraph would have been coded using a computer-aided text analysis.

The inability of computers to “read between the lines” to infer IC stories probably explains the low number of counts reported by prior ICR studies, appearing to have used computerised text analysis (Bontis, 2002; Vergauwen & van Alem, 2005). Bontis (2002), in particular, reported an extremely low 74 counts from conducting a

computerised content analysis of 10,000 annual reports of Canadian corporations. A list of 39 encompassing terms relating to intellectual capital was used. Vergauwen and van Alem (2005) reported to have replicated Bontis's study and that they looked for search terms. This suggests the use of a computerised content analysis. They reported an average number of disclosed IC terms decreasing from 1.404 during 2000 to 1.337 for 2001. They analysed 89 European firms. In total, only 125 counts and 119 counts were recorded for 2000 and 2001 respectively. These extremely low levels of reporting justify why these two studies' results are not included for comparison with prior ICR studies in section 8.2. In addition, they illustrate the importance of explaining methodological issues to enable others to interpret and understand results. Furthermore, these low levels of reporting suggest that manifest content and manifest meanings were coded. This, coupled with the other limitations discussed in this section, explain why computer-aided text analysis is inappropriate for investigating ICR disclosed in annual reports.

7.8 Reliable coder

The practical challenges and methodological problems illustrated in this chapter showed that human judgement is required to interpret the meanings of IC messages conveyed in annual reports. Ideally, for a content analysis to be objective the researcher's personal idiosyncrasies and biases should not go into the findings of the study (Wimmer & Dominick, 2003). However, in reality "the meanings extracted from content depend very heavily on what viewers bring to the situation, including their biophysiological and psychological limitations" (Graber, 1989, p. 148). Therefore, the reliability and validity of a study's results depend on the reliability and validity of the coder's interpretations and inferences. Guthrie et al. (2004) claim "a reliable coder is necessary for consistency" (p. 287). Moreover, Krippendorff (2004) claimed in accepting research results, qualitative researchers tend to apply criteria other than reliability and validity. Such alternative criteria include, among many, trustworthiness, credibility, transferability, embodiment, accountability, reflexivity, and emancipatory aims. According to Krippendorff, it is not clear whether qualitative researchers take this position because inter-subjective verification of interpretations of reliability and validity is extraordinarily difficult to accomplish or whether the

criteria they propose are truly incompatible with the making of abductive inferences from texts (Krippendorff, 2004).

Issues pertaining to coder qualifications and expertise (Krippendorff, 2004; Morris, 1994), and coder training (Guthrie et al., 2004; Krippendorff, 2004; McKinnon, 1988; Milne & Adler, 1999; Morris, 1994) have been raised as a concern for content analysis methodology. It is argued the validity of a content analysis results rests in part upon the qualifications and expertise of the coders. Furthermore, Morris (1994) added it is difficult to reproduce human-coded content analysis without comparable background and training for the coders. This study's researcher has done everything reasonable to best prepare for conducting this content analysis. Reasonable efforts to be reflexive in making inferences about ICR and hence to take account of data-making processes to enhance the reliability and validity of this study's results are illustrated with examples throughout the thesis.

7.9 Summary

This chapter attended to operational issues and methodological problems associated with making inferences about ICR conveyed through texts and visuals in annual reports. Challenges pertaining to ambiguous meanings and subjective interpretations in particular were discussed. The chapter also illustrated with examples from New Zealand firms' annual reports how ambiguous and covert meanings and subjective interpretations were managed while making inferences during this study. The discussion of subjectivity involved in coding pictures was illuminated with examples, and justified the inclusion of pictures in the extended study. Furthermore, the rules of inferences developed for handling the methodological issues that posed challenges for this study were discussed. The chapter also justified why computer-aided text analysis is inappropriate for making inferences about IC information conveyed through texts and visuals in annual reports. The final section considered issues relating to the reliability of the coder. The results of the extended content analysis study are discussed in the next chapter.

CHAPTER 8: RESULTS OF EXTENDED CONTENT ANALYSIS STUDY

8.1 Introduction

This chapter presents results and discusses findings from analysing the content of the annual reports of the 30 largest New Zealand firms listed on the NZSX. Most quantities presented in tabulation tables are absolute frequencies that resulted from counting every occurrence of ICR disclosures. Some tables also contain relative frequencies, while others display appearance, essentially for comparability.

To demonstrate the difficulty with, and limitations of, comparing ICR content analysis studies' results, descriptive statistics of this and prior studies are summarised next. Then this study's results are presented in tables. Section 8.3 presents results of what IC are reported. These results are interpreted in section 8.4. Section 8.5 presents results of how IC is reported, which are interpreted in section 8.6. The chapter concludes by interpreting the New Zealand content analysis study's findings.

8.2 Descriptive statistics of comparative studies

Great care should be exercised in comparing the results of different content analysis studies, as different conclusions will naturally be arrived at when researchers use different tools of measurement (Wimmer & Dominick, 2003). Even though results of some prior ICR studies are obviously different, comparisons have been made. However, Abeysekera (2006) claimed it is difficult to accept the credibility of these comparisons. "Many of the studies that use content methodology cannot be meaningfully compared because of the use of inconsistent data collection instruments" (Guthrie et al., 2004).

While cognisant of these concerns, one aim of any research project is to add to the international literature, so a comparison with international ICR content analysis studies might be expected. Table 8.1 presents descriptive statistics of this and seven comparative studies. This table is used to highlight some of the apparent differences in international ICR practices (in section 8.2.1), but its main purpose is to illustrate the limitations of comparing international ICR studies.

As explained in section 7.7.2, the studies that investigated ICR practices of firms in Canada (Bontis, 2002), and The Netherlands, France and Germany (Vergauwen & van Alem, 2005) are not included in Table 8.1. These two studies applied computerised text analysis, and hence their results are very different to those of the New Zealand study. Moreover, due to the way in which Vandemaele, Vergauwen and Smits (2005) presented their results from investigating ICR practices for The Netherlands, Sweden and the UK, their results are also excluded from Table 8.1.

The results presented in Table 8.1 are those of the seven international studies conducted in Australia (Guthrie & Petty, 2000), Australia and Hong Kong (Guthrie, Petty & Ricceri, 2006), Ireland (Brennan, 2001), Italy (Bozzolan et al., 2003), Malaysia (Goh & Lim, 2004), South Africa (April et al., 2003) and Sri Lanka (Abeysekera, 2003). The statistics given in Table 8.1 illustrate why care should be taken when comparing results.

Table 8.1: Descriptive statistics for current and comparative studies

	NZ	Australia ¹⁸	Australia ¹⁹	Hong Kong	Ireland	Italy	Malaysia	South Africa	Sri Lanka ²⁰
Number of firms	30	20	50	100	11	30	20	20	30
Number of industry/sector groups	13	6	6	7	1 ²¹	Not cited	Not cited	9	4 ²²
Number of IC items in framework	17	24	18	27	24	20	24	24	45
Average number of IC items reported	76.9	8.9	31.6	13.2	3.7	51	14.6	10.4	72.8
Minimum number of IC items reported	1	2	0	2	1	0	1	3	Not cited
Maximum number of IC items reported	153	17	105	29	5	113	20	18	Not cited
Year end of annual reports	2004	1998	2002	2002	1998	2001	2001	2001	2000

The dissimilar numbers of IC items in the frameworks used for coding presented in Table 8.1 indicate the use of different data collection instruments. It is acknowledged that differences in results presented in Table 8.1 could be attributable to different (i)

¹⁸ For the year ended 31 December 1998.

¹⁹ For the year ended 31 December 2002.

²⁰ Annual report of two financial years analysed. Only one year's results quoted here.

²¹ All companies were defined as knowledge-based, i.e. technology and people-oriented companies.

²² Four industry groups were created: Most, second most, third most, and least shareholders.

ICR practices between countries, (ii) economical, cultural, political and social factors in countries, and (iii) application of methodological issues. It is not intended to make in-depth comparisons between the results presented in Table 8.1, but to substantiate observations made throughout the thesis, that: (a) inconsistent application of methodology, and (b) absence of explanations of operational issues, make meaningful comparisons difficult.

8.2.1 General comparisons

Although, as noted, comparisons between the results of international studies are problematic, they do suggest some apparent variations in ICR practices. The extent to which these apparent variations are meaningful will be discussed later.

As a starting point, some general observations from statistics in Table 8.1 are useful. Compared with firms in these seven countries, New Zealand firms have on average much higher levels of reporting than the majority of these studies. Reporting a higher average number of IC items suggests New Zealand firms are more aware of IC than their counterparts in other countries. One explanation may relate to findings from prior research, noted in Chapter 2, namely a general increase in ICR in annual reports from 2000. It is possible that there could have been a sharp increase in awareness and the importance of IC since these seven studies were conducted. Also, there could have been an increase in the expected benefits of communicating IC in annual reports in recent years. The New Zealand results possibly indicate that the expected increase in IC disclosure as the field of IC gains momentum over time (Bontis, 2002) is taking shape.

Based on the average and the maximum number of IC items reported between these studies, the current study's results appear to be more in line with that of Sri Lanka (Abeysekera, 2003) and Italy (Bozzolan et al., 2003), followed by the 2002 Australian study (Guthrie, Petty & Ricceri, 2006). Moreover, the average number of IC items reported show close proximity between the New Zealand and Sri Lankan results. Some explanations follow.

8.2.2 Methodological reasons for dissimilar results

One reason why this study's results appear to be more in line with that of Sri Lanka and Italy is because, as for this study, these two studies presented indices of

frequencies. They recorded frequencies that indicate how many times IC items occurred (see Abeysekera, 2003; Bozzolan et al., 2003). It appears that the 2002 Australian and Hong Kong study also recorded the number of times IC was reported. In contrast, the published results of the 1998 Australian, Irish, Malaysian and South African studies are presented as the number of companies that reported particular IC items, which is an index of presence. Thus, it appears that these studies reported appearance of IC items. April et al. (2003) stated explicitly that they ignored the number of occurrences. As discussed in section 4.3.3, an index of frequencies is different to an index of presence. Thus, making meaningful comparisons between results presented as frequencies with those presented as appearance, is problematic. Tables 8.3 and 8.4 illustrate how frequencies and appearance influence the ranking of the most reported IC items of this study. These tables also illustrate how methodological issues of counting and quantifying results influence our understanding of voluntary ICR practices.

One methodological reason that could explain why New Zealand and Sri Lankan results have close proximity is that both studies included pictorial information (see Abeysekera, 2003). This could also explain why the average number of IC items reported for these two studies is much higher than those of the other studies presented in Table 8.1. The other six studies are silent about whether pictures were coded. The uncertainty over whether pictures were included limits the making of meaningful comparisons between this and these six studies' results.

Due to methodological differences, only general comparisons are made in the remainder of this chapter, and only to the extent to explain, understand and interpret this study's findings.

8.3 Evidence of what IC is reported

One overall finding relating to what IC is reported is similar to that of the Sri Lankan study (Abeysekera, 2003; Abeysekera & Guthrie, 2004a). Not one annual report explicitly mentioned the term "intellectual capital". Only one New Zealand firm made a statement about retaining their branding to ensure that intellectual value developed over many years is not lost (NuPlex Industries Ltd Annual Report, p. 27). One interesting observation about Guthrie et al.'s (2006) study is that only one 2002

annual report, among a total of 100 Hong Kong and 50 Australian companies sampled, specifically mentioned IC as a concept.

Another New Zealand finding that is very similar to that of Abeysekera (2003) is the total counts recorded. A total of 1,710 counts for the 1998/1999 periods and a total of 2,185 for the 1999/2000 periods are reported for the Sri Lankan study. The aggregate frequency for the 30 New Zealand firms is 2,306 counts. On average Sri Lankan firms disclosed IC items 73 times during the 1999/2000 periods, whereas New Zealand firms disclosed IC items 77 times in their annual reports for the 2004 financial year. While these total frequencies and averages are high enough to be considered systematic, they are significant enough to support the contention that Sri Lankan and New Zealand firms have a firm commitment to the notion of communicating information about their IC to an external audience. The New Zealand results suggest that despite the absence of an established, and generally accepted, framework for ICR, New Zealand firms are proactive in reporting IC externally. These results are sufficient evidence that IC is a major focus of interest for New Zealand firms. Fifty per cent of firms scored above the overall average of 77 times for the 30 firms. It is possible that the results of this study confirm the finding reported by O'Regan et al. (2001): IC is perceived as becoming a key determinant of enterprise value. However, such conclusions contradict perceptions that IC is not a major focus of interest and that companies do not intend to report IC externally, reported by prior research (see Roslender & Fincham, 2004; van der Meer-Kooistra & Zijlstra, 2001).

The next subsection gives evidence of what IC items New Zealand firms report, followed by evidence of which IC category is mostly reported. These results are briefly compared with prior research. In the final subsection the aggregate results of what IC New Zealand firms report are interpreted and discussed.

8.3.1 Individual IC items

To determine what IC items are reported and if there is a focus on particular IC items, every occurrence of the IC phenomenon was recorded and counted. Table 8.2 shows the breakdown of frequencies for the 17 IC items for the entire study. The IC items are ranked from most to least frequently reported, based on relative frequencies.

Table 8.2: Frequencies of individual IC item

IC item	Absolute frequency	Relative frequency	Rank	No. of firms
Internal capital				
Intellectual property ²³	21	0.9 %	14 ²⁴	7
Management philosophy	33	1.4 %	12	14
Corporate culture	79	3.4 %	8	26
Management & technological processes	97	4.2 %	7	21
Information and networking systems	21	0.9 %	14	12
External capital				
Financial relations	6	0.3 %	16	3
Brands	301	13.1 %	3	20
Customers and customer satisfaction	191	8.3 %	6	25
Corporate image building	198	8.5 %	5	27
Distribution channels	54	2.3 %	11	16
Business collaborations	71	3.1 %	10	21
Licensing and franchising agreements	11	0.5 %	15	5
Human capital				
Employees	578	25.1 %	1	29
Education	246	10.7 %	4	25
Training	22	1.0 %	13	11
Work-related knowledge	302	13.1 %	2	27
Entrepreneurial spirit	75	3.2 %	9	20
Total	2,306	100 %		

²³ Intellectual property comprises 'patents', 'copyrights', and 'trademarks'. The absolute frequencies for these three attributes are: 'patents' (9 counts), 'copyrights' (0 counts), and 'trademarks' (12 counts).

²⁴ Shared ranking between 'intellectual property' and 'information and networking systems'.

The number of firms, out of a possible 30 that reported on a particular IC item is shown in the right-hand column. This column represents the appearance, thus if the IC item appeared in a particular annual report. One finding from analysing the results of the individual IC items is similar to that of Abeysekera (2003). Table 8.2 shows that New Zealand firms cover a wide range of IC items and that all 17 IC items were reported. The absolute frequencies suggest a few items in the human capital and external capital categories are emphasised. The other types of IC items reported are fairly randomly distributed. However, based on the number of firms that reported IC items, it appears that there is no obvious focus on any particular IC items. Analyses of the type of IC items reported by individual firms confirmed that most firms emphasise the IC items in the human and external capital categories, as indicated in Table 8.2. The analyses also indicated no obvious patterns in the type of IC items reported by each individual firm. The extent of reporting varied greatly among firms. Table 8.2 also shows that no IC item has been reported by all firms in the sample. A further analysis (not evident in Table 8.2) is that no firm reported information about all IC items.

8.3.1.1 Five most and five least reported IC items

To determine if there are patterns between the most and least reported individual IC items, and also to compare the results of individual IC items with the seven other studies, IC items were ranked in two ways. First, using an index of frequencies (see section 4.3.3) items are ranked according to absolute frequencies, presented as frequency. Second, using an index of presence (see section 4.3.3) items are ranked according to the number of firms that reported a particular IC item, (i.e. popularity of the item), presented as appearance. Frequencies of the five most and five least frequently reported items are shown in Table 8.3. In this thesis, the appearance of items is defined as being “popular”. The items that appeared in most firms are described as the most popular and those that appeared least as the least popular. Table 8.4 presents appearances of the five most and five least popular items.

Table 8.3: Five most and five least frequently reported IC items

Most frequently reported			Least frequently reported		
	IC item	Frequency		IC item	Frequency
1.	Employees	578	1.	Financial relations	6
2.	Work-related knowledge	302	2.	Licensing and franchising agreements	11
3.	Brands	301	3.	Intellectual property	21
4.	Education	246	4.	Information and networking systems	21
5.	Corporate image building	198	5.	Training	22

Table 8.4: Five most and five least popular IC items

Most popular			Least popular		
	IC item	Appearance		IC item	Appearance
1.	Employees	29	1.	Financial relations	3
2.	Work-related knowledge	27	2.	Licensing and franchising agreements	5
3.	Corporate image building	27	3.	Intellectual property	7
4.	Corporate culture	26	4.	Training	11
5.	Customer and customer satisfaction	25	5.	Information and networking systems	12
6.	Education	25			

Tables 8.3 and 8.4 show the five least frequently reported IC items are the same as the five least popular IC items. Only the rankings of items 4 and 5 differ. There is no discernable pattern to the reporting of the five least frequently and popular reported IC items. They are spread across the three IC categories. These results are generally

consistent with those of the seven international studies. One contradictory finding is that the Malaysian study reports ‘networking systems’ as one of the most popular reported IC items. Both the New Zealand and Irish studies found this item ranked among the least reported. Except for the Malaysian study, the other studies found ‘financial relations’ among the least popular and frequently reported. Other items ranked as least reported by these seven studies that are similar to this study’s results are as follows: ‘intellectual property’ (Hong Kong, Italian and Sri Lankan studies²⁵); ‘patents’ and ‘trademarks’ (Malaysian study); ‘copyrights’ (Australian [1998], Malaysian and South African studies); ‘franchising agreements’ (Australian [1998], Irish, Malaysian and South African studies); ‘licensing agreements’ (South African study); ‘training’ (Australian [2002] study) and ‘networking systems’ (Irish study).

However, results in Tables 8.3 and 8.4 indicate different trends in the five most reported IC items. Table 8.3 shows three of the five most frequently reported IC items are from the human capital category, and the other two from the external capital category. In contrast, Table 8.4 shows that one of the six most popular items (‘corporate culture’) is from the internal capital category. This suggests the most popular items are spread across the IC categories. Results in Tables 8.3 and 8.4 also show differences in the ranking of these items. These differences indicate how methodological issues such as counting, and quantifying results as frequencies or as appearance influence results. These different results illustrate how differences in methodological issues make meaningful comparisons difficult and also how methodological issues influence our understanding of voluntary ICR. These differences emphasise the importance of using consistent data-collection instruments as a means to replicate studies and hence enhance comparability between studies.

8.3.1.2 Comparison with international studies’ most and least reported IC items

A comparison of the most frequently reported IC items in Table 8.3 with the 2002 Australian study showed only one similarity: ‘brands’. To enable a general association of this study’s results with that of the Italian and Sri Lankan studies, Table 8.5 presents the most frequently reported items per IC category for these three

²⁵ Both the Italian and Sri Lankan studies recorded zero counts for ‘copyrights’, and the Italian study recorded only two counts for ‘patents’ and ‘trademarks’.

studies. The relative frequencies of the item for the particular category are shown for the Italian and New Zealand studies.

Table 8.5: Most frequently reported IC items per IC category

	Italy	Sri Lanka²⁶	New Zealand
Internal capital			
<i>Most frequently</i>	Research projects (51 %)	Processes	Management and technological processes (39 %)
<i>Second most frequently</i>	Management processes (29 %)	Systems (Management philosophy)	Corporate culture (32 %)
<i>Third most frequently</i>	Information systems (17 %)	Not given	Management philosophy (13 %)
External capital			
<i>Most frequently</i>	Customers (35 %)	Brand building	Brands (36 %)
<i>Second most frequently</i>	Distribution channels (18 %)	Corporate image building	Corporate image building (24 %)
<i>Third most frequently</i>	Business collaboration (16 %)	Business partnering	Customers (23 %)
<i>Fourth most frequently</i>	Brands (13 %)	Not given	Business collaboration (9 %)
Human capital			
<i>Most frequently</i>	Employees (57 %)	Employee relations	Employee (47 %)
<i>Second most frequently</i>	Work-related knowledge (17 %)	Employee measurement	Work-related knowledge (25 %)
<i>Third most frequently</i>	Work-related competencies (11 %)	Training programmes	Education (20 %)
<i>Fourth most frequently</i>	Employee education (13 %)	Not given	Entrepreneurial spirit (6 %)

²⁶ Relative percentages not given.

The results displayed in Table 8.5 show some different descriptions of IC items, resulting from the use of different IC frameworks for coding. Despite this, Table 8.5 indicates results are generally consistent. In the internal capital category, two of the three most frequently reported IC items for New Zealand are also most frequently reported for the Italian and Sri Lankan studies. In the external capital category all four most frequently reported IC items for New Zealand appear among the most frequently for both other studies. In the human capital category three of the four most frequently reported IC items for New Zealand also rank as being most frequently reported by the other two studies. One explanation why ‘work-related knowledge’ and ‘education’ do not appear among the results of Sri Lanka is because Abeysekera (2003) did not code information about directors. Since directors were not considered to be full-time employees, information about the Board of Directors was excluded from the Sri Lankan study. The definition of ‘employees’ in this study is delineated when interpreting the overall results of what IC is disclosed later (see section 8.4.3). Suffice for this comparison is that directors are regarded as employees and hence information about the Board of Directors was included in the New Zealand study.

The results in Table 8.4 are compared with those of the 1998 Australian, Hong Kong, Irish, Malaysian and South African studies. Results are generally dissimilar, and only the following similarities are noted: ‘employees’ and ‘work-related knowledge’ (Hong Kong); ‘work-related knowledge’ and ‘customers’ (Australia and South Africa); ‘corporate culture’ and ‘company name’²⁷ (Malaysian study); and ‘customers’ and ‘know-how’²⁸ (Irish study). Moreover, two general similarities between this study and the 1998 Australian study were noted. First, 19 out of 20 Australian companies reported information about the most reported item (‘entrepreneurial spirit’) for the Australian study. In the current study 29 out of 30 firms reported information about the New Zealand study’s most reported item (‘employees’). Second, between the sampled firms in the Australian and New Zealand studies all IC items were reported at least once.

A general dissimilarity between the 1998 Australian study on the one hand, and the New Zealand, South African and Sri Lankan studies on the other, relate to the most

²⁷ Included in ‘corporate image building’ in this study.

²⁸ Included in ‘employees’ in this study.

reported item for the Australian study. 'Entrepreneurial spirit' ranks as the ninth most popular IC item in both the New Zealand and South African studies. Furthermore, interestingly, 'entrepreneurial spirit' was one of the least frequently reported IC items in the Sri Lankan study as well as in the 2002 Australian study. Also 10 of the 30 firms in New Zealand did not report 'entrepreneurial spirit' at all. One general inconsistency between the current and the South African study is that all South African companies reported their most reported item – 'business collaboration'. As stated above, one New Zealand firm did not report this study's most reported item – 'employees'. One dissimilar result between the Irish and New Zealand studies is that this study's fourth most popular item 'corporate culture' was not reported at all in the Irish study. A difference between New Zealand and Hong Kong results is that the latter study presents 'information and networking systems' as the third most reported IC item.

Some final observations pertaining to comparing results presented in Tables 8.3 and 8.4 with other prior ICR studies are made. This study's results confirm some perceptions of Spanish financial directors (see Gallego & Rodriguez, 2005) that the most relevant IC involve employee experience, brand image and customer relationships. The results also agree with perceptions reported by van der Meer-Kooistra and Zijlstra (2001) that knowledge and experience embedded in people are pivotal components of IC. Furthermore, the results are in line with some findings of Boedker et al. (2005a). They found a strong emphasis on 'customers' and one of the highest reported IC items is 'education'. However, the results also disagree with some of their findings. Boedker et al. (2005a) reported the highest reported IC items were 'information systems and technology', and 'training'. Finally, the results of this study also disagree with that of Bontis (2002). He found the most reported term was 'intellectual property'. As discussed earlier, 'intellectual property' is the least reported IC items for the current as well as some of the other seven studies.

8.3.2 IC categories

The frequencies per IC category were examined to determine whether there was a focus on one particular category of IC. Table 8.6 shows the breakdown of aggregated totals of frequencies per IC category for this New Zealand study. The frequencies per IC category for the individual firms are presented in Appendix D.

Table 8.6: Overall frequencies of ICR disclosure per IC category

IC category	Absolute frequencies	Relative frequency
Internal capital	251	11 %
External capital	832	36 %
Human capital	1,223	53 %
Total	2,306	100 %

The results presented in Table 8.6 confirm perceptions reported by April et al. (2004) that mining companies rate human capital the highest. The higher relative frequency for the human capital category is attributed to three of the four most frequently reported IC items being from this category. Moreover, the second highest relative frequency for the external capital category is attributed to the third, fifth and sixth (see Table 8.2) most frequently reported IC items being from this category.

However, the results displayed in Table 8.6 are inconsistent with those of overseas studies. Table 8.7 summarises relative frequencies of some of the overseas studies.

Table 8.7: Relative frequencies of IC categories in international ICR studies

Study	Internal capital	External capital	Human capital
Australia (Guthrie & Petty, 2000)	30.1 %	39.8 %	30.1 %
Australia (Guthrie et al., 2006)	41 %	49 %	10 %
Hong Kong (Guthrie et al., 2005)	28 %	37 %	35 %
Italy (Bozzolan et al. 2003)	30 %	49 %	21 %
Malaysia (Goh & Lim, 2004)	36.4 %	41.4 %	21.9 %
South Africa (April et al., 2003)	30.4 %	40 %	29.5 %
Sri Lanka (Abeysekera, 2003)	20 %	44 %	36 %

The Irish study did not publish these results. Table 8.7 shows highest counting was recorded in the external capital category for the international studies. Only the Hong Kong and Sri Lankan studies found more reporting in the human capital category than in the internal capital category. However, for the Sri Lankan study, the most reported category by line count was human capital. Abeysekera and Guthrie (2004a) gave the following explanation: “This is because firms in Sri Lanka have used more space to report on employee relations by featuring employees mostly by photographs” (p. 158). Therefore, it appears that, similar to this study, Sri Lankan annual reports include many pictures of the IC item ‘employees’, discussed later (see section 8.4.3).

8.4 Interpreting what IC is reported in terms of theory

The results regarding what IC items are reported raise a few questions. Why do New Zealand firms voluntarily report IC information in annual reports? Why do they report a wide variety of IC items? Why do they emphasise human capital, in particular ‘employees’? Why are items in the human and external capital categories more frequently reported than the items in the internal capital category? It appears that the New Zealand study’s results accord with what might be expected from a legitimacy theory perspective. Therefore, legitimacy theory is drawn on here to interpret the results and propose explanations for understanding why voluntary ICR might be important to New Zealand firms.

8.4.1 Possible reasons for voluntary ICR

The literature claims annual reports are highly useful sources of information; managers use annual reports as a reporting mechanism to signal what is important; and represent what is probably the most important document in terms of the organisation’s construction of its own social imagery (Gray et al., 1995; Guthrie et al., 2004). This study’s results suggest that, in the absence of guidelines from the accounting profession such as accounting rules and standards relating to the accounting of IC, New Zealand firms are proactive in identifying, recognising and reporting IC. This study’s results suggest that IC is a focus of interest for New Zealand firms and that they use annual reports strategically to report useful IC information and to signal what IC information is important. By reporting IC information, it appears that firms identify and recognise IC resources as important value drivers. From a legitimacy theory perspective, evidence shows that New

Zealand firms use their annual reports to create social images. Voluntarily reporting IC information suggests firms are seeking to meet implicit and explicit social expectations in accord with a multitude of social contracts between firms and society—the notion that legitimacy theory relies on (Deegan & Samkin, 2001; Guthrie et al. 2006).

It also appears that annual reports are used as a proxy for community concern. Deegan, Rankin and Tobin (2002) reported a study based on interviews with senior management, found managers use the annual report to respond to perceived public concerns. This study assumed that information about IC is a public concern and that managers use annual reports as a means to communicate IC information to society. Management may adopt strategies, including disclosure strategies that show society that the firm is attempting to comply with society's expectations. It appears that some New Zealand managers perceive the annual report to be an effective way for informing the public of the firm's view and strategies pertaining to certain IC issues.

Adopting a legitimacy theory perspective, it is assumed firms would voluntarily report on particular activities that management perceives the society in which it operates, expects. It is assumed that one such expectation is that the firm should voluntarily report on the important value drivers of a firm. Thus, incorporated within the social contract between a firm and the society in which it operates, is society's expectation of voluntary ICR disclosure. Management could also interpret failure to act in accordance with the social contract as detrimental to the ongoing operations of a firm. "Firms must fashion their communication to lure and retain the dollar value of investors" (Kohut & Segars, 1992, p. 11). To retain current and attract potential investors management would voluntarily disclose information about IC as a mean to meet society's assumed expectations. It could also be argued that, even though New Zealand firms may not be pressured by society to report IC, they nevertheless report information to the public to enhance the perceived value of the firm.

8.4.2 Possible explanations for reporting a variety of IC items

The disclosure of wide range of IC items by New Zealand firms implies that these firms realise the importance of communicating IC to an external audience. A prior study (Kohut & Segars, 1992) found CEOs see annual reports as marketing tools, as major communication devices to many constituencies concerning their performance

and that of their firms. This could explain why New Zealand firms report a wide range of IC items. Management want to legitimise both their own and their firms' actions and performance. By voluntarily reporting, firms give the impression that they have beneficial relationships with their markets, customers and employees. Firms could do this to build up a reputation and win the loyalty of these important stakeholder groups. It is likely that firms disclose knowledge-based resources that contribute to the creation of a competitive advantage in anticipation that such disclosure may in fact *give* them a competitive advantage in the market- and workplace.

It could also be argued that firms use voluntary disclosure of a wide variety of IC items as important strategies in their pursuit of value creation and competitive advantage. Kohut and Segars (1992) found annual reports are an increasingly popular medium for communicating company strategy. According to them, a firm earns credibility by convincing others that it is pursuing a sound strategy and has an effective planning capability. It could be argued that New Zealand firms earn credibility by convincing society that they have effective planning capability about their IC resources, and also that IC is important in the firm's strategy. Some interpretations as to why New Zealand firms are relatively transparent and report a wide range of IC items could pertain to reasons reported in a prior ICR study (Ordonez de Pablos, 2005): to provide stakeholders with a different – and broader perspective – of the firm and the fundamentals that drive its business; and to reflect their priorities, their method of working, and their attitude and people.

Another explanation is that firms attempt to report all the assets and resources that create value and that generate a competitive advantage to the firm. Firms display information about all relevant assets from which they expect to obtain benefits in the coming years. Three favourable factors suggested by Vergauwen and van Alem (2005) as to why firms would voluntarily disclose IC information could be relevant to this study's results. First, increased transparency better equips stakeholders to estimate the applicable risk associated with the firm. Second, IC can serve as an additive to the reported earnings to increase the value relevance of the financial statements. Third, *not* disclosing IC information could lead to an asymmetry between firms and users of financial statements. Since this asymmetry will make a firm more vulnerable to insider trading (Bernhut, 2001), it could be argued to prevent this from

occurring, firms will benefit from disclosing IC-related information in order to minimise the information asymmetry. Other reasons why New Zealand firms embark on voluntarily disclosure could pertain to arguments presented by Mouritsen et al. (2004). One such argument is that firms are frustrated with the traditional financial reporting system and perceive that capital markets may be at a disadvantage if IC is not reported. Therefore, New Zealand firms could anticipate potential advantages in reporting IC.

8.4.3 Possible explanations for reporting mostly human capital

The results in Table 8.6 show that the absolute frequencies of IC items in the human capital category are much higher than those of items in the other two categories. Moreover, Table 8.7 shows that none of the seven international studies revealed human capital as the most reported category. One explanation for the high levels of reporting in the human capital category for the New Zealand study could relate to the definition of the IC item ‘employees’. The definition of employee adopted in this study is that of the New Zealand Financial Reporting Standard (ICANZ, 1994) paragraph 4.2. “Employee means any person who supplies services to the entity or related parties by way of an employee/employer relationship. Employee includes all officers of the entity and related parties and all executive or non-executive directors or their equivalents” (1994). Thus, in this study, information about executive and non-executive directors was interpreted as relating to human capital and coded accordingly. The high absolute frequencies of ‘employees’, ‘work-related knowledge’ and ‘education’ could be attributed to including directors in the definition of ‘employees’ for coding purposes. Except for 2 of the 30 sampled firms (Briscoe Group Ltd and Freightways Ltd), all firms presented pictures of their directors. These pictures were recorded as the IC item ‘employees’. Two firms presented group pictures of their directors and 26 firms presented separate pictures of individual directors. Each picture was recorded as a separate count. Most of the sampled firms had, on average, eight directors, which explains the high absolute frequencies for ‘employees’. Coding on average eight pictures of directors for 26 alone equates to 208 counts. Also, 29 of the 30 sampled firms presented information regarding the expertise, experience, knowledge, know-how and/or competencies of each director separately. These disclosures were interpreted as ‘work-related knowledge’ and each disclosure was recorded as a separate count. Furthermore, most sampled firms

presented information about the qualifications and education of their directors, coded as the IC item 'education'. As stated earlier Abeysekera (2003) explicitly states that directors' information was not included in his definition of 'employees'. However, unfortunately this study's approach of including directors' information as 'employees' cannot be compared with the other six international studies. It is not clear how these six studies treated information about directors. One speculation of the relatively high results for the IC items 'employees' and 'work-related knowledge', shown in Table 8.5 for the Italian study, is that information about directors is included in these items.

Another reason for this study's high absolute frequencies of 'employees' and 'work-related knowledge' relate to some firms disclosing information about their senior management teams in a way similar to how information about directors is disclosed, as mentioned above. A few firms presented separate pictures of individuals of their senior management teams. Each picture was recorded as a separate count for the item 'employees'. Moreover, some firms disclosed information about the knowledge and expertise of their senior management team. Such information was interpreted and coded as 'work-related knowledge', one count per individual. Displaying pictures and all this information about directors and senior managers suggests New Zealand firms consider their executives to be valuable resources and central to the long-term future of the firms.

The high levels of reporting in the human capital category agree with the literature that many companies record human capital as their most important asset for sustainability (see Abeysekera & Guthrie, 2004a). It seems that New Zealand firms convey messages that their employees are valuable, and that they recognise this by disclosing information about their employees' contributions, work-related knowledge and education in the annual reports. The overall high result for these three IC items could be interpreted as New Zealand firms highlighting the importance of human capital. As social contracts, in accord with the legitimacy theory, represent multitude of implicit and explicit expectations, which are not fixed, it can be assumed that New Zealand firms have social contract obligations to be transparent about the part that employees play in conducting firms' operations. From this perspective, in accord with Lindblom (1994), management uses public disclosure to demonstrate their concerns for societal values. Failure to act in accordance with social contracts is interpreted as

being detrimental to the ongoing operations of a firm (Deegan et al., 2002) and a firm's legitimacy may be in question. Management therefore voluntarily report to legitimise the firm's activities and outcomes. In accord with Lindblom's (1994) suggestions to combat perceptions that a firm's legitimacy is in question, it appears that New Zealand firms use voluntarily reporting as a combative strategy. They seek to manipulate stakeholders' perceptions and attempt to ensure that outside parties perceive their activities as legitimate.

Other reasons why New Zealand firms emphasise human capital could be, first, that their objectives are similar to those of Danish firms (Mouritsen et al., 2004). More than 90 per cent of Danish firms stated that their objective for preparing ICS is to show that human resources are the most important assets. By recognising 'employees' in particular as important value drivers, firms are portraying images that 'employees' are important. Secondly, similar to the findings of Bukh et al. (2001), New Zealand firms could focus on disclosing human resources as a strategy to attract employees, or as a strategy to signal that they recognise knowledge as an asset.

8.4.4 Explaining high levels of external capital reporting

Legitimacy theory appears to provide a useful explanation of the high absolute frequencies for IC items in the external capital category as well. These relatively high results are mainly attributed to two IC items, 'brand' and 'corporate image building', which rank among the five most frequently reported items. One interpretation of the high counts for these two items could relate to public perceptions. According to Anderson (1999), brands are the most valuable assets, and Fincham and Roslender (2003b) stated that the commercial power of brand and reputation is recognised universally nowadays. New Zealand firms could disclose information about brands and images as they regard these as the most valuable assets, and also realise the commercial power of these two IC items. Thus New Zealand firms may use annual reports as a means to build brand awareness, reputation and image. According to Conrad (1985), messages conveyed in annual reports support the image of a firm and its members. It could be argued that society expects firms to use an external communication medium for informing external stakeholders about their IC items in the external capital category. Thus it appears that New Zealand firms frequently report messages about 'brands' and 'corporate image building' to legitimise their

image. Many firms use powerful pictorial images promoting their company names and brands.

8.4.5 Explaining low levels of reporting for internal capital category

The results presented in Table 8.3 show that three of the five least frequently reported IC items are from the internal capital category: ‘intellectual property’, ‘licensing and franchising agreements’, and ‘information and networking systems’. From a legitimacy theory perspective, this could suggest that firms do not have a social contract to disclose IC resources from the internal capital category. Another possible reason for the low counts for the IC item ‘intellectual property’ in particular could be that New Zealand firms have not registered various forms of property and design rights such as trademarks or patents. Also, it is possible that New Zealand firms do not have ‘licensing and franchising agreements’. However, compared to the results of the seven international studies in general, it appears that firms in these countries also do not emphasise these IC items. Hence it appears that the legitimacy theory provides an explanation as to why firms do not disclose IC items in the internal capital category externally.

Another possibility, which could also contribute to the low recordings for the other least reported items and in particular for the item ‘information and networking systems’, could relate to the problematic issues of recognising IC as discussed in Chapter 2. The entangled natures of IC resources, and the difficulty with making distinct boundaries around IC items and even IC categories, make identifying and recognising them as separate assets difficult. Many IC resources are part of a sphere of a firm’s production process, where the use is complementary to other assets. From this perspective it could be argued that New Zealand firms have difficulties with identifying, describing and recognising IC resources separately. Hence, they do not attempt to “transform” IC resources by reporting them separately.

Furthermore, it is possible that New Zealand firms disclose IC constituents that are different to those contained in the IC framework used in this study. They could, for example, identify and recognise only two groups of IC, similar to the Skandia Value Scheme: human and structural capital. Then, firms would not distinguish between external and internal capital when providing information about structural capital.

Thus it can be argued New Zealand firms make no attempt to disentangle and separate supportive structures and procedures that could be used by employees to create knowledge. This suggests the process of disentanglement is also a problem for firms to report IC items separately. New Zealand firms may acknowledge that some competencies such as expertise create value, but see them as existing only in instances of collective performance. It is likely that New Zealand firms know that IC resources are enablers of corporate resources rather than stand-alone assets. As a result these firms merely identify and report information about competencies found in relationships between human and structural capital. In sum, it could be argued that items in the internal capital category, as well as the other least reported items, are reported, but as part of other items. If so, issues pertaining to separating IC appear to be problematic for the mutually exclusive requirement of categories in content analysis methodology.

8.4.6 Summary of what IC is reported

In sum, voluntarily reporting on IC in New Zealand firms' annual reports support the notion that management seeks to ensure to act, or at least appear to act, within the bounds and norms of their communities. Moreover, management uses it as a method to respond to perceived public pressure, and to legitimise their activities. This New Zealand study's results suggest firms are endeavouring to operate in a manner that is consistent with perceived societal expectations. In an attempt to act in accordance with the social contract, management discloses information about the performance and success of value drivers over and above those reported in accordance with mandatory accounting standards requirements. The results suggest voluntary ICR is important for New Zealand firms as a means to legitimise their performance and corporate success status. Moreover, using Lindblom's suggestion, (cited by Guthrie et al., 2004) voluntarily reporting of IC is important to New Zealand firms as a means to reveal firms' deliberate strategies to change external expectations of the firms' performance.

8.5 Evidence of how IC is reported

Results of the forms and the nature of disclosure are given in the next two subsections. The location of disclosure is helpful in understanding how IC is reported

and New Zealand firms' approach to reporting their IC. Hence results of the location of disclosure in the annual reports are given third.

8.5.1 Forms of disclosure

Evidence of the forms of disclosure contributes to understanding ICR, as no prior study presents such results. Table 8.8 presents the absolute and relative frequencies recorded in the three forms of disclosure: texts, charts and pictures. 'Charts' comprise charts, figures, tables, diagrams and graphs. 'Pictures' comprise pictures and photographs.

Table 8.8: Frequencies of ICR per form of disclosure

Form of disclosure	Absolute frequencies	Relative frequencies
Texts	1,425	62 %
Charts	70	3 %
Pictures	811	35 %
Total	2,306	100 %

An analysis of the form of disclosure of individual firms indicated that all firms, except one, made IC disclosures in textual form. The very low relative frequency of three per cent shown in Table 8.8 indicates that New Zealand firms tend not to disclose IC information through charts. Ten firms did not disclose any information as charts. No further reference is therefore made to disclosures in charts in the remainder of the analysis and discussion relating to the form of disclosure. The relatively high frequencies for disclosing IC through pictures presented in Table 8.8 agree with Preston et al.'s (1996) comment that photographs are a favoured visual medium in annual reports. All New Zealand firms made IC disclosures through pictures. As prior research is silent about whether pictorial information was included, with the exception of Abeysekera (2003), it is assumed that prior ICR studies did not code pictures. This study's results of the form of disclosure therefore provide evidence of the importance of pictures as tools to communicate IC information. Several further analyses of the form of disclosure were made.

An analysis was done to ascertain whether the coding of pictorial information influenced the ranking of IC items determined in Table 8.2. Table 8.9 shows the split

of absolute frequencies of IC items between disclosures made in visuals and textual forms. The right-hand column shows the ranking of items based on the absolute frequencies of textual disclosures only.

Table 8.9: Frequencies per IC item disclosed as texts and visuals

IC item	Total frequencies	Frequency visuals	Frequency texts	Ranking based on texts only
Internal capital				
Intellectual property	21	1	20	13
Management philosophy	33	1	32	12
Corporate culture	79	3	76	8
Management & technological processes	97	14	83	6
Information and networking systems	21	2	19	14
External capital				
Financial relations	6	0	6	17
Brands	301	220	81	7
Customers and customer satisfaction	191	78	113	5
Corporate image building	198	59	139	3
Distribution channels	54	18	36	11
Business collaborations	71	16	55	10
Licensing and franchising agreements	11	2	9	16
Human capital				
Employee	578	461	117	4
Education	246	0	246	2
Training	22	4	18	15
Work-related knowledge	302	0	302	1
Entrepreneurial spirit	75	2	73	9
Total	2,306	881	1,425	

Table 8.9 shows when disclosures in visual forms are excluded that, although the rankings differ, the five most and five least reported IC items are very similar to the results presented in Tables 8.3 and 8.4. Five of the most frequently reported items in Table 8.9 are identical to five of the six most popular IC items as shown in Table 8.4. Furthermore, four of the five most frequently reported IC items in Table 8.9 are also shown as the most frequently reported in Table 8.3. The difference between the results presented in Tables 8.9 and 8.3 is that the IC item 'customers and customer satisfaction' substitutes 'brands' when excluding pictures. One possible reason could be that messages about 'brands' lend themselves better to being portrayed through visuals, in particular as pictures. Moreover, messages about customers and in particular customers' satisfaction lend themselves better to being portrayed through texts. Another possible explanation relates to the nature and difficulty with separating IC resources discussed earlier. It is possible that one picture could convey messages about two IC items. Here for example messages about 'brands' and 'customers and customer satisfaction' could have been portrayed in a single picture. However, due to the mutually exclusive requirement for categories in content analysis methodology, only one IC item per picture was coded.

The results in Table 8.8 were also further analysed to determine what portions of the absolute frequencies are attributed to the five most frequently reported IC items, as ranked in Table 8.3. The analysis revealed that 62 per cent of total disclosures in texts are attributed to the five most frequently reported IC items. However, 88 per cent (714 of the 811 counts) of total disclosures made in pictures are attributed to these five items. This is interpreted as showing that the most popular form of disclosing the most frequently reported items is through pictures. Hence, to determine any relationships between the relative frequencies of forms of disclosure for the overall study and that of the five most frequently reported IC items, the relative frequencies of forms of disclosure for these five items were calculated. Table 8.10 shows the frequencies of forms of disclosure of the five most frequently reported items.

Table 8.10: Form of disclosure of five most frequently reported IC items

Form of disclosure	Absolute frequencies	Relative frequencies
Texts	885	54 %
Charts	26	2 %
Pictures	714	44 %
Total	1625	100 %

Compared with the results in Table 8.8 it is quite clear that the five most frequently reported items are disclosed more through pictures than the other twelve items in the IC framework. To explain and understand these results, the forms of disclosure of the five most frequently reported items were analysed per individual item.

One interesting observation is that the majority of disclosures of the most and third most frequently reported IC items ('employees' and 'brands') are made in visual forms. For 'employees', 80 per cent (461 of the total 578 counts) are visuals: only one per cent is charts, and 79 per cent pictures. Thus 99 per cent (456 of the 461 counts) of disclosure in visual forms for 'employees' is made through pictures. This result is similar to that of the Sri Lankan study. Abeysekera and Guthrie (2004a) report the IC item 'employees' featured mostly in photographs. For this study's third most frequently reported IC item, 'brands', 73 per cent (220 of the 301 counts) are made through visuals: only two percent is charts, and 71 per cent pictures. Thus 98 per cent (215 of the 220 counts) of visual forms of disclosure of 'brands' are made through pictures. Another interesting observation is that it appears that the extremely high percentages of disclosures through pictures are only relevant for 'employees' and 'brands'. The other three most frequently reported items ('work-related knowledge', 'education' and 'corporate image building') are mostly reported in texts.

An analysis of the items mostly reported through pictures revealed the item with the third highest count for pictures is 'customers and customer satisfaction'. However, only 41 per cent (78 of the total 191 counts) of disclosure of 'customer and customer satisfaction' is made in visual forms. Moreover, only 65 per cent of disclosure in visual forms is attributed to pictures. This confirms that the extremely high recordings for reporting IC through pictures are only relevant for the items 'employees' and

‘brands’. It therefore appears that pictures are a transparent medium of communication through which New Zealand firms send messages about ‘employees’, ‘brands’, and ‘customers and customers’ satisfaction’ to the public.

However, analysing the forms of disclosure of the five most frequently reported items individually showed that no disclosures were made in visual forms for the second and fourth most frequently reported IC items (‘work-related knowledge’ and ‘education’). It was found that only one other item had no counts for disclosures in visual forms – ‘financial relations’ the least frequent and popular item shown in Tables 8.3 and 8.4. Furthermore, it was found that no counts were recorded for disclosure through pictures for only four IC items: ‘financial relations’, ‘education’, and ‘work-related knowledge’, and ‘management philosophy’. The fact that no counts were recorded for pictures for two of the five most frequently reported items in particular suggest that using content analysis to investigate the reporting of IC resources which are difficult to separate and disentangle, is problematic. These issues are discussed later when interpreting the results of form of disclosure (see section 8.6.1).

The final analysis discussed here is the forms of disclosure per IC category. Table 8.11 shows the frequencies of disclosure of texts and visuals per IC category.

Table 8.11: Frequencies in texts and visuals per IC category

IC category	Texts			Visuals		
	Abs. freq.	Rel. freq. of total disclosure	Rel. freq. of texts disclosure	Abs. freq.	Rel. freq. of total disclosure	Rel. freq. of visual disclosure
Internal capital	230	10%	16 %	21	1 %	2 %
External capital	439	19%	31 %	393	17 %	45 %
Human capital	756	33%	53 %	467	20 %	53 %
Total	1,425	62%	100 %	881	38 %	100 %

One of the most interesting features in Table 8.11 is that, in the human capital category, the relative frequencies of textual disclosures and the relative frequencies of visual disclosures are the same (53 per cent). This could be explained by the high

count for ‘employees’ through pictures on the one hand and on the other high counts for ‘work-related knowledge’ and ‘education’ through texts. Another feature is that in the external capital category the relative frequency of visual disclosures (45 per cent) exceeds the relative frequency of textual disclosure (31 per cent). One explanation for these results could relate to high counts recorded for ‘brands’ and ‘customer and customer satisfaction’ being reported through pictures. It appears that items in the internal capital category are mostly reported through texts. A final observation from Table 8.11 is that the human capital category shows the highest relative frequency (53 per cent) for disclosure made through visuals. This result agrees with the Sri Lankan study. Charts, tables and photographs were primarily used to communicate information on human capital (Abeysekera & Guthrie, 2004a).

8.5.2 Nature of disclosure

Frequencies were recorded for disclosures made in declarative terms, in numerical terms, or in fiscal values, and are presented in Table 8.12.

Table 8.12: Frequencies per nature of disclosure

Nature of disclosure	Absolute frequencies	Relative frequencies
Declarative terms	2,250	97.58 %
Numerical terms	43	1.86 %
Fiscal values	13	0.56 %
Total	2,306	100 %

The results confirm findings of prior ICR studies that most disclosures are made in qualitative terms (Abeysekera & Guthrie, 2004a; Brennan, 2001; Goh & Lim, 2004; Guthrie, Petty & Ricceri, 2005; 2006). All New Zealand firms made disclosures in declarative terms. Only 50 per cent of firms disclosed information in numerical terms, and only eight firms made disclosures as fiscal values, mostly presented as charts. The Sri Lankan study also reported low levels of quantification of IC information for the 1998/1999 results. Although results were slightly higher than those of the current study, Abeysekera and Guthrie (2004a) reported three per cent of frequencies in numerical terms and six per cent in fiscal values. Reasons for the low levels reported in numerical terms and fiscal values for the New Zealand study appear to be the same

as those for the Sri Lankan study: there is no single agreed method to quantify IC information at present; and research done in the areas of environmental and social accounting has revealed that most information presented voluntarily is not quantified. Thus it could be argued that firms are “more interested in simply understanding where the real value of the firm lies than in assigning dollar values to such items” (Guthrie & Petty, 2000, p. 247).

Other reasons for not attempting to quantify IC pertain to challenges and difficulties with valuing IC as discussed in Chapter 2. Firms possibly consider the historical costs of IC, particularly internally generated IC, as bearing no relationship to their value. Or firms realise that IC has a value in use that is not linked to transactions, but has connections with the organisations’ other tangible and intangibles factors. Continuing with the earlier argument that firms acknowledge the difficulties with separating IC into stand-alone assets, it is argued that firms probably realise IC has considerable overflows and that many IC items cannot be seen in any distinctive way because they function in connection with one another. Hence no attempt is made to value stand-alone IC assets, neither historical values nor estimates of future values. The absence of markets of IC could probably hinder firms from putting a fiscal value on IC. Another possibility is that firms may consider the cost of IC to be sunk cost. No New Zealand firm attempted to report a fiscal value for IC in totality.

To ascertain if there are associations between the natures of disclosure for the overall study and that of IC categories, a further analysis was conducted. Table 8.13 presents the absolute frequencies per nature of disclosure for the IC categories.

Table 8.13: Absolute frequencies per nature of disclosure per IC category

Nature of disclosure	Absolute frequencies	Internal capital	External capital	Human capital
Declarative terms	2,250	250	784	1,216
Numerical terms	43	1	37	5
Fiscal values	13	0	11	2
Total	2,306	251	832	1,223

As expected Table 8.13 shows a similarity in the pattern relating to the nature of disclosures shown in Table 8.12. In all IC categories, most disclosures are made in declarative terms.

8.5.3 Location of disclosure

Only two international studies (see Abeysekera & Guthrie, 2004a; Guthrie et al., 2006) presented results for the location of disclosure, but no study attended to the issues relating to the approach of ICR. This study makes a contribution to understanding voluntary ICR practices, as it addresses this new area of research.

Table 8.14 shows the frequencies recorded for the location of disclosure in annual reports, in accord with the categories selected (see section 6.6.2.3): vision; directors'; business/operational; financial; and the remaining sections.

Table 8.14: Frequencies per location of disclosure

Location of disclosure	Absolute frequencies	Relative frequencies
Vision	38	2 %
Directors	723	31 %
Business/operational	953	41 %
Financial	58	3 %
Remaining	534	23 %
Total	2,306	100 %

The results in Table 8.14 are helpful in understanding the form and nature of disclosure in New Zealand annual reports. The results are also useful to interpret the approach adopted to report IC in New Zealand firms' annual reports. First, the aggregate high relative frequency (95 per cent) for disclosing information in the directors', business, and remaining sections explains the high relative frequency of ICR in declarative terms. The typical presentation and writing styles of these three sections tend to be narrative. These sections also typically contain many pictures, which were classified as disclosures of a declarative nature in the current study. The high aggregate result for these three sections of 95 per cent is similar to those of two prior studies that reported IC communications per sections (see Abeysekera &

Guthrie, 2004a; Guthrie et al., 2006). In the 1998/1999 annual reports of Sri Lankan companies, 95 per cent of frequencies were recorded in sections, equivalent to the directors', business, and remaining sections of this study. For the study conducted on the 2002 annual reports of Australian companies a relatively high 86 per cent of incidences were recorded for these three sections. The latter study also presented the business section as the greatest incidence of reporting; 44 per cent of incidences occurred in this section. However, the Sri Lankan study reported the highest recordings for the remaining section; 60 per cent. Unfortunately no explanations were given for these results.

Second, the relative frequency of three per cent for disclosures in the financial section confirms that firms do not attempt to quantify their IC in fiscal values. Interestingly Guthrie et al. (2006) also reported only three per cent of incidences were recorded in the financial section of the 2002 annual reports of Australian companies. This low three per cent also suggests most firms use the financial section merely to report mandatory disclosures in accordance with the relevant accounting standards. It appears that these results are in line with perceptions found in a prior study (Gallego & Rodriguez, 2005). They reported that financial directors do not believe it appropriate to include factors such as customer bases, employee experience, and the technology of the productive processes in balance sheets.

The locations of disclosure of the five most frequently reported IC items were also analysed, and are presented in Table 8.15.

Table 8.15: Frequencies per location of disclosure for the five most frequently reported IC items

Location of disclosure	Absolute frequencies	Relative frequencies
Vision	20	1.2 %
Directors	621	38.2 %
Business/operational	585	36.0 %
Financial	43	2.7 %
Remaining	356	21.9 %
Total	1,625	100 %

The results displayed in Table 8.15 show a pattern between the vision, financial and remaining sections compared with results presented in Table 8.13. However, the relative frequencies of the directors' and business sections presented in these two tables are dissimilar. One explanation for this difference could be the high counts recorded for information relating to directors as the items 'employees', 'work-related knowledge' and 'education' in the directors' section. Twenty-five firms disclosed information about these three most reported IC items for, on average, eight directors individually. This could explain why the relative frequency of the five most frequently reported items in the directors' section is higher than that in the business section.

An analysis of the location of disclosure per IC category was also done to determine if there are specific patterns. The absolute frequencies per location per IC category are displayed in Table 8.16.

Table 8.16: Absolute frequencies per location per IC category

Location of disclosure	Absolute frequencies	Internal capital	External capital	Human capital
Vision	38	16	13	9
Directors	723	48	78	597
Business/operational	953	125	472	356
Financial	58	2	42	14
Remaining	534	60	227	247
Total	2,306	251	832	1,223

Table 8.16 substantiates the results of Tables 8.14 and 8.15. Table 8.16 also shows the least common locations of disclosure for all IC categories are the vision and financial sections. Table 8.16 also indicates the patterns of disclosing information in the external and internal capital categories are different to that of the human capital category. Most disclosures in the human capital category are made in the directors' section, whereas for the other two categories most are made in the business section. The high recordings for information inferred as 'employees', 'work-related knowledge' and 'education' about directors in the directors' section could explain

this. Moreover, the high recordings for information inferred as ‘brands’ and ‘customer and customer satisfaction’ in the business section could explain why disclosures in the external capital category are mostly made in the business section.

In sum, evidence of how IC is reported in New Zealand annual reports shows the following. First, the form of disclosure shows that pictures are a popular means of disclosing information about the most frequently reported items such as ‘employees’ and ‘brands’. Second, the results of the nature of disclosure reveal most disclosures are made in declarative terms. Third, the directors’ section is the preferred location for IC disclosure, followed by the business section. The following discussion interprets the form, nature and location of ICR in New Zealand firms’ annual reports.

8.6 Interpretations of results on how IC is reported

Interpretations of the New Zealand study’s results regarding the form and nature of IC disclosure help to understand results regarding the location and, hence, the approach taken to IC disclosures. Results of the form of disclosure are interpreted first, followed by the nature of IC disclosures.

8.6.1 Interpreting the form of disclosure

Table 8.10 shows more than one-third of IC disclosures are made through pictures in New Zealand firms’ annual reports. One explanation for this phenomenon could be that visual images are a transparent medium to send messages to investors and public, and photographs are the favoured visual medium in annual reports (Preston et al., 1996). Another explanation could be, in accord with Unerman’s (2000) view, that firms use pictures strategically to communicate to stakeholders (who look mainly at pictures because they do not have either the time or inclination to read every word in the annual report), what they perceive as valuable intangible value drivers. According to Preston et al. (1996) pictures are the most effective, real, believable way of telling a story. Due to difficulties with determining objective reliable measures of IC resources’ values, human capital in particular, using pictures could be an effective way to tell “believable” stories about the “real” value of these resources. The ambiguity of texts and visual images, leading a single reader to alternative and equally valid interpretations, coupled with messages having subjective meanings (Krippendorff, 2004), suggest that New Zealand firms use pictures to convey

messages about subjective values of IC resources. Using pictures to disclose human capital, 'employees' in particular, enables firms to convey values of their IC resources, but without having to quantify such values objectively. Pictorial information enables each reader to make his or her own interpretations about what they perceive the meanings of messages are and determine subjective values of IC resources.

Using pictures could also be a way to tell effective, real and believable stories about IC resources with complex natures, resulting in difficulties to make distinct boundaries around IC. Because IC resources are entangled and co-exist as bundles of assets, they have to be understood in their totality (Mouritsen, 2003). New Zealand firms could use pictures to convey messages about entangled, co-existing bundles of assets such as human capital. Using mostly pictures to convey messages about 'employees' suggests New Zealand firms are signalling that human capital in particular, has to be understood in its totality.

Understanding IC resources in their totality suggests that coding pictures in annual reports could be challenging when applying content analysis methodology to examining ICR practices. One challenge relates to the mutual exclusiveness of IC items. Pictures could tell more than one story, and they could tell stories about more than one IC item. Although some stories may have overt interpretations, others may have covert meanings, making interpretations challenging. For example IC attributes inherent in people, such as knowledge, skills, expertise, education, training and entrepreneurial spirit are entangled and co-exist in a human being. Interpreting meanings of pictures for any of these aspects is problematic. How would these items be portrayed in pictures? For example, how would a picture display knowledge? This raises a question regarding the usefulness and appropriateness of coding pictures as individual IC items in the human capital category. Should pictures featuring employees be coded as 'employees', or should they merely be coded as human capital? The difficulty with interpreting covert meanings of pictures suggest that coding pictures, in particular for human capital, will be biased towards what the researcher "sees" in the picture. Naturally when looking at a picture a physical human being is seen, and not the invisible intangible intellect, skills and aptitudes. This could explain the high counts recorded for 'employees'. The challenges and difficulties with

separating IC suggest that pictures are best coded for IC categories, and not for IC items.

There is a realisation that every piece of communication from the firm goes to build image (Sridhar, 2000). According to Preston et al. (1996) annual reports may be a visual medium through which firms may seek to create and manage their images. New Zealand evidence suggests firms are seeking to create images about their two IC items in the external capital category: 'brands' and 'customer and customer satisfaction'. Many attractive, colourful, and eye-catching pictures pertaining to information about firms' 'brands' and their 'customer and customer satisfaction' were presented in New Zealand firms' annual reports. Unerman (2000) claimed picture illustrations have persuasive power, memorability and understandability. These claims could explain why firms disclose these two IC items through pictures. Firms could use pictures strategically as they realise (as claimed by Beattie and Jones (1997)), that the attention of readers and investors may be better captured by attractive and colourful depictions of numerate facts. It appears that New Zealand firms realise that, as reported by Graber (1989), audiences report visual content more accurately than verbal content and that retention rates are much higher for visual information. Moreover, because "a picture tells a thousand words" it is possible that firms use pictures as a strategic tool to focus readers' attention on their 'brands'. Because of potential higher retention rates, firms could intentionally use one picture instead of thousands of words to convey powerful messages about 'brands'. While reading annual reports and seeing a brand name, people could be reminded to buy the product, or when "seeing" the brand name in future, they may be reminded to buy the product.

Added to the above argument, it is likely that New Zealand firms use pictures to emphasise the IC items 'brands' and 'corporate image building' because of increased global competition. New Zealand firms have to compete with firms in other developed economies with visible brand names. To "make" themselves more visible, firms use pictures instead of texts to "promote" themselves in peoples' minds. Many messages in the current study were interpreted as reminding customers powerfully to buy the firms' products and services in preference to another firm. Such messages meet the definition of 'brands' and were coded accordingly. Increased global competition could also explain why several firms frequently promote their company

names and images, and disclose information pertaining to favourable contracts, which were obtained because of a firm's unique market position. Such "promotional" messages were interpreted and coded as 'corporate image building'. Another explanation for the high absolute frequencies for the item 'corporate image building' could relate to firms promoting their images indirectly by portraying images of being responsible corporate citizens. Quite a few New Zealand firms conveyed messages about taking care of the community and the environment, which were interpreted as 'corporate image building'.

8.6.2 Interpreting the nature of disclosure

Firms may perceive the need to communicate more than mere numbers (Sridhar, 2000). Similar to the international studies, New Zealand firms disclose IC information mostly in declarative terms. One reason for this could be because firms regard IC as part of a value creation process, and a process of discovery and development. Since this is an ongoing process, firms are reluctant to quantify and disclose IC in monetary terms, or to disclose IC in the financial section. No New Zealand firm attempted to measure IC either in its totality or its various constituents as stand-alone IC assets. Another possible reason why New Zealand firms in particular disclose IC information mostly in declarative terms could be similar to the findings of Aerts (1994): management use narratives as a means to legitimise the firms' activities and outcomes. Furthermore, it is possible that New Zealand firms do not attempt to measure IC because they realise the difficulties with determining objective appraisals of the value of IC.

The fact that IC is mostly reported in declarative terms in New Zealand in particular could relate to the approach that these firms have adopted when reporting IC information. The format in which New Zealand firms disclose IC is more in line with the European approach. New Zealand firms give a more holistic picture of their operations and of the organisational resources, which include IC information. It appears that the role of annual reports, for the sampled New Zealand firms, has changed in accordance with the finding of Hooper et al. (2003). They reported that the role of annual reports has evolved from conventional communicator of financial information to 'storytelling'. New Zealand firms' format tends towards telling the 'story of IC'. Firms focus more on IC information relating to the present and future.

They presented information about customers, humans, processes, renewal and development. Emphasising IC disclosure in a narrative way and the use of many pictures is akin to the approach of European initiatives. The stories of IC presented in New Zealand annual reports pertain to stories of coalescence, complementarity and inseparability. Stories that emphasise the value creation process are communicated through providing information about how IC contributes to firms' overall value generation. Stories are told about firms' value drivers, resources that contribute to firms' competitive advantage. Broad stories of relationships are told. Such stories cannot be part of audited financial statements. The narrative approach adopted by New Zealand firms could explain why they make little attempt to disclose information relating to the financial focus, i.e., IC information concerned with the past. They do not attempt to measure IC as a stand-alone fiscal value. Thus it appears that the format in which New Zealand firms report IC does not emphasise the North American orthodox measurement and accounting approach.

8.6.3 Interpreting the location of disclosure

Most disclosures were made in the directors', business, and the remaining sections in the New Zealand study. Disclosing IC information mostly in narrative portions and in declarative terms is interpreted as meaning that New Zealand firms have adopted a narrative approach of telling IC stories. This "story-telling" is done through a network of mostly narratives and visualisations. In addition, they use indicators, although often not expressed in numerical terms, to convey messages about employee profile, employee satisfaction, education, their client profile, customer loyalty, image, stakeholders, general infrastructure, innovation and customer support. Through this network, New Zealand firms disclose a holistic view of their value creation capacities, activities and processes. Although it appears that New Zealand firms have adopted the European approach of telling IC stories, no firm produced a stand-alone ICS report. All New Zealand firms voluntarily report IC information in annual reports. Furthermore, no firm distinguishes between the three sections proposed in the generic ICS discussed in Chapter 2. New Zealand firms do not have a dedicated section, such as the 'knowledge narrative', that describes the firm's activities as well as its business model, mission, vision and values. It was expected that if firms disclose such information that they may disclose it in the vision section. However, the results presented in Table 8.13 indicate that only two per cent of all disclosures were

made in the vision section. An analysis of location of disclosure per individual firm showed only two firms made 76 per cent of all disclosures in the vision section. In the entire sample, only four firms reported information in a vision section. These results are therefore interpreted as indicating that it is not the aim of New Zealand firms to dedicate any particular section in the annual report to the disclosure of IC information. Also, no New Zealand firm discusses management challenges relating to IC in particular and no firm analyses the knowledge management in the firms. Another dissimilarity to the generic format of ICS is that New Zealand firms do not give their own definitions of IC. Thus although it appears that New Zealand firms have adopted the European format of IC disclosure, the way in which they report appears to be more in line with how Indian firms report IC in their ICS (see Ordonez de Pablos, 2005). There is a strong emphasis on a narrative style, an approach that provides information about a firm's efforts to grow its IC for sustained value creation.

One reason why sampled firms have adopted a narrative approach could relate to what Abrahamson and Amir (1996) referred to as "soft information". Soft information cannot be part of the audited financial statements, but firms can voluntarily include soft information in narrative portions of annual reports. Since there are no specific requirements or regulations as to what and how information should be reported, or a common structure for restricting or prescribing disclosure in the narrative portions, firms are able to disclose IC information in forms and natures that are different to that of disclosing information about conventional assets.

The New Zealand results highlight the importance of narrative portions of annual reports and narrative information for understanding voluntarily external ICR practices. The results substantiate the findings in the literature about the role and part of accounting narratives in annual reports. Visual images have become an integral part of corporate annual reports (Hooper et al., 2003; Preston et al., 1996). Moreover, Clatworthy and Jones (2001) stated: "Accounting narratives are becoming increasingly important in external financial reporting" (p. 311). Narrative information equals or exceeds the statutory financial information nowadays. Such changes reinforce a change in annual reports—from statutorily produced documents into those in which narratives, photographs and graphs dominate. Glossy, colourful pictorial information communicated in annual reports nowadays surpasses the communication of financial information (Hooper et al., 2003). Evidence of New Zealand voluntary

external ICR practices helps to understand a possibility of ICR. New Zealand firms' narrative approach suggests that the role of annual reports has evolved from conventional communicator of financial information to "storytelling".

8.7 Summary

The results of this study substantiate the findings of Guthrie, Petty and Ricceri (2005) and Petty and Guthrie (2000) that reporting of IC is inconsistent between firms within countries and between countries. This chapter illustrated that a different application of methodological issues, such as counting the number of IC occurrences; presenting results as frequencies or as appearance; and including pictorial information, influences content analysis results substantially and limit the making of meaningful comparisons. Moreover, the chapter justified why no in-depth comparisons between the results of the New Zealand and seven international studies were made. For example, despite many general similarities between Australia and New Zealand as countries, the different application of methodological issues has meant that the results of the 1998 Australian and the New Zealand studies are very dissimilar. Although the results of the 2002 Australian study are more in line with the New Zealand results, still no meaningful comparisons could be made because the latter study included pictorial information. This stresses the importance of applying consistent data collection instruments so as to enhance comparability and advance the international ICR research project.

General comparisons as to *what* IC are reported showed dissimilarities between this study's and most international studies' results. New Zealand ICR is high; the most reported category is human capital; and the five most frequently reported IC items are in line with the results of only two (the Italian and Sri Lankan) of the seven international studies. Most international studies showed low IC reporting and presented external capital as the most reported category. The five most frequently reported IC items in New Zealand are 'employees', 'work-related knowledge', 'brands', 'education' and 'corporate image building'. Moreover, this study's five least frequently reported IC items, namely 'financial relations', 'licensing and franchising agreements', 'intellectual property', 'training' and 'information and networking systems', are similar to those reported among the seven international studies.

This study's result of *how* IC is disclosed confirms the expectation derived from the existing literature: almost all disclosures are made in declarative terms. Moreover, results of the form of disclosure (an area not raised in the literature yet) showed that more than one-third of New Zealand ICR disclosures are made through pictures. Furthermore, the location of disclosure in New Zealand annual reports is consistent with results reported by two studies: the 2002 Australian and Sri Lankan studies. Most IC disclosures are made in the directors', business, and remaining sections of the annual reports. Almost no disclosures are made in the financial section. This study's results as to how IC is reported are useful in understanding New Zealand firms' approach to ICR, an area not yet raised in the literature. Most ICR disclosures are made in the narrative portions of the annual reports and disclosed as narrative information. Thus, it appears that New Zealand firms have adopted the approach of European initiatives, with a narrative emphasis, to tell their IC stories. They tell IC stories through a network of mostly visualisations and narratives.

The results of this content analysis study may improve our understanding of what and how IC is reported, and provide an approach towards ICR. The narrative approach to ICR in New Zealand firms may be useful to regulators in evaluating potential modifications to current disclosure requirements or providing guidelines for current international best practice for voluntary ICR in narrative information. In addition the narrative approach to ICR also demonstrates the difficulty with conceptualising IC while reading annual reports. Inscriptions made about IC may be weak, as people cannot "read" IC with similar confidence as they might "read" conventional assets. The ability that people develop through training at business schools and universities to read the balance sheet in a "natural way", may be inappropriate for identifying and recognising the reporting of IC information in annual reports.

The chapter explained why voluntary ICR might be important to New Zealand firms from a legitimacy theory perspective. It appears that New Zealand firms voluntarily report IC information to legitimise their activities and performance, and that they use pictures strategically to convey powerful images. Moreover, it appears that pictures are used strategically to communicate information about IC that co-exist.

The next and final chapter concludes and summarises the research. Contributions to the body of knowledge are also summarised.

CHAPTER 9: SUMMARY, CONTRIBUTIONS AND CONCLUSION

9.1 Summary

This thesis had two aims: to gain a better understanding of voluntary ICR practices in New Zealand published annual reports; and to critically reflect on content analysis with a view to strengthening the methodology when applied in such investigations.

The IC topic has attracted widespread interest in practice and among academics internationally and across a wide range of disciplines since the early 1990s. It is widely claimed that IC resources are valuable assets and important value drivers in the modern economy. Consequently, it is argued that, if financial statements are to reflect the real value of a business, then they should account for IC. However, this is a contentious issue, as the traditional financial reporting system does not allow IC resources to be accounted for as assets. This ongoing debate has raised several concerns about the value relevance of traditional annual reports and has led to criticisms that financial statements are irrelevant and deficient. As a result the IC topic and its association with financial reporting has recently become the subject of a rapidly expanding research effort that has focussed on the identification, management, measurement and reporting of IC. However, despite all prior research, and recommendations on the IC notion and its intersection with financial reporting, at the time of writing the thesis there were still no mandatory requirements to account for IC in the prevailing financial reporting system. The literature revealed two issues that hinder mandatory requirements for IC accounting that were of particular interest to this research.

9.1.1 Hindrances to mandatory accounting of IC

The first of these two issues was the identification of IC. There is no consensual view about what IC is and how to identify it. A plethora of IC terminologies are used in a wide range of disciplines, yet no universally accepted IC definition exists and several taxonomies compete to describe the various IC constituents. Other hindrances in identifying IC are the problems relating to the nature of many IC resources that are different to those of conventional assets. It is difficult to make distinct boundaries around IC. Framing IC is a difficult process as many IC resources are deeply

entangled. Many are in use simultaneously, and exist as part of the sphere of a firms' value creation process. They are complementary to other tangible and intangible resources. Moreover, many exist only in instances of collective performance, or in interaction. It is also possible to scale an investment in IC endlessly. These complexities in identifying IC are problematic for the second issue that hinders mandatory accounting of IC: recognition of IC as an asset.

Two criteria for recognising assets under current accounting regulations that are problematic for IC resources were briefly considered. First, firms do not own many IC resources such as human resources in the same way they can own traditional assets. Hence, the "control" criterion is problematic for recognising many IC resources as assets. Often firms cannot exclude others from enjoying the benefits that may derive from IC, such as employees' experience and expertise. Second, the value of IC cannot be measured reliably. It is widely argued that IC is part of a value creation process, and has a value in use. Thus the traditional accounting measurement method of value realisation is inappropriate for valuing IC. Many IC resources do not have a value in exchange, such as an historical cost. Moreover, even though some may have a historical cost, it is argued such a cost often bears no relationship to their value in use.

The failure to meet the recognition criteria of conventional assets, as well as complexities in identifying IC, elucidates why accounting for IC is such a contentious issue. It also suggests that it is unlikely there will be mandatory requirements to account for IC in financial statements in the near future. However, it is argued these problems should not be used as excuses for not disclosing information about IC. It is widely advocated that voluntary ICR would advance the IC research project in the meantime.

9.1.2 Voluntary reporting of IC

The voluntary ICR notion appears to have originated in Europe. In the early 1990s a Swedish firm, Skandia AFS, undertook to report the "hidden" IC assets of the business. Since this pioneering effort, a few initiatives and projects, particularly in European countries, were undertaken to develop guidelines for managing, measuring and disclosing IC. A range of mechanisms has subsequently emerged specifically for voluntarily reporting of IC. The development of the intellectual capital statements

(ICS) is regarded as one of the most significant responses to IC accounting. The ICS was designed to bridge the gap in traditional financial statements by providing information about how intellectual resources create future value. The statements were not designed to calculate the value of a firm's IC, but tend more towards "story-telling", through a network of visualisations, narratives and indicators. Some reasons why firms produce ICS and disclose IC voluntarily include their frustration with traditional financial reporting; their desire to recognise and disclose their human resources and to recognise knowledge as an asset. It is claimed that the ICS approach may eventually pose a strong challenge to the traditional financial statements format. Prior research indicates that ICS are a popular means of voluntarily reporting IC, mostly among European firms.

Voluntary ICR research has also generated interest among researchers in countries outside Europe. These researchers applied a variety of research methods to investigate current ICR practices and perceptions of ICR, including case, field or interview studies; literature and commentary reviews; content analysis methodology; or several combinations of these methods. Both internal and external reporting practices were investigated. In sum, prior research found inconsistencies in current ICR practices, inconsistencies in perceptions of ICR, and inconsistencies *between* current practices and perceptions of ICR.

The most common mechanism investigated for external ICR practices is annual reports. Studies using annual reports data have attempted to capture the ICR practices of many countries, such as that of Australia, Canada, France, Germany, Hong Kong, Ireland, Italy, Malaysia, South Africa, Sri Lanka, Sweden, The Netherlands, and the UK. Examining the results of these studies revealed inconsistent ICR practices among firms, with no clear patterns in the most and the least frequently reported IC items. According to Fincham and Roslender (2003b) the major obstacle to further progress is a collective lack of understanding about the possibilities for ICR with its business reporting associations.

9.1.3 Motivation and ambit of researching voluntary ICR practices

Voluntary ICR practices in New Zealand firms' annual reports were examined to fill gaps identified in the literature pertaining to establishing a consensus about what IC to report and how to report it (Guthrie, 2001; Guthrie et al., 2005). Concerns about

the current limits of understanding of how firms report important value drivers (Boedker et al., 2005a; Guthrie, 2001; Mouritsen et al., 2004); that greater efforts are still needed in researching how to report IC, and providing more evidence on what companies are reporting (Yongvanich & Guthrie, 2004) were attended to. Another focus was Boedker et al.'s (2005a) recommendation for providing practical examples illustrating how firms report their knowledge resources. Addressing these gaps contributed to a better understanding of voluntary ICR practice and to understanding possibilities for ICR. Possibilities for ICR will be useful in establishing future international best practice for reporting information about IC. Possibilities of New Zealand firms' ICR practices might also be helpful to address other research needs identified in the literature. New Zealand ICR practices could be of help: (i) to policymakers in establishing a comprehensive information standard (Lev, 2001); (ii) to develop accepted guidelines for firms willing to report their knowledge-based resources (Ordonez de Pablos, 2005; Canibano et al., 2000); and (iii) to expand accounting systems to enable companies to optimise, manage and report on their real value creating activities and processes (Lev & Daum, 2004).

Since this study focused on external ICR practices, the 2004 annual reports of the 30 largest (by market capitalisation) firms were selected to investigate what and how IC is reported in New Zealand.

9.1.4 Content analysis as a methodology for ICR research

The most popular research method applied in prior research investigating ICR practices in annual reports is content analysis. A review of content analysis literature revealed a growing diversity of research techniques was described under the umbrella of content analysis (Krippendorff, 2004). The review also revealed the contention that “content analysis is nothing more than what everyone does when reading a newspaper, except on a larger scale” (Krippendorff, 2004, p. xxi), is outdated. Depending on the definition and approach adopted, different types of analyses can be performed. Scholars typically classify content analysis into three categories: pragmatism, semantical, and sign-vehicle analyses, and describe two generic approaches to conduct content analyses: “form oriented” (objective analysis) and “meaning oriented” (subjective analysis). Some definitions include a “quantitative” attribute. However, such definitions are criticised as giving content analysis the image

of being a glorified frequency count. Various earlier definitions describe it as an analysis of manifest content, thus taking content to be inherent in a text. However, content analytic procedures that restrict themselves to manifest content alone would be of very limited value (Weber, 1990). The validity of analysis of manifest content has been challenged as it runs counter to the ways in which people ordinarily interpret content and construct meaning (Graber, 1989). There is nothing inherent in a text; someone always brings the meanings of a text to it (Krippendorff, 2004). Recent definitions postulate the focus of defining content analysis is on making inferences. The making of inferences could relate to the area of impression management. Inferences could be made about the intentions of sender(s) of messages, or the impressions that messages could have on the audience. Inferences could also be made about the message itself, either about the message content or about the way in which the message is presented (such as fonts, size, colour), or about the images represented in pictures (such as happy or sad-looking people). Furthermore, since meanings exist in people, and people may understand the same text in different ways, inferences could be made from different perspectives.

This study conducted a semantical content analysis. The following definition was adopted:

Content analysis is a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use (Krippendorff, 2004, p. 18).

The centrepiece of this definition is on making inferences. By including the phrase “or other meaningful matter” in parentheses, this definition does not restrict the analysis to written material. Hence, the meanings of messages communicated in annual reports emerge in the process of the researcher analysing texts and visual images relative to the context of IC. The inferences made in this study were about the content of messages from the researcher’s perspective.

Applying this definition and approach to investigate ICR practices in New Zealand firms’ annual reports posed challenges. Several methodological issues could be applied in different ways. Different applications will result in different findings, which could be problematic for making meaningful comparisons between studies. Furthermore, ambiguous and covert meanings as well as subjective interpretations complicated the making of inferences. Prior ICR content analysis studies were

examined in the search for guidance as to how these studies have practically applied methodological issues and dealt with challenges pertaining to inference making. Such investigation motivated further development and refinement of content analysis methodology when applied to investigate ICR practices. Consequently, to enhance replicability of ICR content analysis research, this study's practical application of the methodology and the data-making and inference-making processes are explained with illustrations in this thesis.

9.1.5 Motivation for refining content analysis for ICR research

The results of the Bontis (2002) and the Vergauwen and van Alem (2005) studies that investigated ICR practices in Canada and France, Germany and The Netherlands respectively were excluded from comparison with the New Zealand study. This study applied computer-aided text analysis and reported extremely low levels of reporting. Moreover, the way in which results were presented for the Vandemaele, Vergauwen and Smits (2005) study (investigating ICR practices in Sweden, The Netherlands and the UK), did not make comparison with New Zealand results feasible. Hence, the New Zealand results were compared with seven international studies (Australia, Hong Kong, Ireland, Italy, Malaysia, South Africa, and Sri Lanka). Comparing the results presented in these seven international studies appears to suggest inconsistent ICR practices between countries. Obvious different quantities are presented. The prior literature critiques comparisons of studies with obviously different results, and argues methodological problems associated with content analysis can distort the findings of ICR studies, or indeed, the credibility of its original textual source (Abeysekera, 2006). An in-depth examination of how prior studies were conducted revealed significant unevenness in regard to dealing with methodological issues. Limited guidance was found on how to deal with the challenges posed in the New Zealand study. Some studies are silent about how methodological issues were dealt with. Due to a lack of clarity, descriptions of some studies required interpretations. No consensus was found in how several methodological issues were applied. For example, some studies applied the same unit of analysis, but with different functions. In general prior ICR content analysis literature reveals an absence of explanation of how important data-making procedures were practically applied. Furthermore, no study explained methodological issues relating to the making of inferences.

The literature agrees that many ICR content analysis studies cannot be meaningfully compared because of the use of inconsistent data collection instruments (Guthrie et al., 2004). It is argued that the real reasons why results are so different need to be addressed and operational issues arising from the use of content analysis in carrying out ICR studies need to be resolved (Abeysekera, 2006). Also, that there is a need to improve the credibility of the research process and its outcome for stakeholders. Without explanations as to how methodological issues have been applied, replicating ICR content analysis studies will be difficult and the results of ICR studies will continue to be incomparable. The literature suggests that, if research advances are to be made in the field of ICR when applying content analysis methodology, then the method is in need of further refinement and development (Guthrie et al., 2004). This study attended to some of these research gaps: to improve the credibility of content analysis as a methodology for investigating ICR in annual reports, the practical application of the methodology has been refined and further developed by critically reflecting on the methodology. Methodological approaches that can be applied in different ways, and hence hinder comparability, were pointed out. Moreover, this study's practical application of the methodology was explained to facilitate the replication of ICR studies and hence make their results more comparable.

The contributions that resulted from this research are elaborated next.

9.2 Contributions of the research

The current embryonic state of research into IC offered the researcher the potential to make contributions that are empirical, theoretical, and methodological in nature (Guthrie et al., 2005). Contributions of an empirical nature are discussed first, then those of a theoretical nature, followed by contributions of a methodological nature. Empirical contributions relate to understanding *what* IC and *how* IC is reported voluntarily in annual reports. The theoretically informed contribution relates to the approach that New Zealand firms have adopted to voluntarily report their IC. Contributions of a methodological nature relate to the use of content analysis as a methodology for investigating ICR in annual reports.

Some of this study's findings do confirm expectations from the extant literature concerning what and how IC is reported. Such findings offer advances to existing knowledge since they add new depth to our understanding of the IC phenomenon.

More substantive contributions, however, are those new additions to knowledge that have arisen from the findings. These include disconfirmations of expectations of what IC is reported (derived from the literature review in Chapter 2); areas speculated about in the literature, but where no empirical testing exists yet; and new areas which had not been raised in the previous literature.

9.2.1 Empirical contributions: understanding voluntary ICR practices

Empirical evidence of *what* and *how* New Zealand voluntarily report IC in their annual reports adds to and extends the body of knowledge's understanding of ICR. Investigating voluntary ICR practices in New Zealand addresses concerns mentioned earlier: to establish consensus about what and how to report IC, which might help policymakers in establishing a comprehensive information standard, which might lead to developing accepted guidelines for firms willing to report, and which might be of help to firms in expanding their accounting system as a means to enable them to report on their real value creating activities and processes. Thus New Zealand evidence contributes to identifying current international best practice.

9.2.1.1 What IC is reported in New Zealand firms' annual reports?

Empirical evidence of the overall level of ICR, the IC categories and the five most frequently reported IC items disclosed in New Zealand firms' annual reports disconfirm the expectations derived from the existing literature. The reported differences between the ICR practices of New Zealand and the international studies can be attributed to two aspects: (i) substantive differences in practices between countries, and (ii) differences in the methodology applied to the relevant national studies. Due to the different political, social, cultural and economic situations of countries investigated in the international studies, explanations for differences in ICR practices between countries were not further investigated. Differences in results caused by different applications of the methodology are elucidated later.

The expected overall level of ICR, derived from the extant literature, is low. However, the overall level of ICR for New Zealand firms is high, and apparently the highest compared with the seven international studies. An average of 77 IC items for New Zealand firms is recorded. The second highest average presented is 73 IC items for Sri Lankan firms, then 51 IC items for Italian firms, followed by 32 IC items for

Australian firms (for the 2002 study). The high level of ICR suggests New Zealand firms are aware of the importance of IC and that IC is a focus of interest for firms in the sample. Interestingly, similar to the finding reported for the Sri Lankan study, no New Zealand firm made any reference to the term IC in their annual reports.

The expected most reported IC category was external capital. However, the most reported IC category in the New Zealand study is human capital, and the second most reported IC category is external capital.

While the most frequently reported IC items per IC category in the New Zealand study are somewhat similar to results presented in the 2002 Australian, the Italian and Sri Lankan studies, the five most frequently reported IC items for the New Zealand study are generally dissimilar to those of most international studies. These dissimilarities to prior results make evidence about the five most frequently reported IC items contribute to the body of knowledge's understanding of what IC is reported. Three of the five most frequently reported IC items in the New Zealand study are from the human capital category: 'employees', 'work-related knowledge' and 'education'. The 2002 Australian, the Hong Kong and Italian studies also presented high recordings for the IC items 'employees' and 'work-related knowledge'. In this Australian study nearly 70 per cent and in the Italian study 74 per cent of IC reported in the human capital category is attributable to these two IC items. The other two most frequently reported IC items in the New Zealand study are from the external capital category: 'brands' and 'corporate image building'. 'Brands' and 'corporate image building' also rank as most and second-most reported in the Sri Lankan study. Moreover, the IC item 'brands' is presented as one of the most frequently reported IC items in the 2002 Australian and the Italian studies.

The five least frequently reported items in the New Zealand study are spread across all three IC categories: 'financial relations', 'franchising and licensing agreements', 'intellectual property', 'training', and 'information and networking systems'. These results confirm expectations derived from the seven international studies. These results add new depth to our current understanding of the least reported IC items and therefore represent an advance in this research field.

In sum, the contributions to identifying current international best practice on *what* to report is that New Zealand firms disclose high levels of ICR, mostly in the human

capital category, with three of the five most frequently reported IC items from human capital. The five most frequently reported IC items are dissimilar to those of most international studies. These contributions suggest that New Zealand firms regard human capital as a valuable asset and value driver.

9.2.1.2 How is IC reported in New Zealand firms' annual reports?

Empirical evidence of the nature of New Zealand firms' ICR coincides with other international studies' results: most IC disclosures are made in declarative terms. No New Zealand firm made any attempt to quantify an aggregate financial value of its IC resources, and very little reporting is quantified in numerical terms.

The most popular form of IC disclosure in New Zealand annual reports is text. However, a contribution to our current understanding of how IC is voluntarily reported is that more than one-third of the IC information in New Zealand annual reports is disclosed through pictures. Although Abeysekera (2003) also found many annual reports contain numerous pictures, the importance of communicating IC information through pictures has not yet been raised in the ICR discourse.

The importance of pictures as a communication tool has been raised in the accounting literature. Stanton et al. (2004) found numerous pictures in conducting an experimental study of impressions of an annual report from readers' perceptions. According to Hooper et al. (2003) visual images have become an integral part of annual reports. They write that glossy, colourful pictorial reports have surpassed annual reports, which have traditionally been used to communicate financial information. Including many graphs and illustrations gives management an opportunity to voluntarily report. It appears that New Zealand firms are optimising the change in how information is presented in annual reports. These firms use visual images, pictures in particular, to voluntarily report their IC information. One of the sampled New Zealand firms acknowledges the importance of communicating information through visual images in their annual reports. The importance of pictures as a communication tool for conveying voluntary IC information is elaborated upon when discussing the theoretical contributions in the next section.

In sum, two contributions to identifying current international best practice on *how* IC is reported are made in this research. First, evidence that more than one-third of all New Zealand firms' IC disclosures are made through pictures illustrates the perceived

importance of including pictorial information when disclosing IC in annual reports, and hence expands our understanding of ICR. Second, practical examples illustrating how New Zealand firms communicate their IC through pictures are provided. Evidence of the nature of IC disclosure confirms, and thus is an advance to our current understanding of voluntary ICR practices: they are mostly done in declarative terms.

This content analysis study's results of *what* IC items are reported are inherently limited to the IC framework applied. Similarly, the results of *how* IC is reported are limited to the categories of variables devised in this thesis. Furthermore, the overall results are limited to the practical application of methodological issues. These limitations do not, however, detract from the significance of the study's findings.

9.2.2 Theoretical contributions: reflections on voluntary ICR approach

To offer theoretically informed suggestions as to why New Zealand firms might have adopted a particular approach for voluntary ICR, this study has drawn on ideas from prior literature and legitimacy theory. Reflection on the approach used to voluntarily report IC information has not yet been raised in the literature.

Chapter 2 considered two divergent theoretical positions for IC accounting: a narrative approach versus a qualitative approach. European initiatives tend more towards telling the "story of IC" in firms and interpret IC accounting more as an internal management and reporting technique (Fincham & Roslender, 2003a). The ICS format in particular is characterised by a strong narrative emphasis and the use of many different forms of pictorial representations (Fincham & Roslender, 2003b). North American initiatives tend to be associated with the orthodox measurement emphasis and a hard accounting calculus (Fincham & Roslender, 2003a). The focus of these initiatives is on external disclosure and accounting standards.

The approach taken by New Zealand firms was examined with a view to investigate possibilities for ICR. According to Fincham and Roslender (2003b), the "major obstacle" to further progress ICR research, is a lack of understanding possibilities of ICR. Although New Zealand firms' approach to voluntarily report IC information is only a possibility for ICR, it might be of help in establishing future international best practices for reporting information about IC. It might be useful to policymakers in

establishing comprehensive IC information standards, and accepted guidelines for firms willing to report. This possibility of ICR might also be helpful to firms in expanding their accounting systems, to enable them to optimise, manage and report on their value-creating activities and processes.

9.2.2.1 Reflections on New Zealand firms' voluntary ICR approach

Although there is not yet any consensual view among New Zealand firms about what and how to report, evidence shows that New Zealand firms generally apply a narrative approach when accounting for IC resources. Sampled firms voluntarily report IC information in the narrative portions and as narrative information in annual reports.

Information contained in narrative components of New Zealand firms' annual reports exceeds the statutory financial information. This reinforces the claim by Clatworthy and Jones (2001) of a change in annual reports from statutorily-produced documents into ones in which narratives, photographs and graphs dominate. Most IC disclosures are made in sections that lend themselves more towards communicating information in narratives, pictures and charts. New Zealand evidence shows that voluntary reporting of IC information is provided mostly in narrative portions such as the 'directors' and 'business' sections instead of the 'financial' section. Moreover, as stated earlier, most disclosures are of a declarative nature.

It appears that New Zealand firms have adopted proposals in the literature for a voluntary information structure that reports IC separate from financial statements in a format that complements financial reports (see Lev, 2001; Gallego & Rodriguez, 2005). New Zealand firms are experimenting with an approach that tends towards the narrative approach first proposed in the Skandia Navigator—developed by Skandia AFS—and widely applied in the ICS in Europe, when reflecting the value of their IC resources. The format used in the ICS to report IC information appears to be influential in New Zealand annual reports. Firms communicate information about important value drivers through “storytelling” in their annual reports. New Zealand firms focus on telling stories about IC resources in the human and external capital categories, focussing on the present. New Zealand firms' voluntary reporting is also in line with the mandatory requirements in the OFR in the UK, as discussed in Chapter 2.

New Zealand firms do not use valuation and measurement difficulties concerning IC as excuses for non-disclosure. By reporting IC information in narrative components and in a declarative nature, New Zealand firms do not find traditional accounting regulations that prohibit IC resources from being recognised as assets, as hindrances for disclosing important value drivers. Furthermore, the approach for disclosing IC information voluntarily is very different to how New Zealand firms generally account for conventional assets currently. In accord with Lev (2001) who suggests that managers should not be expected to disclose values of IC, New Zealand firms depart from the traditional “quantifying” approach when reflecting the value of their IC resources. They depart from an orthodox measurement and accounting calculus approach and do not focus on past financial information when reporting IC. The near absent reporting in financial statements and financial values confirms the suggestions of the FASB (see Upton, 2001) that firms are aware that there is no relationship between the cost of IC and the value of future benefits derived from such cost. It also suggests that New Zealand firms are informed about the problematic issues with measuring IC reliably, and are not concerned with calculating a financial value for IC resources. Thus it appears that New Zealand firms are not concerned with the value realisation of IC, but instead regard IC as part of a value creation process.

9.2.2.2 Possible reasons why New Zealand firms adopted a narrative approach

Drawing on ideas from prior literature could explain why New Zealand firms are experimenting with a narrative approach. In line with the findings of Mouritsen (2004), New Zealand firms could be responding to the perceived decline in the value relevance of traditional financial reporting. They experiment with using a narrative approach as a means to giving value-relevant information to their external stakeholders and hence to enhance the value relevance of annual reports. Firms use annual reports as a strategic communication tool to legitimise themselves by telling stories externally about how they work to develop their IC resources in order to generate value.

Another possible reason why New Zealand firms are experimenting with a narrative approach could be that they use it as a means to respond to Lev and Daum’s (2004) suggestion of expanding their accounting systems. It is argued that accounting systems could be expanded to enable firms to report on their value creating activities

and processes. Furthermore disclosing IC information voluntarily in annual reports could be New Zealand firms' way to respond to Bukh's (2003) recommendation to disclose information as an integral part of a framework illuminating their value creation process. By applying the narrative approach, it appears that New Zealand firms are bridging the perceived gap of traditional financial statements, are providing the expected greater transparency (see Guthrie et al., 2005), and are also responding to Lev's (2001) claim that investors are deprived of IC related information. New Zealand firms make themselves transparent by using a network of texts and visual images to tell holistic stories about their IC resources as part of their value creation process. In addition to mandatory accounting disclosures of physical and financial assets, New Zealand firms voluntarily report information about their intellectual assets. Consequently, these firms provide a balanced overall picture of their operations and activities that create value. From a legitimacy theory perspective, this could be interpreted as indicating that New Zealand firms are legitimising their activities and performances.

It also appears that New Zealand firms recognise the advantages and importance of narrative portions of annual reports and narrative information, which has been highlighted in other accounting literature (see Abrahamson & Amir, 1996; Aerts, 1994; Clatworthy & Jones, 2001; Kohut & Segars, 1992; Smith & Taffler, 2000) and considered in this thesis. Evidence suggests that New Zealand firms are capitalising on Clatworthy and Jones' (2001) claim that accounting narratives are becoming increasingly important in external financial reporting. Reasons why New Zealand firms use a narrative approach to voluntarily report IC information are in line with accounting literature and legitimacy theory. Narratives enable management to use annual reports strategically to set their own unaudited financial reporting agenda (Aerts, 1994); narrative portions of annual reports include important information associated with the future of the firm, that cannot be part of audited financial statements (Abrahamson & Amir, 1996; Smith & Taffler, 2000); effective communication via narrative components can influence actions taken by shareholders (Kohut & Segars, 1992). It is also possible that New Zealand firms use narratives to "fashion their communication to lure and retain the dollar value of investors" (Kohut & Segars, 1992, p. 11), as firms can send messages that they are meeting society's expectations (Deegan et al., 2002; Deegan & Samkin, 2001); and annual reports are

key communication tools used to legitimise corporate activity (Lang & Lundholm, 1993).

Since disclosure of IC resources is not allowed in the audited financial statements it appears that New Zealand firms use the narrative portions of annual reports and narrative information strategically to voluntarily provide information about IC. These firms are capitalising on the change in annual reports from statutorily produced documents into ones in which narratives dominate. The relatively high reporting through pictures suggests that New Zealand firms understand that effective communication via narrative components can influence the actions of their stakeholders.

9.2.2.3 Importance of pictorial information as a communication tool

The importance of pictures as communication means has been highlighted in the accounting literature. Preston et al. (1996) claimed a photograph has an assumed ability to “capture reality”. Unerman (2000) stated photos are more powerful tools than narrative disclosure for stakeholders who do not have the time or inclination to read every word, but simply “flick” through annual reports. Moreover, Hooper and Low (2001) found big pictorial spreads are the eye-catching items in annual reports. With the exception of the Sri Lankan study it appears that international ICR studies have somewhat overlooked the importance of pictures as a means to communicate and report IC in annual reports. International studies are silent about the role and extent of pictorial information in annual reports.

As discussed earlier, the nature of IC resources is different to that of conventional assets: many IC resources are entangled (Mouritsen, 2003). Making distinct boundaries around IC, separating, controlling and measuring IC reliably are problematic (Bernhut, 2001; Gallego & Rodriguez, 2005; Johanson, 2003; Lev, 2001; Lev & Zambon, 2003). This suggests that capturing the “reality” of IC resources’ values in the traditional accounting calculus way will be problematic for many IC resources. It appears that New Zealand firms capture the “reality” of their IC resources through eye-catching pictures. “Realities” captured through pictures cannot be quantified objectively. Thus “realities” captured in pictures are subjective. From this perspective pictures are important communication tools to “capture realities” of resources’ values, which are hard, it not impossible, to quantify objectively. New

Zealand firms use pictures strategically to convey the subjective values of their IC resources.

Many pictures in New Zealand firms' annual reports present powerful images that can be interpreted as conveying powerful messages or signals to readers. This suggests New Zealand firms use pictures as a strategic communication tool to tell powerful stories about what they consider to be important value drivers. Evidence shows sampled firms mostly disclose two IC items, 'employees' and 'brands', through pictures. Eighty-three per cent of all pictorial disclosures are attributable to these two IC items. Seventy-nine per cent of all disclosures of the IC items 'employees' are made through pictures. Furthermore, 71 per cent of all disclosures of the IC item 'brands' are made through pictures. This suggests that New Zealand firms regard 'employees' and 'brands' as important value drivers. Capturing the "reality" of objective values of these two IC items is debatable. The relatively high pictorial disclosures of these two IC items suggest New Zealand firms' strategically use pictures to capture subjective values of IC items with debatable objective values. Moreover, since most pictures in these annual reports convey messages about two IC items, it appears that the sampled firms use pictures strategically to steer the attention of stakeholders who simply "flick" through annual reports, onto 'employees' and 'brands'.

In sum, the narrative approach adopted by New Zealand firms confirms Fincham and Roslender's (2003b) suggestion that the accounting profession must be more receptive to approaches that depart from the certainties produced by traditional hard financial information. New Zealand firms' narrative approach towards accounting for IC suggests one possibility for ICR. Furthermore, New Zealand firms' approach of using pictures strategically to capture the "reality" of their most important IC value drivers suggests a possibility of reporting powerful messages about the subjective values of IC resources. These possibilities add to the body of knowledge's understanding of ICR practice. Such understanding might be of help to develop a set of guidelines for identifying and reporting IC for firms willing to report. Therefore, New Zealand firms' narrative approach to voluntary ICR contributes to identifying current international best practice for ICR.

9.2.3 Methodological contributions to content analysis

This study's main contributions of a methodological nature lie in further refining and developing the methodology (suggested by Guthrie et al., 2004), by addressing operational issues and methodological problems associated with content analysis (suggested by Abeysekera, 2006) when applied to ICR research. These contributions are pivotal for attending to research gaps identified in the literature, pertaining to inconsistency and problems of comparability (see Abeysekera, 2006; Guthrie et al., 2004). These contributions promote consistency in the application of the methodology when replicating ICR studies and hence for enhancing comparability between ICR studies. Three contributions of a methodological nature were made.

9.2.3.1 Importance of explicating methodological applications

The first methodological contribution is the predominant contribution: presenting transparent, detailed and explicit accounts of content analysis operational issues and methodological problems.

This research critically reflected on methodological issues that can be applied differently (and affect results), which result in different findings and hence make comparability of results problematic. These discussions illustrated the importance of applying methodological issues consistently as a means to enhance comparability. They also contribute to understanding the importance of explaining how operational issues and methodological problems are handled. Furthermore, descriptive accounts of how methodological issues were practically applied in this study are explained and challenges relating to the methodology and its practical application are illuminated with examples from New Zealand firms' annual reports.

Explicit accounts were given because an investigation into prior published ICR content analysis studies (see for example Abeysekera & Guthrie, 2005; April et al., 2003; Bozzolan et al., 2003; Brennan, 2001; Goh & Lim, 2004; Guthrie & Petty, 2000; Guthrie et al., 1999) revealed prior IC content analysis studies have neglected the importance of explaining how methodological issues were applied. No prior study provided detailed, explicit accounts or instructions as to how methodological issues were applied. Furthermore, no prior study attended to issues relating to inference making.

Other content-analysis-in-accounting studies explain their instructions and decision rules (see for example Aerts, 1994; Gray et al., 1995b; Hackston & Milne, 1996). Content analysis literature supports the need for explicit instructions. Content analysts must do their best to explain what they are doing and how they derive their judgements, so that others, especially critics, can replicate results (Krippendorff, 2004). Moreover, the literature claimed that content analysts should provide detailed written instructions, which specify the components in as much detail as feasible and which minimize the use of subjective judgements in the recording process (Krippendorff, 2004; Wimmer & Dominick, 2003). Furthermore, it is argued that ambiguity in coding rules typically causes reliability problems in text classification and that content analysts need to spell out the criteria for validating their results (Krippendorff, 2004; Morris, 1994).

Therefore, descriptive accounts of how this study has applied methodological issues in generating data and making inferences are presented in Chapters 6 and 7. Moreover, Chapter 7 presents descriptive accounts of how this study has managed challenges pertaining to ambiguous and covert meanings, and subjective interpretations, and the rules of inference that were devised in this study. In addition, the thesis presents descriptive accounts and illustrates how several methodological issues could be applied differently, which point to the importance of being transparent about methodological issues. Chapter 3 discusses different definitions, different types of content analyses that can be conducted, and several other issues relating to inference-making processes. Chapter 3 also explained the definition, type of analysis and type of inferences made in this research. Chapter 4 discussed methodological issues pertaining to unitising, and quantities and counting that can be applied differently when investigating ICR in annual reports. Consistency in the application of methodological issues delineated in Chapters 3 and 4 is crucial to generating comparable results.

These descriptive accounts and rules of inferences fill the gap identified in ICR content analysis literature: they provide as much detail as is feasible to enable other scholars to replicate the design, and to enable others to assess the reliability and validity of this content analysis study. They therefore contribute to replicating methodological issues when applied to ICR research, and hence to minimise differences in results caused by different application of methodological issues.

Consequently, they contribute to devising consistent data collection instruments for ICR content analysis studies.

9.2.3.2 Importance of consistent application of the methodology and comparable results

The methodological challenges posed by this study led to an examination of how prior ICR studies have managed methodological issues. Obvious differences in reported quantities of IC disclosures are apparent. As Abeysekera (2006) noted, these obviously different results make it difficult to accept the credibility of prior comparisons. Beside differences in results attributable to different ICR practices, the political, economical, cultural and social situations in countries, differences could be attributable to methodological issues. An in-depth analysis of how prior ICR studies applied methodological issues revealed several differences in operational issues and discussion on how key issues were dealt with are often absent in earlier studies. Many interpretations as to how methodological issues were applied had to be made. There also appears to be a tendency towards ambiguity and a lack of understanding of the importance of explicating methodological issues. These different applications, ambiguity and silence hinder the comparability of ICR studies. Therefore, it is highly likely that the application of methodological issues of this study is different to that of prior ICR content analysis studies. This could explain why the New Zealand results presented in Chapter 8 are obviously different to those of five international studies. ICR studies conducted in Australia (for the 1998 year), Hong Kong, Ireland, Malaysia and South Africa report low levels of IC disclosure. The high levels of IC disclosure reported in this study are more in line with the quantities reported for studies investigating ICR practices in Italy, Sri Lanka and to a lesser extent for the 2002 Australian study. One of the reasons why the New Zealand, Italian and Sri Lanka results in particular are more comparable relate to methodological issues pertaining to quantities, counting and frequencies. These three studies counted every occurrence of IC disclosure. The results show that the quantities presented by these three studies are much higher than those presented by the other international studies.

This illustrates that inconsistent application of methodological issues limits meaningful comparisons of results. Not attending to problems with comparability may hinder further advances in ICR content analysis research. It is debatable if and how ICR research may advance the IC discourse when results are not comparable.

Thus differences in ICR studies' results illustrate the importance of applying methodological issues consistently. Unless content analysis approaches are consistent, meaningful comparisons between ICR studies will be limited and problematic.

9.2.3.3 Importance of including pictorial information

The second methodological contribution relates to the coding of pictorial information. Since this area has not been attended to in prior ICR research, reflecting on this methodological issue is a significant contribution to the ICR research area. An in-depth examination of how international ICR content analysis studies applied content analysis provided a possible explanation as to why the quantities presented for the Sri Lankan study in particular are more comparable with the New Zealand study. The Sri Lankan study is the only study, among the seven international studies, that explicitly stated that pictorial information was included. The other six international ICR studies make no reference to the coding of pictorial information. Assuming that these six studies ignored pictures, the much higher quantities presented for the New Zealand and Sri Lankan studies indicate that including pictorial information influences results considerably. In the New Zealand study more than one-third of the IC information in annual reports was disclosed through pictures. Moreover, assuming that prior studies ignored pictures could explain why the most reported category of these international studies (external capital) is different to the most reported category for the New Zealand study (human capital). In the latter study, 56 per cent of all ICR conveyed through pictures is attributable to the IC item 'employees'. These differences in results indicate that pictures can influence our understanding of voluntary ICR practice. Therefore, excluding pictorial information from ICR content analysis is considered to be a considerable limitation to the methodology. Chapter 6 illustrated how this study dealt with operational issues associated with coding pictures. Chapter 7 illustrated how this study managed methodological challenges such as subjectivity in coding pictures as well as the making of inferences about IC information conveyed through pictures.

The earlier discussion of the importance of pictures as a communication tool for capturing "realities" of IC resources' subjective values, and conveying powerful messages about IC resources illustrates the importance of including pictures when applying content analysis methodology to investigate ICR practices in annual reports.

Pictures are an important mechanism to convey messages of a narrative nature and in narrative portions of annual reports. Hence, pictures are essential mechanisms when a narrative approach is adopted for ICR. This, combined with the relatively high quantities recorded for ICR through pictures in the New Zealand study, illustrates the importance of including pictures for understanding narrative approaches to voluntary ICR. Unerman (2000) claimed content analyses that ignore pictures are likely to result in an incomplete representation. Graber (1989) substantiated this and stated that researchers focussing on only the verbal portions of messages “not only miss the information contained in pictures and non-verbal sounds, they even fail to interpret the verbal content appropriately because that content is modified by its combination with picture messages” (p. 145). Therefore, including pictorial information when applying content analysis methodology to investigate ICR practices is essential for getting a comprehensive story about ICR practice.

9.2.3.4 Limitations of using computer-aid text analysis to investigate ICR in annual reports

The third methodological contribution related to an area not mentioned in previous literature: the appropriateness of using computer software to analyse IC information in annual reports. Chapter 7 illustrated that limitations of using computer-text analysis to investigate ICR practices exceed their advantages. The key hurdle is the difficulty of programming computers to respond to the meanings of texts (Krippendorff, 2004). To make inferences about meanings requires human judgement; however, computers lack human intelligence in making value judgments (Morris, 1994). According to Carney (1972) it is difficult to define abstract themes to a computer’s satisfaction. This is particularly relevant for abstract IC themes. Computers do not have the ability to distinguish between synonyms and homonyms (CSU, 2004). ICR requires the interpretation and decision making of competent human coders. Coding of IC information conveyed through pictures in particular limits the use of computer-aided text analyses. Chapter 7 also illuminated with examples that challenges pertaining to subjectivity as well as ambiguous and covert meanings make the use of computer-aided text analysis inappropriate for ICR research reported in annual reports in particular. The chapter also illustrated that coding for manifest meanings and searching and coding specific words is

inappropriate when investigating ICR in annual reports. Computers' inability to read between the lines to make inferences limits their usefulness in ICR research.

In sum, this study's methodological contribution pertains to further refining and developing content analysis when applied to investigate ICR practice. Three contributions of a methodological nature were made: (a) presenting transparent, detailed and explicit accounts of content analysis operational issues and methodological problems; (b) indicating the importance of including pictorial information when investigating ICR in annual reports; and (c) illustrating the limitations and hence inappropriateness of using computer-aid text analysis for ICR research. These contributions promote consistency in application of content analysis methodology when replicating ICR studies and hence comparability between ICR studies. These contributions therefore strengthen the methodology and hence its credibility when applied to ICR research.

However, when considering the contributions of this research the inherent limitations must be acknowledged. These limitations are described in the following section.

9.3 Limitations

Several limitations inherent in this study have been identified. First, the amount of ICR as a proportion of the total annual report was not determined. As discussed in section 4.3.1 this study was not concerned with determining quantities that result from measuring that are descriptive in nature. The space that ICR take up in annual reports was therefore not determined. Second, users' and managers' perspectives and interpretations as to the meanings of content in annual reports were not considered. This study's results are limited to the researcher's perspective. Third, only one research method was applied to investigate voluntary ICR practices in New Zealand firms' annual reports. A second research method such as conducting interviews with a selection of company representatives and/or audiences could have been applied to complement this study's results. However, the inferences about IC information would then have been made from these people's perspectives, which might not necessarily have agreed with the researcher's perspective. Fourth, the sample size may not be sufficiently large to generalise the study's findings. Fifth, the results only reflect New Zealand firms' voluntary ICR practices presented in their annual reports, and not practices communicated in other public domains such as websites, newspaper reports,

triple bottom line reports, environmental reports and interim reports. Sixth, even though Abeysekera (2002) reported that emotional assets and liabilities of firms could impact ICR, emotional assets and liabilities, as well as intellectual liabilities, were not coded in the study. Seventh, all mandatory disclosure of IC such as goodwill and development costs was ignored. Finally, no attempt has been made to make comprehensive comparisons between this and prior ICR content analysis studies' results and findings, because the evaluation of the differing methodologies present in prior studies indicated that to do so would be futile and potentially misleading.

Consequently, a few areas for future research were identified, discussed next.

9.4 Future research

Eight areas for future research were identified. First, conducting interviews with a selection of company representatives to ascertain why they include IC information in their annual reports will add to the richness of the study and the IC discourse. Second, this study could be conducted from users' and authors' of annual reports perspectives. Third, it would be useful to determine whether this study's findings of ICR practices of New Zealand firms would change if changes were made to the sample such as increasing the sample size, or selecting large firms that are not listed on the NZSX, or from a particular industry. Fourth, investigate what and how New Zealand firms voluntarily report IC information in internal management reports. Fifth, analyse the content of annual reports from an impression management perspective. Sixth, financial analysts could be interviewed to ascertain their perceptions about what, how and where IC should be reported. Seventh, the recording instructions developed and explicated in this thesis could be applied to assess this study's replicability and also to ascertain the usefulness thereof for future content analysis studies. Finally, this study used the legitimacy theory to explain why voluntary ICR might be important to New Zealand firms. However, this study did not directly contribute to this theory. Thus there is potential for further research in New Zealand by conducting interviews to ascertain why firms report IC information voluntarily.

9.5 Conclusion

This research investigated the voluntarily reporting of IC in New Zealand firms' annual reports. Content analysis methodology was applied to make inferences about ICR conveyed through texts and visual images in annual reports.

9.5.1 Understanding voluntary ICR practices

The thesis reinforced that identifying, recognising and reporting IC are problematic issues. However, this study illustrated that New Zealand firms do account for important value drivers not currently allowed under accounting regulations, in their annual reports. Many value drivers reported in annual reports meet the operational definitions of IC constituents. Using content analysis methodology to make inferences about ICR in annual reports showed that New Zealand firms consider IC resources as important drivers in a value creation process. Since IC resources are excluded from recognition as assets under traditional accounting regulations, evidence suggests New Zealand firms voluntarily report IC information in narrative components, and in declarative terms in their annual reports. Firms tell holistic stories through a network of mostly visualisations and texts. Evidence shows that this narrative approach adopted by New Zealand firms to disclose IC information departs from the orthodox quantitative approach of how conventional assets are disclosed. New Zealand firms do not apply a value realisation approach to identify, recognise and report IC.

The narrative approach in which New Zealand firms report IC supports Mouritsen's (2003) critique that people (trained at business schools and universities) who can read conventional assets, cannot read intellectual assets (or capital) with similar confidence. To read IC information requires the making of inferences, and often requires reading between the lines. This suggests that the absence of procedures of inscription that make IC visible and recognisable may hinder further advances in ICR research. To advance understanding of ICR practices, readers have to become familiar with how to read the reporting of IC information. This suggests that standard setters and policy makers need to develop guidelines and inscriptions that will make the reporting of IC resources in annual reports visible and recognisable.

Evidence of *what* New Zealand firms identify and recognise as IC and *how* they report IC contributes to our understanding of ICR practices. It adds to understanding

possible avenues for ICR that depart from the traditional financial reporting approach. The accounting profession could become receptive to the idea of using a narrative approach to tell IC stories. This study's results also provide evidence that extends our understanding of current practices of *what* and *how* IC information is voluntarily reported in annual reports. The results could be helpful to standard-setting bodies and policy makers in establishing a potential framework for ICR in the future. Furthermore, firms may benefit from this study's findings. It may help management with identifying their firms' important value drivers and begin the collection of information not currently captured in the financial reporting system, potentially for reporting first in their internal management information systems. New Zealand evidence may be useful to firms in expanding their accounting systems to enable them to report their value creating activities and practices.

9.5.2 Applying content analysis methodology for ICR research

The research illustrated that content analysis is an appropriate methodology to investigate ICR practices in annual reports. The meanings of messages conveyed through texts and visual images can be interpreted in the context of IC. However, the application of methodological issues needs to be carefully considered in future research. This study illustrated that applying content analysis methodology to identifying the voluntarily reporting of IC in annual reports is not without challenges. Some challenges pertaining to methodological issues and their practical application were examined, in particular those relating to subjective interpretations and covert and ambiguous meanings. Illustrations were provided of how these challenges and difficulties were managed during the making of valid and replicable inferences. Several rules of inferences were devised. Discussions of different types of content analysis, as well as different applications of methodological issues, which could result in differences in results, were offered. Overall, the findings suggest that researchers need to recognise the complexity of the processes that influence the making of data and inferences in ICR research. This research represents a contribution to understanding the nuances of the critical components of content analysis methodology when applied to ICR research.

The thesis illustrated that the inconsistent application of content analysis methodology is problematic for ICR research. It hinders meaningful comparisons

between studies. Thus to enhance the comparability of ICR studies' results, consistency is vital. Consistency in the type of analysis performed as well as in the application of methodological issues is crucial for advancing ICR content analysis research and researchers require explicit information about how to make data and inferences. To enhance consistency in applying this study's data-making and inference-making processes, descriptive accounts of methodological issues as well as their practical application were explicated. Rules of inferences were devised and the meanings of methodological terminologies used in this study were delineated. The explicit descriptive accounts and instructions provided may be useful for developing future norms for replicating ICR content analysis studies. Unless ICR studies are replicated, it is unlikely that advances in our understanding of ICR practice will be supported by meaningful comparisons between international research results.

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Appendix A

IC FRAMEWORK APPLIED IN EXTENDED STUDY

DEFINITION OF IC

Invisible investments in and utilisation of a firm's current and future intellectual resources and capacities, representing knowledge resources to enhance a firm's innovation capabilities, processes and performance as part of its value creation processes.

DEFINITION OF ICR

Reporting IC information through textual and visual forms with the intention to meet societal expectations of making IC visible.

DEFINITIONS OF THREE IC CATEGORIES

Internal capital is the knowledge that has been captured or institutionalised within the structure, processes, and culture of the firm (Guthrie & Petty, 2000). It refers to the supportive structures and procedures within the organisation that can be used by the employees to create knowledge, thus to put their knowledge, skills and abilities to work. It consists of two main elements of intellectual property and infrastructure assets. It is the knowledge that remains within the firm at the end of the working day.

External capital is the perception of value obtained by a customer from doing business with a supplier of goods and/or services (Guthrie & Petty, 2000). It relates to the relationships of the firm with different external stakeholders. It includes all knowledge assets that emerge not only from a firm's marketing channels and relations and connections with customers, but also from relationships with competitors, with current and potential suppliers, shareholders, other agents, and society in general.

Human capital is the knowledge and know-how that can be converted into value (Edvinsson & Sullivan, 1996). It represents the value and benefits that can be obtained by utilising the knowledge, experience and skills of the people within the organisation. It is the capital or knowledge that people take with them when they go home.

OPERATIONAL DEFINITIONS AND SEARCH WORDS OF INTELLECTUAL CAPITAL ITEMS

The operational definitions for the 17 IC items were derived from combining those of Guthrie et al. (1999) and (Abeysekera, 2003) as per their IC frameworks. These operational definitions are the shared meanings of leading practitioners and experts in the IC area, indicated in brackets after the definition.

IC ITEM	OPERATIONAL DEFINITION	SEARCH WORDS	Additions to search words
INTERNAL CAPITAL			
1. Intellectual property			
1.1 Patents	An exclusive property right granted by the state to its inventor for a limited period to exclude others from copying, making or selling that invention during the period of protection (Brooking 1996, pp36-37)	Patent	
1.2 Copyrights	A legal protection offered to an expression of idea expressed in some tangible form such as been written down and the protection is not for the idea itself. It can be sold, distributed or licensed to generate wealth (Brooking 1996, p.38)	Copyright	
1.3 Trademarks	TM is non-registered trademark. TM states that the owner believes he or she is the only one using it. Since it is not registered the owner may or may not have the legal right to stop others from using it (Choy 2001, p.35).	Trademark	Superior technology, logo
2. Management philosophy	[The] way leaders in the firm think about the firm and its employees. The management philosophy has a substantial effect on the organisational culture (Brooking 1996, p.62). It is often communicated through mission statements. The mission statements can have either a positive or negative impact on performance	Philosophy, attitude, ability to deal with change, pro-active, customer focused enterprise	Strategy

	depending on whether employees remember, understand, committed to it, and promote its share values (Bart 2001, p.322).		
3. Corporate culture	The set of key values, beliefs and understandings shared by members of the firm (Samson & Daft 2003, p.50).	Vision, mission, value, culture, work environment	Commitment of executives, code of ethics, code of conduct
4. Management and technological processes	<p><i>Management processes</i></p> <p>A process [which] comprises a series of actions that are principally concerned with relations between people that lead to accomplishment of objectives (Newman, Summer & Warren 1972, p.11).</p> <p><i>Technological processes</i></p> <p>Any technological activity that contributes to the creation of organisational capital (Roos et al 1997, p.49).</p> <p><i>Quality standards</i></p> <p>Maintaining of requisite standards in products and services (The Oxford Dictionary for International Business 1998, p.703).</p>	<p>Business process, management process, process, performance indicators, performance report, management plan</p> <p>Quality, defects, standard of work, work standards, professionalism of crew/ employees, ISO9000</p>	<p>Technology developed in-house, management system, management programmes</p> <p>Certification, controlled working environment, ISO 14001, international environmental management standards</p>
5. Information/networking systems	<p><i>Information systems</i></p> <p>These encompass enterprise-wide systems designed to manage all major functions of the firm such as SAP, PeopleSoft, JD Edwards, and general purpose database products targeted towards specific users such</p>	Information system, computer network, database, computer, software, hardware, web,	Integrated resource planning system

	<p>as products offered by Oracle, Microsoft, and many others (Dewett & Jones 2001, pp.313-314).</p> <p><i>Networking systems</i></p> <p>Are information technologies [which] encompass a broad array of communication media and devices which link information systems and people including voicemail, e-mail, voice conferencing, video conferencing, the internet, groupware and corporate intranets, car phones, fax machines, personal digital assistants, and so on (Dewett & Jones 2001, p.314).</p>	<p>internet, server, data, GPS, information technology, warehouse, dataset, IT system, application, architecture, IT.</p>	
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IC ITEM	OPERATIONAL DEFINITION	SEARCH WORDS	Additions to search words
EXTERNAL CAPITAL			
6. Financial relations	They are [the] favourable relationships [which] the firm has with investors, banks and other financiers (Brooking 1996, p.80).	Financial relations, bank, investor, treasury, financiers	Debt rating
7. Brands	<p><i>Brands</i></p> <p>Powerfully reminding customers to buy products and services in preference to another firm. They can include service brand that speaks about its quality and reliability, or corporate brands that speaks for the value in the market place in association with the name of the firm (Brooking 1996, pp.20-21).</p>	New department, brand, creation of new department	Speciality product, market share

	<p><i>Market share</i></p> <p>The extent of market share held in relation to the total market share for a given product or service (Ailawadi, Farris & Parry 1999, pp.20-22).</p>		
8. Customers / customer satisfaction	<p><i>Customer</i></p> <p>It is the customers' after-purchase judgement or evaluation of a specific product or service. The benefits are associated with higher economic returns, profitability, customer loyalty and less reliance upon price based competition (Stank, Daugherty & Ellinger, 1997)</p> <p><i>Customer satisfaction</i></p> <p>Customer satisfaction is related to the customer loyalty (Johanson et al 1999).</p>	<p>Customer, customer behaviour, customer needs, customer loyalty, customer relations, customer preference, customer feedback, customer survey, customer forum, customized, consumer</p>	<p>Additional customers, customer confidence, high reputation for goods and services,</p>
9. Corporate image building	<p><i>Company names</i></p> <p>The evaluation of a firm by its stakeholders in terms of their affect, esteem, and knowledge (Deephouse 2000, p.1093).</p> <p><i>Favourable contracts</i></p> <p>A contract obtained because of the unique market position held by the firm (Brooking 1996, pp.33-34).</p>	<p>Company name</p> <p>Favourable contract, contract, favourable, relationship</p>	<p>Sponsor, community trust, award, prize, leader, sponsor, leading position, leading manufacturer, credibility of company, promoting firm's value, preferred bidder</p>
10. Distribution channels	<p>Appropriate mechanism of getting products and services into the market (Brooking 1996, p.30).</p>	<p>Distribution channel, distributor, value added</p>	<p>Distribution chain</p>

		retailer, distribute, service delivery, information broker, online service delivery, online, internet service delivery, internet access	
11. Business collaborations	Collaboration established with other business partners (Brooking 1996, p.31).	Alliance, partnership, collaboration, business relations, joint project, network	Working with, agreement, network of distributors, partners
12. Licensing and franchising agreements	<p><i>Licensing agreements</i></p> <p>A wide ranging agreement that gives a party the right to sell products, services or technology to other parties as per the conditions set out in the agreement (Brooking 1996, p. 33). They include both licensing and cross-licensing agreements (Burton & Cross 1997, p.138).</p> <p><i>Franchising agreements</i></p> <p>A contractual agreement that grants the license by a person (franchiser) to another (franchisee) to carry out a franchise, franchiser to provide assistance to franchisee to carry out business in payment of a franchise fee. However, it is not a transaction within the consolidated group of companies (Brooking 1996, p.32).</p>	Licensing, license, franchising, franchise	Environmental approvals, resource consent, quota

	<p><i>Employment safety</i></p> <p>Freedom from danger or risks when employees are at work (The Concise Oxford Dictionary 1977, p.994).</p> <p><i>Equity issues</i></p> <p>Making sure that workplace is free from all forms of unlawful discrimination and harassment, and the firm provides programmes to assist people and disability groups (women, and racial, ethnic and ethno-religious minority groups) affected by past of continuing discrimination in employment who are more likely to be unemployed and working in lower paid jobs (ODEOPE 2002).</p> <p><i>Executive and employee compensation plan</i></p> <p>Recompense executive staff and employees for their effort towards the firm in addition to their statutory entitlements (The Concise Oxford Dictionary 1977, p. 206).</p>		<p>Positive working environment, adds value,</p> <p>Safety at work, safety at work environment</p> <p>Equal career opportunities, policy for employment for disabled persons, minority groups</p> <p>Incentive scheme</p>
14. Education	<p><i>Education</i></p> <p>The exposure to new knowledge, concepts and ideas in a structured way to increase knowledge or modify attitudes and beliefs (Mayo & Lank 1994, p.51).</p> <p><i>Average education level</i></p> <p>The average level of education of executives (Sveiby 1997, p.79).</p> <p><i>Vocational qualifications</i></p> <p>Education received by an employee for a particular vocation that proves the skill, knowledge and understanding the employee has to a job well. The skills are verified in several ways from examinations to</p>	Education, study, abbreviations of vocational qualifications	Professional staff

	<p>continual assessments. They could be obtained in a wide variety of fields and are managed and monitored by trade and professional organizations (Brooking 1996, pp.48-50).</p>		
15. Training	<p><i>Training</i></p> <p>Solutions to learning needs that take the form of teaching or showing a way of doing things and are essentially skills-oriented (Mayo & Lank 1994, p.51).</p> <p><i>Career planning and development</i></p> <p>Gradual unfolding of a course of progress through life or history of an employee with a firm (The Concise Oxford Dictionary 1977, pp.149, 281). Planning of employee's career with organisation (Guthrie & Petty, 2000).</p>	<p>Training, learning and development</p>	<p>Training sessions, induction training, competency development programmes</p> <p>Career development opportunities</p>
16. Work-related knowledge	<p><i>Know-how</i></p> <p>Amount of knowledge an employee possess about a particular topic, industry or organization (i.e. individual knowledge). It could be a straightforward activity (ex. raise an invoice) or a complex activity (ex. designing airplane wings). It also could be tacit, for example, tasting tea by a tea taster (Brooking 1996, p.41). This line item also includes work-related knowledge that is acquired during the job in terms of tacit, explicit and implicit knowledge (Brooking 1996, pp.51-52).</p> <p><i>Professional experience</i></p> <p>Average number of years that executives worked in their profession (Sveiby 1997, p.79).</p>	<p>Knowledge, know-how, skill, competencies, capability</p>	<p>Skills, expertise, experience, competence</p>

	<p><i>Expert seniority</i></p> <p>Years of employment of executives with the firm (Sveiby 1997, p.81).</p> <p><i>Senior executive performance and results</i></p> <p>Results achieved by senior executives over a given time period (Guthrie & Petty, 2000).</p>		
17. Entrepreneurial spirit	Innovativeness is the ability to build on previous knowledge and generate new knowledge (Roos et al 1997, p. 40). Pertains to entrepreneurial spirit, innovativeness, proactive and reactive abilities, changeability (Guthrie & Petty, 2000).	Innovation, innovativeness, entrepreneur, entrepreneurship	New products, turn ideas into earnings, development, research project, enhancement, development of innovative products and processes, continued improvement of existing product lines, product introductions, initiative(s), innovative solutions

APPENDIX B

EXAMPLES OF 17 IC ELEMENTS

Internal capital	
1. Intellectual property	
1.1 Patent	Tasman Insulation reprocesses waste glass as the raw material for Pink ® Batts ®, New Zealand’s best-known house insulation. (Fletcher Building 2004 Annual report, p. 25)
1.2 Copyright	No recordings.
1.3 Trademarks	Three years of design and development culminated this year in the release of the latest addition to our FlexiFit™ series of masks, the HC407 nasal mask, used in the treatment of OSA. (Fisher & Paykel Healthcare 2004 Annual report, p. 12)
2. Management philosophy	<p>Our continuous improvement philosophy is applied to our learning and development initiatives and provides ongoing development opportunities for all employees (Fisher & Paykel Healthcare 2004 Annual report, p. 19)</p> <p>We believe our focus on being a world class wood-fibre manufacturing and marketing company is the path to delivering sustainable value for shareholders (Carter Holt Harvey 2004 Annual report, p. 2)</p> <p>Last year the Company’s medium term business plan was updated. The theme and ambition of the new plan is to turn a “good company” into a “great company”. (The New Zealand Refining Company Ltd 2004 Annual report, p. 6)</p>
3. Corporate culture	<p>At Telecom we believe in working closely with our communities – being involved and being committed. (Telecom 2004 Annual report, p. 15)</p> <p>We have set our sights on being a world-class company, and it is our people who are responsible for delivering on this vision. We are making Carter Holt Harvey a great place to work. This means building an open and honest culture that encourages leadership, values diversity and recognizes great performance. (Carter Holt Harvey 2004 Annual report, p. 3)</p>
4. Management and technological processes:	
<i>Management processes</i>	To assist with our environmental responsibilities, we have in place an environmental management system, which is

	certified to ISO14001, the international environmental management standard. (Fisher & Paykel Healthcare 2004 Annual report, p. 18)
<i>Technological processes</i>	This is why Telecom is investing \$1 billion over the next 10 years building a new Internet Protocol (IP) network. It will deliver those integrated services seamlessly, and the customer will be in charge. (Telecom 2004 Annual report, p. 12)
<i>Quality standards</i>	We ensure our compliance to these standards by operating a quality management system, certified by a range of international standards based on the ISO9000 series. (Fisher & Paykel Healthcare 2004 Annual report, p. 17)
5. Information/ <i>networking systems:</i>	
<i>Information systems</i>	<p>In Australia, the IT function and our Customer Services team have worked to install a state of the art system that allows for remote scheduling, inventory control and invoicing of work carried out by our service franchisees. (Fisher & Paykel Appliances 2004 Annual report, p. 15)</p> <p>The Information Technology function has ensured that our business is transacted in a simple and timely manner around the world. As we extend our partnerships with organisations throughout New Zealand Australia and the USA we need systems in place to minimise our costs. In Australia, the IT function and our Customer Services team have worked to install a state of the art system that allows for remote scheduling, inventory control and invoicing of work carried out by our service franchisees. After some refinement, this system is providing more timely service to our customers. (Fisher & Paykel Appliances 2004 Annual report, p. 15)</p> <p>Third, Ports of Auckland has the technology. Its innovative high-tech systems and products, and electronic information systems, are consistently ahead of the game in New Zealand. (Ports of Auckland 2004 Annual report, p. 14)</p>
<i>Networking systems</i>	Activities are conducted via our nation wide network of branches (over 800 including in-store branches), call centers, automatic teller machines (ATMs) and e-channel banking services. (Westpac 2004 Annual report, p. 7)
External capital	
6. Financial relations	Telecom won the award for best investor relations

	performance by a New Zealand company at the Australasian Investor Relations Association's (AIRA) annual conference in Sydney. (Telecom 2004 Annual report, p. 11)
7. Brands:	
<i>Brands</i>	<p>Our customers connect with our brands, and they connect these brands with success. (Cavalier Corporation 2004 Annual report, inside cover page)</p> <p>Above all, our retail brands are specialists in their categories and specialization implies trust and confidence. (Briscoe Group Ltd 2004 Annual report, p. 4)</p>
<i>Market share</i>	We are confident this new mask has the potential to further improve patient comfort and compliance with CPAP therapy. We believe it will contribute to a continuation of strong revenue growth and market share gains from masks. (Fisher & Paykel Healthcare 2004 Annual report, p. 12)
8. Customers/ Customer satisfaction	
<i>Customer</i>	During the year the container terminal experienced a 12.8% growth in volumes, a figure that reflected the securing of new business opportunities and the growth being enjoyed by existing customers. (Port of Tauranga 2004 Annual report, p.8)
<i>Customer (numerical terms)</i>	SKY continues to record strong top-line growth. In the year ending 30 June 2004, we added 33,711 net subscribers to our base. This brings the total number of subscribers to 576,602. (SKY Network Television Ltd 2004 Annual report, p.8)
<i>Customer satisfaction</i>	<p>Sanford has an excellent reputation internationally for the quality and consistency of our products and services. (Sanford Ltd 2004 Annual report, p. 72)</p> <p>Top rankings by shipping-line customers, including 1st among Australasian ports and 5th among all 16 international terminals servicing the 4100-TEU vessels. (Ports of Auckland Annual report, p. 2)</p>
9. Corporate image building	

<p><i>Company names</i></p>	<p>In the eight years since SKYCITY opened its first property, SKYCITY Entertainment Group has experienced significant growth, expanding and developing into an entertainment company ranked in the top 10 companies listed on the New Zealand Exchange and in the top 100 listed on the Australian Stock Exchange. (Skycity Entertainment Group 2004 Annual report, p. 35)</p> <p>We have agreed to provide NZ\$1 million in sponsorship towards the development of a clinical education centre at the new Auckland City Hospital. (Fisher & Paykel Healthcare 2004 Annual report, p. 7)</p>
<p><i>Favourable contracts</i></p>	<p>Winning the contract to construct and operate the Wingfield transfer station consolidates our position in the Adelaide market. (Waste Management N.Z. Ltd 2004 Annual report, p. 9)</p> <p>In July 2000 following success in a tender process, Telecom Corporation of New Zealand Limited's subsidiary TCNZ Australia Pty Limited ("TCNZA") was selected by the Commonwealth Bank of Australia ("CBA") to manage and deliver telecommunications services to meet CBA's business requirements throughout Australia. (Telecom 2004 Annual report, p. 114)</p>
<p>10. Distribution channels</p>	<p>Our distribution chain throughout the world has assisted again in achieving record sales. (Fisher & Paykel Appliances 2004 Annual report, p. 16)</p> <p>Our distribution network has diversified from the simple branch focused model of the past into a diversified mix of distribution channels. (Westpac 2004 Annual report, p. 10)</p> <p>Our strong and expanding direct sales and distributor network has made a significant contribution to the growth we achieved in our 90 international markets this year. (Fisher & Paykel Healthcare 2004 Annual report, p. 16)</p>
<p>11. Business collaborations</p>	<p>We have strong reciprocal technology arrangements with our European and American counterparts – some of the world's largest and most innovative technology companies. They have use of Nuplex technology under licence with give us access to their huge markets – and they make the most of our marketing and distribution channels to bring their products to Nuplex customers in New Zealand and Australia. (Nuplex Industries Ltd 2004 Annual report, p. 6)</p>

	<p>We benefit from many developments instigated and brought into production by our suppliers of products and services. We value these partnerships, which assist our growth, and will continue to encourage this work. (Fisher & Paykel Appliances 2004 Annual report, p. 16)</p>
12. Licensing and franchising agreements	<p>In the last 12 to 15 months, Contact has gained resource consents to allow ongoing electricity production from approximately half of our generating portfolio – on the Clutha River and in the Wairakei geothermal operations. (Contact Energy Ltd 2004 Annual report, p. 8)</p> <p>Fish quota, licences and marine farm licences. (Sanford Ltd 2004 Annual report, p. 37)</p>
Human capital	
13. Employee	
<i>Employee involvement in community</i>	<p>Other business units have established relationships that help them to manage the community impact of their operations in co-operation with community representatives. (Fletcher Building 2004 Annual report, p. 29)</p>
<i>Industrial relations / union activity</i>	<p>35 percent of Fletcher Building employees belong to labour unions, The company has a sound labour relations record and constructive relationships with all labour unions in its business. (Fletcher Building 2004 Annual report, p. 28)</p>
<i>Employee thanked</i>	<p>Telecom’s success is derived from our people. Our staff are professional and enthusiastic; skilled and dedicated; hardworking and creative. It is very important that we acknowledge their huge contribution to the growth of the Company, and to our ability to cope with such an exciting but demanding and changing environment. (Telecom 2004 Annual report, p. 9)</p>
<i>Employee featured</i>	<p>The excellent result is a credit to all management and staff, and the leadership of the company’s chief executive officer, Don Huse, who was appointed in July last year. (Auckland International Airport 2004 Annual report, p. 5)</p>
<i>Value added</i>	<p>Building a skilled and knowledgeable staff is paramount to ensuring TrustPower’s continued success. The Company is extremely fortunate to have a high calibre management team coupled with industry expert employees across all its divisions. (Trustpower Ltd 2004 Annual report, p. 13)</p>

	A business that relies heavily on people can only be as good as the people it employs, and TrustPower prides itself on the calibre of its staff. (Trustpower Ltd 2004 Annual report, p. 14)
<i>Employment safety</i>	The installation of closed circuit television cameras on ten train units and at five key stations is just one of a number of measures Tranz Metro introduced over the last 12 months to safeguard staff and passengers. (Toll NZ 2004 Annual report, p. 11)
<i>Equity issues</i>	<p>The diversity of Sanford's workforce in age, gender and race, when combined with their work ethic and the Company's culture, provide a valuable asset for the Company. (Sanford Ltd 2004 Annual report, p. 62)</p> <p>We continue to support equal employment opportunity principles for all of our employees. (Fisher & Paykel Healthcare 2004 Annual report, p. 18)</p>
<i>Executive and employee compensation plan</i>	Waged employees at all SKYCITY Entertainment Group properties are entitled to a bonus, on top of ordinary wages and other benefits, if both customer service target levels and company financial targets are met. (Skycity Entertainment Group 2004 Annual report, p. 14)
14. Education	
<i>Education</i>	Sir Colin received his undergraduate degrees in engineering from the University of New Zealand, a doctoral degree from Oxford University and an honorary LL.D. from the University of Auckland, New Zealand. (Fisher & Paykel Healthcare 2004 Annual report, p. 21)
<i>Vocational qualifications</i>	Fletcher Building is strongly committed to developing its own leaders, through a variety of programmes and processes. Among these are innovative programmes developed with the University of Auckland Business School, including Leadership Foundations, an Advanced Management Programme now in its second year, and a portfolio of customized short-courses. (Fletcher Building 2004 Annual report, p. 27)
15. Training	

<i>Training</i>	SKYCITY provides training for all staff in all areas of host responsibility, relevant to their role, but especially in responsible service of alcohol and gaming product. Having well informed and well prepared staff is fundamental to the way SKYCITY approaches its responsibilities. (Skycity Entertainment Group 2004 Annual report, p. 27)
<i>Career planning and development</i>	<p>These include a range of critical competency development initiatives, such as accredited certificate programmes for front line operational staff in the readymix, manufacturing and quarrying business. (Fletcher Building 2004 Annual report, p. 12)</p> <p>A strong learning and development focus continues, with approximately 35 percent of employees enrolled in accredited certificate programmes. (Fletcher Building 2004 Annual report, p. 18)</p>
16. Work-related knowledge	
<i>Know-how</i>	The six business unit general managers within the Concrete division have on average more than 17 years' management experience within the building industry. Focused training and development ensures that their industry experience and knowledge is well supported and ably applied by operational staff. (Fletcher Building 2004 Annual report, p. 12)
<i>Professional experience</i>	Peter is a chartered accountant and formerly a partner with Ernst & Young, with extensive experience in banking, business establishment, problem resolution, asset sale and management of change functions. (Westpac 2004 Annual report, p. 53)
<i>Expert seniority</i>	<p>On 21 April 2004, the board appointed Dr Keith Turner as a non-executive director who brings valuable expertise to the board. He has senior management experience as chief executive officer of the Wellington-based state-owned electricity generator and retailer Meridian Energy Limited, extensive commercial experience and a strong infrastructure development background. (Auckland International Airport 2004 Annual report, p. 7)</p> <p>The Board has considered it is appropriate to appoint Mr Paykel as Chairman of the Board given his expertise and skills. (Fisher & Paykel Healthcare 2004 Annual report, p. 25)</p>

<i>Senior executive performance and results</i>	Gordon has extensive Australian and international experience as a senior executive, most recently as Chief Executive Officer of Lion Nathan Limited, a position he held from 1997 to September 2004. Gordon has also held a wide range of senior management positions in marketing and finance with Pepsico, Cadbury Schweppes and Nestle (Spillers) (Westpac 2004 Annual report, p. 52)
17. Entrepreneurial spirit	Another year of positive operating earnings growth confirms our consistent ability to develop, manufacture and sell innovative healthcare devices, which increase shareholder value. (Fisher & Paykel Healthcare 2004 Annual report, p. 5)

5. Location of disclosure indicated as:

V = Vision/strategy

D = Directors

B = Business/operational

F = Financial

R = Remaining

6. Nature of disclosure indicated in three columns as:

1 = Declarative terms

2 = Numerical terms

3 = Fiscal value

Appendix D

Frequencies of ICR disclosure per IC category for individual firms

Firm	Internal capital	External capital	Human capital	Total
Auckland International Airport Ltd	19	46	30	95
Air New Zealand Ltd	10	15	42	67
AMP NZ Office Trust	4	43	18	65
Briscoe Group Ltd	3	17	4	24
Carter Holt Harvey Ltd	21	15	50	86
Cavalier Corporation Ltd	6	19	31	56
Contact Energy Ltd	4	26	66	96
Fletcher Building Ltd	16	57	80	153
Fisher & Paykel Appliances Holdings Ltd	2	17	57	76
Fisher & Paykel Healthcare Corporation Ltd	30	57	45	132
Freightways Ltd	1	34	12	47
Infratil Ltd	3	10	31	44
Independent Newspapers Ltd	0	0	1	1
Kiwi Income Property Trust	2	57	45	104
NGC Holdings Ltd	9	6	40	55
NuPlex Industries Ltd	6	37	37	80
The NZ Refining Company Ltd	20	13	57	90
Port of Auckland Ltd	21	39	76	136
Port of Tauranga Ltd	11	19	19	49
Sanford Ltd	19	38	38	95

Sky City Entertainment Group Ltd	3	51	30	84
Sky Network Television Ltd	4	62	22	88
Steel & Tube Holdings Ltd	1	22	17	40
Telecom Corporation of New Zealand Ltd	12	41	66	119
TrustPower Ltd	4	21	44	69
Toll New Zealand Ltd	4	17	8	29
Tower Ltd	4	22	41	67
Waste Management NZ Ltd	3	3	108	114
The Warehouse Group Ltd	2	22	64	88
Westpac Banking Corporation NZ	7	6	44	57
Total	251	832	1,223	2,306