# Sell-side analysts' use and communication of intellectual capital information

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***Statement of Originality***

*This is to certify that to the best of my knowledge, the content of this thesis is my own work. This thesis has not been submitted for any degree or other purposes. I certify that the intellectual content of this thesis is the product of my own work and that all the assistance received in preparing this thesis and sources have been acknowledged.*

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March, 2010

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## LIST OF ABBREVIATIONS

| | |
|---|---|
| AASB | Australian Accounting Standards Board |
| AFMESC | Austrian Federal Ministry of Education, Science and Culture |
| AIAF | Italian Financial Analysts Society |
| AICPA | American Institute of Certified Practicing Accountants |
| ASB | Accounting Standards Board |
| ASX | Australian Securities Exchange |
| AUD | Australian Dollars |
| CEO | Chief Executive Officer |
| CSR | Corporate Social Responsibility |
| CIC | Commission on Intellectual Capital |
| DATI | Danish Agency for Trade and Industry |
| DMSTI | Danish Ministry of Science, Technology and Innovation |
| EAI | Enhanced Analytics Initiative |
| EBITDA | Earnings Before Interest, Taxes, Depreciation and Amortisation |
| EBRC | Enhanced Business Reporting Consortium |
| EFFAS | European Federation of Financial Analyst Societies |
| EPA | Extended Performance Account |
| EU | European Union |
| EV | Enterprise Value |
| ExtC | External Capital |
| FASAB | Federal Accounting Standards Advisory Board |
| FASB | Financial Accounting Standards Board |
| GAAP | Generally Accepted Accounting Principles |
| GDP | Gross Domestic Product |
| GFMEL | German Federal Ministry of Economics and Labour |
| GICS | Global Industry Classification System |
| GIPID | Guideline for Intellectual Property Information Disclosure |
| HHI | Herfindahl Index |
| HRM | Human Resources Management |
| HumC | Human Capital |
| IABM | Intellectual Asset Based Management |
| IAS | International Accounting Standards |

| | |
|---|---|
| IASB | International Accounting Standards Board |
| IC | Intellectual Capital |
| ICD | Intellectual Capital Disclosure |
| ICR | Intellectual Capital Reporting |
| IntC | Internal Capital |
| IP | Intellectual Property |
| IPO | Initial Public Offering |
| IS | Information Systems |
| IT | Information Technology |
| IWF | Index Weight Factor |
| JMETI | Japan Ministry of Economy, Trade and Industry |
| JV | Joint Venture |
| KPI | Key Performance Indicator |
| KWIC | Keyword in Context |
| MD | Managing Director |
| MERITUM | Measuring Intangibles to Understand and Improve Innovation Management |
| NFI | Non-financial Information |
| NPD | New Product Development |
| NPV | Net Present Value |
| OECD | Organisation for Economic Co-operation and Development |
| OFR | Operating and Financial Review |
| PPP | Private Public Partnership |
| R&D | Research and Development |
| REIT | Real Estate Investment Trust |
| ROA | Return on Assets |
| ROC | Return on Capital |
| ROE | Return on Equity |
| SEC | Securities and Exchange Commission |
| SER | Social and Environmental Reporting |
| SKE | Society for Knowledge Economics |
| SME | Small and Medium Enterprises |
| VMR | Value Measurement and Reporting |
| VMRC | Value Measurement and Reporting Collaborative |

## ABSTRACT

Structural economic changes in many countries, together with unprecedented developments in the business environment, have significantly affected the value creation processes of firms and the way business is conducted. The traditional financial reporting model is inadequate as a consequence of these developments, and intellectual capital (IC) information has gained importance for investment decision making. Empirical capital markets research demonstrates the value-relevance and predictive ability of certain types of IC information.

The use of IC information by capital market participants is a topic that has begun to gain attention from contemporary researchers, but for which scant empirical evidence exists. Much of the research in this area relies on the literature about the use of non-financial information (NFI), which is inadequate in its examination of certain types of IC information. Therefore, the main aim of this thesis is to examine the use and communication of IC information by sell-side analysts. Sell-side analysts are of particular interest because they are capital market intermediaries and sophisticated processors of corporate information. The reports they produce provide an opportunity to examine their use and communication of IC information.

The specific objectives of this thesis are to examine: the extent and types of IC information used by sell-side analysts in *initiating coverage reports* produced by them; *how* IC information is used and communicated in these reports; and factors that may influence the use of IC information by sell-side analysts. In order to address these research objectives a content analysis of IC references in 64 *initiating coverage reports* written on an equivalent number of *S&P/ASX 200/300* companies is performed. The content analysis identifies and measures IC references by *topic*, *evidence* (discursive, monetary, numerical, or visual), *news-tenor* (positive, neutral or negative) and *time orientation* (forward-looking, past-oriented or non-time-specific).

The findings indicate that Australian sell-side analysts appreciate the importance of IC in firm valuation, and thus are not ambivalent about the use of IC information in general. However, the findings suggest that their communication of IC information is inconsistent and unsystematic, and inadequate in relation to certain types of IC. This highlights the need for undertaking work at a policy level to educate and train sell-

side analysts to deal with IC information, and the development of better models and guidelines for analysing and communicating IC information.

On *how* IC information is used, this thesis finds that sell-side analysts have varying uses of IC information. It was found that IC is predominantly communicated discursively, positively, and in a past-oriented manner; and in doing so IC is used as a tool to further the sell-side analysts' agenda for the company analysed. Further, the results highlight that the type of investment recommendation in analyst reports impacts on the *evidence*, *news tenor*, and *time-orientation* of IC communicated. These findings alert future researchers to the wider role played by IC beyond its use in forecasts and valuations.

Also, the findings indicate inter-sectoral differences in the use of IC information in analyst reports, highlighting the need to improve IC reporting practices of firms by including additional information on industry-specific IC value drivers. Further, it was found that sell-side analysts emphasise IC information in analyst reports for companies from high IC-intensive sectors compared to those from low IC-intensive sectors. Similarly, it was found that analyst reports on risky companies contain significantly more IC information than analyst reports on less risky companies. Contrary to expectations, the extent of IC information is not found to vary with firm size and firm profitability. Also, the results support that the extent of certain types of IC information differs between types of analysts' investment recommendations.

More generally, the findings of this thesis suggest that the corporate reporting process could be improved by including additional types of IC information and providing this information more effectively in a manner that enables users to visualise the interrelationships between resources (both tangible and intangible) and outcomes. This study calls for standards or guidelines for intellectual capital reporting (ICR) in Australia and the expansion of the role of auditing and assurance services to enhance reliability of firm provided IC information in a bid to improve the use of IC information in company analysis by sell-side analysts.

# 1. BACKGROUND AND MOTIVATION

## 1.1. Introduction

This study examines the use and communication of intellectual capital (IC) information in *initiating coverage reports* written by sell-side analysts, a topic that is relatively unexplored in the literature. This chapter sets the background for the research and provides an introduction to the study. It also provides an overview of the subsequent chapters of this thesis.

The rest of this chapter is organised as follows. Section 1.2 provides the background of the study. Section 1.3 provides an overview of the research, explaining the objectives, research method and conduct of the study. Section 1.4 explains the motivations for undertaking the research. Section 1.5 briefly reviews the work, roles and influences of sell-side analysts, who are the focus of this thesis. Importantly, this section establishes the motivations for selecting sell-side analysts and analyst reports as the foci of this thesis. Section 1.6 presents an overview of the chapters to follow. Section 1.7 concludes the chapter with a summary.

## 1.2. Background

Countries in the developed world have witnessed structural changes in their economies. Today, in most developed countries, the contribution of service-based industries to the Gross Domestic Product (GDP) far outweighs that of traditional agricultural and industrial sectors. Value creation drivers of these industries are different to those of traditional industries. Firms in these industries rely on only modest investments in capital equipment. To a much greater extent they depend on knowledge resources and are characterised by high economic value addition, intangible throughput and creation of value by utilising IC (Guthrie *et al.*, 2001).

More importantly, the recent decades have seen significant developments in the context in which companies operate (Holland, 2004; Lev, 2001; OECD, 1999). These developments include globalisation, technological advancements (including information technology), shifting demographics, deregulation of industries, opening up of formally closed markets, increased power and sophistication of customers, increased employee entrepreneurialism, increased shareholder activism, and powerful

interest and pressure groups (e.g., Ashton, 2005; Guthrie *et al.*, 2001). Commensurate with these developments, many changes have occurred in corporate value-creation processes, not only in service based industries but also in traditional industries. Holland (2004, p.2) comments:

> These [changes] include the increasing significance of knowledge-intensive processes, assets and intangibles in creating value within the enterprise, and within the immediate network of corporate alliances with suppliers, distributors, and customers.

Elaborating on the changes, Holland (2004, p.3) exemplifies how the internet has been transformational in companies' value creation processes:

> The internet was beginning to influence how […] companies bought goods from suppliers, how they sold products and services, the prices at which they bought and sold, and the way in which they collected and used information at the customer, supplier, and distributor interfaces. In part, this can be interpreted as a cost-cutting exercise, as well as an attempt to create wider profit margins by creating new, price-insensitive and knowledge-intensive products and services.

These changes in the business environment and value creation processes require new management practices and strategies that determine corporate success (Lev and Zambon, 2003; Stewart, 2003). For instance, Ashton (2005, p.53) states that businesses have responded to these changes in a myriad of ways including:

> […] relying more heavily on a wide range of technologies, establishing new organisational forms such as networks, partnerships, and alliances, adopting new business models, emphasising knowledge, learning and flexibility in moving in and out of markets, and implementing sophisticated business practices designed to improve efficiency and effectiveness (*e.g.,* total quality management, business process reengineering, just-in-time manufacturing, strategic cost management, teamwork and gainsharing, and customer relationship management).

Also, Holland (2004) argues that the fusion of the information age with traditional industries has resulted in many innovations and industry specific unique intangibles in those industries. Thus, in contemporary companies in both service and traditional industries the potential for creating competitive advantage and long-term corporate

value lies more on the management of IC than on tangible assets (Daley, 2001; García-Ayuso, 2003b; Guthrie *et al.*, 2001; Petty and Guthrie, 2000). IC, such as customer relationships, firm reputation, business collaborations, management systems, know-how, business models, and employee skills and competences are identified as critical resources in these organisations (OECD, 1999). In other words, the transformations in the contemporary business environment and consequent changes in corporate value creation processes have increased the importance of IC in sustaining competitive advantage. As a result, shareholders and potential investors may show a greater need for information on firms' IC to make investment decisions. IC information concerns "information on a business's efforts to grow its intellectual capital for sustained value creation" (Fincham and Roslender, 2003a, p.783).

Critics argue that the traditional transaction-based financial reporting model is inadequate in providing IC information, as it is concerned with reporting value realisation, which looks at the historical value generated by a firm (Boedker *et al.*, 2005; Fincham and Roslender, 2003a; Fincham and Roslender, 2003b; Roslender and Fincham, 2004). In contrast, intellectual capital reporting (ICR) is forward looking and concerned with reporting value creation. Boedker *et al.* (2005, p.515) explain that reporting value creation is about "communicating the capacity of an organisation to deliver sustainable competitive advantage now and in the future". Hence, it is argued that financial reporting is unable to provide an understanding of firms' total value (e.g., Ashton, 2005; Bornemann and Leitner, 2002; Jenkins and Upton, 2001; Lev and Zarowin, 1999; Phillips, 2001; Stewart, 1997). For instance, Thomas (2003, p.80) comments:

> Codified fifty years ago, in the era of the mass manufacturer, the traditional financial reporting model focused its attention on those factors that are critical for the evaluation of the performance of a large-scale commodity industry – return on fixed assets, inventory position, marginal unit cost of production and so on.

The inadequacy of financial statements to report firm value is further evident when observing the discrepancies between book value and market value of firms, since the latter part of the last century. A balance sheet of a firm only provides the historical value of firm's tangible and certain intangible assets. It does not record or measure a firm's IC. Researchers have argued that the gap between book value and market value

of firms can, at least, be partially explained by IC (e.g., Stewart, 2003; Sullivan, 2000; Sveiby, 1989). Also, empirical research has found that capital market participants increasingly rely on intangibles and other non-financial business information to help them assess the opportunities and risks of investments (e.g., AICPA, 1994; Eccles and Mavrinac, 1995).

Motivated by allegations that the traditional financial reporting model is unable to explain equity values, several studies have examined how the *value-relevance*[1] of accounting information presented in financial statements has changed over time. The majority of these studies document a weak earnings-return association (Amir and Lev, 1996) and a temporal decline in the association between stock prices and both earnings and book values (e.g., Brown *et al.*, 1999; Core *et al.*, 2003; Ely and Waymire, 1999a; Lev, 1989; Lev and Zarowin, 1999). In contrast, Collins *et al.* (1997) and Francis and Schipper (1999) found that the explanatory power of book value of equity in relation to security prices/returns has increased over time. However, Brown *et al.* (1999) reveal econometrical problems associated with regressions in these studies, and they indicate that once the regressions are corrected for bias in the coefficient of variation of the scale factor, they too reveal a decrease over time in the value-relevance of earnings and book values combined together[2]. It has been found that the decline in value-relevance of accounting measures is sharpest for firms that have increased their research and development (R&D) intensity over time (Lev and Zarowin, 1999) indicating the increasing role played by IC in determining firm value, particularly in such firms.

Research studies document that after financial information is adjusted for the expensing of intangible assets, earnings and book values explain security prices and equity values (e.g., Abrahams and Sidhu, 1998; Amir and Lev, 1996; Lev and Thiagarajan, 1993; Livnat and Zarowin, 1990; Ritter and Wells, 2006). For instance,

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[1] Studies assessing the statistical association between information items and equity values (either stock price or stock return) are referred to as value-relevance studies. An item of information is said to be value-relevant if it has a statistically significant positive association with equity values (Barth *et al.*, 2001a).

[2] Brown *et al.* (1999) show that the $R^2$ in regressions used by Collins *et al.* (1997) and Francis and Schipper (1999) is positively correlated with the cross-sectional coefficient of variation of the scale factor. They argue that when corrected for this the results of the two studies are reversed, actually indicating a decline in value-relevance, over the four decades considered.

it has been found that adjusting earnings for R&D accruals and sales, general and administration expenses, which predominantly include investments in certain IC (*e.g.*, customer base, business collaborations and acquisition of licences), improves the explanatory power of accounting earnings as a measure of performance in relation to market returns (Abrahams and Sidhu, 1998; Amir and Lev, 1996). However, a significant proportion of the market value of firms' equity remains unexplained even after these adjustments. Amir and Lev (1996) found that financial information and non-financial information (NFI)[3] combined together can better explain market value. Nonetheless, the invisibility of IC is considered a deterrent in comprehending firm value creation processes, and thus firm value.

The importance of making firms' IC visible through external reporting has led to interest among regulators, practitioners and academics on this topic with the resultant introduction of a multitude of guidelines, frameworks and outlets for ICR. Concurrent to these developments, has been an interest among firms in many parts of the world in publicly disclosing IC information (Petty *et al.*, 2008). Some firms, particularly in Europe, produce a separate IC statement as a supplement to the conventional annual report.

The importance of IC to the capital market was formally recognised by the accounting profession with the appointment of the Jenkins Committee of the AICPA in 1994[4]. This committee found that capital market actors wanted information on firms' value creation processes and leading indicators of firms' value. It attempted to address challenges to voluntary disclosure of NFI in public documents such as annual reports in order to better meet the information needs of the capital market. Since then many studies have documented the importance of information on corporate value drivers for the efficiency of the capital market (see, Chapter 3). However, relative to the

[3] NFI may be defined as all information disclosed outside the financial statements and related notes issued by a company (Orens and Lybaert, 2007; Robb *et al.*, 2001).

[4] AICPA did not investigate IC in particular. They investigated the information needs of investors, creditors and financial analysts, and found a need for more external disclosure of NFI. Certain types of NFI demanded by users relate to what this thesis labels as IC.

extensive body of literature on firms' disclosure of IC, the use of IC information by capital market participants is under researched[5].

### 1.3. Overview of the research

The use of IC information by capital market participants is a topic that has begun to gain attention from contemporary researchers, but for which scant empirical evidence exists. Substantial knowledge on this topic has been borrowed from the literature on the use of NFI (see, Section 3.3.1). Therefore, the main aim of this PhD study is to, in some part, close the gap in the literature by examining the use and communication of IC information by sell-side analysts. The importance of sell-side analysts as a capital market participant, and the reasons for focusing this research on them, are discussed later in this chapter (see, Section 1.6.2).

This PhD study has three main objectives: (1) to understand the importance of IC information, both generally and in relation to particular types of IC information, with specific reference to sell-side analysts; (2) to examine *how* IC information is used and communicated by sell-side analysts; and (3) to investigate the factors influencing the use/communication of IC information by sell-side analysts. In order to address these research objectives this thesis considers IC references in analyst reports as a proxy for use/communication of IC information by sell-side analysts. Thus, the research method adopted in this thesis is a content analysis of IC references in *initiating coverage reports*[6] written on Australian listed companies.

The analyst reports are analysed using a coding instrument. Thus, as a first step, this thesis develops a workable definition of IC (and its categories) and an IC classification scheme that forms part of the coding instrument (see, Sections 2.2 and 5.6). The first research objective is addressed by measuring the frequency with which

[5] Academic research has been carried out on the use of IC information by three types of capital market actors, namely buy-side analysts, fund managers, and sell-side analysts. In summary, the literature concerning the use of IC information by buy-side analysts and fund managers has largely benefited from the works of Holland (2001; 2006) and Holland and Johanson (2003), using case studies/interviews. Also, limited number of studies have been conducted on the use of IC information by sell-side analysts using case study (e.g., Holland and Johanson, 2003; Johansson, 2007) and content analysis methods (*e.g.,* Arvidsson, 2003; Flöstrand, 2006; García-Meca, 2005; García-Meca and Martínez, 2007; Orens and Lybaert, 2007). However, there is scope for more research on both these fronts. Section 3.5 analyses gaps in the current literature on IC information in analyst reports.

[6] *Initiating coverage* analyst reports are written by sell-side analysts when they commence covering a particular company or after a considerable lapse of time since the last coverage (see, Section 5.5.1.1).

various types of IC information are referred to in analyst reports. In addition to examining the extent of IC references in the overall sample, this thesis aims to investigate the use of IC information in analyst reports of firms across eight Australian Global Industry Classification System (GICS®) sectors and across analyst reports with buy, hold and sell recommendations.

In order to examine *how* IC information is used by sell-side analysts (*i.e.,* the second research objective) this study aims to investigate three unique qualitative dimensions of IC references in analyst reports. These include: (1) *evidence* (*i.e.,* whether IC information is communicated discursively, monetarily, numerically or visually); (2) *news-tenor* (*i.e.,* whether IC information is communicated positively, neutrally or negatively); and (3) *time orientation* (*i.e.,* whether IC information is communicated in a forward-looking, non-time-specific or past-oriented manner). Moreover, these three qualitative dimensions of IC references are investigated across analyst reports with different types of investment recommendations. The third research objective will be addressed in this thesis by statistically testing several hypotheses on whether the extent of IC information in analyst reports varies according to firm size, profitability, perceived beta risk, IC intensity of the sector and type of analyst recommendation.

The next section discusses the motivations driving the research reported in this thesis and its potential benefits.

### 1.4. Motivations for the research

This section discusses the three factors that motivate the research undertaken in this PhD study. First, there is a dearth of research on the use of IC information in predicting the market value of firms by capital market participants. Second, there is ambivalence as to whether sell-side analysts are able to use IC information in company valuations (e.g., Bukh, 2003; García-Ayuso, 2003a; Holland, 2003; Johanson, 2003; Mouritsen, 2003). Third, there is a need to enhance the relevance of corporate reporting to capital market participants. These are discussed in the following two subsections, where Subsection 1.4.1 discusses the former motivation and Subsection 1.4.2 discusses the latter two motivating factors.

### 1.4.1. The knowledge gap

Prior research emphasises the importance of providing information regarding knowledge resources, which are key drivers of firm value, to the capital market (e.g., Eccles and Mavrinac, 1995; Epstein and Palepu, 1999; Hunter *et al.*, 2005; Jenkins, 1994; Sengupta, 1998). There have been various attempts by researchers to evaluate ICR practices of firms in various jurisdictions and in a multitude of reporting media (see, Section 2.5). In addition, projects aimed at improving the transparency and understanding of firms' IC have been undertaken by government agencies, the accounting profession and other organisations. These initiatives include research collaborations, networks for sharing information and best practice, and the development of ICR guidelines and frameworks (see, Section 2.3). Several companies are embracing this work and disclosing IC through various media (*e.g.,* annual reports, standalone IC reports, internet, etc) (see, Section 2.5). Improvements to the guidelines and frameworks for ICR and ICR practices of firms can only be made by having a better understanding of the use of IC information by capital market participants.

It is argued that capital markets react to publicly available information about firms' IC. For instance, internal capital (IntC), such as R&D, patents, quality, information technology, and innovations; external capital (ExtC), such as advertising, brand value, customer satisfaction, customer base, and customer penetration; and human capital (HumC), such as quality of the top management, and characteristics of employees are found to be value-relevant in capital markets research studies (see, Section 3.2.2). However, there are many types of IC information, which are not amenable to capital markets research, but are argued to be drivers of future financial performance of firms (see, Section 3.2.4). Market prices of firms will be undervalued to the extent that these types of information are not incorporated in stock prices. One way of understanding the capital market's appreciation of all types of IC information is to investigate their use by capital market participants.

On the other hand, capital markets research studies are only able to identify the impact of certain IC information on stock prices and stock returns, but cannot explain *how* they are interpreted in determining market values (see, Section 3.5). Since IC information is ultimately reflected in market prices through the work of market

intermediaries, more insight into the role of IC in the market price determination can be gained by examining *how* IC is used and communicated by capital market participants. Limited research exists on this front (see, Section 3.4).

Sell-side analysts may be considered influential in the capital market as an information intermediary, informing other market participants about firm values (see, Section 1.6.2). Their role involves conducting company research, and issuing earnings forecasts, price targets, stock valuations and investment recommendations based on their research. Therefore, an opportunity exists to understand the importance of different types of IC information as well as the link between the provision of IC information by firms and inclusion of that information in market prices, by investigating sell-side analysts' handling of IC information. In other words, this thesis addresses the need to understand *what* and *how* IC information is interpreted by sell-side analysts in determining stock prices (see, Section 3.5). An investigation of use of IC information by sell-side analysts in their reports will help achieve this. In addition, such an investigation provides an opportunity to examine the various factors driving the use of IC information by capital market participants.

### 1.4.2. Potential benefits

An investigation of sell-side analysts' use of IC information may provide twofold benefits. First, it enables the assessment of sell-side analysts' contribution as a capital market intermediary in processing and disseminating IC information for the benefit of other capital market participants. It enables the evaluation of the level of sell-side analysts' understanding of the concept of IC, which has been described as a difficult phenomenon for them to comprehend (García-Ayuso, 2003a; Mouritsen, 2003). These findings may be used by policy makers in determining the level of assistance that needs to be provided to sell-side analysts in terms of education, training, and analytical models for evaluating IC information.

Second, benefits will accrue to corporate managers and policy makers. Corporate managers may want to know how IC information influences analysts' forecasts and recommendations in order to understand the types of decision useful corporate information required by capital market actors (Nielsen, 2008). Also, Holland (2004, p.vi) observed that companies' agenda for private and public disclosure of IC is

partially altered by their perception of the information needs of the capital market, and companies have difficulty in understanding how sell-side analysts use IC information to value companies:

> Once the case companies understood the value-creation process, they sought to understand how the stock market used this information to value their enterprises. This allowed the case companies to assess which parts of the internal corporate value-creation information set was likely to be seen as value-relevant by external financial markets. The companies could then decide which information they should disclose through private and public channels.

The knowledge on the use of IC information by sell-side analysts may benefit accounting standards setters and regulators in their quest to improve the quality of corporate information, and better meet the needs of information users (e.g., AICPA, 1994; FASB, 2001a; 2001b; Upton, 2001). Importantly, this understanding can contribute to the development of voluntary guidelines for extended performance reporting. Similarly, organisations and groups actively involved in furthering IC measurement, management, and reporting may use this insight in assessing the impact of work carried out by them in making firms' IC visible and educating them in how to use IC information.

The next section introduces sell-side analysts. It also discusses the work carried out by them, the roles they play in the capital market, and the institutional setting influencing their work.

### 1.5. Sell-side analysts – work, roles and influences

The finance and accounting literature generally classifies financial analysts (also referred to as *research analysts* and *investment analysts*) into two archetypes: namely, sell-side analysts (also known as *broker analysts*) and buy-side analysts[7]. Sell-side analysts differ in many aspects from buy-side analysts. Appendix A distinguishes

[7] Buy-side analysts are employed by institutional investors, such as mutual, hedge, and pension funds, and work alongside portfolio managers to make recommendations, exclusively, on the asset portfolio of that institutional investor (Galanti, 2006; Groysberg *et al.*, 2008). In comparison to sell-side analysts, buy-side analysts deal in many stocks at a time, and they rely on sell-side analysts for company specific information (Campbell and Slack, 2008). With access to sell-side analysts' primary research outputs and industry conferences hosted by sell-side analysts' brokerage firms, buy-side analysts are able to follow a larger number of firms (Nielsen, 2008; Wayman, 2002).

these two types of analysts on several characteristics. As the subject of this thesis is sell-side analysts, this section provides a brief review of the literature on sell-side analysts' work, roles and influences.

The remainder of this section is structured as follows. Section 1.5.1 introduces sell-side analysts. Section 1.5.2 discusses the role played by sell-side analysts in the capital market. The main purpose of this section is to establish the importance of selecting sell-side analysts over other types of capital market participants to be investigated in this PhD study. Section 1.5.3 explains analyst reports and their impact on the capital market. This section provides justification for the selection of analyst reports as the subject of investigation in this thesis. Section 1.5.4 discusses the influences on sell-side analysts' work. The objective here is to provide a frame of reference to understand sell-side analysts' behaviour.

### 1.5.1. Introduction to sell-side analysts

Sell-side analysts work for brokerage houses or large investment-banking firms and produce research reports that are available to their clients (Flöstrand, 2006; Kothari, 2001; Schipper, 1991). Both retail and institutional investors use the services of sell-side analysts (Groysberg *et al.*, 2008).

Sell-side analysts' main task is to conduct company research, where they search and gather information on a company from public and private channels; analyse and interpret this information using models and heuristics; forecast firms' future earnings, cash flows and growth rates; and issue reports on companies with a recommendation to buy, hold or sell the stock (Gniewosz, 1990). The process of gathering, analysing and interpreting information adopted by sell-side analysts is a continuous one. Gniewosz (1990, p.225) explains that this is done by "keeping up to date on all relevant information available at any point in time, affecting the particular shares, what ever the source of information".

As sell-side analysts conduct in-depth primary research on companies, they typically follow a small number of companies (*e.g.,* 10-15) (Groysberg *et al.*, 2008) and specialise in a particular industry (or an industry segment) (Burgman and Roos, 2007; Moizer and Arnold, 1984). Their highly specialised knowledge makes them experts

on the industry (or the industry segment) and companies they follow (Ho and Harris, 2000).

Sell-side analysts closely monitor companies for sudden changes that might impact on future earnings or cash flows (Fogarty and Rogers, 2005), so that they may change forecasts and recommendations already issued. However, not all developments in a company or the business environment result in changes to forecasts and recommendations. Sometimes sell-side analysts merely reiterate that which has already been communicated.

The next subsection illustrates sell-side analysts' role in the capital market.

### 1.5.2. Sell-side analysts' role in the capital market

This subsection briefly reviews the role played by sell-side analysts in the capital market in order to establish their importance as an influential capital market participant. More specifically, this section assesses sell-side analysts' role as an interlocutor in the capital market. The next two subsections review the analyst literature to illustrate sell-side analysts' ability to process information on behalf of the capital market and effectively communicate information to the capital market, respectively.

#### 1.5.2.1. Sell-side analysts as sophisticated information processors

The International Accounting Standard Board's (IASB) *Framework for the Preparation and Presentation of Financial Statements* considers analysts as a primary user group of financial reports (IASB, 2006). Also, Day (1986, p.295) argues that the nature of their job makes sell-side analysts the "most informed and articulate user group" of corporate information. Further, researchers generally identify sell-side analysts as the primary user group to whom financial reporting should be addressed (Lee and Tweedy, 1981), and by doing so they argue that a better service can be rendered to retail investors (Buzby, 1974a; Schipper, 1991). For instance, Buzby (1974a, p.46) argues:

> […] most accounting information is not comprehensible to the average investor and cannot be made so without forgoing important elements of the accounting message.

> The best service that accounting can render the average investor is to provide more and better information to the professional analysts.

Sell-side analysts are considered more sophisticated processors of corporate information than retail investors (e.g., Bence et al., 1995; Govindarajan, 1980; Hopkins, 1996; Schipper, 1991). For instance, sell-side analysts are trained to identify and analyse the impacts of financial and non-financial value drivers by using superior decision models. Hence, it can be argued that the rapid pace at which markets change and the complexity of value creation processes in the current knowledge-intensive economy make non-professionals more reliant on sell-side analysts' advice and reports. Prior research has found that retail investors, in fact, rely on secondary information sources such as analyst reports obtained through stockbrokers (e.g., Baker and Haslem, 1973; Epstein, 1975)[8].

Further, sell-side analysts are found to be more accurate than buy-side analysts in forecasting earnings, exemplifying their superiority in financial analysis (Groysberg *et al.*, 2008). Also, Campbell and Slack (2008, p.6) state that most investment banking firms discourage fund managers from going against the explicit advice of sell-side analysts when making portfolio selection decisions. The fact that buy-side analysts rely on sell-side analysts' work products as an input to their own decision making strengthens the argument for treating sell-side analysts as the primary user group of corporate information.

#### 1.5.2.2. Sell-side analysts as a market intermediary

Lang and Lundholm (1996) explain that sell-side analysts can either be *information intermediaries* or *information providers*. The role of *information providers* is one in which sell-side analysts compete with firm-provided information, and merely substitute for it. If sell-side analysts are *information intermediaries,* their research should contain incremental informativeness over firm-provided information. That is, sell-side analysts' work should complement firm-provided information.

[8] For instance, Baker and Haslem (1973) and Epstein (1975) studied the information sources of retail investors. They found that stockbrokers, advisory services, and financial press were considered as the most important information sources to retail investors whereas financial statements were of minor importance.

There is a substantial body of capital markets research affirming sell-side analysts' information intermediary role. For instance, Ljungqvist *et al.* (2007, p.421) comment:

> A sell-side analyst's primary role is to act as an informational intermediary, channelling information (in the form of investment recommendations, earnings forecasts, and detailed reports) from companies to investors.

Also, De Franco (2004) contends that sell-side analysts gather private information in addition to firm disclosed information and therefore add new information. Similarly, García-Ayuso (2003a) suggests that analyst reports are a key source of information on intangibles, as financial reports inadequately provide investors information on firms' value creation processes. Moreover, sell-side analysts' sophisticated information processing skills enable them to analyse and interpret information in a way that new information is produced (Johansson, 2007). Hence, sell-side analysts communicate both firm-provided public and private information and idiosyncratic information produced through their analyses. For instance, Lui *et al.* (2007, p.2) remark that "in general, [sell-side] analysts add value by both (1) aggregating publicly available information and (2) generating new information".

In summary, the analyst literature views sell-side analysts as representing a dominant user group to whom financial reporting is and should be addressed (Schipper, 1991) and an information intermediary, who complements firm provided information. The analyst report is an important medium through which sell-side analysts communicate with the capital market. The next subsection reviews the literature pertaining to analyst reports to establish the importance of the analyst report as an influential information source in the capital market.

### 1.5.3. The analyst report

Sell-side analysts inform retail investors, institutional investors and other capital market participants about firms they follow, through published comments[9], one-to-

[9] Sell-side analysts' notes or comments are documents distributed to large institutional clients as part of the brokerage firm's daily sales process (De Franco, 2004). Comments are issued frequently and therefore they are a more timely form of communication than analyst reports. In addition to recommendations, forecasts, and summaries of financial data, all comments include a description of recent events effecting the company and the sell-side analysts' commentary on those events (De Franco, 2004).

one verbal discussions[10] and analyst reports (Holland, 2006; Johansson, 2007). This section specifically concentrates on analyst reports as a medium for communicating with the capital market. The purpose of this section is to justify the use of analyst reports in this PhD study.

Sell-side analysts gather company specific and other related information, analyse them and communicate that information through the reports they publish. Analyst reports commonly include three key indicators: an earnings forecast, a stock recommendation in the form of buy/hold/sell[11], and a price target (Asquith *et al.*, 2005). The body of an analyst report contains quantitative and qualitative analyses and resultant arguments supporting the key indicators. As documents in the public domain, these reports tend to be well thought out and carefully worded (Campbell and Slack, 2008).

Prior research has examined the informativeness of analyst reports by investigating the market impact of: (1) earnings forecasts; (2) stock recommendations; (3) price targets; and (4) narrative arguments found in them. Accordingly, for the purpose of this literature review analyst research is classified into four strands:

a) Research on the market's reaction to the initial release of earnings forecasts and/or revisions in earnings forecasts issued by sell-side analysts (e.g., Abdel-Khalik and Ajinkya, 1982; Francis and Soffer, 1997; Givoly and Lakonishok, 1979; Lys and Sohn, 1990; Stickel, 1991).

b) Research on the market's reaction to the initial release of stock recommendations and stock recommendation revisions by sell-side analysts (e.g., Beneish, 1991; Bjerring *et al.*, 1983; Elton *et al.*, 1986; Liu *et al.*, 1990; Lloyd-Davies and Canes, 1978; Stickel, 1995; Womack, 1996).

[10] One-to-one verbal discussions are a rich source of information for buy-side analysts. These discussions comprise a flow of enriching information to complement sell-side analysts' formal reports (Campbell and Slack, 2008). These informal discussions often take place when more robust views on individual stocks need to be obtained, or when certain statements in the analyst reports are not clearly understood by buy-side analysts. This source of information is difficult to research due to its private and non-documented nature.

[11] Certain brokerage firms issues five types of recommendations that include strong buy and strong sell in addition to buy, hold, and sell categories. A five-level rating scale is used by I/B/E/S that categorises the recommendations into strong buy, buy, hold, underperform, and sell.

c) Research on the market's reaction to the issuance of price targets and price target revisions (e.g., Asquith *et al.*, 2005; Brav and Lehavy, 2003).

d) Research on the market's reaction to the strength of arguments in analyst reports (e.g., Asquith *et al.*, 2005; Krishnan and Booker, 2002).

Evidence from these four strands of literature supports the view that analyst reports include information content. For instance, Lys and Sohn (1990) found information content in analysts' earnings forecasts, even when they are preceded by firm-provided information, and that public disclosure does not pre-empt the information content in analyst reports. In addition, prior research establishes that analysts' forecast revisions convey new information to the capital market (e.g., Abdel-Khalik and Ajinkya, 1982; Francis and Soffer, 1997; Givoly and Lakonishok, 1979; Stickel, 1991). For instance, Abdel-Khalik and Ajinkya (1982) contend that not only primary dissemination of analysts' earnings forecast revisions, but also secondary dissemination of such information conveys information that is not deducible from other public sources[12].

In a similar vein, sell-side analysts' stock recommendations (e.g., Beneish, 1991; Bjerring *et al.*, 1983; Liu *et al.*, 1990; Lloyd-Davies and Canes, 1978; Womack, 1996) and revisions therein (e.g., Elton *et al.*, 1986; Francis and Soffer, 1997; Stickel, 1995) were found to be informative. Empirical evidence suggests that analysts' stock recommendations reported in the *Heard-on-the-Street* column of the Wall Street Journal generate statistically significant abnormal returns (Beneish, 1991; Liu *et al.*, 1990; Lloyd-Davies and Canes, 1978). Asquith *et al.* (2005) and Brav and Lehavy (2003) observed significant information content in price target revisions in analyst reports, both unconditionally and conditionally, on simultaneous release of stock recommendations and earnings forecast revisions.

In addition to the above studies showing market reactions to the three summary measures found in analyst reports (*i.e.,* stock recommendations; earnings forecasts; and price targets), Asquith *et al.* (2005) provided evidence of significant market reaction to the strength of the arguments in analyst reports. An experimental study by Hirst *et al.,* (1995) found evidence to support this view, further suggesting that the

[12] Primary dissemination is considered as the initial use of earnings forecast revisions by analysts and their clients, and secondary dissemination is taken as the publication of such revisions in other media, such as the Wall Street Journal.

strength of arguments contained in analyst reports influences investor judgment when unfavourable reports are received. For instance, Krishnan and Booker (2002) observed that the strength of analysts' arguments and supporting information presented in their reports to justify stock recommendations help to potentially reduce investors' disposition errors[13].

According to the literature reviewed above, sell-side analysts' research, as found in their reports, contributes to market efficacy by impounding information about a security's fundamentals on its price (Frankel *et al.*, 2006). In addition, there is evidence of the widespread use of analyst reports by various capital market participants. For instance, among the numerous sources of information used by retail investors, analyst reports are considered as highly influential (SRI International, 1987). Retail investors either directly or through stockbrokers utilise analyst reports for making security evaluation decisions. Analyst reports are also used by buy-side analysts and fund managers as an input to their decision making processes (e.g., Arnold and Moizer, 1984; Core, 2001; Fogarty and Rogers, 2005; Galanti, 2006; Holland, 2006; Holland and Johanson, 2003; Johansson, 2007; Moizer and Arnold, 1984; Schipper, 1991; SRI International, 1987), and are considered as one of their most important information sources (e.g., Arnold and Moizer, 1984; Vergoossen, 1993). Holland (2006) points out that a major source of fund managers' information is sell-side analysts' research. Campbell and Slack (2008, p.6) remark:

> On the basis of their readings of company's financial and other strategic information, sell-side analysts provide advice to buy-side clients. The formal channel for this is the analysts' report, produced to an approximate pro forma.

The research literature explains analyst reports as a proxy for the information needs of the capital market (Healy and Palepu, 2001). As discussed above, the proxy status attributed to analyst reports is justified by research confirming market reactions to issuance and modification of price targets, earnings forecasts, and recommendations, as well as narrative information in analyst reports; and widespread use of analyst reports by other capital market participants. In addition, availability of analyst reports to the public and proliferation of databases storing earnings forecasts, price targets,

[13] Investors' disposition error is selling stocks that are increasing in price too soon and holding stocks that are decreasing in price for too long.

and stock recommendations of sell-side analysts make analyst reports appropriate for academic research. Thus, analyst reports have been used in a large number of studies on sell-side analysts' information collection, use and processing behaviour, and their impact on the capital market.

The next subsection reviews the literature on the influences on sell-side analysts of two important constituents: institutional investors and corporate managers.

### 1.5.4. Influences on sell-side analysts

Sell-side analysts' work may be directly influenced by the corporate culture of the stockbroking firm they work for (García-Ayuso, 2003a) and by institutional investors and their buy-side analysts. They may also be influenced indirectly through companies for which the stockbroking firm provides investment banking services and companies on which sell-side analysts make investment recommendations (Burgman and Roos, 1997; Wayman, 2002). Further, at the macro level, they may be influenced by the wider institutional framework in which the sell-side analysts operate.

This section reviews the analyst literature in order to highlight the influences on sell-side analysts' work of two important actors in the capital market: institutional investors and corporate managers. The purpose of this section is to highlight how they may influence the content of analyst reports, as analyst report content is the subject of this thesis. The following two subsections illustrate influences of institutional investors and corporate managers, respectively.

#### 1.5.4.1. Influence of institutional investors on sell-side analysts

Sell-side analysts' main role is to provide independent and unbiased information about companies to their main clients – institutional investors. Stockbroking firms are generally not explicitly compensated by institutional investors for the research they produce, but are implicitly compensated by way of trading commission when trading through them. Thus, the motive of sell-side analysts is to persuade their clients to buy and sell securities frequently so as to maximise the commission revenue of the brokerage firm (Johansson, 2007; Moizer and Arnold, 1984). Accordingly, sell-side analysts have an incentive to generate optimistic earnings forecasts and stock recommendations, and justify them in their reports with a view to influencing

investors to buy shares through their brokerage firm (Carpenter, 2005; Spooner, 1984)[14]. However, it is argued that this incentive is short lived. For instance, Jackson (2005, p.674) states:

> [t]his incentive is limited in reality by analysts' concerns about their reputation. Since analysts interact with investors repeatedly, opportunistic behaviour may be curtailed by the threat of negative repercussions in the future. In this situation, the analyst must trade off the short-term incentive to lie and generate more trade against the long-term gains from building a good reputation.

Institutional investors rank sell-side analysts based on their research, and these rankings are used in deciding the stockbroking firms that are likely to receive trading business from them. Similarly, the analyst rankings directly influence the remuneration and career prospects of sell-side analysts. Therefore, arguably sell-side analysts have an incentive to produce accurate and unbiased research. Accordingly, greater institutional ownership in a company is found to be associated with more informative analyst research (Frankel *et al.*, 2006).

#### 1.5.4.2. Influence of corporate managers on sell-side analysts

Sell-side analysts depend on senior officers of companies they follow for information. Campbell and Slack (2008) note that senior corporate managers give certain sell-side analysts preference over others when providing information at key times. Thus, sell-side analysts' competitive advantage depends on the relationships and networks they build and maintain with company personnel (Johansson, 2007).

Companies favour those sell-side analysts who produce favourable reports. Thus, sell-side analysts tend to positively bias earnings forecasts and recommendations due to their dependency on the management for information on the companies they follow (Das *et al.*, 1998; Francis and Philbrick, 1993). They are generally reluctant to include negative statements about a company and its management (Fogarty and Rogers, 2005). However, they face a dilemma due to the conflicting objectives: telling the

[14] Several studies highlight an optimism bias in sell-side analyst earnings forecasts and stock recommendations. For instance, Francis and Philbrick (1993) found that relatively optimistic earnings forecasts accompany less favourable stock recommendations in analyst reports. It has been observed that sell-side analysts issue more buy recommendations than hold or sell recommendations, indicating their optimism (Fogarty and Rogers, 2005; Galanti, 2006; Womack, 1996). Further, it has been found that bullish research stimulates trading when short selling is constrained (Cowen *et al.*, 2006).

truth regardless of how bad it is, in order to serve their clients' best interest, and securing and maintaining their preferential treatment by not making negative statements about the company and its management. Although the resultant position of sell-side analysts is often in favour of the company, they are careful in selecting the tone and wording of their communications. For instance, Campbell and Slack (2008, p.7) state that "[…] some information germane to investment decisions is expressed in less than direct terms and in terms capable of being overlooked or missed altogether".

Sell-side analysts' optimism bias is also attributed to the stockbroking firms' need to secure investment-banking business, such as underwriting new security issues, from the companies they follow. For instance, it has been shown that sell-side analysts issue optimistic forecasts and recommendations to secure investment-banking business (Dechow *et al.*, 2000; Dugar and Nathan, 1995; Lin and McNichols, 1998). For instance, Ljungqvist *et al.* (2007, p.421) explain:

> Companies care about what the analyst has to say about their stocks and could take their investment banking business elsewhere if they are unhappy with the analyst's opinion. Thus sell-side analysts who work for integrated investment banking houses instead of research boutiques could come under implicit (or occasionally explicit) pressure to publish more favourable research about their employers' current or potential relationship clients to help boost investment banking fee revenue.

In summary, the literature reviewed above indicates that whilst corporate managers influence sell-side analysts to be optimistic about their companies, the presence of institutional investors could act against forming an optimism bias. Therefore, the ultimate influence on the content in analyst reports cannot be envisaged. However, the analyst literature documents optimism in at least sell-side analysts' earnings forecasts (e.g., Chaney *et al.*, 1999; Francis and Philbrick, 1993) and stock recommendations (e.g., Fogarty and Rogers, 2005; Galanti, 2006). Thus, the possibility of optimism bias in sell-side analysts' work and therefore in the communication of IC in their reports cannot be fully eliminated in interpreting the findings reported in this thesis.

The next section provides an outline of the remaining chapters of this thesis.

## 1.6. Outline of the thesis

Chapter 2 reviews the literature on IC and intellectual capital disclosure (ICD). One purpose of this chapter is to construct a workable definition of IC and an IC classification scheme by reviewing the literature. These are intended to form part of the coding instrument to be used in the content analysis undertaken in this PhD study. This chapter includes a discussion of the nature of work undertaken at various levels to guide and improve the ICR practices of firms. In addition, global initiatives facilitating and promoting the use of IC information by sell-side analysts are reviewed. Finally, a thorough review of the ICD literature is provided in order to appreciate the availability of IC information to capital market participants that may influence sell-side analysts' use of IC information.

Chapter 3 mainly focuses on the demand-side of the market for corporate information as against Chapter 2, which emphasises the supply-side[15]. This chapter reviews the literature on the importance of various types of IC to the capital market in general and sell-side analysts in particular. It also reviews the literature on *how* IC information is used by sell-side analysts and determinants of IC information use. Finally, this chapter establishes the gaps in the reviewed literature and set the objectives of this thesis.

Chapter 4 introduces five hypotheses to test the differential use of IC information by sell-side analysts in their reports. This chapter discusses the theory and prior research that form the foundation for hypotheses development. In addition, it explains the research design for testing the hypotheses, including justification for the particular statistical technique used and the construction of proxies for the dependent and explanatory variables.

Chapter 5 outlines the research method used in collecting and analysing data in this PhD study. The research method adopted in this thesis is manifest semantical content analysis. Content analysis entails a range of decisions and steps. These include defining the recording and measurement units, deciding a method of sampling, constructing a categorisation scheme, developing a coding instrument and fine-tuning

[15] The demand-side of the market for information refers to the users of corporate information, and supply-side refers to the providers of corporate information. The equilibrium level of corporate information depends on the interaction between demand for corporate information and supply of corporate information.

it through pre-testing, and assessing the accuracy and reliability prior to data collection, collecting the data, and testing the reliability of results achieved. This chapter explains these steps and justifies the choices made in relation to them.

Chapter 6 presents the descriptive results of the content analysis of IC information in analyst reports, and discusses them. The results are presented and discussed on the: overall use of IC information; use of IC information relating to main IC categories and IC subcategories; *evidence, news-tenor* and *time orientation* of IC information communicated through analyst reports; differences and similarities across GICS® sectors on the use of IC information; differences and similarities across types of analyst recommendations on the use of IC information; and *evidence, news-tenor* and *time orientation* of IC communicated in analyst reports.

Chapter 7 presents the test results of the five hypotheses developed in Chapter 4. It also interprets and discusses the results of the hypotheses tests. Finally, Chapter 8 provides the summary and conclusions of the thesis. Further, it outlines the contributions made by this PhD study to the research literature, implications of the results, limitations of the study, and suggestions for future research.

### 1.7. Chapter summary

This chapter explained the background to this thesis. It discussed the factors that have significantly affected the value creation processes of firms and the way business is conducted. In the light of these developments, the traditional financial reporting model is argued to be inadequate, and IC information has gained in importance for investment decision making.

This study is motivated by the apparent lack of research on the use of IC information in firm valuation by capital market participants. In addition, it is argued that capital market actors are ambivalent in the use of IC information in company valuations, but empirical research is required to affirm or negate this. Further, a better understanding of the use of IC information by capital market participants is required to enhance the relevance of corporate reporting to them. Thus, the present PhD study aims to contribute to this literature. This thesis focuses on sell-side analysts' use of IC information as: (1) they are sophisticated users of corporate information; (2) they inform the market about changes in values of companies in the capacity of market

intermediaries; and (3) the information in their reports triggers changes in the market prices of stocks.

Hence, this thesis attempts to understand the types of IC information considered important by sell-side analysts, how they use/communicate IC information, and drivers of IC information use in analyst reports.

# 2. A LITERATURE REVIEW ON INTELLECTUAL CAPITAL

## 2.1. Introduction

This chapter reviews the research literature in order to define IC (and its components) and understand the extent of availability of IC information to capital market participants. The remainder of this chapter is organised as follows. Section 2.2 reviews the accounting and management literature to understand IC and its components, in order to form a workable definition of IC and a classification scheme to be used in this PhD study. Section 2.3 reviews recent work of national and international bodies promoting and facilitating external reporting of IC. Similarly, Section 2.4 discusses several initiatives promoting and facilitating the use of IC information by capital market participants. Section 2.5 reviews empirical studies on ICD in order to understand the IC information environment from a user perspective. Section 2.6 summarises the chapter.

## 2.2. IC concept and classification

This section reviews the accounting and management literature in order to first, construct a definition of IC and then to determine a classification scheme to be operationalised in this study. It attempts to conceptualise IC amidst the myriad of overlapping and contrasting terms commonly used interchangeably in the literature.

IC is a nebulous concept and is variously defined and interpreted. The common themes underlying the numerous definitions of IC are that it is intangible in nature and economic benefits embodied in IC accrue over the long-term (Abeysekera, 2006; Kaufmann and Schneider, 2004; Rastogi, 2003). Thus, IC can determine future firm value (Edvinsson and Malone, 1997a; Edvinsson and Malone, 1997b; Edvinsson and Sullivan, 1996; Klein and Prusak, 1994; Van der Meer-Kooistra and Zijlstra, 2001). Since the concept of IC has an intimate nexus with intangibles, it is helpful to understand intangibles, in a bid to understand IC. The next subsection examines the concept of intangibles.

### 2.2.1. Intangibles

'Intangibles' is an abbreviation of intangible resources. Although a generally accepted definition of a resource is difficult to find in an accounting context, it is commonly held as a wider concept than an asset, which is frequently connected with ownership and/or control (Haanes and Lowendahl, 1997). However, *International Accounting Standard 38: Intangible Assets* (IAS 38) uses the term 'intangible resources' to broadly refer to items of an intangible nature, not just intangible assets (IASB, 2008, para. 9).

Internationally, accounting standards setters classify intangibles that may be reported in financial statements into two groups. One is purchased goodwill, which cannot be individually identified and separately recognised. The other is intangible assets, which are separately identifiable from other tangible and intangible assets (Belkaoui, 1992). Intangibles that do not meet the definition of an intangible asset, but are acquired as a result of a business combination form part of goodwill recognised at the acquisition date (IASB, 2008a, Appendix A). Table 2.1 illustrates how intangibles can be classified from an accounting standards' perspective. Accordingly, intangibles comprise items that may be recognised in financial statements and those that cannot be recognised in financial statements — intangible resources generated internally that do not satisfy the recognition criteria for intangible assets.

**Table 2.1: A classification of intangibles inspired by accounting standards**

| Intangibles category | Definition |
|---|---|
| 1. Goodwill | "An asset representing the future economic benefits arising from other assets acquired in a business combination that are not individually identified and separately recognised" (IASB, 2008a, Appendix A). |
| 2. Intangible assets | "Identifiable non-monetary asset without physical substance" (IASB, 2008a, Appendix A). |
| 3. Non recognised intangibles | Internally generated items of a non-monetary nature, with no physical substance and are not capable of being individually identified and separately recognised. |

However, other classifications of intangibles exist. For example, Hall (1993) classifies intangibles into intangible assets and intangible competences. According to this classification, intangible assets include formalised and captured knowledge that can be legally protected, such as intellectual property (IP), contracts, trade secrets and

databases, as well as assets that cannot be legally protected, such as reputation, and organisational and personal networks. This definition of intangible assets also includes items that cannot be recognised as intangible assets according to the IASs.

Intangible competences include people dependent tacit knowledge that cannot be owned or possessed by a firm[16], such as know-how of employees, relationships with suppliers, advisors and distributors, and collective attributes that add up to the organisational culture. Although Hall (1993) uses different criteria to categorise intangibles, the classification scheme essentially includes the same three categories of intangibles shown in the above Table 2.1.

Blair and Wallman (2000) provide a classification of intangibles using three themes: proprietary rights; control; and existence of a market. This classification is illustrated in the following Table 2.2.

**Table 2.2: Blair and Wallman's (2000) classification of intangibles**

| | **Proprietary rights and market exists** | **No proprietary rights and market is weak or non-existent** |
|---|---|---|
| **Controlled by an entity** | • Items satisfying accounting recognition criteria for intangible assets such as patents, copyrights, brands and trade names.<br>• Items that *seem to be* satisfying accounting recognition criteria for intangible assets such as business agreements, licences, executory contracts and data bases. | R&D in process, business secrets, reputational capital, proprietary management systems and business processes. |
| **Cannot be controlled by an entity** | | HumC, core competences, organisational capital and relationship capital. |

*Source: Blair and Wallman (2000)*

The advantage of the classification scheme of Blair and Wallman (2000) is that it helps differentiate between various intangibles that have been typically grouped under the labels of goodwill and unidentifiable intangibles according to IAS 38. Particularly, this classification scheme highlights types of intangibles that cannot be controlled (or partially controlled) by an entity and at the same time are difficult to measure due to

[16] Johanson *et al.* (2001) define competences at individual and organisational levels. At the organisational level, competences include client specific databases, technology, routines, methods, procedures, and organisational culture. Their definition of organisational competences includes several attributes that are considered as intangible assets by Hall (1993).

not having proprietary rights or non-existence of a market, such as reputation, management systems and processes, and core competences. These intangibles have traditionally been neglected by accountants, despite their importance.

In summary, the accounting literature and standard setters have taken the view that intangibles are all intangible determinants of firm value (Ashton, 2005; Blair and Wallman, 2000; Hall, 1993), although financial statements recognise only a fraction of intangibles that exist in an organisation. The next subsection examines the link between intangibles and IC, and presents a definition of IC.

### 2.2.2. Intellectual capital

Many IC researchers have taken the view that IC is synonymous with intangibles (e.g., Ashton, 2005; Bukh *et al.*, 2001; Haanes and Lowendahl, 1997; Kaufmann and Schneider, 2004; Lev, 2001). For example, Lev (2001, p.5) states:

> I use the terms intangibles, knowledge assets, and intellectual capital interchangeably. All three are widely used – intangibles in the accounting literature, knowledge assets by economists, and intellectual capital in the management and legal literature – but they refer essentially to the same thing: a non-physical claim to future benefits.

The literature is ambiguous as to whether IC should be defined as an asset, a resource, or simply something else[17]. In many instances, IC is used interchangeably with intellectual assets and intangibles. When IC is defined as an asset, it has not taken the typical accounting definition of an asset (Lev, 2001, p.5). This is evident when Stewart (2003, p.11) explained IC as a knowledge asset, where "[...] an asset is something that transforms raw materials into something more valuable".

Also, the literature is ambiguous as to whether IC comprises all intangibles or merely those intangibles not recognised in financial statements. Although in minority, those who adopt the latter view distinguish between intangible assets and IC. Caddy (2000) uses the definition provided in IAS 38 for intangible assets, and compares IC with intangible assets on many dimensions. According to his conceptualisation, IC includes intangibles that cannot be recognised in financial statements (*i.e.,* all intangibles

[17] Caddy (2000) defines IC as the difference between intellectual assets and intellectual liabilities. It is rare to find studies that explicitly address the concept of intellectual liabilities.

except intangible assets and goodwill). The following Table 2.3 summarises the differences between intangible assets and IC, as explained by Caddy (2000).

**Table 2.3: A comparison between intangible assets and IC**

| Criteria | Intangible assets | IC |
|---|---|---|
| **Definition** | IAS 38 defines intangible assets | No agreed definition |
| **Identity** | Can be separately identified from other intangible assets | Difficult to identify separately from other items |
| **Nexuses to supply of goods and services** | Can identify an apparent nexus between an intangible asset and the supply of goods and services | Difficult to identify the nexus between an IC item and supply of goods and services |
| **Legal protection** | Available | Not available |
| **Ownership** | All intangible assets are owned and can be legally transferred by the firm | Some IC can be owned but some cannot. Difficult to transfer |
| **Future economic benefits** | Can quantify the value of the economic benefit to the firm | Cannot quantify the value of the economic benefit to the firm |
| **Measurement** | Able to measure the absolute value | Difficult to measure (generally measured using ratio indicators) |
| **Fair value** | Can determine a fair market value | Difficult to determine a fair market value |
| **Value volatility** | Value is comparatively less volatile. | Value is comparatively more volatile. |
| **Management** | Managed through registration and surveillance | Managed through nurturing and enhancing |
| **Examples** | Patents, trademarks, copyrights etc. | Human talent, information systems, corporate culture etc |

*Source: Adapted from Caddy (2000)*

Another strand of the literature defines IC in an all encompassing manner so as to capture all intangible determinants of firm value, regardless of whether these intangibles are separately identifiable, controlled by an entity, captured and codified, or tacit (e.g., Edvinsson and Sullivan, 1996; Klein and Prusak, 1994; Sveiby, 1989; Sveiby, 1997). For example, Klein and Prusak (1994) define IC as intellectual material that has been formalised, captured and leveraged (to produce a higher valued asset). This definition implies that IC includes intangible assets, which can be recognised in a balance sheet, as well as those intangibles that may be excluded, as per the IASs. Accordingly, IC is considered to be synonymous with intangibles.

In summary, the prior literature has largely demonstrated similarities between IC and intangibles. In many instances, the two terms have been used interchangeably. Thus, for the purpose of this study, IC is broadly defined as *all intangible determinants of firm value*. There are two aspects to this conceptualisation of IC. First, IC is a *resource with a non-physical existence,* implying that a broad spectrum of intangible

resources can be considered as IC. Second, IC needs to have the *potential to generate future economic benefits*.

This conceptualisation of IC is suitable for the conduct of this PhD study. First, according to this definition, the boundaries of IC are not confined by the definition and measurement criteria for intangible assets in accounting standards, which may vary among jurisdictions. Second, this definition is consistent with the view taken by many prior IC researchers, thereby enabling the development of a detailed classification scheme of IC by reviewing the prior literature. The next subsection reviews the literature to build an IC classification scheme for the purpose of this PhD study.

### 2.2.3. Classification of IC

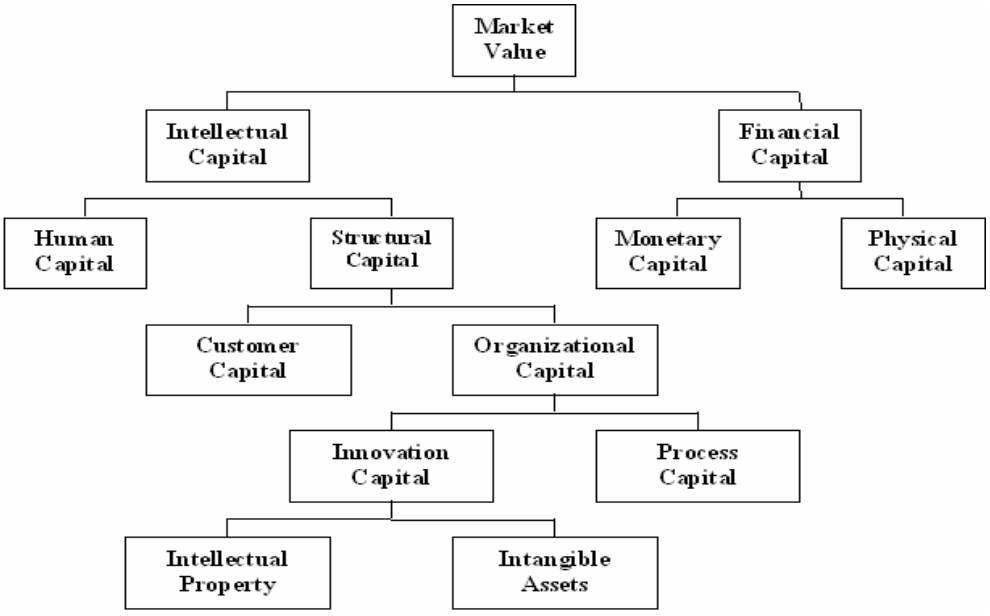
Prior IC researchers have attempted to delineate components of the IC construct for theoretical explanation, measurement, management, and practical application in IC research. Several classification frameworks of IC have thus been developed and deployed in the literature. Although these frameworks are many and varied, there is much convergence (Youndt *et al.*, 2004). This subsection reviews the work of numerous writers and researchers with a view to developing an IC classification scheme to be operationalised in this PhD study.

Several writers in the late 1990s classified IC into HumC and structural capital (*i.e.,* organisational capital and customer capital) (e.g., Edvinsson, 1997; Edvinsson and Sullivan, 1996; Petrash, 1996; Stewart, 1997). In this context, HumC is explained as knowledge, skills, know-how, competences, and experience of the people employed. It represents a tacit dimension. Similarly, structural capital refers to proprietary systems, technological and managerial processes, policies, procedures, networks, and the like. Values, culture, and philosophy of an organisation are distinguished from HumC and are included in structural capital. For instance, Edvinsson (1997)[18] and Edvinsson and Malone (1997b) used the Skandia Value Scheme (see, Figure 2.1 below) to explain various subclasses of structural capital. Accordingly, structural capital includes intangible value drivers, which are both external and internal to the

[18] Skandia AFS, an insurance and financial services company with head quarters in Stockholm, was a pioneer in IC measurement, management and reporting. Leif Edvinsson was appointed as the Director of Intellectual Capital at Skandia AFS when the role was first created (Ashton, 2005).

firm. Internal value drivers are referred to as organisational capital, and are further classified into innovation capital (*i.e.,* IP and other intangible assets which are recognised in the balance sheet) and process capital (*e.g.,* processes, routines, databases, manuals, organisational structure etc). The only external value driver (*i.e.,* ExtC) considered in this model is customer capital (*e.g.,* relationships with customers). However, in the classification scheme introduced by Stewart (1997), customer capital is escalated to an equal footing with structural capital (rather than a subcategory of structural capital). Nonetheless, this classification scheme does not consider the value generating capabilities of other external value drivers, such as relationships with suppliers and financiers, strategic partnerships, and business collaborations, as components of IC.

**Figure 2.1: The Skandia Value Scheme**




*Source: Edvinsson (1997, p.369)*

However, Haanes and Lowendahl (1997) used a different approach to the classification of IC. Their classification scheme differs from other schemes mainly in the level of aggregation. They explained IC as a collection of competences, both individual (*e.g.,* employee knowledge, skills and capabilities) and organisational (*e.g.,* proprietary databases, culture, and procedures), and relationships. Similar to prior classification schemes, this scheme considers relationships with customers, and includes indicators such as reputation and loyalty.

Bontis (1996) developed the notion of relational capital by widening the scope of customer capital to include relationships with all stakeholders – not only customers (Youndt *et al.*, 2004). A subsequent revision to the Skandia Value Scheme, which resulted in the *Intellectual Capital Distinction Tree*, takes into account the relationships with external constituents, such as suppliers, shareholders and alliance partners, in the classification of IC (Roos *et al.*, 1997). The extant literature concurs with this view, and considers all stakeholder relationships as constituting relational capital.

The following Table 2.4 lists several of the main IC classification schemes that have been adopted in extant IC research. Among the widely accepted contemporary IC classification schemes is the tripartite model developed by Sveiby (1997), which was later refined by other researchers (e.g., Guthrie and Petty, 2000; Lynn, 1998; Striukova *et al.*, 2008). This scheme categorises IC in to ExtC, HumC, and IntC[19]. As shown in Table 2.4, classification schemes introduced by other researches (e.g., Abdolmohammadi, 2005; Arvidsson, 2003; Bukh *et al.*, 2001; Sonnier, 2008) assume different levels of aggregation of these three IC categories.

Petty and Guthrie (2000, p.158) state that "Sveiby's classification scheme provides a structure to construct 'intellectual capital accounts' and enables informed decisions to be made regarding firms' value". As highlighted in the following Table 2.4, this tripartite classification scheme of IC has been used in numerous research studies. Moreover, it was adopted by the *Measuring Intangibles to Understand and Improve Innovation Management* (MERITUM) Project initiated by the European Union (EU); by the Danish government in building guidelines for IC statements; and in many other national and international ICR initiatives (see, Section 2.3). Based on its widespread endorsement and appropriateness for ICD research, this PhD study employs the tripartite model. Adoption of this model also enables general comparative analysis of the results of this study with prior studies, at least at category level.

[19] The words 'structural capital' and 'organisational capital' are sometimes used to refer to 'internal capital' by prior researchers. 'External capital' is also referred to as 'relational capital' and 'customer capital' in the literature. 'Employee competence' and 'employees' are some of the terms used interchangeably with 'human capital'. In addition, the term 'capital' has been replaced with 'structure' by some authors (Beattie and Thomson, 2007).

**Table 2.4: IC classification schemes used in prior research**

| Title | Classification | Research study |
|---|---|---|
| The tripartite framework | Internal structure (IntC), external structure (relational or ExtC) and employee competence (HumC) | Guthrie and Petty (2000), Brennan (2001), April *et al.* (2003), Bozzolan *et al.* (2003), Goh and Lim (2004), Abeysekera and Guthrie (2005), Firer and Williams (2005), Oliveras and Kasperskaya (2005), Petty and Cuganesan (2005), Vandemaele *at al.* (2005), Bozzolan *et al.* (2006), Oliveira *et al.* (2006), Dumay and Tull (2007), Striukova *et al.*(2008) and Whiting and Miller (2008) |
| Framework proposed in the Danish guidelines | HumC, customers, processes and technology | Beaulieu *et al.* (2002) (includes IP as a category), Bukh *et al.*(2005), Rimmel *et al.* (2009), García-Meca *et al.* (2005), García-Meca (2005) and Cordazzo (2007) (includes R&D and strategic statements as categories), García-Meca and Martínez (2007) (includes processes and technology in organisation capital and R&D and strategic statements as additional categories) |
| Other frameworks | HumC, relational capital, organisational capital, R&D and environ/social | Arvidsson (2003) |
| | Brand, competence, corporate culture, customer base, information technology (IT), IP, partnership, personnel, proprietary processes and R&D | Abdolmohammadi (2005) |
| | Customer capital, supplier capital, organisational capital, IP, HumC | Sonnier (2008) |

Researchers operationalise IC as a hierarchy of nested concepts where the main IC categories have IC subcategories, and sometimes also, IC items and IC indicators (Beattie and Thomson, 2007). The ambit of each category can be determined with reference to the subcategories[20] they comprise. Therefore, in order to formulate definitions for ExtC, HumC, and IntC, this thesis attempted to understand the subcategories, items and indicators they comprise.

An extensive review of the ICD literature was conducted in order to identify IC subcategories and indicators used by prior researchers and writers. Appendix B enumerates the 320 IC related concepts/terms found in this literature review. In a similar review of a lesser number of studies, Beattie and Thomson (2007) identified 128 IC terms. They made four observations based on their review: (1) IC is a broad

[20] What is referred to as subcategories in this study has been referred as 'items', 'elements', 'attributes', 'components' and 'themes' in the ICD literature.

concept; (2) there are boundary problems in IC categories — some subcategories have been included under different main categories; (3) IC subcategories and indicators have been used interchangeably; and (4) the meaning of some subcategories depends on the context of use. These observations are supported by the literature review conducted as part of this PhD study. Particularly, when attempting to synthesise the numerous IC related concepts/terms under the three main IC categories (*i.e.,* ExtC, HumC, and IntC) and common subheadings, it was found that there are no clear boundaries, at least, in relation to the main IC categories.

In order to overcome the difficulty of drawing boundaries around the main IC categories and formulating IC subcategories under them to subsume the numerous IC related concepts/terms found in the literature, Guthrie and Petty's (2000) ICD taxonomy was consulted for guidance. This taxonomy has been widely used by researchers, either in its pure or derivative form (e.g., Abeysekera and Guthrie, 2005; April *et al.*, 2003; Bozzolan *et al.*, 2003; Goh and Lim, 2004; Guthrie *et al.*, 2006; Oliveras and Kasperskaya, 2005). Guthrie and Petty explain that the subcategories in their taxonomy were derived from several professional pronouncements on IC. Appendix C shows the subcategories included under ExtC, HumC, and IntC categories in different versions of this taxonomy adopted in prior studies. These IC taxonomies provided clarity and a frame of reference to synthesise IC concepts/terms observed in the literature to form subcategories under the three main IC categories. This process of synthesis resulted in the creation of a preliminary IC classification scheme. This formed the foundation for a more refined IC classification scheme and the coding instrument used in this thesis. Section 5.6.1 explains the refinement process undertaken in the development of the final IC classification scheme, which involved trial and error at the test coding and pilot testing stages.

The following three subsections review the conceptualisation of ExtC, HumC, and IntC, respectively, with reference to Guthrie and Petty's (2000) taxonomy and its derivations, and the IC literature reviewed.

#### 2.2.3.1. External capital

The literature identifies all resources related to a firm's relationship with external stakeholder including suppliers, customers, distributors, strategic and joint venture

(JV) partners, franchisors, franchisees, contractors, financiers, government, and the community as ExtC. In other words, ExtC has been described as that part of HumC and IntC linked to a firm's relations with stakeholders (MERITUM, 2002). These relationships can create positive perceptions about a firm, and benefit it through enhanced corporate image, reputation, customer loyalty, and satisfaction (Li *et al.*, 2006). Nonetheless, Sonnier (2008, p.710) distinguishes between customer capital and supplier capital:

> Customer capital are all of the resources linked to the external relationships of the firm with its customers and clients, including firm image, reputation, customer loyalty, customer satisfaction, and goodwill.
>
> Supplier capital are all of the resources linked to the external relationships of the firm with its investors, creditors, suppliers, financiers, and other providers of goods or services to the firm, including with suppliers, financial entities, joint ventures, business collaborations, licensing agreements and franchising agreements.

As shown in Appendix C, prior studies are generally in agreement with the contention that relationships with stakeholders other than employees comprise ExtC. However, there is an ambiguity in the literature as to whether financial relations should be considered as ExtC or IntC. Nonetheless, it can be argued that good relationships with financiers may benefit a company through better credit terms and quick access to finances. Similarly, R&D has been included under IntC in some studies while others consider it as ExtC. Unerman *et al.* (2007) reason out the treatment of R&D in their study. Accordingly, they treated R&D related to new product development (NPD) as ExtC, possibly due to its link with customer attraction and retention, and other R&D as IntC, indicating an internal capability of the company.

Based on the literature reviewed this thesis defines ExtC as *all resources linked to a firm's relationship with external stakeholder including suppliers, customers, partners, government and the community plus the perceptions held about the firm by these stakeholders that can benefit the firm*.

#### 2.2.3.2. Human capital

Many ICD studies define HumC as a stock of knowledge and capabilities. Accordingly, knowledge, skills, attitudes, abilities, work experience, competences,

and other qualities of employees are considered as representing HumC. Mincer (1989) argues that HumC plays a dual role. First, as a stock of skills produced by education and training, it works in conjunction with other factors of production, such as physical capital and unskilled labour. Second, it is a stock of knowledge generating growth through innovation. Sveiby (1997, p.10) uses the term 'employee competence' instead of 'human capital', and defines it as "involving the capacity to act in a wide variety of situations to create both tangible and intangible assets". However, Pena (2002) defines HumC as the accumulation of personal attributes (*i.e.,* knowledge, abilities, personality, health, etc) that allow human beings to function. He used three indicators to capture HumC: level of education; experience; and self-motivation.

The IC literature is biased towards the conceptualisation of HumC as a combination of factors possessed by employees individually and collectively. For instance, Guthrie and Petty (2000) conceptualise HumC as including know-how, education, vocational qualification, work-related knowledge, work-related competences, and entrepreneurial spirit. Specifically, employee knowledge and capabilities investigated in prior ICD studies include employee entrepreneurship, innovative capacity, problem-solving skills, initiative, managerial skills, know-how, motivation, dedication, learning capacity, and ability to work in teams (see, Appendix C).

However, HumC has been broadly defined in some studies as including human resource management (HRM) practices and systems, organisational culture, working environment and social networks, which safeguard, enhance, and leverage knowledge resources. Aspects relating to the working environment that have been considered in prior studies include equity issues, employee safety (or occupational health and safety), welfare, and employee relations (Abeysekera and Guthrie, 2004; Abeysekera and Guthrie, 2005; Oliveira *et al.*, 2006; Oliveras and Kasperskaya, 2005). Bukh *et al.* (2005) define HumC more broadly than in most other studies. According to their definition, HumC encompasses indicators of staff composition by demographic characteristics; HRM activities such as education, training, health and safety, job rotation, remuneration, pensions, incentives schemes, and career progression; HRM policies; staff turnover and absence; human resource departmental structure and employee output measures, in addition to employee qualities and capabilities. This

approach has later been replicated by others researchers (e.g., García-Meca, 2005; García-Meca *et al.*, 2005; Rimmel *et al.*, 2009).

Competent and capable employees are more efficient and effective than employees with relatively low levels of such attributes (Van der Meer-Kooistra and Zijlstra, 2001). Hence, firm value is associated with the stock of knowledge embodied in its employees. However, safeguarding, enhancing, and leveraging the HumC stock in achieving organisational objectives is as important as a firm level investment in the stock of HumC (Collier, 2001). Management and motivation of employees, a facilitative working environment and a supporting culture are all necessary ingredients to reap the benefits of a capable work force. Without such systems in place, even the most capable employees in a firm would not be able to generate value up to their potential.

Consistent with this literature, this thesis views HumC as a broader concept than employee knowledge and competences. Hence, HumC is defined in this thesis as *the knowledge, skills, attitudes, abilities, competences, and qualities of a firm's employees as well as the mechanisms that enable, support, and motivate their performance, such as training and development, employee benefits and compensation schemes and a favourable working environment*.

#### 2.2.3.3. Internal capital

IntC refers to particular types of IP that a firm has developed internally or bought in, and infrastructure assets that enable a firm to be productive, efficient, effective, flexible and innovative (Bozzolan *et al.*, 2003; Unerman *et al.*, 2007). However, not every IP is included in IntC. For instance, Sveiby (1997) includes brand names and trade marks under ExtC and patents under IntC.

Infrastructure assets may be bought in (*e.g.,* information and network systems) or created within the firm (*e.g.,* organisational structure, policies, routines, management processes and procedures, information and networking systems, corporate culture, information technologies, management philosophy, organisational flexibility and adaptability). For instance, Sonnier (2008, p.707) explains infrastructure assets as a "group of resources that brings together all other resources of the firm to deliver goods, products or services to its customers and value to other stakeholders of the

firm". Research and development capabilities are also part of IntC as they enable a firm to be innovative and develop IP (Bozzolan *et al.*, 2003). The value of IntC rests in enabling a firm assemble, integrate, combine, and deploy resources to fulfil its objectives (Sonnier, 2008). The MERITUM project (2002, p.3) defines IntC as "the pool of knowledge that stays with the firm at the end of the working day".

Based on the literature reviewed above this thesis defines IntC as *IP and the intangible infrastructure that a firm has developed internally or bought in, which enable a firm to be productive, efficient, effective, flexible and innovative*.

The definitions developed for ExtC, HumC and IntC in this section are used as a guide to resolving ambiguities that arise in refining the preliminary IC classification scheme and in formulating detail coding instructions, as will be explained in Sections 5.6 and 5.7.

The importance of IC has been recognised worldwide by accounting standards setting bodies, professional societies, and government agencies. The next section reviews several initiatives undertaken at national and international levels by such organisations to promote disclosure of NFI, including IC information.

### 2.3. Initiatives on ICR

Accounting researchers and policy makers have called for increased recognition of IC, either by capitalising intangible assets or reporting IC in corporate media, at least in narrative form (e.g., Edvinsson and Malone, 1997b; Lev and Zarowin, 1999; Stewart, 1997; Wallman, 1995; Wallman, 1996). Work has been undertaken at organisational, national, and international levels to supplement and complement traditional financial statements, so that information on intangible value drivers of companies can be communicated. Initiatives include large scale research projects, research collaborations/consortiums, information sharing networks, and reporting guidelines on NFI in general and IC information in specific. It has been argued that IC information made available to stakeholders is on the rise due to these initiatives (e.g., García-Ayuso, 2003b).

This section reviews several national and international initiatives promoting and facilitating external reporting of IC information. The purpose of this review is to

synthesise some of the work in this domain to comprehend the issues surrounding the reporting and use of IC information. The following Table 2.5 provides the list of IC related initiatives that are reviewed. Brief descriptions of each of these initiatives are provided in Appendix D.

**Table 2.5: National and international contributions to ICR**

| Organisation and year | Region | Main contribution |
|---|---|---|
| The Jenkins Committee of The AICPA (1994) | USA | Recommendations on extending corporate reporting by providing forward-looking information and information on long-term value drivers |
| Danish Agency for Trade and Industry (DATI) (2000)<br>Danish Ministry of Science, Technology and Innovation (DMSTI) (2003) | Denmark | Guidelines for preparing IC statements |
| FASB (2001) | USA | Framework to enhance voluntary disclosure of NFI |
| MERITUM (2001) | EU | Development of a conceptual framework comprising a set of definitions and classification of intangibles<br>A Framework for an IC report describing how intangible resources and activities of a company are linked to the achievement of strategic objectives |
| Japan Ministry of Economy, Trade and Industry (JMETI) (2002) | Japan | Policy on the promotion of creation, protection and exploitation of IP<br>Pilot model for disclosing patent and technical information<br>Guideline for IP information disclosure<br>Guideline for disclosure of intellectual assets based management |
| Austrian Federal Ministry of Education, Science and Culture (AFMESC) (2002) | Austria | Introduction of University Organisations and Studies Act, which among other things, mandates Austrian state universities to prepare and communicate IC statements annually and stipulates the nature of information to be disclosed therein |
| German Federal Ministry of Economics and Labour (GFMEL) (2004) | Germany | Guidelines for preparation of IC statements by small and medium sized enterprises |
| Society for Knowledge Economics (SKE) (2005) | Australia | Guiding principles and a framework for reporting on IC - known as an Extended Performance Account (EPA) |
| IASB (2005) | International | Guidance on preparing a Management Commentary to disclose NFI, including IC |
| Value Measurement and Reporting Collaborative (VMRC) (2005) | International | Development of a reporting structure to standardise ICD across organisations and within and between industries |
| Enhanced Business Reporting Consortium (EBRC) (2006) | USA | Framework for voluntary business reporting with special emphasis on disclosure of Key Performance Indicators (KPIs) and intangibles |

**Table 2.5: National and international contributions to ICR (continued)**

| Organisation and year | Region | Main contribution |
|---|---|---|
| Accounting Standards Board (ASB) (2006) | UK | Guidance on preparing an Operating and Financial Review (OFR) to disclose NFI, including IC |
| Commission on Intellectual Capital (CIC) of European Federation of Financial Analyst Societies (EFFAS) (2008) | Europe | Introduction of a set of principles for effective communication of IC information to satisfy needs of financial analysts |

A review of initiatives listed in Table 2.5 reveals that they are driven by an assumed demand for NFI from capital market participants. They address the information needs of users of financial statements that are not met by the traditional financial statement. Although these initiatives broadly differ in the nature of information, their intention is to promote the reporting of NFI, be it forward-looking information, critical success factors, key performance indicators or extended performance measures. At the centre of these information types is what this thesis defines as IC information. Thus, the importance of IC information to capital market participants is acknowledged in all of the initiatives outlined in Table 2.5.

Among the outcomes of the reviewed initiatives are proposals, models, and guidelines for reporting types of NFI, and networks for sharing information. In common, the proposed guidelines/models for the reporting of NFI aim to ensure quality, integrity, transparency, and meaningfulness of information used for decision making. More importantly, in relation to IC information, these guidelines/models propose making visible the alignment and linkages between value creation and management strategies. The majority of these guidelines/models suggest the disclosure of measures/indicators of a company's progress in the achievement of management strategy and their outcomes. Thus, the overarching aim is not just making the invisible value drivers of firms' transparent but communicating interconnections and entanglements between firms' resources (both tangible and intangible), strategy and value creation.

While some guidelines focus on enhancing voluntary disclosure in general (*i.e.,* NFI, forward-looking information and intangible information) within the traditional reporting model (*e.g.,* annual report), others propose a separate IC report/statement

that elaborates the *value-creation story*[21] of a company through IC relationships. Some of the guidelines falling under the latter category look at particular types of entities such as small and medium sized enterprises (e.g., GFMEL) or universities (e.g., AFMESC), when proposing reporting guidelines. Although different kinds of matrices are recommended in these guidelines, placing special emphasis on numerical measures and indicators, most acknowledge the important role played by narratives in the disclosure of non-financial, and particularly, IC information.

The prospective increase in the level of NFI reported by companies through these models and the extensive use of narratives in reporting IC information may call for a paradigm shift in the approach to processing and making meaning of such information by stereotypical users of financial information. One of the initiatives reviewed in this section – EFFAS Commission on Intellectual Capital (CIC) – has addressed this very issue by recommending principles for effectively communicating IC information to financial analysts.

Although numerous guidelines and models are available for reporting IC information, interpretation of IC information by users is largely an under researched area. Even more interesting is how this information is retransmitted by capital market intermediaries, such as sell-side analysts (see, Section 3.4). The next section discusses initiatives promoting the interpretation and evaluation of IC information.

### 2.4. Initiatives promoting the use of IC information

Internationally, government agencies, professional societies, and analyst associations have recommended methods of incorporating IC information in valuing companies. The work done in this area ranges from models evaluating the quality of IC information, to schemes encouraging innovation in using IC information in company valuations. The purpose of this section is to highlight some of the work done in this domain. These initiatives are listed in the following Table 2.6.

[21] In this thesis, *value-creation story* refers to an explanation of all activities performed by an entity in order to create value to the stakeholders.

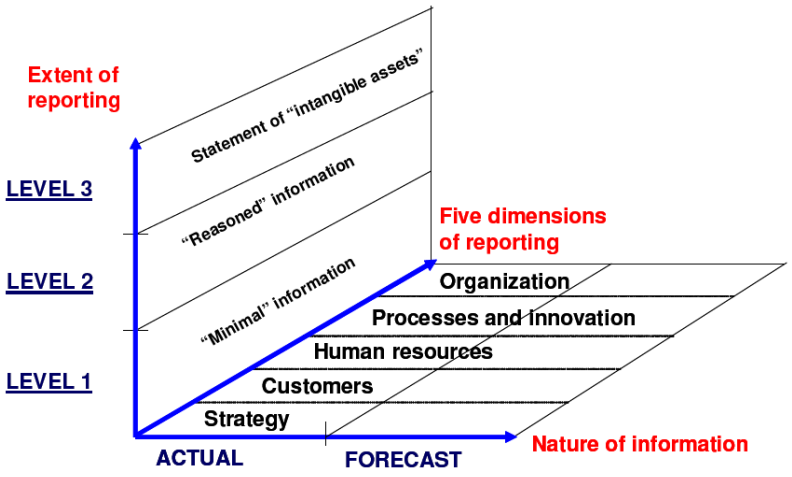
**Table 2.6: Initiatives promoting the use of IC information**

| Organisation | Year | Country | Main contribution |
|---|---|---|---|
| Italian Financial Analysts Society (Associazione Italiana degli Analisti Finanziari) (AIAF) | 2002 | Italy | Model to measure and evaluate ICD by companies |
| DMSTI | 2003 | Denmark | Model for analysing IC statements |
| Enhanced Analytics Initiative (EAI) | 2004 | International | Encourage investment research that incorporates analyses of extra-financial issues by awarding prize money |

### 2.4.1. AIAF (2002)

Associazione Italiana degli Analisti Finanziari (AIAF), in collaboration with the University of Ferrara, introduced a model to measure (and evaluate) the nature and level of IC disclosed by companies in their external communication documents. This model is illustrated in Figure 2.2. It enables analysts to evaluate the quality of ICR using three dimensions: (a) nature of IC information (*i.e.,* forecasted or actual); (b) type of IC information (*i.e.,* strategy and business model, processes and innovation, human resources, organisation, customers, or market); and (c) completeness and depth of IC information (*i.e.,* minimum, reasoned, or extended) (AIAF, 2006).

**Figure 2.2: The AIAF framework for analysing ICD**

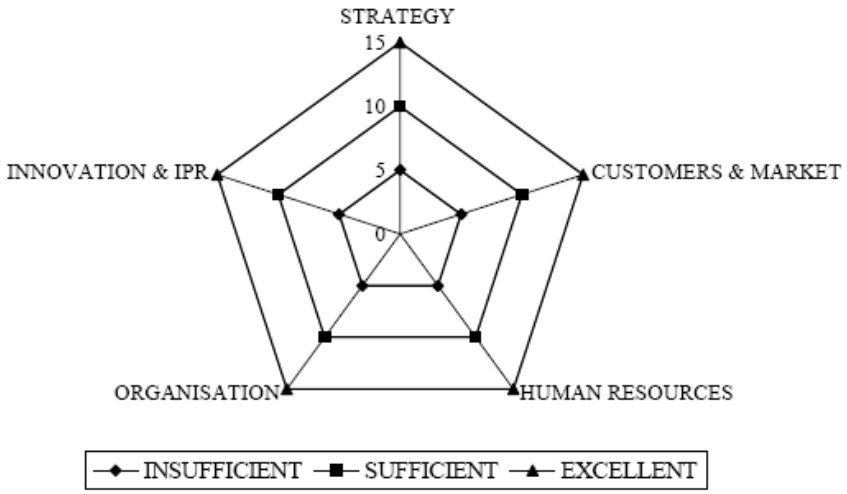



*Source: AIAF ( 2006, p.1).*

This model is complemented by a scoring tool entitled the *Radar Diagram* (Bergamini and Zambon, 2002). The *Radar Diagram* maps the scores obtained for

each category in a particular dimension so that companies can be ranked against a benchmark or other companies. Figure 2.3 presents the *Radar Diagram*.

**Figure 2.3: The radar diagram of disclosure quality**




.

*Source: Bergamini and Zambon (2002, p.10)*

The AIAF model has been used to assess ICR practices of companies listed in the Italian Stock Exchange. It was found that most companies provide moderate levels of IC information, falling between levels five and ten in the *Radar Diagram* (Bergamini and Zambon, 2002).

### 2.4.2. DMSTI (2003)

DMSTI (2003) published *Analysing Intellectual Capital Statements*, a report introducing a model for analysing IC statements. This report complements DMSTI's previous publication that stipulates guidelines for preparing IC statements (see, Appendix D). The analytical model introduced in this report provides sell-side analysts a systematic method for reading and interpreting an IC statement, which is a novel concept in financial analysis (Mouritsen *et al.*, 2003).

The method is based on searching information on three aspects of a company's IC: (a) composition of the company's knowledge resources; (b) work done by the company to strengthen its knowledge resources; and (c) effects of the company's knowledge management work. Information on these aspects is sought for the IC categories comprised in an IC statement, as stipulated in the guideline issued by DMSTI for the

preparation of IC statements. As shown in Figure 2.4 below, the model takes the form of a 4 x 3 matrix, where the vertical dimension includes key IC categories and the horizontal dimension consists of evaluation criteria.

**Figure 2.4: An analysis model for IC statements**

| Evaluation criteria / Key resource | Effects<br>What happens | Activates<br>What is done | Resources<br>What is created |
|---|---|---|---|
| **Employees** | • | • | • |
| | • | • | • |
| **Customers** | • | • | • |
| | • | • | • |
| **Processes** | • | • | • |
| | • | • | • |
| **Technologies** | • | • | • |
| | • | • | • |

*Source: Mouritsen et al. (2003, p.7 ).*

The benefits of analysing IC by resource, activity, and effect are explained in the DMSTI report (Mouritsen *et al.*, 2003, p.9):

> The knowledge resources column provides the basis for a 'portfolio assessment' of the company. The analyst will determine whether the company's knowledge resource portfolio is competitive and can meet the future.
>
> The activities column allows the management's ability to develop the employees, the organisation and customer relationships to be evaluated.
>
> The effects column provides the basis for assessing whether the company's knowledge management set-up and activities work, giving an assessment of company stability.

The DMSTI report emphasises that the conclusions drawn from this analysis are qualitative and therefore cannot be converted into numerical forecasts of future growth and profitability. It suggests that analysts need to compare the IC statement analysis with their personal qualified assessment of the company before making valuation decisions.

### 2.4.3. EAI (2004)

EAI[22] is an international collaboration of fund managers established for encouraging investment research that takes account of the impact of *extra-financial issues* on long-term investments. EAI (2008, p.1) defines *extra-financial issues* as "fundamentals that have the potential to impact companies' financial performance or reputation in a material way, yet are generally not part of traditional fundamental analysis". Accordingly, *extra-financial issues* include corporate governance, human capital management, value creation or destruction during mergers and acquisitions, and global environmental challenges, such as climate change.

EAI member organisations commit to allocating a percentage of their institution's brokerage commission to a pool of funds that is used as prize money to research agencies conducting investment research that provides the 'best analyses' of *extra financial issues* within mainstream research. Thus, it encourages research agencies to be innovative by considering IC and other NFI in their analyses. The research providers that effectively analyse *extra financial issues* and IC are rewarded each year.

## 2.5. ICR practices

ICR practices of organisations have been extensively studied in the literature. These studies describe the nature and the extent of voluntary ICD in various corporate reporting media. As will be discussed in the following sub-sections, research studies have mainly examined the annual reports of listed companies for the presence of IC information. However, few studies have investigated ICD in Form 10-Ks (in the USA), Initial Public Offering (IPO) prospectuses, IC statements, company websites, presentations to analysts, and company announcements. This section reviews the ICD literature with a view to understanding the nature and extent of IC information made available to capital market participants by companies in the present business context.

[22] Information to compile this section has been sourced from http://www.enhancedanalytics.com (Accessed 10 June 08).

### 2.5.1. ICD in corporate annual reports

The corporate annual report is an appropriate medium for companies to communicate IC information, as the company has editorial control over the content, it is widely distributed, and freely available (Campbell, 2000).

A pioneering study on ICR was conducted by Guthrie and Petty (2000). They used content analysis to examine the annual reports of 20 large listed firms in Australia to explain voluntary ICR practices. Since then a plethora of studies on ICD in annual reports has been conducted in many parts of the world, including Belgium (Orens and Lybaert, 2007), Canada (Bontis, 2003; Carnaghan, 1999), Denmark (Arvidsson, 2003), Finland (Arvidsson, 2003), France (Vergauwen and van Alem, 2005), Germany (Vergauwen and van Alem, 2005), Hong Kong (Guthrie *et al.*, 2006; Petty and Cuganesan, 2005), Italy (Bergamini and Zambon, 2002; Bozzolan *et al.*, 2003), Ireland (Brennan, 2001), Malaysia (Goh and Lim, 2004), the Netherlands (Vandemaele *et al.*, 2005; Vergauwen and van Alem, 2005), New Zealand (Steenkamp, 2007b; Whiting and Miller, 2008), Norway (Arvidsson, 2003), Singapore (Abeysekera, 2008a; Firer and Williams, 2005), South Africa (April *et al.*, 2003), Spain (García-Meca and Martínez, 2005; Oliveras and Kasperskaya, 2005), Sri Lanka (Abeysekera and Guthrie, 2005), Sweden (Arvidsson, 2003; Beaulieu *et al.*, 2002; Olsson, 2004; Vandemaele *et al.*, 2005), United Kingdom (Citron *et al.*, 2005; Vandemaele *et al.*, 2005; Williams, 2001), and the USA (Abdolmohammadi, 2005).

The majority of these studies attempt to obtain a snapshot or short time view of ICR practices of large companies in a particular country. The common finding of these studies is that there is a lack of systematic and concerted effort to report IC in annual reports. For instance, Guthrie and Petty (2000) commented that 'key components of IC are poorly understood, inadequately identified, inefficiently managed and inconsistently reported' (p.241). Similar conclusions have been drawn by researchers such as Brennan (2001) in relation to Irish companies, and Abeysekera and Guthrie (2005) in relation to Sri Lankan companies. Moreover, voluntary disclosure of IC in annual reports is found to be low worldwide (Whiting and Miller, 2008). Nonetheless, studies investigating longitudinal changes in ICR generally have found a temporal increase in the extent of ICD (e.g., Abdolmohammadi, 2005; Oliveira *et al.*, 2006; Vandemaele *et al.*, 2005).

Often ICD is classified into main categories and subcategories in order to explain the relative emphasis placed by companies on different IC topics. Although a variety of IC categorisation schemes have been used in the literature, Sveiby's (1997) tripartite categorisation scheme (as discussed in Section 2.2.3) remains popular — being used in most studies in its pure or derivative form (Guthrie *et al.*, 2006). The following Table 2.7 shows the extent of ICD reported in prior studies.

**Table 2.7: A comparison of prior ICD studies**[23]

| Study | Country | Frequency of disclosure (per cent) | | |
|---|---|---|---|---|
| | | ExtC | IntC | HumC |
| Abeysekera and Guthrie (2005) | Sri Lanka | 44 | 20 | 36 |
| April *et al.* (2003) | South Africa | 40 | 30 | 30 |
| Bozzolan *et al.* (2003) | Italy | 49 | 30 | 21 |
| Brennan (2001) | Ireland | 40 | 30 | 30 |
| Citron *et al.* (2005) | UK | 60 | 26 | 14 |
| Goh and Lim (2004) | Malaysia | 41 | 37 | 22 |
| Guthrie *et al.* (1999) | Australia | 40 | 30 | 30 |
| Guthrie *et al.* (2006) | Australia, | 49 | 41 | 10 |
| | Hong Kong | 37 | 28 | 35 |
| Oliveira *et al.* (2006) | Portugal | 48 | 25 | 27 |
| Oliveras and Kasperskaya (2005) | Spain | 51 | 28 | 21 |
| Steenkamp (2007a) | New Zealand | 36 | 11 | 53 |
| Sujan and Abeysekera (2007) | Australia | 48 | 31 | 21 |
| Vandamaele *et al.* (2005) | The Netherlands | 40 | 30 | 30 |
| | Sweden and UK | | | |
| Whiting and Miller (2008) | New Zealand | 47 | 21 | 33 |

As shown in the above table, there are similarities in the findings of these studies. ExtC is the most reported category in annual reports in all prior studies, but that of Steenkamp (2007a). In most studies, the extent of HumC disclosure is either greater than or equal to IntC disclosure in terms of frequency. Researchers have attributed the emphasis on ExtC to challenges imposed by changes in the business environment and resultant responses to those challenges, such as rationalisation of distribution channels, reconfiguration of firm value chains, re-assessment of customer value, globalisation and segmentation of markets (Guthrie and Petty, 2000; Whiting and Miller, 2008). It is argued that HumC disclosure is low, as it is defined narrowly and most items related to HumC are categorised under IntC (Abhayawansa and Abeysekera, 2008). Further, cross-country studies have found similarities as well as differences among countries in terms of ICR practices of companies (e.g.,

[23] When comparisons are made across countries based on the frequency of ICD, method differences among the studies should be considered.

Abeysekera, 2008a; Arvidsson, 2003; Vandemaele *et al.*, 2005; Vergauwen and van Alem, 2005). Vandemaele *et al.* (2005) observed that while there was similarity in the relative emphases on ExtC, HumC, and IntC across countries investigated by them, trends in ICR differed over time.

Shifting focus to the way in which IC is disclosed, it has been found that IC tends to be disclosed predominantly in narrative form in annual reports (April *et al.*, 2003; Guthrie and Petty, 2000). Nonetheless, Oliveira *et al.* (2006) reported a significant number of quantitative disclosures relating to IC in annual reports of Portuguese companies. IC is also disclosed by way of visuals (*e.g.,* pictures, tables, graphs etc) in annual reports (Steenkamp, 2007a). However, Guthrie and Petty (2000) posit that companies report IC in an ad hoc manner or not within a consistent framework in annual reports and the rhetoric about IC has not been translated adequately into measurables (Guthrie and Petty, 2000).

### 2.5.2. ICD in IPO prospectus

IPO prospectuses are circulated by companies planning to issue shares to the public. Many companies use the services of investment banking firms in preparing prospectuses. The content of a prospectus is often governed by company law and stock exchange listing rules. Although regulations restrict and stipulate the content in a prospectus, companies are able to provide voluntary information through this medium to promote the company to prospective investors. It is argued to be a *role model* of ICR, as companies have a high level of discretion in the way in which they present themselves to investors, and can be future-oriented in doing so (e.g., Beattie, 1999; Bukh *et al.*, 2005; Cumby and Conrad, 2001). Studies examining IPO prospectuses have been motived by the fact that companies can and will present all information that they think necessary for potential investors to make an informed investment decision. As such, more emphasis on IC is expected in IPO prospectuses.

Voluntary disclosure of IC information has been investigated in the IPO prospectuses of Danish (Bukh *et al.*, 2005), Japanese (Rimmel *et al.*, 2009), Italian (Cordazzo, 2007) and Singaporean (van der Zhan *et al.*, 2007) companies. These studies have found a significant level of ICD in IPO prospectuses. Bukh *et al.* (2005) investigated the changes in voluntary ICD in IPO prospectuses in Denmark from 1990 to 2001.

They reported an increase in ICD from 1990-1999, while 1999-2001 showed a slight decline. Similarly, van der Zhan *et al.* (2007) reported a yearly rise in average ICD in Singaporean IPO prospectuses from 1997 to 2003. However, the average level of ICD observed in the Singaporean study was marginally below the Danish one for comparable years. Also a temporal increase in IC information supplied in Italian IPO prospectuses was observed by Cordazzo (2007). Rimmel *et al.* (2009) replicated the Danish study using Japanese data. They reported that the Japanese IPO prospectuses disclose less IC than the Danish ones, but the emphasis on the main IC categories was similar between the two countries.

It was found that information on strategies and customers are the most reported types of IC in the Danish and Japanese IPO prospectuses. Also, 'strategy' was found to be the most disclosed IC attribute in the Italian IPO prospectuses (Cordazzo, 2007). In contrast, van der Zhan *et al.* (2007) found human resource management as the mostly disclosed IC category followed by information relating to strategy in the Singaporean IPO prospectuses. Further, the relative popularity of other IC categories differed among the four the studies.

The studies reviewed here indicate that companies actively disclose IC information in IPO prospectuses, and the extent of disclosure has increased over time. Since IPO prospectuses are expected to provide the types of information that capital market participants find important, the emphasis on IC can be interpreted as an indication of its importance to the capital market.

### 2.5.3. ICD on company websites

The internet is an increasingly important media for corporate communication (Adams, 1999; James, 1999; Lane, 1999). The recent amendments to the *Corporations Act* in Australia allowing companies to provide annual reports to shareholders on the internet rather than by hard copy exemplify the importance of the World Wide Web as an effective medium to communicate with shareholders. Corporate websites provide an opportunity for companies to disclose large amounts of information cost effectively, interactively, engagingly, and in a way that can be tailored to suit different stakeholder needs (Shepherd *et al.*, 2001; Williams and Pei, 1999). Unlike annual reports and financial statements, information presented in company websites is not

subject to restrictions imposed by corporate regulators and thus provides companies with substantial discretion in information disclosure. Adams and Frost (2003, p.5) argue that companies are "using the Internet to communicate with their stakeholders rather than just report to them".

Striukova *et al.* (2008) examined ICD in a variety of corporate reporting media, such as web pages, annual reports, annual reviews, interim reports, analyst presentation, preliminary reports, and corporate and social responsibility reports. They found that web pages accounted for the highest proportion of ICD (36 per cent), followed closely by annual reports (32 per cent), suggesting that web pages are the richest source of IC information. Nonetheless, it was found that various reporting media disclosed differing proportions of IC categories, inferring the inappropriateness of relying on only one form of corporate communications for all IC information needs. Concurring with this view, Unerman *et al.* (2007) commented that managers consider different media to have different levels of effectiveness in communicating IC information.

Also, Striukova *et al*. (2008) found that the most reported category of IC information in company websites is ExtC (60 per cent), followed by HumC (22 per cent) and IntC (18 per cent). They further reported that about 80 per cent of ICDs were in narrative form. It was also observed that firm size drives ICD. However, contrary to the evidence from prior research, this study found that IC-intensive companies (*i.e.,* IT/Software and Pharmaceutical/biotech) do not report more IC than traditional ones (*i.e.,* retail, real estate and utility).

In summary, Striukova *et al.* (2008) identify websites as an important medium for ICR, which is richer in IC information than any other regular corporate reporting media. Although similarities exist in relation to the relative emphasis on IC categories in company websites and annual reports, it was identified that the types of IC emphasised in them differ.

### 2.5.4. ICD in presentations to analysts

García-Meca and Martínez (2005) studied ICD in managements' presentations to financial analysts in Spain. They found considerable emphasis on IC in the presentations made to analysts. According to this study, 'customers', 'strategy' and 'technology' were the most reported IC categories in these presentations. Further, a

relatively high level of quantitative ICDs was observed, while the level of quantification varied according to the type of IC. In addition, it was observed that firm size, profitability and leverage drove ICD in the presentations to analysts.

### 2.5.5. ICD in company announcements

The Australian Securities Exchange (ASX) imposes a continuing disclosure requirement on listed companies. Hence, listed companies are required to disclose new developments in the company or the business environment that can affect its market price. In addition, companies can also make discretionary announcements on matters they believe to have significant substance. Some of the announcements made by companies either voluntarily or mandatorily are classified as price-sensitive by the ASX.

Announcements made by listed companies to the ASX are an alternative mechanism for the disclosure of IC to the capital market. A significant advantage in using announcements to voluntarily disclose IC is the increased frequency with which such information can be disseminated and the ability to disclose in a timely manner compared to annual reports and IC statements, which are prepared on an yearly basis (Dumay and Tull, 2007).

Dumay and Tull (2007) examined company announcements made to the ASX that were classified as 'price-sensitive' in the 2004/2005 financial year by *S&P/ASX 20* and *S&P/ASX 200* companies. They found that announcements relating to each of the three IC categories (*i.e.,* ExtC, HumC, and IntC) affected market returns. Further, they found that IntC announcements had the most pronounced effect on the market.

## 2.6. Chapter summary

First, this chapter reviewed the literature in order to understand the concept of IC and its components. Accordingly, it was revealed that IC is a fragile concept with no clear boundaries or a uniform definition. It is commonly conceptualised as synonymous with intangibles. Accordingly, IC includes identifiable as well as unidentifiable intangibles. A number of research studies identify IC as comprising three main categories — IntC, ExtC and HumC. However, the boundaries of these IC categories are argued to be unclear.

Second, this chapter discussed the work carried out by several national and international organisations in promoting the disclosure and use of IC information. These initiatives acknowledge the increasingly important role played by IC in communicating firm value, and thus encourage the reporting of IC information, in a manner that is comprehensible to users and satisfies user needs. From the point of view of the users of IC information, there are models developed for evaluating IC information as well as schemes encouraging innovation in using IC information in company valuations.

Finally, this chapter assessed the availability of IC information to capital market participants. It was found that companies disclose IC through various corporate communication media, and the extent of ICD is on the rise. The literature suggests that some media contain more IC information than others do. A greater emphasis on ExtC information is commonly observed across various corporate communication media, although the types of IC disclosed may differ among them. Further, it was found that the extent of ICD varies with a range of firm specific, as well as market variables. However, prior literature fails to find a systematic or consistent reporting of IC by companies.

# 3. A REVIEW OF THE USE OF IC INFORMATION

## 3.1. Introduction

This chapter identifies broader gaps in the research literature that form the basis for the development of the research objectives of this PhD study. The chapter begins with a review of prior capital markets research studies in order to illustrate the importance of IC in determining the market value of firms, in Section 3.2. It first examines the increase in price-to-book ratios of companies that indicate the increasing significance of IC in determining the market value of firms. Second, capital markets research studies on value-relevance and predictive ability of types of IC information are reviewed. Section 3.3 reviews the literature on sell-side analysts' use of information, with special emphasis on types of IC information used or considered useful. Section 3.4 reviews prior research on the use of IC information in sell-side analysts' company research and in their valuation models. Section 3.5 discusses the gaps in the research literature reviewed in this chapter and establishes the research objectives of this thesis. Section 3.6 summarises the chapter.

## 3.2. Capital markets research on the importance of IC

The Generally Accepted Accounting Principles (GAAP) of many countries do not permit the recognition of most elements of IC in financial statements. The underlying reason for this arguably is accounting standards setters' inclination to uphold reliability of measurement over relevance to users. Nonetheless, information on a firm's IC is important for determining its value. Given that IC encompasses future value creation potential and capital market valuations are essentially forward-looking, capital market actors could be using IC information in their valuations and investment decision making.

This section reviews the capital markets research literature, in the tradition of Ball and Brown (1968) and Beaver (1968), on the impact of IC. The main purpose of this section is to establish the importance of IC for firm valuation. Also, it is intended to identify gaps in the capital markets research literature relating to IC. The next subsection reviews the literature on the composition of the price-to-book ratio and the role of IC in explaining it.

### 3.2.1. IC and the price-to-book ratio

The widening gap between the book value and market value of firms' equity in many countries is commonly discussed as evidence of the inadequacy of financial accounting information for firm valuation and the increasing need for more non-financial (including IC) information. Lev (2001) showed that the average price-to-book ratio of the *S&P 500* companies has gradually increased almost six fold in the period from 1977 to 2001. By the end of 2003, the average price-to-book ratio of the *S&P 500* companies was 4.5 (Gu and Lev, 2004) and of the *FTSE 100* companies was 2.52 (Beattie and Thomson, 2005). Also, Beattie and Thomson (2005) document that companies in knowledge-intensive industries, such as pharmaceutical and media, have higher price-to-book ratios when compared to other industries. They further identified that companies in less knowledge-intensive industries, such as insurance and real estate, record the lowest price-to-book ratios.

Several authors propose that IC is the difference between the book value and market value of firms (e.g., Brennan, 2001; de Pablos, 2003; Stewart, 2003; Sullivan, 2000; Sveiby, 1989). However, non-recognition of IC in financial statements is not the only cause of disparity between the book value and market value of a company. Other factors contributing to this disparity include: some identifiable net assets not carried at their fair values; recorded fair values of identifiable assets not reflecting their correct market valuation; accounting conservatism; non-recognition of intellectual liabilities in GAAP accounting; reflection of the value creation potential of future plans and systematic risk in the market value; and market anomalies (Bukh *et al.*, 2001; García-Ayuso, 2003a; Gu and Lev, 2003; Lev, 2001)[24]. Despite these factors, the market value of a firm presumably incorporates the value of IC, although it is not strictly the gap between the book value and market value. Thus it can be argued that, *ceteris paribus*, the increased importance of IC in a firm's value creation processes increases the price-to-book ratio of that company.

[24] Gu and Lev (2003) explain that the use of price-to-book ratio as a proxy for IC suffers from two flawed assumptions. First, there is no market mispricing. Second, the recorded asset values in the balance sheet are a surrogate for their market values. If IC is merely the difference between market value and book value of a firm, then it is partly a function of book value, which is determined by accounting rules. Thus, the value of IC is subject to changes in accounting rules (Bukh *et al.*, 2001).

Jenkins and Upton (2001, p.5) explain the gap between the book value and market value by introducing items that may cause the gap. This is illustrated in the following Table 3.1. According to this table, several items explaining the gap relate to IC that may have been either recorded at cost or not recorded at all in the financial statements.

**Table 3.1: Reconciliation of accounting book value to market capitalisation**

| | |
|---|---|
| Accounting book value | ***$XXX*** |
| +/- Market assessments of differences between accounting measurement and underlying value of recognised assets and liabilities | ***XX*** |
| +/- Market assessments of the underlying value of items that meet the definition of assets and liabilities but are not recognised in financial statements (*e.g.,* patents developed through internal research and development) | ***XX*** |
| +/- Market assessment of intangible value drivers or value impairers that do not meet the definition of assets and liabilities (*e.g.,* employee morale) | ***XX*** |
| +/- Market assessment of the entity's future plans, opportunities and business risks | ***XX*** |
| +/- Other factors, including puffery, pessimism, and market psychology | ***XX*** |
| Market capitalisation | ***XXX*** |

*Source: Jenkins and Upton (2001, p.5).*

While the composition of the gap between the book value and market value of companies is widely debated in the literature, empirical evidence is limited. In one of the few reported studies, Lev and Sougiannis (1999) found that *innovative capital*[25] is significantly associated with market returns, and reduces the informativeness of price-to-book ratio for all firms in the sample. Also, it was found that for firms intensive in R&D, innovative capital replaces the value-relevance of price-to-book ratio altogether[26]. This supports an earlier study by Hirschley and Weygandt (1985) that reported a statistically significant positive association between price-to-book ratio and R&D intensity. These findings indicate that R&D is a major investment underlying the difference between the book value and market value of equity. Lev and Sougiannis (1999) call for future research to examine other factors that may explain the price-to-book effect in public companies.

[25] *Innovative capital* is defined as the sum of the unamortised past R&D expenditures that are expected to generate current and future earnings (Lev and Sougiannis, 1999).

[26] Also, Lev and Sougiannis (1999) observed that companies with high (low) price-to-book ratios have more (less) innovative capital, and the innovative capital-to-market ratio is closely associated with the price-to-book ratio.

In addition, Beattie and Thomson (2005) examined reasons for extreme changes in price-to-book ratios of companies. They argue that events causing the market to reassess the value creation prospects of a company (*e.g.,* developing a new business model, acquisition, divestments, etc.) and the significance of knowledge based assets contribute to these extreme changes.

From the literature reviewed above it is found that the rise in the price-to-book ratio provides evidence of the increasing significance of IC. However, few studies have investigated the impact of types of IC on the price-to-book ratio of companies. Nonetheless, the value-relevance literature is comparatively rich in studies addressing the valuation impact of types of IC. The next subsection reviews this literature.

### 3.2.2. Value-relevance of IC

The aim of value-relevance studies is to assess the usefulness of accounting and non-accounting numbers in equity valuation (Holthausen and Watts, 2001). Value-relevance research has two strands: event studies (or marginal information content studies) and association studies[27] (Holthausen and Watts, 2001). The event study method is used to investigate whether the release of a particular information item (*i.e.,* an event such as a brand extension announcement), conditional on other information releases, is associated with changes in the level or variability of a stock price over a short window around the event (Kothari, 2001). If the level or variability of stock price changes around the event date is significant, it is said that the event has information content on the amount, timing, and/or uncertainty of cash flows (Kothari, 2001). According to the association study method, when a particular information item (*e.g.,* customer satisfaction measure) has a predicted association with equity value or changes in the equity values over a long window (*e.g.,* one year), it is said to have information content and thus is value-relevant (Barth *et al.*, 2001a; Kothari, 2001).

Although value-relevance studies have primarily been used in relation to financial accounting numbers, researchers have also examined the explanatory power of

[27] Holthausen and Watts (2001) classify 'association studies' into two categories: (1) relative association studies that investigate the association between stock market values or changes in those values (over long windows) and accounting numbers; (2) incremental association studies that investigate whether a particular accounting number of interest is able to explain the stock market values or changes in those values (over long windows) among other variables (examine whether the estimated regression coefficient of the particular accounting variable is significant).

various types of IC, separately, as well as in groups, using proxies (Holthausen and Watts, 2001). The following Table 3.2 lists several research studies that have found particular IC items to be value-relevant on a standalone basis. These studies are reviewed in the following two subsections.

**Table 3.2: Prior research on the value-relevance of IC**

| | IC items | Association studies | Event studies |
|---|---|---|---|
| **IntC** | Intangible assets | Ritter and Wills (2006)<br>Godfrey and Koh (2001)<br>Barth and Clinch (1998) | |
| | R&D expenditure | Lev and Sougiannis (1996; 1999)<br>Abrahams and Sidhu (1998)<br>Chauvin and Hirschey (1993)<br>Bublitz and Ettredge (1989)<br>Wang (2008) | Chan *et al.* (1990)<br>Doukas and Switzer (1992) |
| | Patents and patent citations | Deng, Lev and Narin (1999) | Austin (1993) |
| | Quality / quality awards | Aaker and Jacobson (1994) | Hendricks and Singhal (2001)<br>Hendricks and Singhal (1996) |
| | Software development costs | Aboody and Lev (1998) | |
| | Innovations | | Liu (2006) |
| | IT investments/ computer capital | Brynjolfsson and Yang (1997) | Dos Santos *et al.* (1993) |
| | Selling, general & admin expenses (SGA)/ sales<br>SGA/employees | Wang (2008) | |
| **ExtC** | Advertising expenses | Lev and Sougiannis (1996)<br>Wang (2008) | |
| | Brand values / quality | Barth *et al.* (1998)<br>Kallapur and Kwan (2004) | Lane and Jacobson (1995) |
| | Customer satisfaction | Ittner and Larker (1998) | Ittner and Larker (1998) |
| | Celebrity endorsement announcements | | Agrawal and Kamakura (1995) |
| | Sponsorship announcements | | Mishra *et al.* (1997) |
| | Customer base / penetration | Amir and Lev (1996) | |
| **HumC** | Top management changes | | Dedman and Lin (2002)<br>Furtado and Rozeff (1987)<br>Reinganum (1985)<br>Denis and Denis (1995) |
| | No. of employees<br>Sales/employees<br>Net income/employee | Wang (2008) | |

### 3.2.2.1. Association studies

As illustrated in the above Table 3.2, association studies have found significantly positive associations between stock prices/returns and various IC items or IC surrogates. For instance, Wang (2008) examined the association between IC (and its components) and the market values of companies in the electronics industry. All constituents of IC in this study, namely, HumC (proxied by number of employees, sales per employee and net income per employee); customer capital (proxied by sales growth rate and advertising expenses); innovation capital (proxied by R&D); and

process capital (proxied by selling, general and administrative expenses per sales and per employee) were found to be positively related to the market value.

In an Australian setting, Ritter and Wells (2006) investigated the association between stock prices and voluntarily recognised and disclosed identifiable intangible assets, such as patents, licences, brand names, and trademarks in the balance sheet of large listed companies between 1979 and 1997. They found a significantly positive association between voluntarily recognised and disclosed identifiable intangible assets and stock prices. Further, they found that the introduction of *Australian Accounting Standards Board (AASB) Standard 138: Intangible Assets* (Australian equivalent of IAS 38) restricted the recognition of most intangible assets and reduced the value-relevance of financial statements. Also, Godfrey and Koh (2001) found that capitalisation of intangible assets provides information relevant for valuation of large Australian firms, and that information was incremental to other balance sheet items. Further, Barth and Clinch (1998) provided evidence of a significant relationship between revaluation of intangible assets and security returns. On the contrary, Ely and Waymire (1999b) documented that capitalised intangible asset values are not significantly associated with stock prices. However, Zarowin (1999) suggests that the conclusions in Ely and Waymire (1999b) can be attributed to sample selection bias, where firms that do not capitalise intangible assets can be more successful than the firms that capitalise intangibles (*i.e.,* firm success would be a correlated omitted variable in the regression). He argues that in the era prior to the Securities Exchange commission, firms that were more successful may not have capitalised intangible assets.

The empirical literature has also examined the value-relevance of specific intangible assets. Among various intangible assets, R&D, brands and patents have been extensively studied (Maines *et al.*, 2003). It has been found that the market value incorporates the future cash flows associated with expenditure on R&D despite accounting standards prohibiting capitalisation of R&D expenses in the USA (Bublitz and Ettredge, 1989; Chauvin and Hirschey, 1993; Lev and Sougiannis, 1996; 1999). In the Australian context, under a previous regulatory regime, where capitalisation of R&D expenses was based on management discretion (*i.e.,* under AASB1011-

*Accounting for Research and Development Costs)*[28] Abrahams and Sidhu (1998) found that capitalised R&D expenses are value-relevant.

Looking at the value-relevance of brands, Barth *et al.* (1998) found that brand value estimates produced by a third party is value-relevant. Also, capitalised, acquired as well as self generated brands in the UK were found to be value-relevant, and news about brand capitalisation has been observed to convey information to the stock market (Kallapur and Kwan, 2004). Empirical evidence also exists on the value-relevance of advertising expenses (e.g., Chauvin and Hirschey, 1993; Lev and Sougiannis, 1996) indicating that costs associated with attracting customers and building brand loyalty are considered as IC investments by the capital market.

Other IC items found to be value-relevant in the literature include capitalised software development costs (Aboody and Lev, 1998), patents and patent citations (Deng *et al.*, 1999), customer satisfaction measured by the American Customer Satisfaction Index[29] (Ittner and Larker, 1998), customer-base (POPS)[30] and customer penetration rates in the cellular operator industry (Amir and Lev, 1996), and perceived quality of a firm's products (Aaker and Jacobson, 1994). Brynjolfsson and Yang (1997) observed that computer capital, which results from the computerisation of a firm's operations (*i.e.,* intellectual, cultural, organisational, and inter-organisational changes that are needed to make computers effective), is strongly related to the market value of companies, suggesting that computerisation creates IC.

#### 3.2.2.2. Event studies

The above Table 3.2 highlights that the announcements relating to ExtC, IntC and HumC are associated with positive market returns. Within the ExtC category, brand extension announcements (Lane and Jacobson, 1995), release of customer satisfaction data (*i.e.,* American Customer Satisfaction Index) (Ittner and Larker, 1998), celebrity endorsements (Agrawal and Kamakura, 1995), sponsorships (Mishra *et al.*, 1997), and

[28] AASB1011- *Accounting for Research and Development Costs* was superseded by AASB 138 – *Intangible Assets* that came in to effect from 1 January 2005.

[29] This index is a national economic indicator of customer satisfaction managed by the National Quality Research Centre at the University of Michigan Business School and the American Society for Quality (Ittner and Larker, 1998).

[30] POPS is a measure of growth potential based on population size. It is the total population area a firm is licensed to operate multiplied by the firm's share of ownership.

winning quality awards used as a proxy for Total Quality Management (Hendricks and Singhal, 1996; 2001) are associated with post announcement positive returns. Announcements of innovation news in the biotechnology industry (Liu, 2006), innovative information technology investments (Dos Santos *et al.*, 1993), R&D spending (Chan *et al.*, 1990; Doukas and Switzer, 1992), and patent issuances (Austin, 1993) are among the IntC related announcements that are found to be value-relevant in event studies. In addition, Dumay and Tull (2007) found that price-sensitive announcements made to the ASX by companies about IntC information are associated with cumulative abnormal returns.

Event studies on HumC are mainly limited to top management HumC. These studies investigate the shareholder wealth effect of companies announcing top management appointments and departures. Research shows a negative market reaction to Chief Executive Officer (CEO) / Managing Director (MD) departures and a positive reaction to CEO / MD appointments (Dedman and Lin, 2002; Furtado and Rozeff, 1987). The positive market reaction to the appointment of a CEO through internal promotions is found to be stronger than the positive market reaction to an external appointment (Furtado and Rozeff, 1987), implying that promotions are regarded as news about a firm's HumC investment program and existence of firm specific HumC. On the other hand, when a CEO is forced to resign due to the poor financial performance of the company, a positive market reaction has been documented (Denis and Denis, 1995). This probably suggests that the capital market sees a departure of a poorly performing CEO as extinguishing an intellectual liability. Further, Reinganum (1985) found that the simultaneous announcement of a CEO departure and an appointment of a successor results in no significant share price reaction, implying that the negative reaction to the CEO departure is neutralised by the positive reaction to the new appointment. These findings suggest that the HumC in top management is value-relevant.

The next subsection reviews the literature on the predictive ability of IC. Predictive ability research studies explain the indirect impact of IC on the market value of firms.

### 3.2.3. Predictive ability of IC

Predictive ability studies investigate how current information corresponds to future financial performance (compared to market price/return, as in value-relevance studies) that may ultimately be incorporated in the share price of companies (Maines *et al.*, 2002).

Some of the research of this genre has found that IC can be a leading indicator of firms' financial performance. For instance, Ashton (2005)[31] reviewed predictive ability research conducted during the past two decades, and contended that many IC items are positively associated with financial performance (also see, Canibano *et al.*, 2000).

Examining the predictive ability of ExtC items, Srivastava *et al.* (1998) provided empirical evidence suggesting that customer relationships (brand equity), channel relationships (channel equity), and partner relationships influence firm value by accelerating and enhancing cash flows, lowering the volatility and vulnerability of cash flows, and increasing the terminal value of cash flows. Moreover, research has found a positive association between customer satisfaction measures and current and future financial performance (e.g., Anderson *et al.*, 1994; Anderson *et al.*, 1997; Behn and Riley, 1999; Helmi, 1998; Ittner and Larker, 1998; Yeung and Ennew, 2001). Still in relation to customer satisfaction, Schefczyk (1993) found that passenger focus in companies in the airline industry is associated with the profitability of the firm, indicating that customer orientation is a leading indicator of financial performance. Also, product and process quality, measured as the winning of quality awards, has been found to be associated with firm profitability (Hendricks and Singhal, 1997).

In relation to HumC, Bilmes *et al.* (1997, p.1) contended that "companies which place workers at the core of their strategies produce higher long-term returns to shareholders than their industry peers". Prior research studies have found statistically significant association between firms' financial performance and HRM strategies and

[31] Ashton (2005) identifies about 200 studies that investigate the association between intangible value drivers and financial outcomes at both firm and market levels. These studies are grouped under human, customer, process, and renewal and development categorised as per the Skandia Business Navigator (Skandia, 1994).

practices. For instance, Terpstra and Rozell (1993) found that extensiveness of recruiting and use of formal selection procedures have a positive impact on company profits. Similarly, performance appraisal systems linked to compensation are found to be consistently connected with increased firm profitability (Gerhart and Milkovich, 1992). Further, Huselid (1995) examined the combined impact of a range of HRM practices proven to be related to financial performance on a standalone basis, described as *High Performance Work Practices*, on employee turnover, productivity and corporate financial performance. The results revealed that investments in such practices are associated with lower employee turnover, greater productivity and increased corporate financial performance measured in terms of sales, market value and profits. In addition, positive relationships between employee satisfaction, customer satisfaction and financial performance are documented in Neely and Al Najjar (2002). The predictive ability of HumC is further justified by Brynjolfsson and Hitt (1996), who found that spending on information systems staff generates higher returns than spending on other labour expenses.

Studies on the predictive ability of IntC items are comparatively scarce, possibly due to the difficulty of measuring aspects of IntC such as business models, corporate culture, management processes and management philosophy. Among the few reported studies, Bharadwaj *et al.* (1999) found IT investments to be associated with financial performance. Similarly, Brynjolfsson and Hitt (1996) documented an association between computer capital and financial performance.

The next section reviews the prior accounting and finance literature to understand the types of information considered useful to (or used by) sell-side analysts *vis-à-vis* other information, with a special focus on IC information.

### 3.3. Importance of types of information to sell-side analysts

Researchers for decades have shown an interest in examining the importance of types of information for stock valuation. Whilst some studies have resorted to the study of value-relevance or predictive ability of types of information, as discussed in the previous section, others have investigated the perceived usefulness/importance of types of information to sell-side analysts, or alternatively examined the information they have used. This section reviews the research literature on the

usefulness/importance of various types of information to sell-side analysts, with a special focus on IC information.

The next subsection reviews the research literature on sell-side analysts' use of financial and NFI, in general.

### 3.3.1. Sell-side analysts' use of financial and non-financial information

Prior research on information usefulness has found that sell-side analysts use both financial and NFI in their decision processes. For instance, Barker (1999) observed that accounting as well as non-accounting information that is relevant to predict future financial performance is considered helpful by sell-side analysts. However, evidence suggests that sell-side analysts use more financial information than NFI (Bouwman *et al.*, 1987; Coram *et al.*, 2006; Dempsey and Gatti, 1997). This is also confirmed by Campbell and Slack (2008) based on interviews with a group of sell-side analysts. On the other hand, a significant use of non-financial performance indicators (provided in the format of a Balanced Scorecard) and company information by Australian sell-side analysts has been observed by Coram *et al.* (2006).

Prior studies have examined the relative use of earnings versus cash flow information by sell-side analysts. The results of these studies indicate that sell-side analysts favour earnings information over cash flow information on which to base their decisions (Firth, 1978; Govindarajan, 1980; Previts *et al.*, 1994). For instance, Govindarajan (1980) conducted a content analysis of 976 analyst reports and concluded that sell-side analysts use earnings information on companies significantly more often than cash flow information, while inter-industry, inter-firm, and inter-analyst differences explain the relative utilisation of earnings information. The relative importance placed on earnings information is also supported by Firth (1978), who found that earnings related information items such as 'breakdown of earnings by major product lines, customer classes and geographic location' and 'analysis of sales revenue and earnings attributable to foreign operations' are ranked as the most important types of annual report information by sell-side analysts. Previts *et al.* (1994) arrived at a similar conclusion through content analysis of analyst reports. They found that sell-side analysts base their recommendations primarily on an evaluation of company income,

relative to balance sheet or cash flow evaluations and emphasise core earnings[32], including earnings per share, earnings variability, and earnings momentum. Biggs (1984) noted that sell-side analysts mostly search the income statement in assessing the earnings power of capital-intensive companies. The earnings bias of sell-side analysts has also been empirically established by Eccles and Mavrinac (1995).

In suggesting reasons for the popularity of financial information, researchers argue that sell-side analysts place high importance on financial information, as it is central to conducting fundamental analysis, which is their preferred method of valuation (e.g., Arnold and Moizer, 1984; Arnold *et al.*, 1984; Barker, 1999; Bence *et al.*, 1995; Moizer and Arnold, 1984; Olbert, 1994; Vergoossen, 1993). Another explanation is that sell-side analysts believe markets are short-term oriented (Eccles and Mavrinac, 1995) and thus are sceptical about the usefulness of IC information, as they are indicators of long-term economic value. For instance, Bence (1995) argues that sell-side analysts invariably take a short-term perspective and more attention is paid to short-term performance measures, which are predominantly financial than non-financial. This contention is supported by Ghosh and Wu (2007), who provided evidence to suggest that utilisation of financial measures, as against IC measures, is greater for short-term investment horizons.

Nielsen (2008) observed that whilst some sell-side analysts are interested in short-term earnings fluctuations, others emphasise the longer-term. The long-term oriented sell-side analysts are expected to rely on NFI, unlike short-term oriented sell-side analysts. On the other hand, financial measures being lag indicators are of limited use for making long-term investment decisions. Evidence based on interview and survey results suggests that NFI is used to assess both short-term (SRI International, 1987), and to a greater extent, long-term (Chugh and Meador, 1984; Dempsey and Gatti, 1997) performance of stocks. Further, Coram *et al.* (2006) observed a significant use of non-financial performance indicators by sell-side analysts when performing company valuations.

[32] 'Core earnings' refers to earnings adjusted for nonrecurring, unusual and extraordinary items. Sell-side analysts distinguish between permanent (recurrent) and temporary (non-recurrent) components of earnings, and adjust reported earnings for changes in accounting rules (Previts *et al.*, 1994).

Another reason for the relative unpopularity of NFI among sell-side analysts, as Dempsey and Gatti (1997) argue, is the concerns over reliability of NFI, albeit its superiority over financial information in predicting long-term success of a company. According to the literature, disclosures of NFI, including IC information, are often received with suspicion by the capital market (Catass and Grojer, 2003; Nielsen, 2008). Further, Barker (1999) contends that sell-side analysts tend to heavily discount IC information and other NFI that lacks reliability. As a remedy, some argue for independent verification or audit of IC information and other NFI. In support of this proposition, Coram *et al.* (2006) found that the use of IC and other non-financial performance information increases with the provision of an assurance report on that information.

The next subsection reviews the empirical research literature in order to understand the importance of types of IC information to sell-side analysts.

### 3.3.2. Importance of types of IC information

Studies on the usefulness or importance of types of information to sell-side analysts have employed different research methods, such as interviews, surveys, experimentation, protocol analysis and content analysis. The following Table 3.3 categorises prior research studies on this topic according to the research method adopted. Each research method provides a unique perspective to understand the types of information used by or useful/important to sell-side analysts. Whilst the scope of many studies reviewed in this section is not limited specifically to the investigation of IC information, they are helpful in understanding the nature and extent of sell-side analysts' use of IC information.

Table 3.3 highlights that while the survey method was popular prior to 1998, since then the recent decade has seen an increase in the use of content analysis in the investigation of the importance of types of information to sell-side analysts. Moreover, research studies exclusively investigating IC information use/disclosure by sell-side analysts have predominantly utilised content analysis. In addition, few studies have employed the interview method. Other methods have not yet been adopted to examine IC information use of sell-side analysts. Nonetheless, studies

utilising these methods in the examination of sell-side analysts' use of NFI reveal interesting insights into the importance of certain IC information.

**Table 3.3: A classification of prior studies by research method**

| | Survey | Interview | Experiment | Protocol analysis | Content analysis |
|---|---|---|---|---|---|
| Pankoff and Virgil (1970) | | | × | | |
| Buzby (1974b) | × | | | | |
| Horngren (1978) | | × | | | |
| Firth (1978) | × | | | | |
| Govindarajan (1980) | | | | | × |
| Arnold *et al.* (1984) | × | | | | |
| Chugh and Meador (1984) | × | | | | |
| Arnold and Moizer (1984) | × | | | | |
| Chugh and Meador (1984) | × | | | | |
| Chang and Most (1985) | × | | | | |
| Day (1986) | | | | × | |
| Mear and Firth (1987) | | | × | | |
| SRI International (1987) | × | × | | | |
| Anderson (1988) | | | | × | |
| Mear and Firth (1990) | | | × | | |
| Pike *et al.* (1993) | × | | | | |
| Previts *et al.*(1994) | | | | | × |
| Olbert (1994) | × | | | | |
| AICPA (1994) | × | × | | | × |
| Bence *et al.* (1995) | | × | | | |
| Bricker *et al* (1995) | | | | | × |
| Bouwman *et al.* (1995) | | | | × | |
| Eccles and Mavrinac (1995) | × | × | | | |
| Rogers and Grant (1997) | | | | | × |
| Dempsey and Gatti (1997) | × | | | | |
| Low and Siesfeld (1998) | × | × | | | × |
| Barker (1998) | | × | | | |
| Breton and Taffler (2001) | | | | | × |
| Arvidsson (2003) | | | | | × |
| Holland and Johanson (2003) | | × | | | |
| Thomas (2003) | | | × | | |
| Fogarty and Rogers (2005) | | | | | × |
| García-Meca (2005) | | | | | × |
| Abdolmohammadi *et al.*(2006) | | | | | × |
| Flöstrand and Ström (2006) | | | | | × |
| Flöstrand (2006) | | | | | × |
| Coram *et al.* (2006) | | | | × | |
| García-Meca and Martínez (2007) | | | | | × |
| Ghosh & Wu (2007) | | | × | | |
| Johansson (2007) | | × | | | |
| Campbell and Slack (2008) | | × | | | |
| Nielsen (2008) | | × | | | × |

The literature reviewed in this section is classified according to the research method adopted: surveys; interview; experimentation; protocol analysis; and content analysis.

#### 3.3.2.1. Survey based literature

In survey research, respondents rank information items on a Likert scale based on their perceived importance or usefulness. The importance of each information item is then determined based on its mean rank relative to that of other items. This method presumes that the types of information sell-side analysts perceive as important are what they actually use in their analysis. Therefore, validity of findings in survey-based studies is largely dependent on sell-side analysts' self-insight – the ability to communicate one's own judgements. It has been found that the information needs of sell-side analysts can only be elicited to a certain extent from their subjective opinions (Mear and Firth, 1987; 1990)

Evidence from surveys on the importance of NFI to sell-side analysts suggests that IC information is prevalent among the NFI items that are identified as useful. Appendix E shows the importance attached to a list of IC items that has been investigated among other information items in four survey-based studies, some dating back to as early as the 1970s (e.g., Benjamin and Stanga, 1977; Buzby, 1974b; Dempsey and Gatti, 1997; Firth, 1978). These four studies are selected as they have looked at roughly the same set of information items, thus enabling comparison. According to these studies, several IC information items are perceived as very important/always used, while few IC information items are considered as either moderately or less important.

Looking at more recent research, Orens and Lybaert (2007) investigated sell-side analysts' use of NFI. They found sell-side analysts to be most concerned with IC information in annual reports, such as 'broad objectives and strategy', 'forward-looking information', 'reasons for changes in the financial, operating and performance related data', 'scope and description of the business', and 'properties and impact of industry structure on a company'. Similar results have been reported in a study conducted two decades ago by SRI International (1987). They observed that NFI such as 'recent developments and outlook for a company', 'company's market position', 'company's risk exposure', and 'recent events affecting a company' were considered

as highly important by professional investors (including sell-side analysts). On the subject of the usefulness of IC disclosed in annual reports, Firth (1978) reported that many NFI items that can be included in an annual report (*e.g.*, 'information relating to company directors and managers', 'products', 'market share', 'dependence on customers', 'acquisitions', 'order backlogs', 'R&D and capital expenditure', 'company assets', 'geographical spread', and 'company segments') are considered important to sell-side analysts.

On the relationship between types of information and the valuation time horizon, Chugh and Meador (1984) observed that sell-side analysts emphasise qualitative predictors of long-term growth and earnings in stock value determination. According to them, these predictors include IC information such as 'quality and depth of management', 'company's market dominance', and 'company's history of achieving stated goals (strategic credibility)'. Sell-side analysts also value information on companies' strategic plans and the planning system (Chugh and Meador, 1984). Dempsey and Gatti (1997) conducted a questionnaire survey using an instrument comprising 63 financial and non-financial measures that are considered as predictors of long-term performance in industries other than the financial services sector. They found that sell-side analysts use a broad range of indicators to assess long-term performance, and include many IC items including 'management experience', 'market share', and 'brand awareness'.

#### 3.3.2.2. Interview based literature

Interview based research on sell-side analysts' use of NFI suggests that IC information is mainly used to assess a company's performance in the long-term. For instance, Nielsen (2008) found information about 'company management', 'strategy', 'long-run competitiveness', and 'governance' are used by sell-side analysts to determine the value of a stock in the long-term.

Interview based studies reveal that sell-side analysts' demand for IC information is at least partly derived from the demand for IC information from buy-side analysts and fund managers. In other words, it has been found that buy-side analysts and fund managers are interested in knowing the reasons for sell-side analysts' recommendations and underlying value drivers of the firms they analyse (Holland,

2006; Johansson, 2007). For instance, the following quote from an analyst's transcript in a study conducted by Johansson (2007, p.39) emphasises this point:

> They [buy-side analysts and fund managers] want to know, do we find the company well managed? Do they have the right strategies? What can be improved [in the company]?

Also, Holland (2006, p.288) observes that a range of qualitative and IC information items are required by fund mangers:

> [...] the unique private agenda [of fund managers] included information on qualitative, non-financial company variables such as 'quality of management', strategy and its coherence, investment and financing plans, recent changes in these and in corporate succession and management style. Information on competitors and the structure of competition was very important. Other information sources here included a supportive company climate for innovation and long-term investment in productive and human assets, R&D expenditure, flexibility of company to technological change, and the role of internal financial resources in the above. Customer and suppliers relations were important external intangibles. Management attitudes to these variables, to profitability, and to return to shareholders, were also central to this part of the agenda. The categories of private information identified in the FM [fund manager] cases had many strong similarities to the ideas outlined by writers in the field of Intellectual Capital.

Since an important role of sell-side analysts is to provide information required by buy-side analysts and fund managers, it can be argued that sell-side analysts will source and distribute the IC information required by them.

#### 3.3.2.3. Experiment based literature

There are few experimentation studies on sell-side analysts' use of IC information. Two of these studies examine the impact of IC information on the earnings forecasts and recommendations of sell-side analysts.

Thomas (2003) reports on an experiment conducted by PricewaterhouseCoopers. In this study, two versions of a corporate annual report and accounts of a company that is renowned for ICR in Denmark (*i.e.,* Coloplast) were given to sell-side analysts. One version included the original complete set of the corporate annual report and accounts,

including IC reports, while the other version excluded all NFI. The sell-side analysts were expected to generate an earnings forecast and a recommendation for this company. The results of the experiment revealed that the average revenue and earnings forecasts of the sell-side analysts, who were not provided with IC information, were significantly lower than the forecasts of their counterparts, who had IC information. In addition, the estimates produced by the former group were more widely spread, and they considered the company as more risky. Moreover, the sell-side analysts that received the complete set of information were overwhelmingly in favour of a buy recommendation, while nearly 80 per cent of the group with only financial information recommended a sell. The findings further indicate that IC information enables sell-side analysts to assess the quality and sustainability of a company's current financial performance. Based on the findings, Thomas (2003, p.80) argued:

> What one can see is that those who generated their models using more complete information base their estimates upon such things as confidence in the market positioning of the firm, in the credibility of its strategy and in the strength of the innovation cycle underpinning its new product pipeline. … [I]n the absence of any supporting information, the investor is forced to try to gain reassurance about the quality and sustainability of corporate performance from the unsubstantiated narratives of the 'front end' of the report and accounts and the audited financial statement itself.

Using a different experimental design, Ghosh and Wu (2007) investigated the relative utilisation of IC information in making investment recommendations by sell-side analysts. In this experiment, each analyst was provided with information about four listed companies in the electronics industry in Taiwan, and either a long-term or a short-term investment horizon. The four listed companies represented differing performance levels in terms of financial (*i.e.,* return on investment and earnings growth) and IC (*i.e.,* the number of information system related employees as a percentage of total number of employees and the ratio of R&D to sales) measures compared to their industry averages. It was found that financial measures are primary variables of interest to sell-side analysts while IC measures assume a supplementary role. Hence, this study concluded that IC measures interact with financial measures when informing sell-side analysts' investment decisions.

#### 3.3.2.4. Verbal protocol analysis based literature

Verbal protocol analysis has not been used to explore the utilisation of IC information in particular, but NFI, in general, by both sell-side (Coram *et al.*, 2006) and buy-side analysts (Bouwman *et al.*, 1995).

Verbal protocol analysis is a technique to obtain data by asking respondents to *think aloud* in a problem-solving situation so that transcripts of verbalised thoughts can be recorded on tape. These transcripts, which are referred to as verbal protocols, can then be analysed to make inferences (Day, 1986). In order to investigate the types of information mostly used by sell-side analysts the verbal protocols of sell-side analysts in their review of information is transcribed, and subsequently content-analysed to create a list of frequently mentioned information items (Day, 1986). This method presumes that the more frequently a word or phrase is mentioned, the more important it is. Findings of this method may differ from that of content analysis of analyst reports, as the verbal protocols reveal information that is actually used by analysts but may have not been included in their reports.

This strand of literature contributes to an understanding of the relative use of financial and NFI by sell-side analysts. In common, these studies suggest that analysts place more importance on financial information than on NFI, but they do actively search for NFI (Bouwman *et al.*, 1995; Coram *et al.*, 2006; Day, 1986). An early study employing protocol analysis was conducted by Day (1986) to explore the usefulness of information contained in annual reports to investment analysts in their normal review of accounts. She found that while analysts are mostly interested in accounting information they actively search non-accounting items in narrative sections of annual reports.

Although a study on buy-side analysts, Bouwman *et al.* (1995) provide an interesting account of the process of using NFI (referred to in their study as non-GAAP information), which could be equally useful in understanding sell-side analysts' behaviour in similar circumstances. Bouwman *et al.* found that the use of non-GAAP information increases when analysts transit from a familiarisation stage (*i.e.,* where analysts familiarise themselves with the company) to an evaluation stage, and the use of non-GAAP information is particularly dominant when summarising, analysing and

integrating all acquired information. According to this study, among the non-GAAP information mostly used by buy-side analysts was information regarding management's planned expenditure and descriptive information, such as products, technology, managers, directors and employees, which comprise IC.

#### 3.3.2.5. Content analysis based literature

Studies employing content analysis have been dominant recently in the examination of IC information use of sell-side analysts. Content analytic studies of analyst reports reviewed in this section can be classified into two groups: (1) those that investigate NFI (or sometimes narratives) in analyst reports; and (2) those that specifically examine IC information. The following discussion is structured accordingly.

***Studies investigating NFI in analyst reports***

Content analysis has been commonly used by researchers in the investigation of types of information, financial and non-financial, used/disclosed by sell-side analysts (e.g., Breton and Taffler, 2001; Fogarty and Rogers, 2005; Previts *et al.*, 1994; Rogers, 1996; Rogers and Grant, 1997). These studies reveal the existence of several types of NFI in analyst reports. According to Previts *et al.* (1994), types of NFI disclosed in analyst reports include 'market and competition', 'industry and economic conditions', 'history of the company and its products', 'pricing', 'customers', 'suppliers', 'production capabilities', 'technologies', 'marketing and distribution systems', 'R&D expenditure', 'quality of management', 'organisational structure', 'corporate and management strategy', 'anticipated changes on future earnings', and 'major projects'. Also, Rogers and Grant (1997) examined six categories of information in analyst reports: (1) financial and operating data; (2) analysis of financial and operating data; (3) forward-looking information; (4) management and shareholder information; (5) description of company and its products etc; and (6) description of environment in which the company operates. They observed a substantial amount of NFI in the sample analyst reports with most of it relating to descriptions about the firm or the environment in which the firm operated.

However, Fogarty and Rogers (2005) point out that information about the company and management are given considerable importance in analyst reports. Similarly, Breton and Taffler (2001) observed that sell-side analysts are concerned with the

firm's management and strategy, and its trading environment when making recommendation decisions. They state that 'whereas accounting information is of fundamental importance to sell-side analysts, it is not the only, nor even the most important' (p.91). Also, they propose improvements to the provisioning of qualitative information on management and strategy. Similar conclusions are drawn by Low and Siesfeld (1998), who argue that sell-side analysts extensively use NFI when evaluating companies and making recommendations.

On a slightly different focus, Flöstrand and Ström (2006) examined the *time orientation* of NFI in analyst reports. They reported that sell-side analysts tend to rely more heavily on forward-looking NFI than on historical NFI. The mostly reported non-financial items in this study were 'information related to forecasts', 'beneficial or detrimental circumstances with future cash flows consequences', 'description of business and industry structure', and 'changes in markets, competition or technology'.

Breton and Taffler (2001) investigated the relationship between types of information in analyst reports and corresponding recommendations. They found that three NFI categories (*i.e.,* positive and neutral references to management and strategy, and negative information cues on market conditions) statistically significantly differ between types of investment recommendations. Further, the multivariate results of their study reconfirm the importance of neutral and positive mentions of management and strategy. These findings indicate that certain types of NFI are more important than some other types in driving favourable investment recommendations.

Focusing on IC information, Low and Siesfeld (1998) observed the existence of IC related information among other non-financial performance information items in analyst reports. Also, they submit that IC items such as 'customers and product related factors', 'structural and employee related factors', and 'innovation related factors' are used with a greater frequency in analyst reports. Similar conclusions were drawn in a more recent study conducted by Orens and Lybaert (2007), which is discussed later in this chapter.

On the contrary, Nielsen (2008) found little IC information, as well as social, sustainability and corporate governance information in a sample of analyst reports. However, he found a substantial amount of information relating to the 'company

background (*i.e.,* information on markets, products, industry and general development of the company)', 'business segments', 'risks and opportunities', 'value drivers', and 'critical success factors'. Thus, the low level of IC information in Nielsen's study could probably be due to the narrow operationailsation of the IC concept and limited number of IC items investigated by him.

***Studies investigating IC information in analyst reports***

To early 2009, there have been five content analytic studies specifically investigating IC information in analyst reports. Table 3.4 provides a comparison of findings of these studies in relation to the frequency of references to the main IC categories examined in them.

**Table 3.4: Frequency of references to main IC categories**

| | Customers | External | Human | Internal | Organisational | R&D | Strategy | Total IC |
|---|---|---|---|---|---|---|---|---|
| García-Meca (2005) [a] | 9.5 | | 4.1 | | 27.8 | 5.1 | 30.4 | 13.8 |
| García-Meca and Martínez (2007) [b] | 25.7 | | 3.7 | | 15.2 | 3.6 | 35.2 | 14.9 |
| Arvidsson (2003) [c] | | 22.6 | 3.1 | | 6.7 | 31.0 | | 12.2 |
| Flöstrand (2006) [d] | | 62.5 | 10.7 | 26.8 | | | | 2.5 |
| Orens and Lybaert (2007) [e] | | 40.0 | 5.0 | 23.0 | | | | 21.0 |

(a) Frequency is calculated as the percentage of IC items disclosed over a predefined list of potentially communicable items averaged over the number of reports in the sample. Technology and processes categories are combined together and presented as one category – organisational.
(b) Frequency is calculated as the percentage of IC items disclosed over a predefined list of potentially communicable items averaged over the number of reports in the sample.
(c) Frequency is calculated as the percentage of analyst reports referring to an IC category (N=105).
(d) Frequency is calculated as the number of IC indicators disclosed per category relative to the number of IC items disclosed for the total sample. Frequency for 'total IC' is calculated as the number of IC indicators per analyst report.
(e) Frequency is calculated as the percentage of analyst reports referring to an IC category in 2006 analyst reports (N=40).

Arvidsson (2003), the first to investigate IC information in analyst reports, examined 105 analyst reports on knowledge-intensive firms in Denmark, Finland, Norway and Sweden. She used a disclosure index of 81 IC items classified into human, relational, organisational, R&D and environmental/socio categories. Arvidsson found that information on R&D is the most referred to IC category followed respectively by relational, human and organisational capital categories.

The next published study of this genre is García-Meca (2005). She studied IC information in 217 analyst reports written on Spanish listed companies. According to

her findings, 'strategy', 'technology', and 'processes' are the three most referred to IC categories, in descending order of frequency. With the exception of 'quality and experience of managers', HumC is the least referred to IC category in this study. Extending this work, García-Meca and Martínez (2007) investigated the disclosure of IC information in a large sample of analysts' *results reports* and *company reports*.

In contrast to the findings of García-Meca (2005), García-Meca and Martínez (2007) found that 'strategy' was the most referred to IC category followed by 'customers' (see, Table 3.4). Also, both García-Meca (2005) and García-Meca and Martínez (2007) found that IC references relating to R&D are rare in analyst reports, a finding that contradicts Arvidsson's (2003) results.

The main focus of the study by Flöstrand (2006) was the use of *IC indicators* (in contrast to IC references)[33] in analysts' *initiating coverage reports* in the USA. Almost two thirds of IC indicators found in the analyst reports examined in this study relate to ExtC. Number of employees is the only HumC indicator that was referred to frequently by sell-side analysts, according to the results of this study.

However, Orens and Lybaert's (2007) study differs from the other studies listed in Table 3.4, in that they investigated the relative importance of IC *vis-à-vis* other NFI. They noted that sell-side analysts occasionally discuss IC information compared to other types of NFI. Nonetheless, their results are similar to that of Flöstrand (2006) in relation to the relative importance placed on ExtC, IntC and HumC categories by sell-side analysts.

The literature reviewed in this section identifies that IC exists to different degrees in analyst reports. Also, the results are mixed on the importance of IC categories. Therefore, it is important to examine differences in the use of IC information at IC item level. The following Table 3.5 lists the five most and least referred to IC items in each study.

[33] Flöstrand (2006, pp. 463-4) defines an IC indicator as "[…] a parameter or a value derived from parameters, which provides information about a phenomenon. The indicator has significance that extends beyond the properties directly associated with the parameter values". IC indicators are purely numerical or monetary representations of IC.

**Table 3.5: Most and least reported IC items in prior ICD studies**[34]

| | Most referred to IC items | Least referred to IC items |
|---|---|---|
| Arvidsson (2003) | • Status of product portfolio<br>• Competitive strength of R&D activities in relation to competitors<br>• Future prospects regarding R&D<br>• Network of suppliers and distributors<br>• R&D projects by position in pre-clinical stage | • Objectives and reasons for investments in IT<br>• Corporate quality performance<br>• Organisational flexibility and adaptability<br>• Abilities of employees<br>• Mention of directors of top management team |
| García-Meca (2005) | • Investment in new business<br>• Business vision, objectives and consistency of strategy<br>• New products and technology<br>• Acquisitions<br>• Leadership and brands | • Social responsibility<br>• External and internal failures<br>• Remuneration systems<br>• Dependence on key employees<br>• Career opportunities and insurance policies (for employees) |
| García-Meca and Martínez (2007) | • Investment in new business<br>• Credibility and consistency of strategy<br>• New products<br>• Strategic alliances and agreements<br>• Leadership and trademarks | • Future projects regarding innovation and R&D<br>• Patents pending<br>• Career opportunities<br>• Insurance policies (for employees)<br>• Job rotation opportunities, dependence on key employees, value added per employee, career opportunities, and social responsibility |
| Orens and Lybaert (2007) (Only from IC items included in the study for the 2002 sample) | • Realised acquisitions<br>• Evolutions in the market share<br>• Innovation (*e.g.,* new products and production processes)<br>• Distribution and delivery methods<br>• Main brands of the company<br>• Employee compensation | • Education and training programs of employees<br>• Staff policy<br>• Employee satisfaction<br>• Organisation structure<br>• Customer satisfaction and loyalty |

As shown in the above table, the five most referred to IC items in the listed studies do not share any common items. However, García-Meca and Martínez (2007) and García-Meca (2005) find several common IC items in the top five most referred to IC items. These include information relating to investment in new businesses, strategy, new products and leadership. Also, information on new products is one of the five most disclosed items in Orens and Lybaert (2007). Similarly, information on acquisitions and brands are found to be of high importance by García-Meca (2005) and Orens and Lybaert (2007). Further, information relating to supply and distribution channels is considered to be highly important to sell-side analysts in Orens and Lybaert (2007), Flöstrand (2006) and Arvidsson (2003).

Looking at the least important IC items across the studies listed in Table 3.5, aspects of employee related information are commonly found to be the least important.

[34] Flöstrand's (2006) study is excluded from this comparison as it concerns IC indicators only.

Further, 'career opportunities' and 'insurance policies (for employees)' are the least disclosed IC items according to two studies. However, results are contradictory in certain instances, where the most referred to IC items according to some studies are also the least referred IC items according to another study. For instance, 'employee compensation' is a frequently referred to IC item according to Orens and Lybaert (2007), while García-Meca (2005) failed to find any reference to 'remuneration systems' in analyst reports investigated in her study. 'Future projects regarding R&D' is another IC item that is subject to this contradiction. These inconsistent findings could be due to methodological differences, such as the type of analyst reports investigated (*initiating coverage reports* versus *recurrent reports* etc.), method of reporting results (percentage of reports referring to an IC item versus number of total references to an IC item in all reports), and differences in item definitions.

The next section reviews the literature to understand *how* IC information is used in sell-side analysts' company research.

### 3.4. How sell-side analysts use IC information

This section reviews the research literature in order to understand *how* IC information is used by sell-side analysts. The next subsection discusses the use of IC information is the valuation models of sell-side analysts.

#### 3.4.1. Company valuation

A firm's market value is not the sum total of individual values of all assets: physical, financial and intangible. For instance, Flöstrand (2006, p.458) explains that "analysts value companies holistically by valuing future financial performance of the firm, rather than valuing all the assets individually and then adding the parts". It has been found that sell-side analysts commonly employ comparative valuation models (*e.g.,* price-earnings (P/E) ratio, price-cash flow ratio, dividend yield, etc) and, to a lesser extent, net present value (NPV) based models (*e.g.,* dividend discount models, discounted cash flow models etc) (e.g., Arnold and Moizer, 1984; Arnold *et al.*, 1984; Asquith *et al.*, 2005; Barker, 1999; Block, 1999; Demirakos *et al.*, 2004; Pike *et al.*, 1993). Particularly, the price-earnings approach has been identified as the most popular model in company valuation among sell-side analysts (Barker, 1999). Arnold

and Moizer (1984, p.197) explain the price-earnings approach generally adopted by analysts in their study:

> The common general pattern involved attempts to predict a company's share price at some time in the future, usually not more than one year ahead. Most frequently; this prediction involved estimating earnings for the current year and applying an 'appropriate' price-earnings ratio to the estimated earnings in order to predict future market price. Predicted market price was then compared to the current market price to see if the share looked currently over-or under-valued.

Also, Arnold and Moizer (1984) observed that when predicting earnings sell-side analysts consult company officials to obtain qualitative information. Further, Bradshaw (2002) found that sell-side analysts incorporate NFI into estimates of value and use this information to justify their recommendations. It is likely that IC occupies a significant place in this process, given its value creation potential. Barker (1999) explains that the use of financial information as a basis of company valuation is limited to short-term forecasts, while forecasting into the long-term horizons requires NFI.

The literature has also examined how IC and other NFI are used in NPV based models. For instance Holland (2004, p.xi) comments:

> Such information [on intangibles] is used in the capital market to estimate the expected level of residual future corporate cash flows available to investors, earnings and their absolute and relative risk to the sector and the market…and provides the basis for the valuation of these firms as manifest in their stock price.

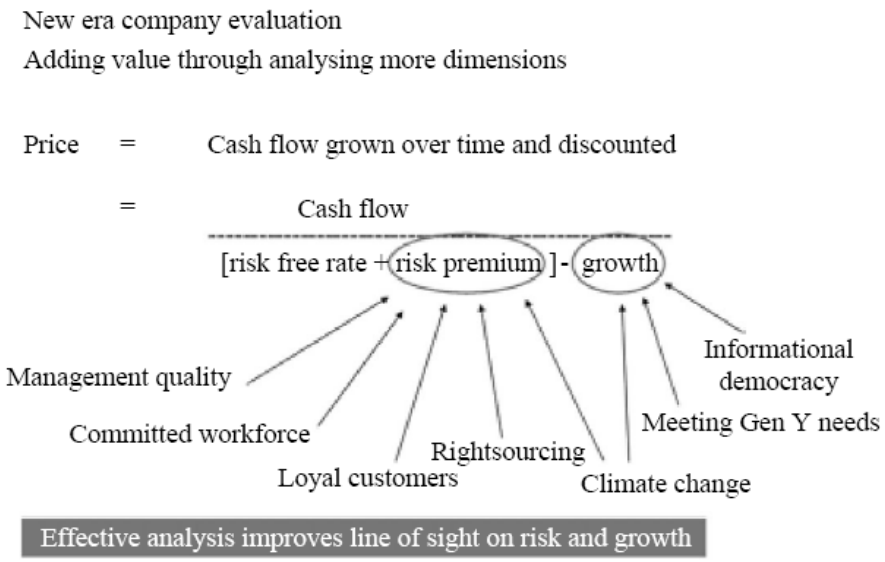
Similarly, Barker (1999) argues that, in a dividend discount model, the determination of terminal value is a subjective one, which is driven by sell-side analysts' assessment of *management quality* – an important HumC attribute. He justifies the use of *management quality* as a proxy on the basis that future performance is unobservable, whereas *management quality* is currently assessable.

A similar explanation of company valuation is provide by Holland (2004, p.66) quoting an interviewee in his study:

> First of all, they value the company on existing earnings, cash flows and risk and they [sell-side analysts] then add on the extra value from our future growth potential. They can develop precise numbers for our existing business but they have to make a lot of blue-sky guesses for the growth options being created in the business. A large element of growth deals with the intangibles such as do they believe the company story and plans. So, the critical variables here are: the management quality; the record to date; and the ability of the management to deliver promises[…] The brokers' analysts and the fund managers may not necessarily make links between intangibles, tangibles and financial effects. They may not formally model these. They may, in fact, use their view of management confidence and credibility as a short cut. If they believe the story we [company management] are talking about and it makes sense relative to the competition then they will use this to tweak their P:E relatives and be more optimistic in them.

The following Figure 3.1 highlights diagrammatically how IC and other NFI are used in the determination of the risk premium and growth rate for a NPV based model.

**Figure 3.1: The affect of changing information needs on firm valuation**




*Source:* Boedker *et al.* (2008, p.17)

The literature reviewed above indicates that IC is an important input to sell-side analysts' valuations, regardless of the valuation method adopted. However, the literature on the role of IC in company valuation is limited. The following subsection reviews the role IC information plays in sell-side analysts' company research.

### 3.4.2. Role of IC in sell-side analysts' company research

Several researchers contend that IC information is used by sell-side analysts to construct a unique picture or *mosaic* of corporate value-creation as a step in the company valuation process (e.g., Day, 1986; Holland, 2004; Nielsen, 2008). For instance, Holland (2004, p.62) remarks:

> The first level [in the valuation process] involved a holistic or mosaic view employed by fund managers and analysts in their valuation models of individual companies. Over time, fund managers and analysts were seen to be seeking to acquire a broadly based understanding of company supplied, intellectual capital based value-creation information.

Holland (2006) explains that this *mosaic* becomes a springboard for problematising and analysing the company. In this process, the mosaic of information is used in estimating values for key variables, such as earnings. In relation to IC, Holland (2006) argues that the *mosaic* serves several purposes: (a) it provides a coherent means to combine IC information with other fragmented information to construct a broader picture; (b) it enables assessing the impact of IC information on corporate valuations; and (c) it provides a means to check corporate promises against reality. The *mosaic approach* is also explained as helping sell-side analysts to deal with the problems of understanding and using IC information supplied by companies (Holland and Johanson, 2003). In this regard, both Holland (2004) and Holland and Johanson (2003) argue that not all information on corporate value creation processes considered as relevant by company management are used by sell-side analysts. For instance, Holland and Johanson (2003, p.12) contend:

> Company management "relevant" information is relatively stable and comprehensive, covering all of the value creation process, whereas analyst "relevant" information is transient, seen as part of a mosaic of information, and often quite narrowly conceived.

Nielsen (2008, p.82) makes an important distinction between sell-side analysts wanting to understand the company and wanting to understand the stock price:

> While company management and the long-term oriented analysts' interests relate to understanding the company's concept and business model, fund managers and the so

> called *trigger oriented analysts* are primarily concerned with predicting the stock price (emphasis added).

Nielsen views the *mosaic* as providing a basis for building a case or the company *value-creation story*. He further explains that those sell-side analysts interested in understanding the company attempt to build a case on the company, and see their competitive advantage being derived from communicating the *value-creation story* of the company in an easily understandable manner. It is suggested that the long-term oriented sell-side analysts, who usually endeavour in this approach, utilise more IC information than the so called *trigger oriented* sell-side analysts (Nielsen, 2008).

Information on *management quality* has been widely discussed as forming a major part of sell-side analysts' work (e.g., Barker and Imam, 2008; Previts *et al.*, 1994). For instance, Barker (1999, p.205) contends that *management quality* is assessed by sell-side analysts as the basis for determining the ability of the firm to outperform in periods beyond the foreseeable future.

> […] if we characterize analysts' valuations as comprising two parts – value for an explicit forecast period and an estimate of terminal value beyond this forecast period – then the assessment of management is the subjective basis around which the estimate of terminal value is derived.

Holland and Johanson (2003) argue that sell-side analysts use their assessment of *management quality*, which is partially based on their track record, in order to determine the likelihood of top management going ahead with an indicated strategy.

Also, it is suggested that sell-side analysts rely on their assessment of *management quality* in a bid to deal with the complexity associated with the use of qualitative information, such as IC. For instance, Almqvist and Henningsson (2009, p.55), investigating sell-side analysts unwillingness to *dig deeper* in to HumC and corporate work environmental matters despite their importance, explain:

> The paradox in reducing the complexity of such information was then resolved by evaluating the management and their judgment. It was also partly solved by relying on the involvement of the organisation as a whole, and allowing them a certain distance. When evaluating in more general terms the judgment or responsibilities of the management in which they invested, they were more indirectly concerned with

> whether the management was thinking in these directions or not. The reputation risk for the organisation did not prompt them to actively seek to understand how management did this, as long as the business continued to be financially successful.

Bismuth and Kirkpatrick (2006, p.8) comment on the important role played by *management quality* in organisational success, even when other IC is limited:

> There are many examples of firms that have proved incapable of bringing successful R&D to market and others that have succeeded without much R&D, but rather through the careful use of human capital and the promotion of innovation in their own organisations.

*Management quality* is also considered as a basis for relying on IC and other NFI provided by the management. For instance, Nielsen (2008) contends that the reputation of management is considered by sell-side analysts as sufficient grounds to rely on IC information supplied by the company, and rejects the need for assurance by an external auditor.

*Management quality* is assessed by sell-side analysts in meetings with company personnel. This is done by evaluating: management's ability to achieve results; management's performance in the past; and how the management has kept to their promises in the past. Once the *management quality* is affirmed by assessing their achievements against promises made in the past, information conveyed by company management to sell-side analysts is acknowledged as reliable (Holland, 2004).

Thomas (2003, p.81) argues that IC is used by sell-side analysts within their financially driven analytical models in order to determine the quality and sustainability of the current financial performance, especially in making economic projections:

> [T]he factors that allow an analyst to gain confidence in them [i.e., analytical models] – such as revenue growth, margin trends – are typically non-financial in nature. Revenue rises because a company is in a growing market and/or is gaining share while market share increases through new product innovation, through areas such as superior customer recruitment and retention policies.

In summary, the literature reviewed above identifies that sell-side analysts use a *mosaic approach,* and IC information is included in that *mosaic* of information. However, little is known about the types of IC information included in this *mosaic,* or *what* and *how* IC information is used in sells-side analysts' company analysis and valuation. One exception is *management quality,* which has been studied in some detail.

The next section discusses the gaps in the reviewed literature and formulates the research objectives.

### 3.5. Gaps in the literature and research objectives

The purpose of this section is to develop the research objectives of this PhD study in order to address the gaps in the literature reviewed in this chapter. The remainder of this section is divided into three subsections, which frame the three main research objectives of this thesis

#### 3.5.1. Importance of IC information

The review of the capital markets research literature in Sections 3.2 highlights that IC plays an important role in explaining the gap between the book value and market value of firms. It was also discussed that several types of IC belonging to the ExtC, HumC and IntC categories are capable of predicting firms' financial performance and market value. However, IC items that are not amenable to economic or financial measurement, or for which measurement proxies are unavailable, cannot be evaluated for their importance using capital markets research. Moreover, researchers argue that measurement difficulty, non-specificity, complexity and interdependence of IC are impediments for capital markets research on IC (Bukh and Johanson, 2003; Holland, 2003; Mouritsen, 2003). On the other hand, capital markets research studies cannot explain *how* IC information is interpreted in determining market values.

A more suitable approach to investigating these issues is to examine *what* and *how* IC information is used by capital market participants. Research of this genre has mainly focused on sell-side analysts, as they are considered market intermediaries and sophisticated processors of information, and their reports have a significant impact on trading activities and stock returns (Breton and Taffler, 2001) (see, Section 1.5).

A review of the literature on sell-side analysts' use of information in Section 3.3 revealed that, while substantial research attention is directed at examining the extent and types of financial and non-financial information used/disclosed by sell-side analysts, studies specifically exploring sell-side analysts' use of IC information are scarce. However, research evidence suggests that IC information is considered important by sell-side analysts. Nonetheless, little convergence was found on the types of IC information sell-side analysts consider most and least important in the studies investigated. Therefore, more research is needed on the importance of IC information to sell-side analysts.

In an attempt to further the understanding of the use of IC information by the capital market, given the issues addressed above, it is argued that IC information referred to by sell-side analysts should be investigated. This leads to the first objective of this thesis:

***Objective 1: Understand the importance of IC information, in general and various types of IC information, in specific to sell-side analysts***

Flöstrand and Ström (2006) explain that the importance of types of IC to the capital market can be ascertained by investigating their *valuation relevance* (as against value-relevance). They note that an item of information is *valuation relevant* if it is used by sell-side analysts in their research. It is argued that information considered important to sell-side analysts will also be considered important to the capital market in determining the market value of a company. Similarly, the literature reviewed in this section indicates that content analysis of analyst reports has been widely used to investigate sell-side analysts' use of various types of information, especially in the recent past. In addition, it has been the most commonly employed research method to investigate sell-side analysts' use of IC information.

The next subsection provides a comparison of the characteristics of prior studies on the use of IC information in analyst reports. The purpose of this comparative analysis is to address the specific gaps in the literature that this PhD study attempts to fill in relation to the first research objective.

### 3.5.1.1. Characteristics of prior content analysis studies on IC use

The key features of the five published studies on the use of IC information in analyst reports are summarised in the following Table 3.6 in order to facilitate a quick visual analysis of the gaps in the literature that are explained in more detail below under separate subsections.

**Table 3.6: Key features of prior content analysis studies**

| | **Arvidsson (2003)** | **García-Meca (2005)** | **Flöstrand (2006)** [a] | **García-Meca and Martínez (2007)** | **Orens and Lybaert (2007)**[b] |
|---|---|---|---|---|---|
| **Country** | Denmark, Finland, Norway, and Sweden | Spain | USA | Spain | Belgium |
| **Type of Report** | Not disclosed | Not disclosed | Initiating coverage | Company and results | Company |
| **Report IC use by sector** | No | No | Yes | Yes | No |
| **Industries /sectors** | Pharmaceutical Biotechnology Health care Equipment and supplies | Financial services Utilities Food Construction Communication Petrochemical Metallurgy Technology Other | Energy Materials Industrials Consumer discretionary Consumer staples Health care IT Telecommunication | Banks and finance Utilities Food, beverages and tobacco Construction Metalworking Petrochemical Communications New technology Other | All industries except banks, insurance companies, holding and real estate companies |
| **Measurement of IC** | Presence of IC themes | Presence of IC themes | Presence of IC indicators | Presence of IC themes | Presence of IC themes |
| **Determinants of ICD investigated** | • ICD in annual reports<br>• Market share of the analyst firm<br>• Firm size<br>• International listing status | • IC disclosed in meetings with analysts | • Year of report<br>• Industry<br>• Length of report<br>• Analysts' firm<br>• Recommendation type<br>• Price-to-book ratio | • Firm size<br>• International listing status<br>• Profitability<br>• Systematic risk<br>• Price-to-book ratio<br>• Analysts' firm<br>• Recommendation type | • Time period<br>• Analyst forecast accuracy<br>• NFI in annual report |

(a) Flöstrand's study was limited to the examination of numerical indicators of IC.
(b) Orens and Lybaert (2007) examined ICD as well as a range of other narrative disclosures.

***Country setting***

As can be seen in the first row of Table 3.6, all of the studies published have been conducted in an American (Flöstrand, 2006) or a Continental European setting (e.g., Arvidsson, 2003; García-Meca, 2005; García-Meca and Martínez, 2007; Orens and Lybaert, 2007). Australian studies on the utilisation of information, let alone IC information, by sell-side analysts are limited. This thesis attempts to fill this void.

Investigating the use of IC information by sell-side analysts in different country settings is particularly important due to several reasons. First, it is likely that the use of IC information differs by country, as country differences in the use of NFI by sell-side analysts have been previously observed (e.g., Arnold *et al.*, 1984; Belkaoui *et al.*, 1977; Olbert, 1994; Pike *et al.*, 1993)[35]. Second, the extent of IC information available to sell-side analysts differs by country. For instance, the level of voluntary disclosures of NFI made by companies not only differs among culturally distinct countries but also among culturally similar countries, such as Australia, Canada and the USA (Gray, 1988; Robb *et al.*, 2001). Third, it has been argued that the perceived demand to provide NFI in analyst reports differs across cultures (Adhikari *et al.*, 1998). Fourth, sell-side analysts' reliance on different information sources is influenced by the strength of a country's equity market (Clatworthy and Jones, 2008).

***Analyst report type***

The second row in Table 3.6 shows the type of analyst reports examined in each study. Accordingly, only Flöstrand (2006) has examined IC in *initiating coverage reports*, despite it being the most comprehensive of all types of analyst reports. Prior research indicates that *initiating coverage reports* are lengthy and thus provide more opportunity for sell-side analysts to explain in detail their analysis of the company and justify their forecasts. Nonetheless, Flöstrand's (2006) investigation is limited to IC indicators in analyst reports. Given that, numerical expressions of IC are just a small part of all IC information communicable by sell-side analysts, there is scope to extend the current literature. In other word, a more detailed investigation of IC information in *initiating coverage reports* is warranted.

[35] For instance, Pike *et al.* (1993) found that German sell-side analysts consider more types of NFI as highly important than UK sell-side analysts, whilst the type of NFI considered as very important by the sell-side analysts of the two countries varied.

***Sector differences***

The third row in Table 3.6 indicates whether each study has investigated and reported on inter-industry or inter-sectoral differences in the use of IC information by sell-side analysts. Similarly, the fourth row highlights the industries investigated in each study. According to this table, only Flöstrand (2006) and García-Meca and Martínez (2007) have investigated differences in the use of IC information in analyst reports by industries/sectors. These two studies report inter-industry variations in the extent of IC information used by sell-side analysts. However, they report results by industries in relation to broad IC categories. It is more important to understand the specific subcategories or types of IC information that are considered important or not important by sell-side analysts in analysing companies from different industries/sectors. This thesis attempts to extend the literature from this perspective.

***Method of analysis***

The fifth row in Table 3.6 indicates the method adopted in each study to measure the extent of IC information present in sampled analyst reports. As this table highlights, all prior studies have looked for the presence or absence of IC themes or categories, whereby the importance of an IC theme/category is determined by the number of analyst reports in which the theme/category is present. Hence, analyst reports are not scrutinised for every occurrence of an IC theme/category, once that it is found to be present. This approach treats a report as having one occurrence of a particular IC theme/category, as equal to one having many occurrences of that IC category (Milne and Adler, 1999). Hence, the full extent of IC information used in analyst reports has not been investigated previously. This thesis intends to address this gap by examining the *incidence* of IC information in analyst reports, so that the importance of an IC theme/category is measured by its frequency of occurrence across the sample (see, Section 5.4).

***Differences by type of analyst recommendation***

The final row in Table 3.6 shows the independent variables investigated in each study to explain the differential use of IC information by sell-side analysts. Among the variables examined in prior studies, Flöstrand (2006) and García-Meca and Martínez (2007) have examined whether the extent of IC information differs by type of analyst

recommendation. Both these studies failed to find a relationship between the extent of IC information (or indicators in the case of Flöstrand (2006)) and type of analyst recommendation. However, their analyses were limited to the extent of total IC information in analyst reports. Prior research, although not specifically in relation to IC information, has found that the use of particular types of NFI differ by type of investment recommendation. Hence, the current literature can be extended to look at differential use of types of IC information by type of analyst recommendation. Further, given the dearth of research on this issue, there is also scope to study *how* the communication of IC information in anlyst reports differs by type of analyst recommendation. Thus, this thesis intends to contribute to the literature through descriptive and statistical analyses of differences in the use/communication of IC information in analyst reports across recommendation types.

The next section describes the second main research gap addressed in this PhD study, and establishes the second research objective.

### 3.5.2. How IC information is communicated

The literature reviewed in the previous sections of this chapter indicates that the focus of prior research has been on understanding the types of financial and non-financial information considered important by sell-side analysts. Nonetheless, it was discussed in Section 3.4 that a few studies have attempted to understand how NFI and sometimes IC information is used in company valuation and in analyst research. However, studies particularly looking at how IC information is embedded in valuations and recommendations of sell-side analysts are rare.

Moreover, it has been argued in the literature that sell-side analysts not only disseminate information relevant to their forecasts and recommendations through their reports but also attempt to convince the readers about their opinions (e.g., Nielsen, 2008; Previts *et al.*, 1994; Rogers and Grant, 1997). Therefore, when investigating sell-side analysts' use of IC information via a content analysis of analyst reports it is important to consider analyst reports as a communication medium. However, none of the prior studies investigating IC information in analyst reports has acknowledged this. This is particularly important given the evidence on sell-side analysts' optimism bias, which is influenced by the institutional setting in which they operate (see,

Section 1.6.2). Hence, a gap exists in the literature that can be filled by an investigation of qualitative characteristics of IC references in analyst reports that enables understanding of *how* sell-side analysts use/communicate IC information.

None of the prior studies has conducted a detailed investigation of qualitative characteristics of IC information used/communicated by sell-side analysts in their reports. However, qualitative characteristics such as *evidence*, *news-tenor* and *time orientation* have been investigated in analyst reports in relation to other types of information. For instance, Abdolmohammadi *et al.* (2006) examined *evidence* of information in analyst reports. They looked at NFI referred to qualitatively and quantitatively in analyst reports, and found that NFI is increasingly being disclosed quantitatively. Also, the prior literature has investigated *news-tenor*[36] in analyst reports, and has found that *good news* dominates *bad news*. For instance, Fogarty and Rogers (2005) used content analysis to examine analyst reports and found that sell-side analysts more often speak well of the company management and their plans than they speak ill of them. Also, Fogarty and Rogers (2005) examined the use of *time oriented* verbs in analyst reports. An investigation of time orientation in analyst reports provides evidence as to whether sell-side analysts believe that the past will repeat itself, or future performance has little to do with past successes/failures, but largely depends on a company's present and future activities. However, Fogarty and Rogers (2005) observed that analyst reports predominantly dwell on the past, contradicting the popular expectation that analyst reports are forward-looking. It is important to investigate these qualitative aspects of IC information in analyst reports in order to appreciate the role IC information plays in the capital market in analyst communications. This leads to the second objective of this thesis:

***Objective 2: Examine how IC information is used and communicated by sell-side analysts***

The present study intends to address this gap by investigating three qualitative dimensions of IC: (1) *evidence* (*i.e.,* whether IC information is communicated discursively, quantitatively or visually; (2) *news-tenor* (*i.e.,* whether IC information is

[36] News-tenor refers to the pro- or con-representation of the subject matter (Kassarjian, 1977). However, Kassarjian (1977, p.13) uses the term 'direction' to refer to what this thesis refers to as news-tenor.

communicated positively, neutrally or negatively); and (3) *time orientation* (*i.e.,* whether IC information is communicated in a forward-looking, non-time-specific or past-oriented manner) (see, Section 5.6).

The next section describes the third main research gap addressed in this thesis, and establishes the third research objective.

### 3.5.3. Determinants of use of IC information

As highlighted in Table 3.6 above, prior studies have examined whether the use of IC information in analyst reports is driven by a number of explanatory factors. These studies find that the extent of overall IC references in analyst reports is influenced by a number of factors: the extent of overall disclosure on intangibles in annual reports; whether the analysed firm is listed internationally; industry of the firm analysed; firm profitability; and price-to-book ratio (Arvidsson, 2003; Flöstrand, 2006; García-Meca, 2005; García-Meca and Martínez, 2007). However, none of these findings has been replicated in a second study nor have these explanatory variables been studied in relation to different types of analyst reports or by using different methods. It is important to conduct more research on the determinants of use of IC information in analyst reports in order to give credibility to the current findings. This leads to the third research objective of this thesis:

***Objective 3: Investigate the factors influencing the use/communication of IC information by sell-side analysts***

More specifically, this study intends to investigate how the use of IC information in analyst reports varies with firm size, profitability, perceived systematic risk of the firm, IC intensity of the firm's sector, and type of analyst recommendation. The two important points of departure of this study from prior studies are that it concerns *initiating coverage reports* and measures the frequency of incidence of IC references.

The next section summarises this chapter.

## 3.6. Chapter summary

The purpose of this chapter was to review the research literature in a bid to identify research gaps and introduce the research objectives of this thesis. This chapter

commenced with a discussion of the widening gap between the book value and market value of firms and the increasingly important role played by IC in explaining this gap. The research literature revealed that several standalone IC items are associated with the market value of equity and financial performance. Nonetheless, it was observed that the complexity of IC limits the utility of capital markets research studies in exploring the valuation impact of many types of IC. Consistent with prior research, this thesis suggests an investigation of IC information used by sell-side analysts in their reports as an alternative approach to examining the importance of types of IC information to the capital market. Therefore, the first research objective of this PhD study was formed — *to understand the importance of IC information, in general and various types of IC information, in specific to sell-side analysts.*

A review of the literature on the types of information considered important to sell-side analysts revealed that: (1) whilst sell-side analysts use more financial information than NFI, the latter plays an important role in their research; (2) most NFI used by sell-side analysts shows characteristics of IC; and (3) sell-side analysts use a variety of IC.

The second research objective emerged from the review of the research literature on how IC information is used by sell-side analysts. Important observations made based on this literature review are that: (1) some types of IC information are used as part of a *mosaic* of information by sell-side analysts to build a case or a story about the company; (2) *management quality* plays an important role in the valuation decisions of sell-side analysts, and has been researched quite extensively; (3) IC is an important input to both comparative valuation models (*e.g.,* PE ratio) and NPV based models (*e.g.,* dividend discount model); and (4) academic research is limited on how different types of IC information is used in the sell-side analysts' *mosaic* of information, or in constructing the *value-creation story* or in their valuation models. Thus, the second research objective was formed – *examine how IC information is used and communicated by sell-side analysts.*

Also, this chapter included a review of the literature on the determinants of use of IC information in analyst reports, which provided the background for the development of the third research objective of this thesis — *investigate the factors influencing the use/communication of IC information by sell-side analysts.*

# 4. HYPOTHESES DEVELOPMENT AND TESTING

## 4.1. Introduction

The three research objectives of this PhD study were introduced in Chapter 3. The purpose of this chapter is to develop hypotheses to operationalise the third research objective. Also, this chapter describes the method of testing the hypotheses. These hypotheses concern the impact of firm size, profitability, firm's systematic risk, IC intensity of the sector and type of analyst recommendation on the use of IC information by sell-side analysts in the reports they produce. Section 4.2 outlines how the hypotheses, based on theory and the prior literature, are constructed in this thesis. Section 4.3 describes the research design for testing the hypotheses, including the choice of statistical tests and construction of proxies for the dependent and independent variables. Section 4.4 provides a summary of the chapter.

## 4.2. Development of hypotheses

This section explains the development of five hypotheses on the differential use of IC information in analyst reports. The hypotheses are based on prior theory and are supported by prior research as explained below. All hypotheses developed in this section are unique, given the nature of analyst reports examined and the research method adopted.

The following five subsections are devoted to the development of each hypothesis intended for testing in this thesis. All hypotheses are stated in alternative form.

### 4.2.1. Impact of firm size on the use of IC information

In the corporate disclosure literature there is a plethora of studies that establish a significant positive association between firm size and the extent of voluntary disclosure made by companies, mainly in annual reports (e.g., Ahmed and Nicholls, 1994; Buzby, 1975; Cerf, 1961; Chow and Wong-Boren, 1987; Cooke, 1989; Firth, 1979; Hossain *et al.*, 1995; Hossain *et al.*, 1994; Inchausti, 1997; Kahl and Belkaoui, 1981; Marston and Robson, 1997; Salamon and Dhaliwal, 1980; Singhvi and Desai, 1971; Wallace, 1988; Wallace *et al.*, 1994). Prior studies have also investigated the impact of firm size on particular types of voluntary disclosures, such as financial,

non-financial, corporate social responsibility (CSR), social and environmental (SER) and IC information (e.g., Flöstrand, 2006; Flöstrand and Ström, 2006; Mathews, 1997; Robb *et al.*, 2001).

As indicated by Marston and Shrives (1991), several reasons are provided for this relationship by early researchers. First, smaller firms face higher information accumulation costs compared to larger firms, who have already gathered most of the information that can be reported externally in the course of their internal reporting (Singhvi and Desai, 1971). Buzby (1975) adds to this argument by stating that larger firms have complex structures, multiple products and a wide geographical spread. As a result, to deal with this complexity they possess sophisticated management accounting systems. These management accounting systems in turn facilitate better external reporting. Lower marginal information production costs for external reporting to large firms is also conjectured by Leftwich *et al.* (1981). Similarly, Lang and Lundholm (1993) contend that although the total cost of disclosure is unlikely to be a function of firm size, disclosure cost per unit of size decreases due to the fixed cost associated with disclosure. They further argue that information dissemination costs are comparatively low for larger firms as the news media are more likely to carry stories of larger companies that are the focus of public attention at no cost to firms. Consequently, analyst following is greater for these firms.

Second, larger firms need greater external funds that potentially expose them to conflicts between owners, managers and creditors. Jensen and Meckling (1976) show that agency cost increases with the amount of outside capital, and the amount of outside capital is related to firm size. Therefore, larger companies may make more disclosures in order to reduce agency costs and information asymmetry (Leftwich *et al.*, 1981). On a related note, Singhvi and Desai (1971) suggest that the tendency to raise funds from the public via public offerings is greater for larger firms and therefore they stand to benefit most from better disclosure that can increase the attractiveness of the firm and investor confidence.

Third, the proprietary cost of disclosure is smaller for large firms (Inchausti, 1997; Leftwich *et al.*, 1981; Singhvi and Desai, 1971). Therefore, they have less incentive to withhold information from the market. Fourth, larger firms face greater political costs due to their economic, environmental and social impact and visibility, and therefore

they make more disclosures in those areas to avoid possible government intervention through extra scrutiny, taxes and regulations (Buzby, 1975; Cooke, 1989; Inchausti, 1997).

Fifth, the transaction cost hypothesis of King *et al.* (1990) predicts that larger firms make extra disclosure as there are greater incentives for private information acquisition in large firms - higher profits can be made from trading on private information in larger companies. Finally, larger firms face greater demand for information from stakeholders, such as customers and suppliers, as well as from market intermediaries such as analysts. In particular, stakeholder demand has been stated as determining factors of corporate, social and environmental disclosures (Deegan and Gordon, 1996).

On the topic area of ICD, prior researchers have examined the relationship between firm size measured using various proxies, and the extent and quality of IC disclosed in various corporate reporting media. Among these studies, those investigating the association between ICD in corporate annual reports and firm size have found a positive association (e.g., Abdolmohammadi, 2005; Bozzolan *et al.*, 2006; Citron *et al.*, 2005; Oliveira *et al.*, 2006; Petty and Cuganesan, 2005). However, there is mixed evidence on the impact of firm size on the extent of ICDs in IPO prospectuses (e.g., Bukh *et al.*, 2005; Cordazzo, 2007). For instance, Bukh *et al.* (2005) found that ICD made in IPO prospectuses is not significantly correlated with firm size (measured by number of employees). However, Cordazzo (2007) argues that number of employees is an inaccurate proxy for firm size, and by using total sales instead he found a statistically significant positive association. García-Meca and Martínez (2005) investigated IC disclosed in managements' presentations to sell-side analysts. Their study confirms the general pattern of ICD increasing according to firm size.

In addition to the reasons discussed above for corporate disclosures in general, several factors specifically explain greater ICD in larger firms. First, larger companies are better resourced to accommodate new reporting initiatives such as ICR. Second, these companies have more IC to report due to their sheer operating scale and large number of stakeholders. Third, large companies are capable of acquiring and implementing new technologies, processes and systems that adds to their stock of IC. These reasons are summarised by Abeysekera and Guthrie (2005, p.156):

> In aggregate terms, bigger firms are likely to possess more intellectual capital because they are more visible and have more resources at their disposal to sponsor new initiatives.

As noted by Arvidsson (2003), the explanations provided by theories for the impact of firm size on the extent of ICD are both demand and supply driven. In other words, firm size acts as a driver to increase information supplied by management, as well as to increase the information demanded by stakeholders. The greater the extent of IC information available to sell-side analysts, because of the supply and demand forces, it can be expected that they will use more IC information in company analysis. The following hypothesis is therefore developed.

**H1: Sell-side analysts are more likely to use more IC information in analyst reports on larger firms than on smaller firms**

The size of the company being analysed is found to be related to the extent of NFI included in analyst reports (Flöstrand and Ström, 2006). However, only García-Meca and Martínez (2007) have specifically examined the impact of firm size on the extent of IC information used by sell-side analysts. They do not find a significant association between the two variables. The present study differs from García-Meca and Martínez's study in at least two important ways. First, whilst García-Meca and Martínez examined *company reports* and *results reports*, this study investigates IC in *initiating coverage reports*. The differences between the three types of analyst reports are significant (see, Section 5.5.1.1). Second, the present study measures the extent of ICD as the frequency with which IC information appears in analyst reports, which differs from the method adopted by García-Meca and Martínez (2007).

### 4.2.2. Impact of profitability on the use of IC information

Previous accounting theories predict a positive association between extent of firm disclosure and firm profitability (Singhvi and Desai, 1971; Wallace *et al.*, 1994). According to signalling theory, management of profitable firms is interested in disclosing detailed information to the market in order to avoid undervaluation of their firms and to increase investor confidence. In addition, this theory suggests that managers of profitable firms make good news disclosures to distinguish their firms from other firms that are less profitable. Agency theory posits that management of

better performing firms are motivated to make voluntary disclosures to maximise their own benefits, particularly in order to obtain ongoing support for the continuance of their position and compensation. Similarly, management in less profitable firms may disclose less information in an attempt to conceal their poor performance, which may otherwise be threatening to the maintenance of their position and compensation arrangements. Similarly, political cost theory predicts that highly profitable firms have an incentive to disclose voluntary information, explaining how profits are made in order to discourage political intervention such as taxes, controls and regulation. Disclosure of IC information is particularly suitable in these contexts as IC drives firm performance and can justify firms' profits.

Looking at causal attributions in management forecasts, Baginski *et al.* (2000) note that internal (external) causal attributions are made with good (bad) news management forecasts. The difference in type of attribution depending on the *news-tenor* of the forecast has implications for ICD. That is, arguably, more ICDs will be associated with communication of good news, as IC is internal to the firm. This follows that management of profitable firms may be motivated to make more ICDs.

The prior literature on determinants of ICD by corporate managers is limited and inconclusive. García-Meca and Martínez (2005) found a positive association between profitability and the extent of ICD made in managements' presentations to analysts. However, the extent of ICD in the Management Report and the Chairman's Letter in annual reports was not found to be significantly associated with profitability by Oliveira *et al.* (2006). More research is necessary to appreciate the likely impact of profitability on the extent of ICD in order to support the theories. Moreover, evidence on the relationship between the extent of disclosure and firm profitability in the broader corporate disclosure literature is mixed. Some studies find a significant positive association (e.g., Singhvi and Desai, 1971; Wallace *et al.*, 1994), while others note either no association (e.g., Cowen *et al.*, 1987; McNally *et al.*, 1982; Raffournier, 1995) or a negative association (e.g., Wallace and Naser, 1995).

As discussed above, although several theoretical perspectives predict a positive relationship between firm profitability and the extent of ICD, empirical evidence is limited and at best provides partial support. Therefore, it cannot be conclusively established that the extent of IC information available through public channels to sell-

side analysts for profitable firms is greater than that for less profitable firms. On the other hand, it can be argued that sell-side analysts of profitable firms are at an information advantage as profitable firms provide more IC information to sell-side analysts through analyst meetings than less profitable firms. This contention is supported by García-Meca and Martínez (2007).

The following hypothesis is built presuming that more profitable firms will possess and utilise more IC than not so profitable firms, and that there will be a positive relationship between the extent of IC information available and its use by sell-side analysts.

**H2: Sell-side analysts are more likely to use more IC information in the analyst reports on more profitable firms than on less profitable firms**

### 4.2.3. Impact of firm's systematic risk on the use of IC information

Systematic risk, or beta, measures the relative volatility of a particular stock to the market in general. This risk is firm specific and cannot be diversified away. It can be argued that provision of information to the market will reduce the systematic risk of the firm due to the reduction in information asymmetry. A lower systematic risk means a lower cost of capital to the firm. Based on this line of thought, risky firms will provide more information to the market in order to reduce their cost of capital: hence increase firm value. However, research evidence on the relationship between extent of corporate disclosure and systematic risk is inconclusive. For instance, provision of social responsibility information (Trotman and Bradley, 1981) as well as certain NFI (Hendricks and Singhal, 1996) is found to be associated with a lower systematic risk. On the other hand, Firth (1984) reported no significant association between corporate disclosures and systematic risk.

A more recent experimental study by PricewaterhouseCoopers revealed that provision of NFI, particularly IC information, to sell-side analysts helps to reduce the beta estimates of the analysed firms (Thomas, 2003). Generally, risky companies will be subjected to more public scrutiny and pressure for information. Therefore, it can be predicted that more information will be available for sell-side analysts for riskier firms.

Sell-side analysts consider high-beta stocks as riskier (Lui *et al.*, 2007) and they are reluctant to follow risky companies (Hong *et al.*, 2000). However, there will be a greater demand for informative research on risky companies from investors. This demand will materialise as investors try to reduce the risk they face by gathering more information on firms. Therefore, risky companies provide sell-side analysts with an opportunity to gain from their expertise in private information gathering and creating value adding research. On the other hand, since intangibles may increase the risk profile of a firm, it is expected that sell-side analysts will provide more information on IC. The following hypothesis is thus formed.

**H3: Sell-side analysts are more likely to use more IC information in analyst reports on risky firms than on less risky firms**

In a recent study, García-Meca and Martínez (2007) observed that the extent of IC information used in analyst reports varied with beta. However, their multivariate analysis did not find a significant relationship between the two variables.

### 4.2.4. Impact of firm's sector on the use of IC information

In the corporate disclosure literature, it has been suggested that firms from a particular industry will share similar voluntary disclosure practices. Inchausti (1997) draws on signalling theory to explain this. She explains that if a firm does not adopt the same reporting practices as others in the industry, the market will perceive it as a signal of *bad news* and thus the firm will be penalised. Another explanation is that proprietary costs of firms in a particular industry is similar due to similarities in the competitive landscape facing them (Verrecchia, 1983). Also, it is argued that similar political costs are faced by firms in the same industry. Therefore, voluntary disclosure by companies should differ across industries. However, prior studies that have tested this hypothesis report mixed results (e.g., Amernic and Maiocco, 1981; Inchausti, 1997; Raffournier, 1995; Wallace *et al.*, 1994).

According to prior research evidence, the industry effect of ICD practices depends on the type of corporate communication media. In relation to ICD in annual reports, prior research finds significant differences based on industry (e.g., Abdolmohammadi, 2005; Bozzolan *et al.*, 2006; Citron *et al.*, 2005; Petty and Cuganesan, 2005). These

studies have found differences in ICD between *old economy*[37] and *new economy* firms (Abdolmohammadi, 2005), service sector and manufacturing sector firms (Citron *et al.*, 2005), traditional and knowledge-intensive firms[38] (Bozzolan *et al.*, 2003; 2006), and firms in high and low intangibles-intensive industries (Oliveira *et al.*, 2006). However, results are mixed on the industry impact of ICD in other corporate communication media such as IPO prospectuses (Bukh *et al.*, 2005; Cordazzo, 2007) and analyst presentations (García-Meca and Martínez, 2005).

It has been observed that the importance of NFI, particularly IC information is greatest in firms in sectors and industries that are knowledge intensive and where key success factors relate to IC (Lev, 2001; Lev and Zambon, 2003; Stewart, 2003; Sullivan, 2000). Oliveira *et al.* (2006) argue that mandatory financial reporting is inadequate for industries classified as high-tech and knowledge intensive, who possess large IC investments. Therefore, firms in these industries are likely to provide more IC information. For instance, Eccles and Mavrinac (1995) found that sell-side analysts following firms in knowledge-intensive industries, such as service and technology based industries, want to be given more NFI, including IC information. Not only the extent of IC information, but also the types of IC information considered as important to the capital market have been found to differ across firms in more and less intangible-intensive industries and sectors. Also, Low and Siesfeld (1998) contend that the impact of types of IC information, such as 'management quality', 'quality of products and services', 'level of customer satisfaction', 'strength of corporate culture', 'effectiveness of executive compensation policies', 'effectiveness of NPD' and 'strength of market position' differs by industry. Similarly, Eccles and Mavrinac (1995) observe that the need for certain IC information, such as 'customer

[37] Abdolmohammadi (2005) classified computers and office equipment, semiconductors and software industries as 'new' economy. In his classification, 'old' economy industries included aircraft parts, banks, chemicals, motor vehicles and parts, nonferrous metal, petroleum and natural gas, pharmaceuticals, and pumps and pumping equipment. The results of this study indicate that the extent of disclosure of information on brands and partnerships is greater for 'old' economy companies whilst disclosure of information technology and IP information is higher for 'new' economy companies.

[38] Knowledge intensive industries in this study included internet application provision, biotechnology, entertainment, high-tech manufacturing, media, retail, software, systems integration, telecommunications and web services. Traditional industries included food, automobiles, chemicals, construction, electronics, manufacturing, oil, utilities, textile/clothing and tourism/leisure. The former companies were listed in 'Nuovo Mercato' board and the latter companies were listed in ordinary board of the Italian Stock Exchange (Bozzolan *et al.*, 2003; 2006).

satisfaction', 'NPD', and 'product and process quality measures' are more pronounced for firms in high-tech and service growth industries.

There is evidence indicating analysts' willingness to follow intangibles-intensive firms, suggesting that they actively search more IC information. Firms with substantial intangible assets have more information asymmetry between managers and general investors, more inherent uncertainty about firm's value, and a greater potential to outperform firms with lesser intangible assets on earnings and stock prices in the future (Chung and Charoenwong, 1991). Also, empirical evidence suggests that sell-side analysts favour following firms with higher information asymmetry as there is an incentive for private information acquisition (e.g., Barth *et al.*, 2001b; Matolcsy and Wyatt, 2006). Sell-side analysts consider that expertise in accessing private information is an important competitive advantage and a value addition to their research output (Johansson, 2007). Thus, their contribution is greatest in relation to intangibles-intensive firms (Amir *et al.*, 2003; Barron *et al.*, 2002). As a result, sell-side analysts, arguably, spend more time analysing IC-intensive firms (Barth *et al.*, 2001b; Matolcsy and Wyatt, 2006). With greater analyst following comes greater analyst demand for information, especially IC information to value these intangibles-rich firms (Bhushan, 1989; Lang and Lundholm, 1996; O'Brien and Bhushan, 1990).

In summary, on the one hand, firms in IC-intensive sectors make more ICDs, and on the other hand, sell-side analysts following firms in those sectors demand more IC information. Therefore, as the availability and importance of IC information is greater for firms in intangibles-intensive industries, it can be argued that sell-side analysts include more IC information in analyst reports written on those firms. Based on this line of thought the following hypothesis is developed.

**H4: Analyst reports on firms in high IC-intensive GICS® sectors are more likely to include more IC information than analyst reports on firms in low IC-intensive GICS® sectors**

The seminal work of Govindarajan (1980) established that the use of cash flow and earnings information in analyst reports differs by industry. Prior research on the use of NFI by sell-side analysts has found that analyst reports provide more NFI for companies in intangibles-intensive industries than in tangible-asset-intensive

industries (Abdolmohammadi *et al.*, 2006; Low and Siesfeld, 1998). Only two studies have investigated the industry impact of analysts' use of IC information. In one study, Flöstrand (2006) found that analyst reports on firms in intangibles-intensive sectors, such as information technology and telecommunication services, contain significantly more numerical IC indicators than in tangible-asset-intensive sectors, such as materials, energy, and industrials. Also, he reported that the extent of numerical IC indicators found in analyst reports on companies with moderate levels of intangibles, such as consumer staples and consumer discretionary, was more than that of tangible-asset-intensive sectors but less than that of intangibles-intensive sectors. Similar results were obtained by García-Meca and Martínez (2007) for the use of IC information in the *results reports* and *company reports* of sell-side analysts.

### 4.2.5. Impact of analyst recommendation type on the use of IC information

Few research studies have investigated the impact of the type of analyst recommendation on sell-side analysts' use of IC information (Breton and Taffler, 2001; García-Meca and Martínez, 2007). The importance of such an investigation lies in understanding whether sell-side analysts selectively use IC information to suit the type of recommendation they are issuing. For instance, Breton and Taffler (2001) investigated the differential use of information themes in analyst reports across types of recommendations they contain. Although this study did not particularly concentrate on IC information, it was found that four themes included in analyst reports were capable of significantly distinguishing between the different types of recommendations. Three of these four themes were IC related: (1) *positive references to management*; (2) *neutral references to management*; and (3) *negative references to market conditions*. However, García-Meca and Martínez (2007) did not find that the extent of IC information in analyst reports significantly differs by type of recommendation after controlling for endogeneity of the variable (García-Meca and Martínez, 2007), although their regression results showed a statistically significant relationship.

It can be argued that sell-side analysts will use more IC information when making a favourable recommendation due to two reasons, at least. First, the greater the extent of IC possessed by a firm the greater its future value creation potential. Therefore, existence of IC and availability of IC information to sell-side analysts will result in

favourable earnings forecasts and positive recommendations. Consequently this information will be used in their reports to explain and justify their forecasts and recommendations. Second, given analyst optimism, IC information enables sell-side analysts to communicate and justify their optimistic forecast and recommendations. In so doing, sell-side analysts are likely to use more IC information in their reports. On the other hand, it can be argued that unfavourable recommendations will be associated with less IC information, as poorly performing companies either do not possess IC or are not efficiently and effectively managing their IC. Moreover, sell-side analysts have an incentive to limit the use of IC information in reports carrying unfavourable recommendations in order to avoid communicating a mixed message. Therefore, this thesis intends to complement and extend the literature by testing the following hypothesis.

**H5: Analyst reports with favourable recommendations are more likely to include more IC information than analyst reports with unfavourable recommendations**

The next section discusses the method adopted in testing the five hypotheses developed in this section.

### 4.3. Testing of hypotheses

This section discusses the choice of statistical tests used to test the five hypotheses developed in the previous section, and the choice, design, and measurement of empirical proxies for the dependent and independent variables.

#### 4.3.1. Selection of statistical techniques

This study depends on non-parametric statistical tests over more powerful parametric tests. Two main reasons drive this decision. First, non-parametric tests do not make assumptions about normality of distribution of the population that the sample is drawn from (*i.e.,* non-parametric tests are distribution free). It is difficult to assume that IC references are normally distributed in analyst reports. Second, the small sample size (*i.e.,* 64 analyst reports) in this study makes non-parametric testing a reasonable option as *P*-values from parametric tests can be inaccurate for small samples.

The Mann-Whitney U test is used to test all the hypotheses developed in this thesis. It is the non-parametric equivalent to the t-test for independent samples. The Mann-Whitney U test is selected because the hypotheses examine the differences in the use of IC information (which is a continuous variable) between two independent groups of a given variable. Pallant (2002, p.291) explains the working of the Mann-Whitney U test:

> Instead of comparing means of the two groups, as in the case of t-test, the Mann-Whitney U test actually compares medians. It converts the scores on the continuous variables to ranks, across the two groups. It then evaluates whether the ranks for the two groups differ significantly. As the scores are converted to ranks, the actual distribution of the scores does not matter.

The next subsection discusses the measurement of the dependent variables for the testing of hypotheses in this thesis.

### 4.3.2. Dependent variables

The dependent variable used in this PhD study for testing the hypotheses is the number of total IC references. As will be explained in Section 5.2, this study uses content analysis to measure total IC references in analyst reports. Section 5.6.1 explains the IC categorising scheme used in this study to capture IC references in analyst reports. Accordingly, each reference to any of the 34 IC subcategories included in the IC categorising scheme is coded as an IC reference.

The measurement of the independent variables used in testing of the hypotheses is discussed next.

### 4.3.3. Independent variables

The hypotheses developed in this study test the impact of five variables on the use of IC information by sell-side analysts in reports produced by them. The following Table 4.1 shows the independent variables used for testing each hypothesis.

In order to test the hypotheses each variable listed in Table 4.1 (except IC intensity of the sector and analyst recommendation type) is partitioned at the median in order to form two groups, each with an equal number of cases. Those cases above the median

indicate higher values of the variable and those below the median pertain to lower values. This approach of segregating continuous variables for testing differences is consistent with prior research (e.g., Beaulieu *et al.*, 2002; García-Meca *et al.*, 2005). The construction of proxies for each independent variable is separately explained below.

**Table 4.1: Independent variables**

| Hypothesis | Independent variable |
|---|---|
| H1 | Firm's size |
| H2 | Profitability |
| H3 | Systematic risk (β) |
| H4 | IC intensity of the sector |
| H5 | Analyst recommendation type |

#### 4.3.3.1. Firm size

Hypothesis H1 pertains to firm size. The prior disclosure literature has used various proxies for firm size when testing its impact on the extent of corporate disclosure. These proxies include book value of total assets or total fixed assets, total market value of the firm, total sales revenue, total number of shareholders and total number of employees. In this study firm size is proxied by market capitalisation (or total market value) of a firm as at the date of the analyst report. The market capitalisation of a company is calculated using the unadjusted share price (obtained from FinAnalysis database) and the number of outstanding shares (obtained from the DatAnalysis database) as at the date of the analyst report. Although most analyst reports publish market capitalisation data of the analysed companies, various discrepancies were found in relation to share price data and data on the number of outstanding shares that underpin those reported values. Therefore, it was decided to calculate the market capitalisation data for each firm in order to ensure consistency and accuracy.

#### 4.3.3.2. Profitability

Hypothesis H2 is concerned with the impact of firm profitability. Among the several proxies available for profitability this study uses Return on Equity (ROE). In addition, the results are checked for robustness using Return on Assets (ROA). The ROE and

ROA data are gathered from the FinAnalysis database. This database defines ROE and ROA as follows:

$$\text{ROE} = \frac{\text{Net profit after tax but before abnormal items}}{\text{Shareholders equity - Outside equity interests}}$$

$$\text{ROA} = \frac{\text{Earnings before interest}}{\text{Total assets - Outside equity interests}}$$

As analyst reports used in this study have been issued at various points in time within a five year period, it is important to use data for the independent variables that correspond with the respective analyst report. Therefore, the data obtained for ROE and ROA in this study was based on the most recent annual financial statements issued prior to the date of the analyst report on the company.

However, it is possible that interim financial statements may have been published between the date of issuance of the most recent annual financial statements and the date of the analyst report. Therefore the ROE and ROA data available for sell-side analysts at the time of writing the report could have been different to what is used in this study. Nonetheless, due to data unavailability and for other practical reasons, this study has opted to take the current approach. On the other hand, it can be assumed that ratios based on interim results may not be materially different to the ratios based on annual results.

#### 4.3.3.3. Systematic risk

The impact of firms' systematic risk is tested in Hypothesis H3. Systematic risk is a measure of the volatility of a particular stock relative to the market. Most previous disclosure studies use historical estimates of systematic risk or beta calculated by regressing monthly returns for each firm on the monthly value-weighted return index for a predetermined number of monthly return observations, as explained in finance theory. Instead, this study uses the equity beta as reported in analyst reports. The reported beta figure is generally an estimate based on the analysts' perception of the riskiness of the company relative to the market. Most but not all analyst reports provide beta estimates. Analyst provided beta estimates rather than historical

estimates calculated using market data are used in this study in order to capture the risk perceptions of sell-side analysts writing the reports.

#### 4.3.3.4. Sector

The IC intensity of the GICS® sector to which a firm belongs is the focus of hypothesis H4. Prior studies have classified industries or sectors (depending on the level of aggregation they employ) dichotomously based on intangibles intensity of firms they constitute in testing the impact of industry/sector on the extent of disclosure. Following the tradition, the eight GICS® sectors to which the firms investigated in this study belong are classified into two groups – high IC-intensive and low IC-intensive[39]. Accordingly, the high IC-intensive sectors group includes consumer discretionary, consumer staples, information technology, and health care sectors, and the low IC-intensive sectors group comprise financials, materials, Real Estate Investment Trust (REIT), and utilities sectors.

#### 4.3.3.5. Recommendation type

Hypothesis H5 posits a relationship between analyst recommendation type and the use of IC information. The analysts' investment recommendation for the stock in concern is an important component in the analyst report. The recommendation is generally based on analysts' perception of what the share price might be in twelve months time. This is estimated through their forecasts and valuations.

The finance literature on analysts' behaviour often labels sell-side analysts as producing optimistic forecasts and recommendations (see, Sections 1.5.4). This is sometimes justified by their reluctance to issue sell recommendations. Finance researchers suggest that due to sell-side analysts' optimism bias users of analyst reports interpret hold recommendations as sell recommendations (e.g., Bradshaw, 2002; Fogarty and Rogers, 2005; Hong *et al.*, 2000; Malloy, 2005). Consistent with the state of affairs for analyst recommendations, in order to test the hypothesis, hold and sell recommendations are grouped together and considered as unfavourable

[39] The dichotomous classification of sectors used in the hypothesis testing is different to the sector classification used in discussing the descriptive results in this thesis. The sectors are classified into three groups – high, medium and low IC-intensity sectors. This classification enables a detailed discussion of the descriptive results, whereas a dichotomous classification serves the purpose of testing the relevant hypothesis.

recommendations, and buy recommendations are considered as favourable recommendations.

The next section summarises the chapter.

### 4.4. Chapter summary

This chapter concerned the development of hypotheses to operationalise the third research objective of this PhD study. First, it described the development of five hypotheses around five independent variables: (1) firm size; (2) profitability; (3) systematic risk; (4) IC intensity of the GICS® sector; and (5) type of analyst recommendation. The hypotheses developed in this thesis intend to test the differential impact of these variables on the overall extent of IC information used in analyst reports.

The chapter then described the method intended to be used for testing the hypotheses. It was explained that the Mann-Whitney U test, which is a non-parametric statistical technique, will be used to test the hypotheses. Although non-parametric tests are less powerful, this decision was driven by the small sample size and the absence of assumptions about the population distribution. The construction and measurement of dependent variables, as well as the choice and measurement of the proxies for independent variables were also explained in this chapter.

# 5. RESEARCH METHOD

## 5.1. Introduction

This chapter explains the research method used in collecting and analysing the data in this thesis. This chapter is structured as follows. Section 5.2 defines and discusses the content analysis method and its different manifestations in an attempt to clarify the particular approach of content analysis adopted in this study. In addition, the appropriateness of the content analysis method for the present study is discussed. Further, this section outlines the process of content analysis adopted in this thesis. The rest of the sections in this chapter address each step in this process. Section 5.3 defines the recording unit and Section 5.4 defines the measurement unit used for the content analysis. These sections discuss various alternatives available for recording and measuring content and justify the choices made. Section 5.5 explains the sample and the sampling process. The categorisation scheme adopted in this study is introduced in Section 5.6. The four dimensions of IC information investigated in this thesis are also detailed here. Section 5.7 explains the coding instrument. Sections 5.8 and 5.9 describe the test-coding phase and the pilot study, respectively. The data collection process, including the use of Nvivo in content analysis, is explained in Section 5.10. Section 5.11 explains how reliability and validity is maintained, particularly the steps taken to ensure reliability, how inter-coder and intra-coder reliability is measured, various aspects of validity and evidence presented to justify validity. Section 5.12 summarises the chapter.

## 5.2. Content analysis

This PhD study collects empirical data using *content analysis* of sell-side analysts' *initiating coverage reports* to address the research objectives introduced in Section 3.5.

Content analysis is a method for making inferences from published media in a systematic manner, and has been used in empirical social science research for many years, mainly in the field of communisation research (e.g., Bos and Tarnai, 1999; Carney, 1972; Krippendorff, 2004a). Content analysis is a widely used research technique in the accounting literature to analyse voluntary disclosure in corporate reports (Unerman, 2000). It is a dominant method for assessing the extent of

organisations' CSR reporting, SER (Parker, 2005), and ICR (Beattie and Thomson, 2007). Content analysis has also been applied to analyst reports (e.g., Abdolmohammadi *et al.*, 2006; Fogarty and Rogers, 2005; Govindarajan, 1980; Previts *et al.*, 1994; Rogers and Grant, 1997).

Content analysis is the main method of investigating ICD in different forms of corporate communications and analyst reports. In the realm of IC research, content analysis has been conducted on annual reports, IPO prospectuses, corporate websites, company announcements, and company presentations to analysts to identify the importance placed by companies on IC (see, Section 2.5). In addition, a few studies have applied this research method to analyst reports to investigate the importance placed by sell-side analysts on IC information (e.g., Arvidsson, 2003; Flöstrand, 2006; García-Meca, 2005; García-Meca and Martínez, 2007; Orens and Lybaert, 2007).

A definition and a brief explanation of content analysis are provided in the next subsection.

### 5.2.1. Definition of content analysis

Krippendorff (2004a, p.18) defines content analysis as "a research technique for making replicable and valid inferences from texts (or other meaningful material) to the context of their use". This is an all-encompassing definition that captures the many variants of content analysis that have been adopted by researchers. Webster's Dictionary of the English Language (1961 edition) (cited in Krippendorff, 2004a, p.xvii) provides a more elaborate definition of content analysis, which is consistent with Krippendorff:

> 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.

As defined above, at the most basic level of content analysis, the content analyst scans a document to find whether a particular theme, attribute or text is present or absent. The content analysis can become complex with the addition of more attributes/information categories and/or counting all references to the given categories. This method involves codifying narrative and visual content in source

documents into pre-defined information categories. The importance placed by the author on a given information category can be inferred from the frequency of occurrence of that content category in the analysed document.

The next subsection discusses the applicability of the content analysis method to analyst reports in order to study sell-side analysts' information use.

### 5.2.2. Content analysis of analyst reports

Looking specifically at research involving analyst reports, Flöstrand and Ström (2006) argue that content analysis of analyst reports provides evidence of the *valuation relevance*[40] of NFI. According to these authors, an information item is considered *valuation relevant* if it is disclosed in an analyst report. Thus, it is assumed that information disclosed in analyst reports is used in the analysts' company valuation process. Campbell and Slack (2008, p.9) argue that "valuation relevance allows for a discussion of factors that may not necessarily have a direct relationship with the share price but nonetheless may be useful in their overall valuation process".

*Valuation relevance* is based on two premises. The first premise is that the information needs of sell-side analysts proxy for the information needs of the capital market. Strong support for this argument is available in the research literature as discussed in Section 1.5.2. The second premise is that analyst reports include information used by sell-side analysts in arriving at their forecasts, valuations and stock recommendations. Although information cited in an analyst report could only be a subset of all information used to form a recommendation, it is argued that cited information is both important and influential (Previts *et al.*, 1994; Rogers, 1996; Schipper, 1991).

In addition, researchers have argued that content analysis of analyst reports can unveil insights about sell-side analysts' information needs (Nielsen, 2008; Previts *et al.*, 1994; Rogers and Grant, 1997) and most suited to evaluate the importance of information to them (Breton and Taffler, 2001). Although content analysis is not without limitations, it can reliably identify, *ex-post*, the types of information used by sell-side analysts by examining their reports. Thus, an analysis of information cited in

[40] *Valuation relevance* is a concept different to *value-relevance*, which is discussed in Chapter 3 (Section 3.2.2) of this thesis.

analyst reports is a valid method of deriving the importance of IC information to sell-side analysts and serves the purposes of this thesis.

The next section provides the reasons for the use of content analysis method in this thesis.

### 5.2.3. Suitability of content analysis method

Content analysis method was selected for this study for several reasons. First, it is an unobtrusive and a non-reactive method of collecting data about phenomena of interest (Krippendorff, 2004a). Interference with the phenomena being investigated can contaminate data, especially when subjects (*e.g.,* respondents) show a tendency to alter their behaviour patterns, respond in a socially desirable manner or attribute more rational thought processes to past decisions (Krippendorff, 2004a; Morris, 1994). This is especially the case for other methods of evaluating sell-side analysts' thought processes such as interviews, focus groups, surveys, controlled experiments, or field studies (Jones and Shoemaker, 1994; Morris, 1994). Therefore, by content analysing analyst reports it is possible to avoid problems caused by respondents' interference in evaluating sell-side analysts' thought processes in using/communicating IC information. In other words, as analyst reports are neither prepared for content analysis nor to be read by a researcher, the measurement process will not confound data generation (Smith and Taffler, 2000).

Second, content analysis overcomes the need to engage the communicator to obtain data. This is particularly advantageous in this study as access to sell-side analysts is difficult to establish. It enables the obtaining of generalisable inferences about the use of IC information by sell-side analysts that would otherwise require interviewing or surveying a large group of sell-side analysts.

Third, content analysis "*preserves the conceptions of the data's sources*, which structured methods largely ignore" (emphasis in original) (Krippendorff, 2004a, p.41). Content analysis investigates information once that information has been generated for a different purpose and audience. Although this approach results in unwanted confounding information being inherited by the researcher, it is particularly beneficial for exploratory research such as the present study, as IC information use in analyst reports is largely an under-explored area.

Fourth, it is a method for systematic analysis of information contained in documents (or other media) to asses the implicit importance of particular information categories present therein (Holsti, 1969). Content analysis investigates the frequency with which information appears. According to Berg (1998), the frequency with which information occurs in a document such as an analyst report is a useful proxy for its magnitude and importance. Therefore, in the context of this PhD study, content analysis enables the researcher to infer the emphasis sell-side analysts place on different types of IC as a basis to value firms and/or to communicate their forecast, valuations and recommendations. This helps to address the research objectives of this thesis.

Fifth, content analysis provides a means for textual and pictorial disclosures to be converted into quantities, which can be subjected to statistical manipulations. For instance, in an accounting context, researchers have performed content analysis on graphs, tables, images and symbols, in addition to texts, in various business related print media (Beattie and Thomson, 2007; Steenkamp, 2007a). At the same time, it harnesses the advantages of qualitative research providing a wider outlet for enquiry. Qualitative aspects of content analysis help to ask a wide range of questions and draw clear inferences from the data (Carney, 1972). In addition to the importance of types of IC information presented in analyst reports, content analysis can investigate various attributes of analysts' IC communication agenda such as *evidence, news-tenor* and *time orientation* that are investigated in this thesis. These communication dimensions are discussed later in this chapter.

The next section discusses two main variants of content analysis and explains the approach adopted in this thesis.

### 5.2.4. Semantical and syntactical content analysis

Content analysis can be categorised broadly into semantical and syntactical content analysis (Ahuvia, 2001; Krippendorff, 2004a). In semantical content analysis the researcher classifies communications according to their meanings into predefined categories (Andrén, 1981; Krippendorff, 2004a). Andrén (1981, p.56) exemplifies this approach as "counting the number of times that Germany is referred to, irrespective of the particular words that may be used to make the reference". Three variants of semantical content analysis are explained by Krippendorff (2004a, p.45):

*Designation analysis* provides the frequency with which certain objects (persons, things, groups or concepts) are referred to, that is, roughly speaking, subjects-matter analysis (*e.g.,* references to German foreign policy).

(a) *Attribute analysis* provides the frequency with which certain characterisations are referred to (*e.g.,* references to dishonesty).

(b) *Assertion analysis* provides the frequency with which certain objects are characterised in a particular way, that is, roughly speaking, thematic analysis (*e.g.,* reference to German foreign policy as dishonest). (emphasis in the original)

In contrast, syntactical content analysis[41] classifies content according to the physical properties of the communication (Andrén, 1981; Lau, 2006). Janis (1943 cited in Ahuvia, 2001) describes this as looking for certain patterns of *black-marks-on-white* or simply character combinations. Investigating the number of times the word 'Germany' occurs in a communication is an example of syntactical content analysis. Under this approach the term *homeland of Germans* cannot be put into the same category as *Germany* because of their different physical properties (Ahuvia, 2001, p.151). However, according to semantical content analysis these two references are categorised under the one category as they infer the same meaning. Syntactical content analysis is commonly referred to as sign-vehicle analysis in the literature (Ahuvia, 2001; Krippendorff, 2004a).

IC information in analyst reports cannot be analysed using syntactical content analysis. It limits the scope of investigating IC references to a list of words or word combinations that does not represent the universe of IC that is potentially communicable. Hence, keyword searches are not desirable for studying ICD. Since texts need to be read for their meaning with the intention of classifying them into various content categories, the present study uses semantical content analysis (Krippendorff, 2004a).

[41] Jones and Shoemaker (1994) explain syntactical content analysis as analysis and quantification of the cognitive difficulty of reading a message. It analyses the readability of texts using syntactical textual features (such as sentence length or number of syllables). Readability is generally assessed using a formula such as the Flesh index. This index "uses counts of language variables in a piece of writing in order to provide an index of probable difficulty for readers" (Klare, 1974-75, p.64). This approach, however, can be considered as a particular application of syntactical content analysis.

Manifest and latent content analyses are two variants of semantical content analysis (Ahuvia, 2001). The next section discusses these two variants and provides reasons for the use of manifest content analysis in this PhD study.

### 5.2.5. Manifest and latent content analysis

Themes or attributes of interest to a researcher may be manifested in the document in the form of *text* (*i.e.,* manifest content) or may be implied by *reading between the lines* (*i.e.,* latent content). Manifest content analysis uses the most obvious, straight forward, commonsense or literal meaning (denotative meanings) of texts when making coding decisions (Ahuvia, 2001; Holsti, 1969). In latent content analysis, the coder ferrets out a text's embedded, subtle or deeper meanings (*i.e.,* connotative meanings) by reading between the lines (Ahuvia, 2001; Holsti, 1969). Smith and Taffler (2000) refer to the former approach as form-oriented (objective) content analysis and latter as meaning-oriented (subjective) content analysis. Both manifest and latent content analyses explore the meaning of material being investigated: the difference being whether it is denotative meaning or connotative meaning (Ahuvia, 2001). However, the meaning of a text or image is a product of a perceiver interacting with the perceived. Weber (1990, p.80) remarks that "texts do not speak for themselves […] the investigator must do the speaking". Accordingly, content analyst does not investigate an objective reality, but only a manifestation of the reality.

Manifest content analysis is used in this study. Thus, the focus is on denotative meanings of the narratives and images in analyst reports. Three reasons are provided for this decision. First, this approach reduces subjectivity in judgements involved in the coding process. Second, as analyst reports are explicit, manifest content analysis does not result in loss of information content. Finally, it is the predominant method of content analysis evident in the accounting literature.

The next section explains quantitative and qualitative aspects of content analysis, and their benefits to the present PhD study.

### 5.2.6. Quantitative and qualitative content analysis

Content analysis involves both qualitative and quantitative research methods. Early definitions of content analysis try to label it as a quantitative research method. As

Kaplan and Goldsen (1968, p.83) claim "content analysis aims at a classification of content in more precise, *numerical terms* than is provided by impressionistic 'more or less' judgements of 'either or'' (emphasis added). However, Holsti (1969, p.5) states that "there is considerable disagreement about the meaning of 'quantitative' as applied to content analysis". Reading of texts, which is the crux of content analysis, is essentially a qualitative exercise (Krippendorff, 2004a). Several qualitative aspects of content analysis can be identified: close reading of relatively small amounts of textual matter; rearticulation (interpretation) of given texts into new narratives; influence of analysts' own socially or culturally conditioned understandings on the coding process; and the use of non-numerical procedures during the research process, such as the researcher developing content categories to answer the research questions and refining the categories through pre-testing (Holsti, 1969; Krippendorff, 2004a, p.17).

Variants of content analysis such as discourse analysis, rhetorical analysis, conversation analysis and ethnographic analysis enable the researcher to investigate qualitative questions, such as how particular phenomena are represented in texts, how messages are delivered, and the effects of messages (Krippendorff, 2004a). These questions are otherwise difficult to answer through straightforward frequency counts. However, the ability of content analysis to yield numerical data enables precise inferences to be made and statistical techniques to be employed to gauge relationships, associations, and differences of phenomena.

Holsti (1969, p.11) argues that "qualitative and quantitative are not dichotomous attributes, but fall along a continuum". He further states that quantitative and qualitative techniques complement each other in content analysis. Likewise, this thesis benefits from the advantages of both qualitative and quantitative attributes of content analysis. From a quantitative perspective, this study uses frequency counts of categorical variables to test hypotheses. Use of excerpts from analyst reports will enable interpretation of the results and understanding of the manner in which IC information is used by sell-side analysts, from a qualitative perspective.

### 5.2.7. Computerised and manual content analysis

Deffner (1986 cited in Morris, 1994, p.904) introduces three variants of content analysis: (1) human scored schema; (2) individual word-count systems; and (3)

computerised systems using artificial intelligence. Prior studies examining narrative content of analyst reports have used manual content analysis (e.g., Abdolmohammadi *et al.*, 2006; Flöstrand, 2006; Flöstrand and Ström, 2006; García-Meca, 2005; García-Meca and Martínez, 2005; García-Meca and Martínez, 2007) and computerised content analysis; both individual word-count systems and artificial intelligence systems (e.g., Breton and Taffler, 2001; Fogarty and Rogers, 2005; Previts *et al.*, 1994). These three variations are discussed below.

#### 5.2.7.1. Manual content analysis

In manual content analysis, human coders classify the text according to a particular categorisation scheme. Operational definitions and coding rules are developed in manual content analysis to minimise subjective interpretations when texts are coded by humans. Nonetheless, "human coders have difficulties in remembering complex coding rules and applying them consistently to all documents to be coded" (Morris, 1994, p.907). Usually steps need to be taken to ensure inter-coder agreement between multiple coders to establish reliability and validity of these studies.

#### 5.2.7.2. Individual word-count systems

Individual word-count systems classify words in a given text into predetermined semantically equivalent categories. Hence, a group of words with similar meaning in a given context are categorised into one category. The contexts within which the words appear are not generally considered in this approach. Simple computerised coding systems could easily perform this type of content analysis with near perfect reliability and cost effectiveness (Morris, 1994).

#### 5.2.7.3. Artificial intelligence systems

Artificial intelligence systems are superior to individual word-count systems in that they are capable of considering the context of usage when classifying words. Thus, it distinguishes among the various meanings of the same word depending on the context. These systems can recognise both the syntax and lexicon of words (Morris, 1994) and try to mimic the intelligence in humans while maintaining objectivity at the same time. Although artificial intelligence systems can provide more valid results than word counts, they still use keyword searches.

For example, Breton and Taffler (2001) used the Keyword in Context (KWIC) facility of the SATO content analysis software program, with eight keywords to define each category. These keywords were selected after an alphabetic sort of all words appearing in analyst reports. Nonetheless, human involvement was necessary to identify the attribute dimension (referred to as *news-tenor* in this study) after the computer generated the KWIC output. KWIC operations are performed using a "dictionary system[42] in which words are looked up in the dictionary and automatically coded with information representing the investigator's frame of reference and assumptions" (Holsti, 1969, p.153). Meanings are ascribed to keywords based on their co-occurrence with other pre-specified words or existence of such words in its neighbourhood. Krippendorff (2004a) strongly warns against over reliance on computer content analysis when diverse meanings of texts are investigated as artificial intelligence systems cannot determine meanings of sentences.

The present study does not use computerised content analysis using artificial intelligence systems as keywords because IC information in analyst reports is difficult to identify. Often IC information is not described using technical or specific words; and presence of IC information cannot be judged by co-occurrence of two or more words, or through the existence of pre-specified neighbouring words. Holsti (1969, p.151) suggests that computerised content analysis is particularly useful when the "unit of analysis is the word or symbol, and inferences are to be based on the frequency with which they appear". Further, as this PhD study attempts to analyse several qualitative dimensions of IC information appearing in analyst reports, computerised content analysis is not a feasible or an appropriate option.

In the present study, coding is done manually with the assistance of NVivo, which is a software program designed for qualitative research. Section 5.10 discusses in more detail the way NVivo is used in coding. NVivo possesses the ability to assign multiple codes to a given recording unit thus speeding up the coding process when multiple dimensions of the same texts are analysed. Further, it enables the viewing of all texts classified under each category. This capability is useful to detect errors and omissions in coding, and it increases the reliability of data. Various query functions inbuilt to this software enable the researcher to conduct complex analyses of data. For example,

[42] *E.g.,* Harvard IV Psychological Dictionary and Lasswell Value Dictionary.

this program not only allows generating frequency counts of each category but also enables cross tabulations of categories. The functionalities embedded in this software make it an invaluable tool for this study. Beattie *et al.* (2004a) employ a similar method to analyse annual report content. They used NUD*IST, which is a software with similar functionalities.

The next section provides a brief overview of the process adopted in this PhD study in conducting the content analysis.

### 5.2.8. Process of content analysis

Weber (1990, pp.21-24) enumerates an eight step approach to conducting content analysis. The approach to content analysis adopted in this thesis relies heavily on Weber's approach. In addition it incorporates procedures suggested by Krippendorff (2004a). The following Table 5.1 presents the nine-step process of content analysis adopted in this PhD study and the relevant sections in this thesis that address each step.

**Table 5.1: The stepwise process to content analysis**

| | Step | Section |
|---|---|---|
| 1. | Defining the recording unit | Section 5.3 |
| 2. | Defining the measurement unit | Section 5.4 |
| 3. | Sampling | Section 5.5 |
| 4. | Developing the categorisation scheme | Section 5.6 |
| 5. | Developing the coding instrument | Section 5.7 |
| 6. | Test coding a sample of analyst reports and revising the coding instrument | Section 5.8 |
| 7. | Conduct of a pilot study to assess reliability of the revised coding instrument and subsequently finalising the coding instrument after further finetuning | Section 5.9 |
| 8. | Conducting the main data collection | Section 5.10 |
| 9. | Assessing achieved reliability and validity | Section 5.11 |

As indicated in the above table, the following sections explain how each of these nine steps is operationalised in this PhD study.

## 5.3. Defining the recording unit

Holsti (1969, p.116) defines a recording unit as a "specified segment of content that is

characterised by placing it in a given category". In other words, determining a recording unit concerns what is to be coded.

This section defines the recording units used in this thesis. Separate recording units are considered for narrative and visual content in this thesis. Subsections 5.3.1 and 5.3.2 describe in detail the narrative recording unit and the visual recording unit, respectively, and explain how they are operationalised in this thesis.

### 5.3.1. Narrative recording unit

In relation to narratives, the recording unit is the basic unit of text that is to be classified (Weber, 1990). Commonly used recording units of narrative content include words, terms, sentences, themes, paragraphs, pages and the whole text.

#### 5.3.1.1. Word

Words and terms (*i.e.,* combination of few words) are commonly used recording units in computer-based content analysis. It is the smallest, most reliable and safest recording unit for written documents (Krippendorff, 2004a). Abrahamson and Amir (1996) use words as the recording unit in assessing the information content in company president's letters to shareholders. However, Milne and Adler (1999) argue that, in the context of SER, individual words have no meaning to provide a sound basis for coding without a sentence or sentences for context. Similarly, it can be argued that words or terms are inappropriate recording units for ICD studies. For example, Bontis (2003) conducted a content analysis of 10,000 Canadian annual reports using 39 IC related search terms. He could only find 74 counts of ICD in the 10,000 annual reports and that corresponded to 7 terms. Higher counts were obtained by Vergauwen and van Alem (2005) who investigated 198 annual reports of Dutch, French and German companies using the same list of search terms. Nonetheless, the results of these studies are inconsistent with other manual content analysis studies on annual reports, which report substantially more IC information. Thus, a word or a term is not an appropriate recoding unit for this study.

#### 5.3.1.2. Sentence

The preferred recording unit in the CSR and ICD literatures has been the *sentence*

(Gray *et al.*, 1995). Milne and Adler (1999) suggest that the sentence provides complete, reliable and meaningful data when used as a recording unit. When the sentence is used as a recording unit, each sentence needs to be read separately from other sentences and categorised as either containing IC information or not. Inter-coder reliability can easily be calculated by comparing how multiple coders have coded each sentence (Beattie and Thomson, 2007).

A problem arises when a given sentence consists of more than one IC category (Abeysekera, 2006) as mutual exclusiveness of recording units become unachievable (Carney, 1972). This can be overcome by classifying a sentence into the dominant IC category it represents (Beattie and Thomson, 2007). Further, identification of the dominant category may become an arbitrary exercise and will bias results by neglecting valid information when the writer uses long sentences that connect several pieces of information. When using sentences, the ability to compare results across source documents may be hampered when a number of IC information categories are included in one sentence in one document and in many sentences in another document. These problems can only worsen with the use of paragraphs or areas of pages as the recording unit (Beattie and Thomson, 2007; Holsti, 1969).

#### 5.3.1.3. Theme

The present study uses *themes* as the narrative recording unit. Jones and Shoemaker (1994) review 68 content analytic studies pertaining to accounting narratives and note that most researchers use *themes* as recording units. In certain studies, *themes* have also been referred to as 'text units' (e.g., Beattie *et al.*, 2004b; Beattie and Thomson, 2007; Breton and Taffler, 2001) or 'logical parts of sentences'(e.g., Zéghal and Ahmed, 1990). Using *themes* as the recording unit can overcome coding dilemmas when multiple IC categories are represented in a given sentence.

A *theme* is a single assertion about some subject (Holsti, 1969; Kassarjian, 1977). Unlike grammatical units of the language it is difficult to identify boundaries for thematic units[43] (Holsti, 1969). Thus, structural properties of a thematic unit need to be precisely defined. According to Holsti (1963a, p.136), a *theme* has no more than

[43] For example, a word is followed by a space, a sentence is followed by a full stop and a paragraph is set off by indentation. However, there are no such boundaries visible between themes in a sentence (Holsti, 1969).

one each of four elements: (1) the perceiver; (2) the perceived or the agent of action; (3) the action; and (4) the target of the action. This thesis adopts the definition of Beattie and Thomson (2007) and defines a *theme* as a group of words or part of a sentence containing a "single piece of information that [is] meaningful in its own right" (p.142).

For example, the sentence "the company is undertaking trials with most of the largest grocery suppliers in Australia and delivering improvements in logistics costs and levels of on time delivery" can be decomposed into three *themes*: (1) the company is undertaking trials with most of the largest grocery suppliers in Australia; (2) the company is delivering improvements in logistics costs; and (3) the company is delivering improvements in levels of on time delivery. In this exercise, parts of a sentence that are shared between *themes* are repeated. Accordingly, each sentence containing more than one piece of information has to be edited to identify the *themes*. The *themes* containing IC information can then be coded.

Despite the advantages of using *themes* as the recording unit, the introduction of *themes* can add complexity to the coding process and has the potential of reducing reliability. Section 5.11.1 explains how reliability is maintained in this thesis despite the use of *themes*.

### 5.3.2. Visual recording unit

Concentrating on narrative content alone is unlikely to provide valid results as it ignores the important role played by photographs, pictures, tables, charts and diagrams in constructing a firm's value creation story (Steenkamp, 2007a). Visuals are an effective mode of disclosure and an integral part of corporate annual reports (Beattie and Jones, 1992; Beattie and Jones, 2001; Beattie and Jones, 2002; Graves *et al.*, 1996; Preston *et al.*, 1996). Management uses visual disclosure to communicate environmental issues (Frost and Wilmshurst, 2000), CSR (Unerman, 2000) and IC (Beattie and Thomson, 2007) in annual reports. Steenkamp (2007a) finds that a relatively high proportion of IC information is reported in the form of visuals in annual reports and frequency counts of ICD categories differ significantly between inclusion and exclusion of pictures from the analysis. She posits that visuals significantly influence the understanding of ICR practices. Krippendorff (2004a, p.18)

in his definition of content analysis, intentionally includes the phrase "or other meaningful matter" in parentheses to emphasise that content analysis is not limited to texts.

Analyst reports frequently include tables, graphs, charts and figures and sometimes pictures. Piror content analysis studies on analyst reports have either excluded visuals (e.g., Breton and Taffler, 2001; Nielsen, 2008) or not been explicit about the treatment of visuals in them. Breton and Taffler (2001) exclude tables and graphs from their analysis. They argue that information contained in tables and graphs will be referred to in the text and will be given prominence through repetition, if that is important to strengthen the arguments put forth in the report. Given that visuals are an important medium of communicating IC (Steenkamp, 2007a) and the objectives of this study require investigating all references to IC, visuals are include and analysed.

In relation to pictures, Steenkamp (2007a) defines her recording unit as the visual itself, caption of the visual, references to the visual in the written text, and notes given inside or across a particular visual. Although this approach is suitable for pictures and images, other visual content, such as graphs, charts and tables, may contain more than one information category. Hence, this thesis considers an *information item* as the recording unit for analysing visuals. Following Beattie and Thomson (2007, p.142) an *information item* is "a single piece of information that is meaningful in its own right". An *information item* derives its meaning from the entire visual and its context. For example, a single cell in a table may be considered as an *information item*, but the cell obtains its meaning from its column and row headers, others cells, caption of the table and footnotes to the table. A disadvantage of this method is that it can increase the use of judgement in the coding process.

Having defined the recording units, the next section describes the selection of a measurement unit to be operationalised in this PhD study.

### 5.4. Defining the measurement unit

A key assumption underlying content analysis is that the quantum of disclosure signifies the importance of an information category (Weber, 1990). Therefore, an important aspect of content analysis is measuring the quantum of disclosure

pertaining to each information category investigated. The unit of measurement concerns the basis for quantifying the amount of disclosure.

There are two main quantification methods. According to the first method, a source document is searched for the presence/absence of an information category. If the category is found to be present, then the document is not scrutinised further for multiple occurrences of the same category. For example, a score of one will be given if 'customer satisfaction' is referred to once or several times in an analyst report.

According to this method, the importance of a particular IC category is determined by the aggregate number of source documents in the sample in which the category is present. Most ICD content analysis studies and all published content analysis based studies on ICD in analyst reports (e.g., Arvidsson, 2003; Flöstrand, 2006; García-Meca, 2005; García-Meca and Martínez, 2005; García-Meca and Martínez, 2007; Orens and Lybaert, 2007) have adopted this measurement method. The following Table 5.2 provides a hypothetical example of how results are reported according to this method. The main limitation of this method is that it treats a document making a single disclosure of a particular information category in the same way as one that makes many disclosures (Milne and Adler, 1999).

**Table 5.2: Presence of themes**

| Theme | Number of reports in which the theme occurs (N = 30 reports) | Reports (per cent) |
|---|---|---|
| Management experience/capabilities | 30 | 100 |
| Employee compensation | 14 | 47 |
| Organisational structure | 9 | 30 |
| Customer satisfaction/loyalty | 0 | 0 |

In contrast, the second method codes all occurrences (or incidences) of an information category in a source document. Under this method, disclosure can be measured in several ways: (1) calculating the the amount of space (or proportion of a page) occupied by the relevant disclosures (Unerman *et al.*, 2007); (2) counting the number of words, sentences or paragraphs that comprise the relevant disclosures; and (3) counting the instances of appearance (*e.g., themes* and *information items*) of the relevant disclosures.

When using proportion of a page as the measurement unit, a grid (a sheet of A4 paper divided into 100 rectangles) is laid over the page and the number of cells covered by the disclosure is counted. Critics of this measure argue that differences in print sizes, column sizes and page sizes in the analysed document may render cross-sectional comparisons difficult (Ng, 1985 cited in Hackston and Milne, 1996).

The use of number of words or terms as a measurement unit suffers from several drawbacks too. First, non-narrative content, which is also examined in this thesis, cannot be measured using words and terms. Second, differences in writing styles may result in the same message being conveyed using different number of words in two reports. This has the potential to bias results as analyst reports are written by different individuals with different writing styles. Third, as argued by Hackston and Milne (1996), counting the number of words is problematic when determining which individual word comprises the information category.

As a solution to the problems of using word counts to measure disclosure, Milne and Adler (1999) promote the use of sentences for both coding and measuring. This has the effect of simplifying the content analysis as well as reducing potential for error compared to using words and proportions of pages for measuring. However, as discussed in the previous section (Section 5.3), problems associated with using sentences as the recording unit will equally apply here. For example, a sentence can contain more than one IC information category and if one sentence is counted as one disclosure, only the dominant IC category in that sentence will be counted, while ignoring the other IC categories present. As the same meaning can be conveyed using a different number of sentences, this measure will result in a higher disclosure frequency being attributed to documents containing more sentences compared to those containing lesser sentences.

This thesis measures the instances of IC *themes* (in narrative content) and IC *information items* (in visual content). That is, IC references in analyst reports are measured in this thesis by counting the number of instances each information category is manifested in *themes* and *information items*. Use of these two measurement units overcomes the aforementioned limitations associated with using other measurement methods to measure IC references in analyst reports.

*Themes* and *information items* are also the recording units used in this thesis. Most prior ICD content analysis studies have, in fact, used the same construct for coding and measuring (e.g., Abeysekera and Guthrie, 2005; Unerman *et al.*, 2007). Further, the approach adopted in this thesis is in line with Beattie *et al.* (2004b) and Beattie and Thomson (2007), who used text units for coding and measuring narrative disclosures and information units for coding visual disclosures.

In the present study, each appearance of a *theme* (in texts) or an *information item* (in visuals) representing an IC category, in each report, is assigned a score of one in the respective content category. Accordingly, the importance of a particular information category is established by the number of times that information category is cited (Gray *et al.*, 1995; Krippendorff, 2004a). For instance, if ten analyst reports contain five references each to the 'management experience' subcategory, then that subcategory will be assigned a score of 50. Table 5.3 provides a hypothetical example of how results may be reported when incidences are coded.

**Table 5.3: Incidence of themes**

| Theme | Frequency of incidence (N = 30 reports) | Per cent of total incidence |
|---|---|---|
| Business infrastructure & know-how | 45 | 11 |
| Business model | 30 | 8 |
| Corporate culture | 23 | 6 |
| Corporate governance | 12 | 3 |
| Information systems | 58 | 15 |
| IP | 45 | 11 |
| Management processes | 100 | 26 |
| Management philosophy | 22 | 6 |
| Organisation structure | 16 | 4 |
| Organisational expertise | 40 | 10 |
| Total internal capita1 | 391 | 100 |

Coding all IC references in analyst reports enables a richer set of data to be extracted and qualitative dimensions of communication of IC information to be investigated. Also, this approach evokes the qualitative aspects of the content analysis method (see, Section 5.2.6), which is used in this study to complement the quantitative results generated through frequency counts.

The next section describes the sample selection process.

## 5.5. Sampling

In content analysis, sampling should be done in such a way that the researcher arrives at conclusions that an analysis of all possible texts will lead to, by analysing a manageable body of texts (Krippendorff, 2004a). Holsti (1963b) states that both theoretical and practical considerations are involved in achieving this. The purpose of this section is to address these theoretical and practical considerations and explain the selection of the sample for this PhD study. In doing so, Section 5.5.1 discusses the selection of the analyst report as the sampling unit for this study. Section 5.5.2 describes the selection of sample companies and the sample of analyst reports.

### 5.5.1. Sampling unit

The universe of content to be considered for the examination of IC information use / communication by sell-side analysts includes: verbal communications with their clients; analyst comments; and analyst reports. Verbal communications of sell-side analysts, although an important source of IC information (Johansson, 2007), are not accessible, and their occurrence is generally unknown. Similarly, analyst comments are brief documents and are not publicly available. Therefore, from a practical point of view, analyst reports were selected as the sampling unit, as they are the only publicly accessible document.

In addition, the selection of analyst reports can also be justified from a theoretical point of view. First, as discussed in Section 1.5.3, information included in analyst reports has a significant impact on the market prices of stocks, and analyst reports proxy for information requirements of the capital market. Therefore, content analysis of analyst reports enables the understanding of the importance of various types of IC information to sell-side analysts and thus to the capital market – the fist research objective of this thesis. Second, analyst reports provide a trail of analysts' work, and include carefully selected information. For instance, Breton and Taffler (2001, p.92) claim that analyst reports, "despite being less timely than other means of brokerage house client communications, are the only extensive trace of the analysts' work". Moreover, formal articulation of written reports requires careful thinking and rationalisation of thought processes in justifying forecasts and recommendations (Breton and Taffler, 2001). Third, use of analyst reports as the sampling unit is

consistent with prior research on the importance of types of information to the capital market, as discussed in Chapter 3 (Section 3.3.2). Also, content analysis of analyst reports have been used to investigate the importance of IC information to sell-side analysts in prior research (Arvidsson, 2003; García-Meca, 2005; García-Meca and Martínez, 2007; Orens and Lybaert, 2007).

The next subsection describes the types of analyst reports available and the selection of *initiating coverage reports* as the sampling unit for this PhD study.

#### 5.5.1.1. Types of analyst reports

Once the decision was made to use analyst reports as the sampling unit, it was necessary to select a specific type of analyst report. In the accounting literature, analyst reports are broadly classified into *initiating coverage reports* and *recurrent reports*. *Recurrent reports* are further classified into *company reports* and *results reports* based on the events triggering them. The nature and role of each of these analyst report types is explained below.

*Initiating coverage reports* are issued by sell-side analysts when their brokerage firm commences coverage of a particular company for the first time or after a considerable lapse in time. Nielsen (2008) explains that *initiating coverage reports* are also written by new sell-side analysts who seek to brand themselves and to market their key knowledge areas in relation to the company. *Initiating coverage reports* are concerned with forming a new knowledge base as opposed to other types of analyst reports that are considered to be merely updates on an existing base of knowledge (Nielsen, 2008).

The labelling of an analyst report as either a *company report* or a *results report* depends on the type of event triggering it. *Company reports* are usually triggered by changes in the company itself or in the business environment. For instance, *company reports* evaluate the impact of a particular event or a new development in a company, such as a change in a firm's strategy or entering into a new alliance. These reports are issued on an ad hoc basis.

On the other hand, *results reports* are generally issued to accompany an earnings release (*i.e.,* annual, half-year, or quarterly result announcement). They may revise

previous earnings forecasts, recommendations or price targets by upgrading or downgrading, or may simply reiterate those. *Results reports* are the most frequently released form of analyst reports (Barker, 1998). Whilst *company reports* incorporate relatively more information about a company (*e.g.,* general vision of the business, specific issues such as mergers, new products, or changes in strategy), *results reports* merely discuss the impact of interim or annual results announcements (García-Meca and Martínez, 2007; Orens and Lybaert, 2007).

Initiating coverage analyst reports are used as the sampling unit in this study for four reasons. First, *initiating coverage reports* generally include a comprehensive analysis of a company providing all justifications and arguments for arriving at sell-side analysts' conclusions. Important facts and useful information are presented in these reports in an informative and a comprehensive manner. Flöstrand (2006, p.463) claims that:

> [T]he sample reports should be as well articulated as possible in the sense that all the motivations and reasons the analyst gives the reader for believing in his/her view of the future is included in the report, and is not excluded on the grounds that it was included in a previous report and now assumed common knowledge.

As *initiating coverage reports* are greater in length and more detailed than other types of reports it is expected that these reports provide the best opportunity for sell-side analysts to discuss the IC that is important to the valuation of a company.

Second, *initiating coverage reports* are self-contained. Therefore, by selecting *initiating coverage reports*, this study overcomes the threat of analysts omitting relevant information on the grounds that they were previously disclosed. In other words, all relevant IC information that the sell-side analysts wish to communicate can be examined through *initiating coverage reports*. This is an advantage over *company reports*. Third, sell-side analysts are not affected by time or space constraints when writing *initiating coverage reports*. This enables them to communicate with their readers more freely and emphasise important information. Finally, these reports are clearly labelled as initiating coverage, thereby reducing any bias in sample selection.

The next section explains the selection of sample companies and the sample of *initiating coverage reports* written on those companies.

### 5.5.2. Selection of sample companies

The sample companies are selected based on two criteria: company size and GICS® sector. These criteria are identified in the prior literature as determining the extent and type of IC information disclosed in analyst reports. In order to select analyst reports on large companies, the sample of analyst reports is drawn for companies listed in the *S&P/ASX GICS® sector* indices, which represent large companies.

The literature reviewed in Section 4.2.4 revealed significant diversity in the extent of ICD in annual reports and analyst reports across industries/sectors (Flöstrand, 2006). Characteristics idiosyncratic to a specific industry can be examined using a stratified sample, where various industries are adequately represented. Stratified sampling is an appropriate method of sampling when a large class of sources contain dissimilar sub-classes (Holsti, 1969). Therefore, the present study uses stratified sampling, where analyst reports are chosen for companies from selected GICS® sectors.

Companies representing eight GICS® sectors with varying levels of reliance on knowledge resources/IC value drivers were sampled. This approach to sector selection is consistent with the prior literature on ICD (Bozzolan *et al.*, 2003; Unerman *et al.*, 2007). The following Table 5.4 lists the eight GICS® sectors selected and their expected IC intensity. The IT and health care sectors are selected because companies in these sectors are expected to be at the high end of the IC-intensity continuum. Consumer discretionary, consumer staples[44] and financial sectors are selected as companies in these sectors are expected to show moderate reliance on IC. Finally, REIT, materials and utilities sectors are selected to represent companies expected to be at the bottom end of the IC-intensity continuum. Thus, the present study examines analyst reports on companies in eight of the 12 GICS® sectors[45] used in Australia.

[44] Unerman *et al.* (2007) categorised the retail sector as moderately relying on IC. They state that "while retailers do rely on a number of intellectual capital value drivers (such as brands, brand management, customer satisfaction, service quality, logistic and supply chain management, and so on), they also rely extensively upon a number of more traditional tangible value drivers" (p.24).

[45] Sectors are defined in terms of the GICS® classification. The GICS® classifies companies into sectors, industry groups, industries and sub-industries. The GICS® system incorporates 10 sectors, 24 industry groups, 67 industries, and 147 sub-industries. In adition, two more sectors (REITs and financials excluding REITs) comprise the GICS® in Australian. The 10 original sectors include consumer discretionary, consumer staples, energy, financials, health care, industrials, information technology, materials, telecommunication services, and utilities.

**Table 5.4: The GICS® sectors investigated**

| Expected IC intensity | GICS® sector |
|---|---|
| High | Information technology<br>Health care |
| Medium | Consumer discretionary<br>Consumer staples<br>Financials |
| Low | REIT<br>Materials<br>Utility |

The decision of the optimal sample size to be used in a content analysis study is a product of several factors. These may include, *inter alia*, hypotheses being tested, the degree of expected precision of results, nature of the data, and properties of the source (Holsti, 1969). As explained later in this chapter, it became apparent in the pre-testing stage of this PhD study that parsing and coding analyst reports are highly time-consuming (see, Section 5.8). For example, an average length report takes approximately five hours to be coded completely. Therefore, the demand on researcher's time was a limitation in increasing the sample size. Further limitations for increasing the sample size were the limited representation of *S&P/ASX 300* companies in certain GICS® sectors and limited analyst coverage of those companies.

On the other hand, in order to explore IC information use in analyst reports across GICS® sectors, each sector needs to be adequately represented in the sample. Therefore, it was decided to limit the sample to one initiating coverage analyst report each on eight companies for each of the eight GICS® sectors. The sample companies were selected from the companies listed in the respective S&P/ASX GICS® sector index for each of the eight sectors.

However, limitations in sourcing *initiating coverage reports* for companies listed in the S&P/ASX GICS® sector indices affected the sub-sample selection for the information technology and consumer staples sectors. This resulted in the sub-sample for the information technology sector having an initiating coverage analyst report on a *S&P/ASX 500* company (as at 05 June 2008) to complete the quota of eight analyst reports for that sector and the sub-sample for the consumer staples sector having only seven *initiating coverage reports*. To make up a total sample size of 64 *initiating coverage reports* (due to the shortfall in the consumer staples sector) the sub-sample

for the materials sector was boosted to nine. Therefore, all initiating coverage analyst reports in the sub-samples, except one analyst report in the information technology sector, represented companies listed in the respective S&P/ASX GICS® sector index as at 05 June 2008.

Standard & Poor's (2007, p.6) explains that "the constituent securities for the GICS® indices are derived from the eligible pool of securities within the *S&P/ASX 200* and the *S&P/ASX 300"*. The *S&P/ASX 200 (300)* index includes the 200 (300) largest index-eligible stocks listed on the ASX by float-adjusted market capitalisation[46]. Hence, this index includes the largest and the most liquid and tradeable stocks in the Australian market. *S&P/ASX 300* covers more than 80 per cent of the Australian equity market by capitalisation (Standard & Poor's, 2007).

The main source of *initiating coverage reports* in this study is the OneSource Global Business Browser database. OneSource describes itself as covering over 90,000 global, 260,000 Asia Pacific, and 21,000 Australian and New Zealand private and public companies, providing eight *long* brokerage house reports including the two most recent *initiating coverage reports* for most companies. The database was searched for *initiating coverage reports* for the eight largest companies (by market capitalisation) included in the respective S&P/ASX GICS® sector indices.

In order to be selected, an *initiating coverage report* had to be written in the period after 01 July 2003. When several *initiating coverage reports* are available for a selected company, the one with the most number of pages was selected in line with the thesis' aim to focus on detail information. If the database did not contain an *initiating coverage report* issued after 01 July 2003, an *initiating coverage report* on the next largest company in the relevant S&P/ASX GICS® sector index was selected. When unable to complete a sample of eight reports per GICS® sector in this manner due to reports being unavailable, missing reports are sourced in a number of ways

[46] The inclusion of a company in the index is not determined by market capitalisation only, although it is the primary determinant. Inter alia, liquidity is also considered. Once eligible companies are selected based on the set criteria, the float-adjusted market capitalisation is calculated in order to determine the ultimate constituents of the index. The market capitalisation is multiplied by an Index Weight Factor (IWF) to obtain float-adjusted market capitalisation. Strategic holdings that are classified as either corporate, private, or government, and shares owned by founders, directors of the company, trusts, and venture capitalists are excluded when calculating the IWF (Standard & Poor's, 2007).

including directly contacting analysts covering the relevant companies, company websites, and purchasing through Thomson Analytics database.

Table 5.5 shows the companies represented by the analyst reports selected for the sample and the corresponding brokerage firms that have issued the selected analyst reports (see, Appendix F for more information on the sample). As indicated in Table 5.5, the final sample consists of 64 initiating coverage analyst reports: eight analyst reports each on companies in consumer discretionary, financials, health care, IT, REIT and utilities sectors; seven analyst reports on companies in the consumer staples sector; and nine analyst reports on companies in the materials sector. In total, 15 stockbroking firms are represented in the sample and the majority of the reports are issued by some of the world's biggest investment banks, such as ABN-AMRO, Citigroup and Deutsche Bank.

**Table 5.5: Sample for the main study**

| Sector | Company | Brokerage firm |
|---|---|---|
| Consumer Discretionary | 1. News Corporation Ltd | Cowan and company |
| | 2. Crown Ltd | Deutsche Bank |
| | 3. Tabcorp Holdings Ltd | Deutsche Bank |
| | 4. Harvey Norman Holdings Ltd | Citigroup Global Markets Inc. |
| | 5. Aristocrat Leisure Ltd | Citigroup Global Markets Inc. |
| | 6. Tatts Group Ltd | ABN AMRO Equities Australia Ltd |
| | 7. Billabong International Ltd | Citigroup Global Markets Inc. |
| | 8. Consolidated Media Holdings Ltd | Deutsche Bank |
| Consumer Staples | 1. Woolworths Ltd | Citigroup Global Markets Inc. |
| | 2. Wesfarmers Ld | Deutsche Bank |
| | 3. Foster's Group Ltd | Citigroup Global Markets Inc |
| | 4. Coca-Cola Amatil Ltd | Citigroup Global Markets Inc. |
| | 5. Lion Nathan Ltd | Citigroup Global Markets Inc. |
| | 6. Metcash Ltd | Deutsche Bank |
| | 7. Futuris Corporation Ltd | ABN AMRO Equities Australia Ltd |
| Financials | 1. ASX Ltd | Macquarie Research Equities |
| | 2. Babcock & Brown Ltd | Deutsche Bank |
| | 3. Westpac Banking Corporation Ltd | Independent International investment Research Plc |
| | 4. Bank of Queensland Ltd | Citigroup Global Markets Inc. |
| | 5. Perpetual Ltd | Macquarie Research Equities |
| | 6. Challenger Financial Services Group Ltd | ABN AMRO Equities Australia Ltd |
| | 7. Macquarie Group Ltd | ABN AMRO Equities Australia Ltd |
| | 8. Henderson Group plc | ABN AMRO Equities Australia Ltd |
| Health care | 1. CSL Ltd | ABN AMRO Equities Australia Ltd |
| | 2. Sonic Healthcare Ltd | ABN AMRO Equities Australia Ltd |
| | 3. ResMed Inc. | Kaufman Bros. L.P. |
| | 4. Cochlear Ltd | ABN AMRO Equities Australia Ltd |
| | 5. Ramsay Health Care Ltd | ABN AMRO Equities Australia Ltd |
| | 6. Australian Pharmaceutical Industries Ltd | Commonwealth Securities Limited |
| | 7. Healthscope Ltd | ABN AMRO Equities Australia Ltd |
| | 8. Sigma Pharmaceuticals Ltd | Commonwealth Securities Limited |

**Table 5.5: Sample for the main study (continued)**

| Sector | Company | Brokerage firm |
|---|---|---|
| Information Technology | 1. Computershare Ltd | ABN AMRO Equities Australia Ltd |
| | 2. Customers Ltd | Commonwealth Securities Limited |
| | 3. UXC Ltd | BBY Limited |
| | 4. MYOB Ltd | ABN AMRO Equities Australia Ltd |
| | 5. Oakton Ltd | Macquarie Research Equities |
| | 6. SMS Management & Technology Ltd | ABN AMRO Equities Australia Ltd |
| | 7. Redflex Holdings Ltd | Macquarie Research Equities |
| | 8. Melbourne IT Ltd | ABN AMRO Equities Australia Ltd |
| Materials | 1. Onesteel Ltd | RBC Capital Markets |
| | 2. Alumina Ltd | Davenport & Company LLC |
| | 3. Boral Ltd | Commonwealth Securities Limited |
| | 4. Zinifex Ltd | ABN AMRO Equities Australia Ltd |
| | 5. Aquarius Platinum Ltd | Deutsche Bank |
| | 6. Minara Resources Ltd | RBC Capital Markets |
| | 7. Western Areas N.L. | Tricom Equities Limited |
| | 8. Sims Metal Management Ltd | Wilson HTM Ltd |
| | 9. Timbercorp Ltd | ABN AMRO Equities Australia Ltd |
| REIT | 1. Westfield Group | Citigroup Global Markets Inc. |
| | 2. Stockland | ABN AMRO Equities Australia Ltd |
| | 3. Goodman Group | Deutsche Bank |
| | 4. Macquarie DDR Trust | Citigroup Global Markets Inc. |
| | 5. Valad Property Group | Citigroup Global Markets Inc. |
| | 6. Centro Retail Group | Deutsche Bank |
| | 7. Babcock & Brown Japan Property Trust | Deutsche Bank |
| | 8. ING Industrial Fund | Citigroup Global Markets Inc. |
| Utilities | 1. Challenger Infrastructure Fund | ABN AMRO Equities Australia Ltd |
| | 2. Transfield Services Infrastructure Fund | ABN AMRO Equities Australia Ltd |
| | 3. Sp Ausnet | DBS Vickers Research (Singapore) Pte. Ltd. |
| | 4. Hastings Diversified Utilities Fund | ABN AMRO Equities Australia Ltd |
| | 5. Spark Infrastructure Group | Merrill Lynch |
| | 6. Babcock & Brown Wind Partners Ltd | Deutsche Bank |
| | 7. APA Group | ABN AMRO Equities Australia Ltd |
| | 8. Babcock & Brown Power Ltd | Commonwealth Securities Limited |

The next subsection describes the contents of an *initiating coverage report* and the sections of it selected for content analysis in this PhD study.

#### 5.5.2.1. Format of initiating coverage analyst reports

*Initiating coverage reports* are broadly similar in format regardless of the brokerage firm issuing them. The first page contains a summary of the main issues discussed subsequently in the body of the report and generally includes three key indicators: an earnings forecast, a stock recommendation, and a price target (Asquith *et al.*, 2005). Name of the brokerage firms, names and contact details of the sell-side analysts who have written the report, date of the report, summary of stock data and key indicators about the company are also located in the first page. The body of the analyst report contains descriptions about the company and industry, quantitative and qualitative

analyses, and arguments supporting the key indicators. Appendices, summary tables of financial data, regulatory disclosures, investment bank's disclaimer and other disclosures explaining the recommendation structure are found at the end of report. In this thesis, only the body of the report, appendices and footnotes are analysed. No distinction is made among IC information referred to in the body of the report, appendices or footnotes.

### 5.6. Developing the categorisation scheme

Content analysis is predominantly a process of codifying recording units into predefined content categories. Hence, a categorisation scheme is a pre-requisite for a content analysis based study. This section introduces the IC information categorisation scheme used in this thesis for codifying content in analyst reports.

In order to address the research objectives and to capture multiple facets of IC information use an IC categorisation scheme was built around four dimensions related to ICD: *topic*, *evidence*, *time orientation* and *news-tenor*. The following Table 5.6 illustrates the four dimensions investigated in this thesis and the main content categories of each dimension.

**Table 5.6: Main dimensions of investigation**

| Dimension | Classification | No. of Categories |
|---|---|---|
| Topic | ExtC, IntC, HumC | 3 |
| Evidence | Discursive, numerical (non-monetary), monetary, visual | 4 |
| Time orientation | Past-oriented, forward-looking, non-time-specific | 3 |
| News-tenor | Positive, neutral, negative | 3 |

The content categories developed under each dimension are *exhaustive* (Holsti, 1969). That is, all references to IC are capable of being placed into a category in each dimension. At the same time, *mutual exclusiveness* of the content categories is upheld by creating unambiguous and precise operational definitions and theory laden but empirically grounded coding rules so that each recording unit is assigned to only one category in each dimension (see, Section 5.7). Further, both the principles of *independence* and s*ingle classification,* which Holsti (1969) recommended for

creating content categories, are achieved in this study. For instance, in this thesis, the assignment of one recording unit into a category in each dimension does not affect the classification of other recording units (*i.e., independence* of categories) and conceptually different levels of analyses are kept separate by having four separate dimensions and resultant categories (i.e. *single classification*).

The following subsections discuss the four dimensions of investigation and the categories formulated under them.

### 5.6.1. Topic dimension

*Topic* (or type of ICD) is the primary variable investigated in this thesis. A *theme* or an *information item* was further analysed for the remaining three dimensions only if it referred to IC. As explained in Section 2.2.3, the *topic* dimension in this study is based on the widely used tripartite taxonomy of IC, where IC comprises ExtC, HumC and IntC. The following Table 5.7 presents the operational definition of IC as well as the definitions of ExtC, HumC, and IntC adopted in the present thesis. These definitions were developed from the literature review reported in Section 2.2.3.

**Table 5.7: Operational definitions**

| Concept | Definition |
|---|---|
| IC | IC includes all intangible determinants of firm value that can be categorised in to ExtC, HumC, and IntC. |
| ExtC | ExtC refers to all resources linked to a firm's relationship with external stakeholder including suppliers, customers, partners, government and the community plus the perceptions held about the firm by these stakeholders that can benefit the firm. |
| HumC | HumC refers to the knowledge, skills, attitudes, abilities, competences, and qualities of a firm's employees as well as the mechanisms that enable, support, and motivate their performance, such as training and development, employee benefits and compensation schemes and a favourable working environment. |
| IntC | IntC refers to IP and the intangible infrastructure that a firm has developed internally or bought in, which enable a firm to be productive, efficient, effective, flexible and innovative. |

There is no precise method for forming content categories. However, Weber (1990) points out two distinct ways of doing it. The first is to formulate categories by the investigator and justify them theoretically (*i.e.,* assumed categories). The second is to

use categories of those who produced the text (*i.e.,* inferred categories). This study commenced with an investigator imposed IC categorisation scheme developed from the literature. This categorisation scheme was modified during the pre-testing stage to make it aligned with information referred to in analyst reports.

In specific, when developing IC subcategories for each IC category, Guthrie and Petty's (2000) taxonomy and its derivations were initially consulted[47] (see, Appendix C). In addition, an extensive review of the literature was undertaken to investigate how ExtC, HumC, and IntC are conceptualised. This review resulted in a list of over 320 IC concepts and indicators (see, Appendix B). Thereafter, IC subcategories to which these concepts and indicators could be assigned were explored across a list of IC subcategories found in Guthrie and Petty's (2000) taxonomy and its derivations. If a contradiction between studies was found in relation to categorising a particular IC item, then it was categorised according to the way similar items are generally categorised. New subcategories were created when the existing subcategories were inadequate. When creating new subcategories in this manner, the definitions of the three main IC categories were consulted (see, above Table 5.6 for definitions of main IC categories). Sometimes existing categories were expanded to accommodate certain IC information, especially when the underlying concepts were too fragile to have operational definitions constructed or boundaries demarcated.

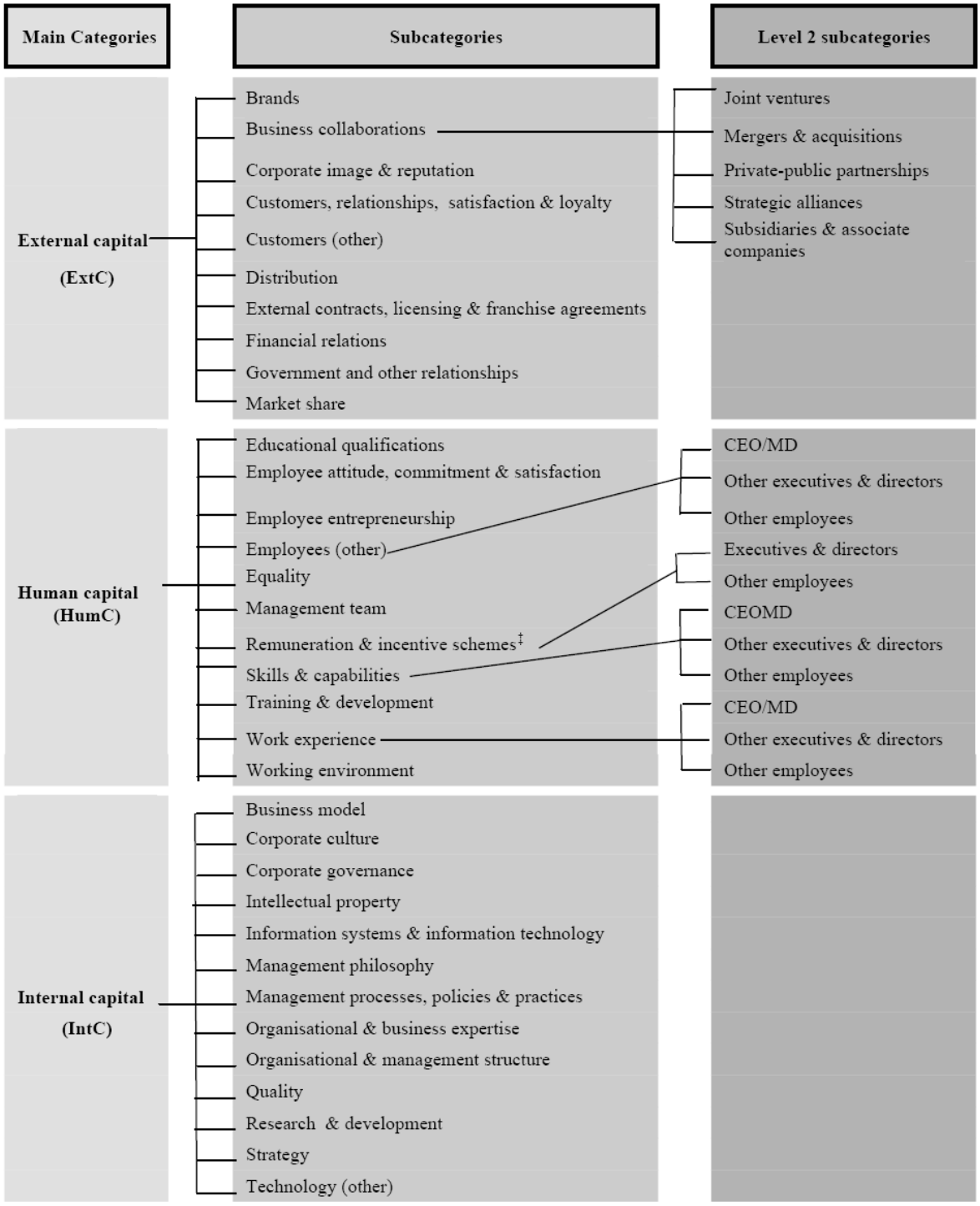
These initial IC subcategories were further refined and new subcategories were added throughout the course of pre-testing and at the end of the pilot study. The trial and error approach adopted in this thesis in developing content categories is consistent with the content analysis literature. When a standard categorisation scheme is non-existent the usual way of constructing content categories is to start with theory and then modify the categories during pre-coding. Holsti (1969, p.104) states that "[t]his process consists of moving back and forth from theory to data, testing the usefulness of tentative categories, and then modifying them in the light of the data".

The final IC categorisation scheme consisted of 34 IC subcategories that were divided between ExtC (10), HumC (11) and IntC (13). The following Figure 5.1 presents the

[47] A pre-sample of analyst reports were coded using a derivative of Guthrie and Petty's (2000) categorisation framework. However, it was found that IC communicated in analyst reports could not exhaustively and mutually exclusively be categorised into these categories.

IC categories and subcategories used in this thesis. The resultant IC categories are consistent with most prior IC research.

**Figure 5.1: The architecture of the classification scheme**




‡ It was revealed in the pilot study that remuneration and incentives schemes are discussed for executives in general and often not distinguished between CEO and other senior executives. Thus the remuneration and incentives subcategory consists of only two level-2 subcategories: executives and directors (including CEO) and other employees.

As shown in Figure 5.1, ExtC includes business collaborations (including mergers and acquisitions, subsidiaries and associate companies, private public partnerships (PPPs), JVs and strategic alliances), financial relations, governmental and other relations, external contracts, licensing and franchising arrangements, distribution, relationships with customers including customer satisfaction and loyalty, reputation, brands (including trade names, service names, brand marks and service marks), and market share.

Similarly, HumC consists of employee attributes such as their capabilities, educational and vocational qualifications, skills, expertise, attitude, loyalty, satisfaction, entrepreneurship, and work experience; management team; and organisational attributes that enhance employee capabilities and performance such as remuneration and incentive systems, equality, training and development, and working environment. The term 'employees', in this study, encompasses all employees of a company and the board of directors.

Finally, IntC consists of IP (*i.e.,* excluding brand names, trademarks, trade names, service names and service marks) management process and practices, management philosophy, corporate culture, R&D, information technology and information systems, organisational and business expertise, business model, strategy, corporate governance, technology, organisational and management structure and quality.

A considerable variation exists in the number of (sub)categories included in prior ICD studies. There is no generally accepted number of IC (sub)categories to be employed in an investigation. For instance, Bukh *et al.* (2005) include as many as 78 IC subcategories in their study of ICD in Danish IPO prospectuses, whereas Abdolmohammadi (2005) studied ICD using 10 categories. Increasing the number of content categories, consequently, increases the potential for coding errors and reduces reliability (Holsti, 1969; Milne and Adler, 1999). On the other hand, fewer content categories increases reliability, but at the expense of the potential understanding of the phenomenon of interest, as subdivision of categories permits more insight to be obtained. The IC subcategories employed in this thesis are sufficient to capture IC information communicated in analyst reports, without diminishing reliability.

In order to improve the richness of data collected for further analysis, some IC subcategories were further subdivided. For instance, the business collaborations subcategory, which comes under ExtC, was further subdivided as JVs, mergers and acquisition, relations with associate and subsidiary companies, private-public partnerships and strategic alliances. Similarly, this thesis considers board of directors (including non-executive directors) as representing the HumC of a firm. Hence, several HumC subcategories were further subdivided in order to investigate references to CEO/MD, directors and other executives, and regular employees, separately. More specifically, employees (other), skills and capabilities, and work experience subcategories were further subcategorised into CEO/MD, executives and directors and other employees; and remuneration and incentive schemes subcategory was further subcategorised into executives and directors, and other employees.

The next subsection discusses the measurement of disclosure quality of IC information in analyst reports. In this thesis, disclosure quality is measured to determine the differences in IC information use of sell-side analysts across sectors. Also, it is an extension of the investigation of the *topic* dimension of IC.

#### 5.6.1.1. Disclosure quality

Beattie *et al.* (2004a) identify that accounting researchers use two principal approaches to measure disclosure quality of corporate reports. The first approach is to use sell-side analysts' ranking of firms' disclosures in the reports of the Financial Analysts Federation Corporate Information Committee (FAF Reports) as a measure of disclosure quality[48]. Sell-side analysts provide scores according to their evaluation of a range of firm disclosure outlets including annual published information, other published information (including quarterly filings, press releases and proxy statements) and other investor relations (Lang and Lundholm, 1996). The second approach is content analysis of various business documents (*e.g.,* annual reports). In this approach, selected documents are checked for the presence or absence of a set of pre-specified themes, where disclosure quality is surrogated by the amount of disclosure.

Beattie *et al.* (2004a) argue for the use of actual amount of disclosure relative to an

[48] This ranking system has been discontinued since 1997 (Beattie *et al.*, 2004a).

expected amount given various company characteristics affecting disclosure (*e.g.,* size and profitability), when using amount of disclosure as a proxy for disclosure quality. In addition, they propose to assess the spread of disclosure across information categories by either calculating a disclosure concentration measure, referred to as the Herfindahl Index (HHI), or counting the number of non-empty disclosure categories.

The present thesis uses the HHI to measure the quality of IC information in analyst reports. The main purpose of calculating the HHI in this manner is to investigate differences in the use of IC information across sectors.

HHI is generally used as a measure of industry concentration or level of competition in an industry. It is defined in this thesis for the purpose of measuring quality of IC information as: $H = \sum_{i=1}^{n} P_i^2$ , where $P_i$ is the proportion of disclosures in IC subcategory *i,* and *n* is the number of IC subcategories investigated (*i.e.,* 34, in this study). The HHI score can range from one, when all IC references pertain to one IC subcategory, to 1/*n*, when the IC references are spread evenly across all subcategories. Thus, in relation to the study reported in this thesis a lower HHI score will indicate that sell-side analysts refer to many IC subcategories in their reports. Similarly, a high HHI score will indicate a low spread of IC references across IC subcategories, suggesting that sell-side analysts concentrate on few IC subcategories in their reports.

### 5.6.2. Evidence dimension

Several studies that attempt to investigate *evidence* of ICD in corporate annual reports have done so by assigning weights and calculating a composite disclosure index (Bozzolan *et al.*, 2003). Petty and Cuganesan (2005) assigned a score of one for IC disclosed in narrative form, two for numerical disclosure and three for dollar amounts. Vandemaele *et al.* (2005) coded sentences comprising narrative disclosure of IC by assigning a score of one and IC disclosed in either quantitative or graphical form by assigning a score of two. A more detailed weighting system was adopted by Firer and Williams (2005), who not only considered the quantitative and narrative aspects of disclosure, but also the level of specificity in relation to the impact of stated IC on the firm and its policies. Quantitative disclosures are given heavy weightings based on the assertion that they are specific and precise, and therefore desired by information users. In contrast to these studies, this thesis investigates *evidence* of IC information as a

separate dimension. That is, each IC related *theme* or *information item* is separately coded into the relevant evidence category. This approach to investigating *evidence* of information is consistent with Striukova *et al.* (2008) and Beattie *et al.* (2004a).

The IC related prior literature has often used three *evidence* categories: discursive; numerical (non-monetary); and monetary. Although, imagery is a powerful way of communicating IC, only a few IC studies have included visuals in their content analyses (e.g., Steenkamp, 2007a). Guthrie *et al.* (2004) encourage researchers to extend content analysis to capture IC communicated through visuals, which include diagrams, tables, figures, charts, graphs, and photographs. Hence, this thesis investigates IC disclosed in visual form in addition to the aforementioned three narrative categories examined in prior studies. In other words, IC related *themes* and *information items* are classified into discursive, numerical (non-monetary), monetary and visual categories. The following Table 5.8 presents operational definitions of *evidence* categories.

**Table 5.8: Operational definitions of evidence categories**

| Category | Operational definition |
|---|---|
| Discursive | A theme disclosed in narrative/written form only or a cell in a table which conveys a non-numerical meaning by corresponding to column and row headers. |
| Numerical (Non-monetary) | Information disclosed using actual numbers of non-financial nature to communicate or emphasise a theme. |
| Monetary | Information disclosed using actual numbers of financial nature to communicate or emphasise a theme. |
| Visuals | A theme communicated through a graph, chart or figure. |

As tables presented in analyst reports are coded in this study, special coding rules are required. The making of coding decisions in relation to the *evidence* categories for information presented in tables is discussed below.

An extract from a table found in a sample analyst report is provided in the following Figure 5.2. The *information items* included in it are numbered from 1 to 12. *Information items* 1, 5 and 9 are coded as discursive as they state the positions held by senior executives in the company. *Information items* 2, 6 and 10 are coded as monetary being the salaries of the executives. *Information items* 3, 4, 7, 8, 11 and 12

either assert or negate whether directors possess a particular type of experience. Thus they are coded as discursive.

**Figure 5.2: A table extracted from an analyst report**

| Name | Current role | Estimated annual salary (AUD) | Grocery sector experience | Acquisition integration experience | Probability |
|---|---|---|---|---|---|
| Marty Hamnett | 1. Director of General Merchandise | 2. $2.2m | 3. ✓ | 4. × | 50% |
| Michael Luscombe | 5. Director of Supermarkets | 6. $2.2m | 7. ✓ | 8. × | 75% |
| Bernie Brookes | 9. Chief General Manager Refresh | 10. $2.2m | 11. ✓ | 12. × | 25% |

*Source: Woolworths Analyst Report (2005, p.19)*

### 5.6.3. News-tenor dimension

The *news-tenor* dimension in disclosure has not previously been investigated in an IC context. However, Abeysekera and Guthrie (2005) attempted to identify intellectual liabilities and intellectual assets in annual reports. There is limited explanation in their paper about the method adopted so it is unclear whether intellectual liabilities (assets) represented negative (positive) attributes.

The present study uses three *news-tenor* categories: positive, negative and neutral. It is difficult to develop coding rules for these categories as each *theme* or *information item* has to be evaluated based on its own merit. Kassarjian (1977) states that the element of subjectivity in deciding the correct *news-tenor* category is difficult to control and impossible to eliminate fully. However, coding rules were formulated in this thesis to assist coding of news-tenor categories in order to increase coding reliability.

It is expected that possession of IC will be disclosed in a positive manner by sell-side analysts, whereas lack of IC, or having comparatively less of a particular type of IC than competitors, will be disclosed in a negative manner. The following Table 5.9 provides operational definitions and excerpts from analyst reports to explain coding decisions on this dimension.

**Table 5.9: Operational definitions and examples of news-tenor categories**

| Category | Operational definition | Examples |
|---|---|---|
| Positive | Information about benefits or potential benefits of a firm's IC; beneficial utilisation of a firm's IC; and reference to IC as an indication of a firm's strengths. | • The company **dominates** the Australian market and also most international gaming markets (Aristocrat Leisure Ltd).<br>• BBG has **more than** 3,000 customer accounts globally which are fragmented and provide BBG with significant market power (Billabong International Ltd).<br>• BBG has recently launched Element branded shoes in the US and expects the product to be a top-three seller over time (Billabong International Ltd). |
| Negative | Information about a firm lacking IC, not deriving an expected or reasonable level of benefits from IC, or being in a disadvantaged position compared to another firm in relation to possession or utilisation of IC. | • The appeal of BBG's brands is more limited in Europe given the cultural and seasonal differences (Billabong International Ltd).<br>• However, its low-ball bid re-affirmed our view that management's acquisition strategy is too conservative (Sigma Pharmaceuticals Ltd).<br>• WOR has experienced a shortage of engineering staff but has indicated that it is not as yet impacting on its growth (Worley Parsons Ltd.). |
| Neutral | Information disclosed about a firm's IC that is neither a positive nor a negative reference. | • API is an integrated health care services company with retail, wholesale and manufacturing interests in the health and beauty sector (Australian Pharmaceutical Industries Ltd).<br>• Ken Talbot has been appointed to the SDL Board (Sundance Resources Ltd).<br>• Pacific Sunwear accounts for an estimated 20% of BBG's sales (Billabong International Ltd). |

### 5.6.4. Time orientation dimension

*Time orientation* of IC references in analyst reports can be used to infer whether analysts use IC to communicate value realisation, similar to the function of traditional financial accounts, or *value creation* (Ashton, 2005; Fincham and Roslender, 2003b) (see, Section 1.2). The tense in a sentence, the nature of verb, and linkages to value in the context of value creation or value realisation are used to infer the *time orientation* of IC *themes* and *information items* in this thesis. Similarly, coding of visuals is based on the meaning they infer. Operational definitions and examples of *time orientation* categories used in the present study are shown in the following Table 5.10.

**Table 5.10: Operational definitions and examples of time orientation categories**

| Category | Operational definition | Examples |
|---|---|---|
| Forward-looking | Communication of the future value creation potential of a company through IC.<br>This category contains themes that relate<br>- to current investments in IC;<br>- current or past IC to benefits / losses that can (or expected to) accrue in the future; or<br>- to IC that may exist in the future due to current or past IC.<br>Forward-looking IC information is generally communicated through sentences with future tense. | The emergence of 'participation' as a sales model will continue to deliver expanded earnings and margins, through sales of Aristocrat jackpot game technology (Aristocrat Leisure Ltd). |
| Past-oriented | Communication of value realisation by a company as a result of current or past IC.<br>This category contains themes that relate to benefits currently accruing or had already accrued to the company due to current or past IC, or reference to IC in a backward looking manner.<br>Past-oriented IC is generally communicated through past tense sentences. | These problems exposed weaknesses in management reporting and accountability within the company (Aristocrat Leisure Ltd). |
| Non-time-specific | A theme containing IC that is neither a forward-looking nor a backward-looking statement.<br>The main feature of content categorised here is that IC is not linked with value or any outcome. | Quiksilver uses 'Roxy' to market its surf wear to women and 'Quiksilver' to men (Billabong International Ltd). |

## 5.7. Developing the coding instrument

There is an obligation on the researcher to be explicit about the procedure, instructions and rules of the data capture processes in content analysis based research (Carney, 1972; Gray *et al.*, 1995; Krippendorff, 2004a; Morris, 1994). This helps the reader to envisage how the data were generated, inferences were made and the vigilance of coding (Carney, 1972). The present study has systematised the data collection process and makes it transparent by using a coding instrument. The coding instrument used in this thesis comprises the five elements recommended by Boyatzis (1998, p. 53) to be included in a *good* coding instrument:

1. A label, comprising category name and code.
2. A definition of what the category concerns (*i.e.,* the characteristics or issue constituting the theme).
3. A description of how to know when the category occurs (*i.e.,* how to 'flag' a category).
4. A description of any qualification or exclusion to the identification of the category.
5. Examples, both positive and negative, to eliminate possible confusion when looking for a category.

In specific, the coding instrument includes operational definitions, coding rules for determining whether a recording unit falls within a given category/subcategory, and examples of various types of recording units that can and cannot be classified into a category/subcategory. An extract of the coding instrument is presented in the following Figure 5.3. The full coding instrument used in this thesis is provided in Appendix G.

**Figure 5.3: An extract of the coding instrument**

| *Category* | Operational definition | Coding Rules | Examples |
|---|---|---|---|
| ***Business model*** | Business model is a conceptualisation of the way a firm does business by identifying the elements and relationships that describe the business (Ostenwalder *et al.*, 2005). A business model may be explained by referring to the markets it serves as well as how the markets are served. | • Reference to the term business model and explanation of the business model.<br>• Description of the nature of firm's business activities that explain its business model.<br>• Explanation of franchising systems (if franchising is the firm's business model)<br>• Reference to the attractiveness, advantages and benefits of the firm's business model.<br>**Exclude**<br>• All other references to franchising operations are included under 'franchising, licensing and external contracts'. | • NetReturn claims its advantage lies in its ASP model (*i.e.,* customers 'rent' the software via an Internet channel rather than buying the software outright) (MYOB Ltd.).<br>• Harvey Norman operates a franchise business structure in Australia with up to four franchisees within each Harvey Norman complex (Harvey Norman Holdings Ltd). |

Clear operational definitions and coding rules that are capable of delineating the boundaries of content categories in an exhaustive and mutually exclusive fashion minimise confusion, vagueness, and ambiguity in the coding process, and allow replication by others (Gray *et al.*, 1995; Kolbe and Burnett, 1991; Krippendorff, 2004a). According to Holsti (1969), an operational definition should be a valid representation of the content analyst's concepts and precisely characterise the major properties of a category so that reliable judgements can be exercised by the coders. This study developed operational definitions by reviewing the extant literature. The operational definitions of IC subcategories were developed in conformity with the definitions of IC categories. Coding rules and instructions provided in Unerman *et al.* (2007), Rogers and Grant (1997) and Guthrie *et al.* (2003) were instrumental in developing coding rules for IC topic categories and subcategories. Definitions and coding rules were subsequently modified during pre-testing when they were found to

be either too narrow or too broad. Final fine-tuning of the coding instrument took place at the completion of the pilot study.

During test coding, few new IC subcategories were added and several existing categories were re-labelled. This necessitated the creation and/or amendment of operational definitions and coding rules for the affected categories. Examples of information that can be included under each category were obtained during pre-testing. The resultant operational definitions, coding rules and examples are a product of several iterations of amendments throughout pre-testing and the pilot study.

### 5.8. Test coding (Pre-testing)

Test coding a pre-sample is a recommended method to develop a set of content categories to be used in the main study (Breton and Taffler, 2001; Krippendorff, 2004a). Holsti (1969) recommends testing of operational definitions and coding rules on a small sample of data before actual coding commences in a bid to enhance validity and reliability. Test coding is used in this study to refine the content categories and the coding instrument.

In this PhD study, pre-testing was done in three stages. The test sample included analyst reports from 13 reputable brokerage houses covering companies from 10 sectors. In the first stage, 15 reports were analysed for the *topic* dimension using paper based coding sheets. These *initiating coverage reports* were randomly selected from constituent companies of the *S&P/ASX 200* index as at 23 March 2007 and for which *initiating coverage reports* were available from the OneSource Global Business Browser database. In the second stage, Nvivo7 software program was used for coding instead of paper based coding sheets and the analyst reports were analysed for all four dimensions. This sample of *initiating coverage reports* was conveniently drawn from the OneSource database and the website of Commonwealth Securities Ltd (as at 12 December 2007), provided they represented *S&P/ASX 200* companies as at 23 March 2007. In addition, another report was sourced from the internet, as it is written by a globally reputed brokerage house that was not included in the OneSource database. In the third stage, a fully-fledged content analysis of 28 reports, drawn from the main sample used in the extended study, was conducted using NVivo. Some of the reports

coded at this stage included ones from the previous two stages of test coding. The pre-samples used in the test-coding phases are shown in Appendix H.

Each time a report was analysed, changes were made to the coding instrument to rectify potential coding problems. This process was repeated several times until the author was satisfied as to the reliability of the coding instrument. Therefore, the coding instrument was continuously modified as the test coding progressed. This resulted in IC subcategories listed in the instrument being relabelled and the scope of a number of subcategories being expanded so that they converge better with the type of IC information referred to in analyst reports. Further, operational definitions and coding rules for content categories relating to *evidence*, *news-tenor*, and *time orientation* dimensions required some refinement.

### 5.9. Pilot study

A pilot study was conducted to assess the reliability of the coding instrument. The author and a researcher acquainted with a non-business related discipline independently coded a sample of randomly selected sentences and visuals from *initiating coverage reports* using the refined coding instrument. The coding was done in three rounds. In the first round, all sentences and visuals were coded as referring to any of the 34 IC subcategories or not. At the end of this round, disagreements between the coders were resolved. The resolution resulted in an agreed set of sentences and visuals for evaluation in the second round. In the second round, only the content agreed to contain IC related *themes* and *information items* was subjected to coding. Hence, the coders decided on the number of IC related *themes* and *information items* they contained. Again, disagreements were resolved through discussion and an agreed list of IC related *themes* and *information items* was finalised. The third round involved coding these into content categories (and subcategories) under the four dimensions. The level of agreement between the two coders was calculated upon conclusion of the first and third rounds. These coefficients of reliability are presented in Section 5.11.2. The level of reliability achieved at this stage was acceptable to rely on the coding instrument for use in the main data collection. However, further fine-tuning of the coding rules resulted from the discussions between the coders at the conclusion of the pilot study.

## 5.10. Data collection

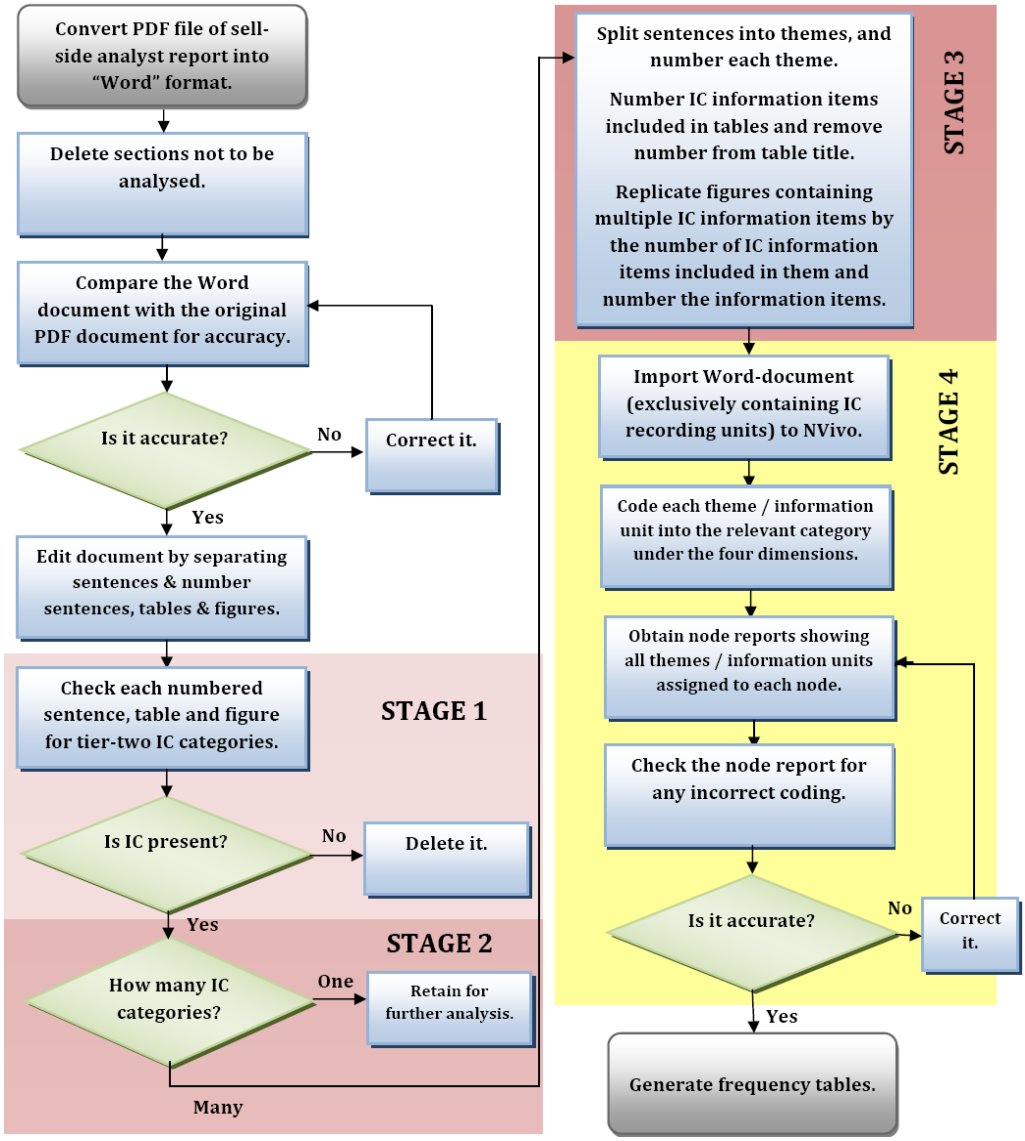
Data collection commenced with all analyst reports being converted into Word-documents. Since analyst reports were in portable document format (PDF) the conversion involved copying and pasting the texts and visuals into Word-documents. The first page of the report, table of contents, investment bank's disclaimers, regulatory disclosures and other disclosures about the recommendation structure, distribution of recommendations and summary tables of financial data were not copied into the Word-documents as they are excluded from analysis in this PhD study. On occasions where the PDF documents were copy-protected, the hard copies of those reports were scanned and converted into Word-documents through Optical Character Recognition Software. Subsequently, the Word-documents were compared against the original analyst reports to ensure accuracy, and were edited as appropriate. Preparation of the Word-documents for coding involved having each sentence start on a separate line and all sentences sequentially numbered. Figures and tables were not assigned numbers as the respective captions were numbered. Headings were not numbered and were not included in the analysis. The following Figure 5.4 provides a flow chart of the data collection process used in the main study.

As shown in Figure 5.4, after the Word-document was prepared from the analyst report, the coding was done in four stages. Beattie and Thomson (2007) recommended a multi-stage process for coding when grammatical constructs such as words, clauses, sentences, or paragraphs are not used as recording units, in order to facilitate reliability measurement. Hence, a step-wise coding process is adopted in this thesis as the use of *themes* and *information items* entails several interim coding decisions to be made before making the final coding decision.

In the first stage, each numbered sentence, figure, and table was examined as to whether it includes IC information as represented by any of the 34 IC subcategories. The number of coding decisions at this stage equals the total number of sentences, figures and tables. In the second stage, sentences, tables, and figures marked as representing IC information were further scrutinised as to whether they include multiple references to one or more IC categories. The number of sentences, tables and

figures identified as containing IC in the first stage equals the number of coding decisions to be made at this stage[49].

**Figure 5.4: Flowchart of the data collection process**




In the third stage, sentences containing multiple IC references were split into *themes*. Each *theme* containing IC was then numbered. Tables and figures containing more than one IC related *information item* were identified. As regards tables, all IC related *information items* included in them were numbered and the number allocated to the table was removed. If a figure contained multiple IC related *information items*, the figure was replicated in the word document to represent the number of IC related

[49] The total number of coding decisions each coder makes and the coding outcomes of each decision are required to be known to calculate statistical reliability measures (Beattie and Thomson, 2007).

*information items* found in it. Consequently, they were included in the numbering sequence in the document. The *topic* dimension was the decisive criterion for splitting sentences into *themes* and for identifying *information items*. The coding decision at this stage was ascertaining the number of *themes* or *information items* contained in each sentence, table and figure identified in the second stage. The number of coding decisions at this stage equalled the number of sentences, tables and figures marked as containing multiple IC related references. At the end of the third stage, a Word-document was produced that only contained IC related *themes* and *information items*, each having a number assigned. This document was the basis for detailed coding in the fourth stage.

The fourth stage of coding used the NVivo (Version 7) computer software. NVivo is a commercial computer program designed to support qualitative research. It enables the researcher to explore *themes*, code them into multiple content categories, and discover and test patterns (QSR International, 2006). In NVivo, coding is done by identifying references to content categories, ideas or concepts within the sources and linking them to the nodes that represent them. Nodes can be either free nodes or tree nodes. A free node is used as a container to collect references to a content category that cannot be conceptually related to another content category. Tree nodes are used when content categories are logically related in a hierarchical structure. The latter was used in this study. Thus, four tree nodes with their own hierarchies were created in NVivo to reflect the categorisation scheme in this study, which included four dimensions.

The process of coding using NVivo comprised three phases. First, the Word-documents exclusively containing IC related *themes* and *information items* were imported into NVivo. Second, each *theme* and *information item* was coded into the four dimensions in such a way that none could be coded more than once into each dimension. Accordingly, the total number of coded *themes* and *information items* was equal in each dimension. Coding was done in NVivo by assigning each *theme* or *information item* to relevant nodes. In this phase, the coder faces 1584 permutations of choices for each *theme / information item*[50]. Third, node reports were obtained

[50] The coder needs to decide which of the 44 possible topic categories (including second level subcategories), and which of the four possible evidence categories, and which of the three possible *news-tenor* categories, and which of the three possible *time orientation* categories each theme or information item should be coded into (i.e. 44*4*3*3 = 1584).

from NVivo showing all *themes* and *information items* assigned to each node. This further ensures reliability of coding as wrongly coded recording units tend to stand out among a group of like items (Beattie and Thomson, 2007). Consequently, *themes* and *information items* coded into each node were checked. Subsequently, corrections were made by 'uncoding' and 'recoding', if errors were found. Another set of node reports were obtained after the corrections.

### 5.11. Reliability and validity

As indicated previously, this PhD study uses manifest content analysis to code the content in analyst reports into predefined categories according to their denotative meaning (Ahuvia, 2001; Andrén, 1981). As meanings of texts are not always straightforward and the coder's frame of reference can interfere with the way meaning is derived, even manifest content analysis entails interpretation and subjectivity. Therefore, content analysis lends itself to validity and reliability threats that need to be addressed by the researcher.

*Validity* in content analysis refers to the extent to which a measurement procedure actually measures the phenomena that the researcher purports to measure (Abbott and Monsen, 1979; Kassarjian, 1977; McKinnon, 1988). In the same context, *reliability* is the extent to which a measurement procedure responds to the phenomena being measured in the same way, regardless of the circumstances of its implementation (Krippendorff, 2004a). For instance, Kaplan and Goldsen (1968, p.83) note that "the importance of reliability rests on the assurance it provides that the data obtained are independent of the measuring event, instrument or person". In the words of Krippendorff (2004a, p.212), "... reliability provides assurance that particular research results can be duplicated …[while] ...validity provides assurance that the claims emerging from the research are borne out in fact".

Reliability and validity are related concepts. Morris (1994, p.905) states that "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". Reliability is a necessary condition for validity in content analysis. However, reliability does not guarantee validity. For example, Krippendorff (2004a, p.213) states that "two observers of the same event who hold the same conceptual

system, prejudice, or interest may well agree on what they see but still be objectively wrong". Although reliability and validity are interlinked and may be hard to distinguish from each other, the discussion to follow has singled out the two concepts to address how each has affected this PhD study and to outline the specific measures adopted to address the issues.

This section discusses the measurement of reliability and evidence of validity in this thesis. Subsection 5.11.1 discusses the reliability concerns in content analysis based research and actions taken in this thesis to achieve reliability. Section 5.11.2 provides results of the reliability tests. Section 5.11.3 discusses validity concerns in content analysis based research in general, and how different variants of validity are achieved.

### 5.11.1. Reliability

Reliability is of paramount importance in content analysis to generate systematic and objective inferences from communication content (Kassarjian, 1977). Three types of reliability are mentioned in the literature. They are stability, reproducibility and accuracy. Stability is the extent to which a coding procedure yields the same results on repeated trials over time (Krippendorff, 2004a). Stability is tested by an individual coder re-coding the same texts usually after some time has lapsed. Stability is considered as the weakest form of reliability by Krippendorff (2004a). In order to achieve a high level of stability, the coding instrument must be well specified and the coder needs to be consistent over time. Intra-coder reliability signifies consistency of the coder over time.

Reproducibility is the extent to which multiple coders, working independently of each other, obtain consistent results by using the same (or different but functionally equivalent) coding instrument on the same text (Guthrie *et al.*, 2003; Krippendorff, 2004a). A high level of reproducibility means that both intra-coder and inter-coder differences have been minimised.

Accuracy is the strongest form of reliability. It is the degree to which a coding procedure conforms to its specifications and yields what it is designed to yield (Krippendorff, 2004a, p.215). To establish accuracy the results of a coding procedure need to conform to the results of a procedure that is taken to be correct. In other words, coding results should be comparable to a predetermined standard set by a

panel of experts or known from previous experiments and studies (Guthrie *et al.*, 2003; Krippendorff, 2004a; Milne and Adler, 1999). This standard may not necessarily be the truth. If the standard is in fact the truth then accuracy signifies validity.

The research method used in this study achieves stability and reproducibility. Evidence of stability and reproducibility is provided respectively by high intra-coder reliability coefficients for the coding of a sub-sample of analyst reports and high inter-coder reliability coefficients for the coding done in the pilot study. The results of these reliability tests are presented in Subsection 5.11.2. Two courses of action were taken in this PhD study to ensure stability and reproducibility. First, a well-specified coding instrument was developed. Second, the coder underwent a significant period of training. The following two subsections explain these two actions in detail.

#### 5.11.1.1. Reliability of the coding instrument (category reliability)

Having a reliable coding instrument is important for two reasons. First, the researcher's perceptions and predispositions (partly guided by the research questions) can be manifested in their coding decisions (Gray *et al.*, 1995). Second, written language may convey different meanings to different coders due to their creativity and sensitivity (Abeysekera, 2003). Reliability of a coding instrument can be improved by selecting content categories from well-grounded relevant literature, clearly defining them and introducing well-specified decision rules (Guthrie *et al.*, 2003; Holsti, 1969). In the present study, effort was put into ensuring that the coding instrument contained relevant content categories, and detailed instructions and definitions for including (excluding) information into (from) content categories.

Further, reliability of the coding instrument can be established by demonstrating that multiple coders using the same coding instructions agree on which items of a certain population belong in a category and which do not (Gray *et al.*, 1995; Holsti, 1969; Kassarjian, 1977). Milne and Adler (1999) argue that even relatively inexperienced coders may produce only few discrepancies when the content categories and coding instructions are well specified. Further, Holsti (1969) notes that untrained coders are more likely to agree if category reliability is high than would well trained coders working with ambiguous categories.

Moreover, establishing reliability of the coding instrument across a wide range of data sets and coders, reduces the need for multiple coders (Milne and Adler, 1999). Therefore, inter-coder reliability was measured at the pilot study stage of this PhD study. This enabled trust in the coding instrument to be established, so that a single coder could be solely responsible for the data collection in the main study.[51] Nonetheless, research domain restrictions inherent to this study do not permit the use of a coder independent of the author, although it is a desirable property to ensure reliability and validity (Kolbe and Burnett, 1991).

#### 5.11.1.2. Coder training

Consistency of the coder (intra-coder agreement) and inter-coder agreement can be significantly increased by undergoing a sufficient period of training (Kaplan and Goldsen, 1968; Kolbe and Burnett, 1991; Milne and Adler, 1999; Woodard and Franzen, 1948). Untrained coders can bias findings as errors originating in the coders tend to fall into systematic patterns unlike those resulting from poorly constructed categories, which generally scatter around the range of possible disagreements (Funkhouser and Parker, 1968). Training provides the coder familiarity with the texts, coding categories, operational definitions and decision rules. It also minimises the chances that the coder will use his/her intuition in interpretation (Ahuvia, 2001). In relation to SER, Milne and Adler (1999) found that less experienced coders need to have coded about 20 annual reports before their results on categorical level coding can be relied upon. In the present study, the researcher, who is not a complete novice to the ICD literature, coded 52 analyst reports in the pre-testing stage and a sub-sample of recording units in the pilot study, before commencing the data collection in the main study.

The next section discusses the measurement of inter-coder and intra-coder reliability in this thesis.

[51] Abeysekera (2003, p.89) argues that "the results of the sole researcher's judgement should be trusted in semantic content analysis, as this seems to be the only feasible way of attaining a measurement of the veracity of data concerning semantic content". However, validity of this argument rests mainly with latent content analysis where connotative meanings in texts are fleshed out by the coder. It has also been suggested that inter-coder reliability merely guarantees that the coding instructions have been followed by the coder but does not affirm that it is the popular or widely held interpretation of the coded content (Ahuvia, 2001). Consistent with this view, this thesis considers a high inter-coder reliability score as an indication of the reliability of the coding instrument, but not so much that it is the popular interpretation.

### 5.11.2. Measuring inter-coder and intra-coder reliability

Inter-coder reliability (or inter-coder agreement[52]) "is a measure of the extent to which independent judges make the same coding decisions in evaluating the characteristics of messages" (Lombard *et al.*, 2002, p.587). Similarly, intra-coder reliability is a measure of the extent to which a coder makes the same coding decision in two different points in time.

Several measures of inter-coder reliability have been discussed and used in the content analysis literature. These measures have also been used to measure intra-coder reliability. Although some measures are argued to be better than others, there is no well-developed theoretical framework for choosing between them (Rust and Cooil, 1994). Nonetheless, association statistics such as Pearson's product moment correlation and Cronbach's alpha[53], albeit being used in some studies, are criticised as inappropriate measures of inter-coder reliability in content analysis (Krippendorff, 2004b; Lombard *et al.*, 2002).

Scott's $\pi$ is used in this thesis to assess both inter-code and intra-coder reliability due to several reasons. First, it is a recommended method to calculate reliability when nominal scales are used (Scott, 1955) and two coders are involved (Craig, 1981; Lombard *et al.*, 2002). All variables used in the present study comprise nominal scales (categories). That is, "content units are coded in terms of an unordered scheme of mutually exclusive and exhaustive categories" (Craig, 1981, p.260). In addition, Scott's $\pi$ assumes that categories and coders are independent (Larimer and Watkins, 1980). Second, it takes into consideration the agreement to be expected based on chance that is absent in the popular proportional agreement[54] measure. Third, this

[52] Tinsley and Weiss (1975, p.359) distinguish between inter-coder reliability and inter-coder agreement stating that "when judgements are made on a numerical scale, inter-coder agreement means that the judges assigned exactly the same values' whereas inter-coder reliability represents 'the degree to which the ratings of the different judges are proportional when expressed as a deviation from their means". They further argue that it is the inter-coder agreement that is needed in content analysis. Since this study does not use judgments on numerical scales (instead uses nominal scales) this distinction in terminology is not relevant to this thesis. Nonetheless, the literature widely uses inter-coder reliability interchangeably with inter-coder agreement to denote the extent to which coders tend to make the same coding decisions.

[53] Reliability is measured by the agreement among coders' judgements and not the correlation among their judgements in relation to the number of recording units allocated to each category.

[54] Proportional agreement is the ratio of coding agreements between the coders to the total number of coding decisions made by the coders.

measure treats coders as interchangeable, which is a necessary condition in reliability testing as the intention is to test the reliability of the data generation in content analysis rather than the reliability of individual coders (Krippendorff, 2004b)[55]. Fourth, the large number of *themes* and *information items* found in the sample analyst reports justifies the appropriateness of using Scott's π for measuring reliability in this thesis. Krippendorff (2004b) notes that Scott's $\pi$ is a suitable reliability measure when the sample size is large[56]. Lastly, while having the same properties as Krippendorff's α, it is relatively less complicated to compute (Craig, 1981). Appendix I illustrates the calculation of Scott's $\pi$. However, in addition to Scott's π, for comparison, Krippendorff's α, Cohen's κ and proportional agreement are calculated and presented. 'ReCal2' software program developed by Freelon (2008) was used to calculate the inter-coder and intra-coder reliability coefficients.

The next two subsections provide the results of inter-coder and intra-coder reliability testing done in this thesis.

#### 5.11.2.1. Measuring inter-coder reliability

As indicated in Section 5.9, the author and a researcher acquainted with a non-business related discipline, who was a novice in content analysis, coded a random

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$$P.A = \frac{2M}{N_1 + N_2}$$

where P.A is proportional agreement, M is the number of inter-coder pairwise agreements, and $N_1$ and $N_2$ are the number of coding decisions made by the first and second coders respectively (Holsti, 1969). For example, if an analyst report contained 300 sentences and the two coders agree on 270 of them, the proportional agreement would be 90 per cent. The major weakness in proportional agreement is its failure to consider inter-coder agreements that could occur merely by chance (Lombard *et al.*, 2002). In that, this measure is biased in favour of dimensions with small number of categories (Scott, 1955).

[55] Critics argue that $P_e$ in Scott's $\pi$ is based on the assumptions that the individual coders' distribution of coding over the categories for the population is known and is taken to be equal for the coders (Craig, 1981; Lombard *et al.*, 2002; Tinsley and Weiss, 1975).

[56] When the sample size is small Krippendorff's α is a better measure as it accounts for the size of the sample under consideration by the factor $n/(n-1)$, where n is the total number of categories used to describe all units by all coders (Krippendorff, 2004a). For large sample sizes, $n/(n-1) \approx 1$; thus reducing the impact of the factor on the calculation of the coefficient. As regards reliability data, size of the sample (or *n*) is dependent upon the number of coding decisions to be made and the number of coders. In the present study, the number of coding decisions is equal to the number of sentences or recording units to be coded. Further, the number of sentences sampled in this PhD study for testing reliability is large enough to justify the use of Scott's $\pi$.

sample of recording units using a coding instrument that was somewhat less refined than the one employed later in the main study.

The inter-coder reliability measures were calculated for sentence coding and for the four dimensions. Reliability of coding for the four dimensions was tested on the sentences that were mutually agreed upon by the two coders as containing an IC *theme* or *information item*, at the sentence coding stage. Table 5.11 shows the reliability coefficients for sentence coding and coding for *topic*, *evidence*, *news-tenor* and *time orientation* dimensions.

**Table 5.11: Reliability coefficients of inter-coder reliability**

| Coding level | Proportional agreement | Scott's π | Cohen's κ | Krippendorff's A | Agree | Disagree | Coding units |
|---|---|---|---|---|---|---|---|
| Sentence | 97.4% | 0.793 | 0.793 | 0.794 | 368 | 10 | 378 |
| Topic | 95.2% | 0.937 | 0.937 | 0.938 | 20 | 1 | 21 |
| Evidence | 95.2% | 0.914 | 0.915 | 0.916 | 20 | 1 | 21 |
| News-tenor | 95.2% | 0.877 | 0.877 | 0.880 | 20 | 1 | 21 |
| Time orientation | 90.5% | 0.847 | 0.847 | 0.851 | 19 | 2 | 21 |

As shown in Table 5.11, Scott's π for sentence coding is 0.793. Coefficients for individual dimensions are 0.937 for the *topic* dimension, 0.914 for the *evidence* dimension, 0.877 for the *news-tenor* dimension, and 0.847 for the *time orientation* dimension. The Scott's π coefficients are similar to the other reliability coefficients reported and are closer to or above 0.80, which is suggested by researchers as an acceptable level of reliability in content analysis (Lombard *et al.*, 2002; Neuendorf, 2002)[57]. Hence, the inter-coder reliability achieved for coding in the pilot study is satisfactory and justifies the use of the coding instrument in the main study.

### 5.11.2.2. Measuring intra-coder reliability

Intra-coder reliability was assessed under a test-retest condition, where the researcher

[57] There is no widely held acceptable threshold for any of the reliability statistics (Holsti, 1969; Lombard *et al.*, 2002). Guthrie and Mathews (1985) suggest that 80 per cent agreement above chance is acceptable when coding social and environmental disclosures in annual reports. Neuendorf (2002) suggests that coefficients of 0.90 or greater are acceptable for any reliability measure while 0.80 or greater are acceptable in most situations. Lombard *et al.* (2002) bring down the bar to 0.70 for exploratory research. Krippendorff (2004b, p.429) states that while it is customary to require an alpha of 0.8, tentative conclusions are still acceptable when $\alpha \geq .667$ . Krippendorff (2004a; 2004b) warns that the decision of an acceptable threshold must be made after envisaging the costs of drawing invalid conclusions.

re-coded three analyst reports randomly selected from the sample, three months from the initial coding. Scott's π as well as proportional agreement, Cohen's κ and Krippendorff's α were calculated for sentence coding and for the four dimensions. Reliability of coding for the four dimensions was tested on the sentences that were found to contain an IC related *theme* or *information item* in both instances at the sentence coding stage. Table 5.12 shows the reliability coefficients for sentence coding and coding for *topic*, *evidence*, *news-tenor* and *time orientation* dimensions.

**Table 5.12: Reliability coefficients of intra-coder reliability**

| Coding level | Proportional agreement | Scott's π | Cohen's κ | Krippendorff's α | Agree | Disagree | Coding units |
|---|---|---|---|---|---|---|---|
| Sentence | 97.6% | 0.864 | 0.864 | 0.864 | 828 | 20 | 848 |
| Topic | 91.5% | 0.908 | 0.908 | 0.908 | 65 | 6 | 71 |
| Evidence | 98.6% | 0.974 | 0.974 | 0.974 | 70 | 1 | 71 |
| News-tenor | 93.0% | 0.877 | 0.877 | 0.878 | 66 | 5 | 71 |
| Time orientation | 88.7% | 0.814 | 0.814 | 0.815 | 63 | 8 | 71 |

As shown in Table 5.12, Scott's π for sentence coding is 0.864. Coefficients for individual dimensions are 0.908 for the *topic* dimension, 0.974 for the *evidence* dimension, 0.877 for the *news-tenor* dimension, and 0.814 for the *time orientation* dimension. All the coefficients are above 0.80 (for Scott's π as well as for Krippendorff's α and Cohen's κ) indicating that the level of intra-coder reliability achieved in this thesis is satisfactory.

### 5.11.3. Validity

Validity concerns whether the "researcher is studying the phenomena she or he purports to be studying" (McKinnon, 1988, p.36). In content analysis validity is the extent to which inferences drawn from the text truthfully represent the phenomena to which they refer. According to Krippendorff (2004a, p.94) "validity is the quality of research results that leads us to accept them as true". However, it is not an objective truth. Content analysis only assesses "someone's [*i.e.,* researcher's] image of reality" but not "the reality" (Carney, 1972, p.195). Therefore, when discussing validity in content analysis, reference is made to the researcher's conception of the reality and not to any potentially objective reality. However, in the present thesis, validity refers to the reality that the researcher constructed (*i.e., what* and *how* IC information is used by sell-side analysts as perceived by the researcher) (Steenkamp, 2007a).

McKinnon (1988, p.36) states that "validity is impaired if the research design and/or conduct of the research are such that the researcher is unintentionally studying either more than or less than the claimed phenomena". Hence, validity relates to both the research design and the data generating process. Validity of the research design is the extent to which an instrument is measuring what it is intended to measure. Hence, validity is dependent on the appropriate formulation of content categories, operational definitions and coding rules, the sampling method and the recording units used.

According to Krippendorff (2004a, p.313) "a content analysis is valid if it withstands the tests of independently available evidence, of new observations, of competing theories or interpretations, or of being able to inform successful action".

Different variants of validity are discussed in the research literature. The American Psychological Association's *Technical Recommendations for Psychological Tests and Diagnostic Techniques* (1954) defines five types of validity concerns that psychologists face when they are developing tests for individual characteristics or abilities. These are face validity, content validity, construct validity, criterion related validity and predictive validity. Although content analysis textbooks have often followed this validity classification it is strongly grounded in the epistemology of psychological testing. Krippendorff (2004a, p.318) provides a classification of empirical validity based on validating evidence that is more suited for the content analysis method:

- *Evidence that justifies the treatment of texts*, what it is, what it means, and how it represents what…
- *Evidence that justifies the abductive inferences* that a content analysis is making (Here, analysts are concerned with the validity of the analytical constructs on which they rely…)
- *Evidence that justify the results*, whether a content analysis contributes answers to the research questions of other researchers or is borne out in fact… (Emphasis added)

Each of the above and other measures of validity is discussed in the following subsections.

#### 5.11.3.1. Evidence that justifies the treatment of texts

This aspect of validity is mainly concerned with sampling (sampling validity) and recording (semantic validity) phases of a content analysis.

Holsti (1969) mentions that an adequate sampling design is a necessary condition for validity. Sampling validity is the extent to which a sample of texts accurately represents the population of phenomena from which it is drawn (Krippendorff, 2004a). Sampling validity is ensured when a sample is a subset of the very population of texts and it fairly represents the population phenomena that the content analyst intends to study. Sampling error is a measure of the former. Sampling error can be reduced and sampling validity increased by increasing the sample size. The latter is not straightforward to achieve. Krippendorff (2004a, p.322) states that "if phenomena of interest need to be accurately represented in the texts that researchers are analysing, then sampling must undo the biases that result from the selective ways texts are made available". Knowledge of the population phenomena and the knowledge of the sampling practices of the source of the available texts provide validating evidence (Krippendorff, 2004a)

This study draws the sample of *initiating coverage reports* on the largest listed companies in eight chosen GICS® sectors, in order to draw inferences about IC information use of sell-side analysts in general and in those sectors in specific. Section 4.5 provides justification for selecting the sample and its representativeness of the population. Thus, sample validity is addressed in this thesis.

Semantic validity refers to the "extent to which categories of an analysis of texts correspond to the meanings these texts have within the chosen context" (Krippendorff, 2004a, p.319). Texts that are classified into a given category may differ in varied ways but still should convey the same meanings that are relevant to the analysis. Likewise, texts that are classified into different categories should differ in relation to relevant meanings.

Semantic validity is demonstrated in the present study by ensuring that content categories are *emic* or indigenous. Content categories were formulated in two stages. First, a preliminary set of IC content categories was developed from a thorough review of the literature (see, Section 2.2.3). Second, a sample of sell-side analyst

reports was analysed using these content categories. This phase resulted in substantial modifications to content categories whenever the imposed categories were non-representative and inadequate. This process provided assurance that the content categories are, in fact, indigenous to the sell-side analyst reports.

Another way of establishing semantic validity is to use persons familiar with the language and texts to examine the coding rules and operational definitions. The coding instrument used in this thesis was evaluated by two senior researchers, who are considered as experts in the field of IC research, and the coding instrument was confirmed as appropriate. Morris (1994) states that semantic validity can also be established by using multiple coders as the extent to which the coders agree on the categorisation of the texts is a surrogate for the validity of the process used in the categorisation. Thus, the high inter-coder reliability coefficients obtained for the pilot study in this thesis provide additional evidence of semantic validity.

#### 5.11.3.2. Evidence that justifies the abductive inferences

Krippendorff (2004a, p.320) states that "evidence that justifies the abductive inferences of a content analysis sheds light on how well the analytical construct in use actually does model what it claims to model". Evidence of this type may be provided to indicate structural validity and functional validity.

Also, Krippendorff (2004a, p.320) defines structural validity as "the structural correspondence between available data or established theory and the modelled relationships or the rules of inferences that a content analysis is using". It is the relationship between what is known about a context and how it is built into the analytical procedures. For instance, Steenkamp (2007b) demonstrated structural validity by referring the reader to an explanation of the data making process and process of making inferences. Similarly, the approach taken in this thesis in its data making process provides evidence to justify structural validity.

Functional validity is the extent to which analytical constructs are justified by reference to their past use and success of such use (or absence of significant failures in using them) (Krippendorff, 2004a). Content analysis has been previously used to investigate ICD in various corporate reports and analyst reports, as well as NFI references in analyst reports. IC categories used in this study are broadly comparable

to those that have been used in a large body of literature investigating ICD in annual reports, IC statements, IPO prospectuses, presentations to analysts, company websites, and analyst reports. These studies have successfully drawn inferences using such classification schemes. This provides evidence on the functional validity of the content analysis method in the present thesis.

Another form of evidence that justifies the abductive inferences made in a study relates to content validity[58]. Content validity can be achieved by using a categorisation scheme that appears to measure the constructs it intends to measure in their entirety (Morris, 1994). The present study conceptualises IC using Sveiby's (1997) tripartite categorisation scheme that has been widely used in prior ICD research and international guidelines for ICR. IC subcategories have also been constructed by reviewing a large body of IC literature. Moreover, the content categories are constructed to capture all IC according to the definition of IC adopted in the thesis. Hence, the categorisation scheme used in this thesis relates to IC as it has been defined by the researcher (*i.e.,* the reality constructed by the researcher), as well as how IC is commonly being perceived by the academic community, thereby achieving content validity.

#### 5.11.3.3. Evidence that justifies the results

Validity can be established by demonstrating that results obtained in the study relate to an external criterion. Correlative validity and predictive validity are two variants of this form.

Correlative validity is the extent to which findings obtained through one method correlate with findings obtained through another method that is considered as accurately representing the phenomena. Holsti (1969, p.145) states that "if the criterion itself is not a valid measure of the phenomena to be explained, little is gained by demonstrating that content data are significantly related to it". Correlative validity is demonstrated when it can be established that a measure correlates with other

[58] Krippendorff's (2004a) discussion on evidence that justifies the abductive inferences of a content analysis is limited to structural validity and functional validity. Content validity is discussed in the content analysis literature, and thus included here as it has a subtle contrast to the other two types of validity that can be captured under the same heading.

measures of the same construct (convergent validity) and does not correlate well with measures of dissimilar constructs (discriminant validity) (Weber, 1990). On the contrary "low correlations with measures that are known to measure the phenomena of interest and high correlations with measures that are known to distinctively different phenomena or phenomena independent of the one intended to be measured" (Krippendorff, 2004a, p.334) are evidence of correlative invalidity. The correlative validity of some aspects of this study can be demonstrated by comparing the results of this study with those of other content analysis studies of analyst reports, which use different approaches to the conduct of content analysis (Jones and Shoemaker, 1994).

Predictive validity is the extent to which the results of a content analysis accurately forecast events or conditions external to the study. It is the "ability of an instrument to predict events for which evidence is not at present available" (Holsti, 1969, p.144). Predictive validity could also be demonstrated by using results of a content analysis to predict past events for which evidence is not currently available. Predictive validity is a powerful form of validity as inferences can be generalised beyond the study context. However, demonstrating predictive validity is beyond the scope of this thesis.

#### 5.11.3.4. Other measure of validity

Although not as strong as methods of empirical validation, face validity and social validity are two important validation methods discussed in the literature. However, they are not scientific validation methods. Face validity is the assessment of results of a study on the basis of logic and meaning (Abbott and Monsen, 1979). If the results are plausible, obvious, make sense or relate to the common truth then the researcher is said to have achieved face validity (Holsti, 1969; Krippendorff, 2004a). Investigating *what* and *how* IC is referred to by sell-side analysts using relative frequencies with which IC is mentioned in their reports makes sense. It has also been done in prior studies. Hence, the present study achieves face validity. "Social validity is the degree to which the content analysis categories created by the researchers have relevance and meaning beyond an academic audience" (Riffe and Freitag, 1996 cited in Krippendorff, 2004a, p.137). Social validity is established when research findings are accepted by the wider community because of their contribution to the public discussion. Social validity is therefore an *ex-post* measure of validity, which is not addressed in this thesis.

The next section summarises the chapter.

## 5.12. Chapter summary

The purpose of this chapter was to describe the research method employed in this PhD study. The chapter introduced content analysis as a suitable research method to be employed and several reasons were provided for its use in this thesis. It was stated that this PhD study uses manifest content analysis from among other variants of content analysis available. Accordingly, IC information in analyst reports was classified into content categories using their denotative meaning.

Content analysis conducted in this thesis involved a stepped approach. First, it was decided that *theme* was to be used as the narrative recording unit and *information item* was to be used as the visual recording unit. Second, the measurement unit of this study was defined. It was explained that the measurement unit used in the content analysis is the same as the recording unit. Hence, each IC related *theme* and *information item* was to be counted as a single occurrence of IC. Third, the sampling unit was defined and the sample was selected. The final sample consisted of 64 *initiating coverage reports* written on an equivalent number of companies listed in eight *S&P/ASX* GICS® sector indices.

Fourth, an IC categorisation scheme was formulated in order to conduct the content analysis. The categorisation scheme included categories and subcategories under four mutually exclusive dimensions: (1) *topic*; (2) *evidence*; (3) *new-tenor*; and (4) *time orientation*. Fifth, a coding instrument was developed that included operational definitions, coding rules and examples from analyst reports for all content categories/subcategories. Sixth, a pre-sample of analyst reports was test coded in order to refine the content categories and the coding instrument. Several modifications and refinements to the categorisation scheme and the coding instrument resulted from pre-testing.

Seventh, a pilot study was conducted to assess the reliability of the coding instrument and the content categories before they could be used in the main study. Here, a sample of recording units was coded by the author and another coder to generate reliability

data. The results of reliability measurement suggested that a satisfactory level of inter-coder reliability was achieved. Therefore, the main data collection was done by an individual coder (*i.e.*, the author of this thesis) using the finalised coding instrument. This was the eighth step in the process. Finally, the reliability was assessed by calculating intra-coder reliability. The reliability coefficients achieved were satisfactory for the results of the main coding to be considered reliable. Also, this chapter provided evidence to justify the research validity.

# 6. DESCRIPTIVE RESULTS AND DISCUSSION

## 6.1. Introduction

This chapter reports and discusses the results of the empirical analysis of IC related references in analyst reports. The chapter is structured as follows. Section 6.2 provides descriptive statistics of the sample. Section 6.3 presents and discusses the results for the overall use of IC information in the total sample of analyst reports. In Section 6.4, the extent of IC references to main IC categories and IC subcategories is presented and discussed.

Sections 6.4 to 6.7 present and discuss the results for each of the other three IC communication dimensions, namely *evidence*, *news-tenor*, and *time orientation* in relation to: (1) overall IC references; (2) main IC categories (ExtC, HumC, and IntC); and (3) IC subcategories. For the latter subcategory level analysis, only IC subcategories with at least 1 per cent of total IC references are considered.

Section 6.8 reports and discusses IC information use in analyst reports by the GICS® sector. This section emphasises differences and similarities across GICS® sectors in the use of IC information in general and IC categories and subcategories in specific. Sections 6.9 reports and discusses the results by analyst recommendation type. In this section, differences and similarities in the use of IC are not only analysed by IC categories and subcategories but also by *evidence*, *news-tenor* and *time orientation* of IC information across recommendation types. Finally, in Section 6.10, a summary is provided.

## 6.2. Descriptive statistics of the sample

This section provides descriptive statistics of the total sample. The full sample includes 64 analyst reports from eight GICS® sectors, with each sector represented by eight analyst reports except consumer staples and materials sectors that contain seven and nine analyst reports respectively (see, Chapter 5, Section 5.5.2).

The following Table 6.1 highlights the mean, minimum, maximum and standard deviation of the number of pages per analyst report for the eight chosen GICS® sectors. It also shows the number of analyst reports investigated per sector.

**Table 6.1: Pages per analyst report**

| GICS® sector | No. of reports | Mean | Min | Max | Std. Deviation |
|---|---|---|---|---|---|
| Consumer discretionary | 8 | 24.38 | 13 | 32 | 7.39 |
| Consumer staples | 7 | 28.43 | 13 | 37 | 8.60 |
| Financials | 8 | 21.25 | 7 | 40 | 15.13 |
| Health care | 8 | 38.50 | 15 | 81 | 23.38 |
| Information technology | 8 | 13.88 | 7 | 22 | 5.11 |
| Materials | 9 | 28.00 | 15 | 45 | 10.57 |
| REIT | 8 | 24.25 | 9 | 48 | 12.98 |
| Utilities | 8 | 28.75 | 7 | 60 | 18.68 |
| **Total** | **64** | **25.92** | **7** | **81** | **14.77** |

As shown in the above Table 6.1, the mean page count per report in the sample is 25.92. The number of pages per report ranges from a minimum of seven to a maximum of 81. Analyst reports of companies in the information technology sector have the least number of pages per report, on average. The mean page count per report for each of the other sectors is at least 21.25. The health care sector has the highest page count per report. This indicates that sell-side analysts have sufficient opportunity to discuss IC information in the reports they produce. However, it was also found that the lengthy analyst reports generally use the extra space to discuss and analyse the industry environment rather than the company.

The following Table 6.2 shows the frequency distribution of the sample analyst reports by year of publication. It also shows the number of analyst reports per year as a percentage of the total frequency. As shown in this table, analyst reports in the sample have been written between 2003 and 2008, with the majority in the four-year period to 2007.

**Table 6.2: Sample distribution by year of publication**

| Year of report | Frequency | Per cent |
|---|---|---|
| 2003 | 2 | 3.1 |
| 2004 | 11 | 17.2 |
| 2005 | 20 | 31.2 |
| 2006 | 10 | 15.6 |
| 2007 | 17 | 26.6 |
| 2008 | 4 | 6.2 |
| Total | 64 | 100.0 |

The following Table 6.3 shows the frequency distribution of the sample analyst reports by issuing brokerage firm. It also shows the number of analyst reports per brokerage firm as a percentage of the total frequency and the number of sectors represented in the sample by each brokerage firm.

**Table 6.3: Sample distribution by publishing brokerage firm**

| Brokerage firm | Number of reports | Per cent of reports | Sectors represented |
|---|---|---|---|
| ABN AMRO Equities Australia Ltd. | 21 | 32.8 | 8 |
| Citigroup Global Markets Inc. | 12 | 18.8 | 4 |
| Commonwealth Securities Ltd. | 5 | 7.8 | 4 |
| Cowan & Company Ltd. | 1 | 1.6 | 1 |
| Davenport & Company Ltd. | 1 | 1.6 | 1 |
| DBS Vickers Securities (Singapore) Pte Ltd. | 1 | 1.6 | 1 |
| Deutsche Bank AG. | 11 | 17.2 | 6 |
| Independent International Investments Ltd. | 1 | 1.6 | 1 |
| Kaufman Bros., L.P. | 1 | 1.6 | 1 |
| Macquarie Securities (Australia) Ltd. | 4 | 6.2 | 2 |
| RBC Dominion Securities Inc. | 2 | 3.1 | 1 |
| Wilson HTM Investment Group Ltd. | 1 | 1.6 | 1 |
| BBY Ltd. | 1 | 1.6 | 1 |
| Tricom Equities Ltd. | 1 | 1.6 | 1 |
| Merrill Lynch & Company Inc. | 1 | 1.6 | 1 |
| **Total** | **64** | **100.0** | **64** |

The above Table 6.3 highlights that the analyst reports originated from fifteen brokerage houses. However, more than 80 per cent of the analyst reports are published by five large brokerage firms in Australia: ABN AMRO Equities Australia Limited; Smith Barney division of Citigroup Global Markets Inc; Deutsche Bank AD (Sydney branch); Commonwealth Securities Limited; and Macquarie Securities (Australia) Limited. As the brokerage firms commonly represented in the sample are found in more than one sector, any resultant sector differences in relation to the use of IC information are genuine, and are not driven by brokerage firm differences.

The following Table 6.4 shows the frequency distribution of the sample analyst reports by recommendation type. It also shows the number of recommendation types as a percentage of total number of analyst reports.

**Table 6.4: Sample distribution by recommendation type**

| Recommendation type | Frequency | Per cent |
|---|---|---|
| Buy | 28 | 43.7 |
| Hold | 27 | 42.2 |
| Sell | 8 | 12.5 |
| No recommendation | 1 | 1.6 |
| **Total** | **64** | **100.0** |

As shown in Table 6.4, reports are almost equally distributed between buy and hold recommendations. The relatively low level of sell recommendations in the sample is not surprising given the optimism bias in analyst recommendations that has been widely debated in the literature (see, Sections 1.5.4). However, one analyst report did not contain a recommendation as it was written on a company seeking listing on the Australian Stock Exchange, and thus it had not begun trading at the time the analyst report was written. However, it included other summary measures such as a price target and an earnings forecast.

### 6.3. Results on the overall use of IC information

The following Table 6.5 highlights the descriptive statistics of IC use in analyst reports for the total sample.

**Table 6.5: Summary of results for the total sample**

| | |
|---|---|
| Average IC information per report | 55.73 |
| Minimum IC information per report | 0 |
| Maximum IC information per report | 273 |
| Average number of IC subcategories disclosed per report | 9.97 |
| Minimum number of IC subcategories disclosed per report | 0 |
| Maximum number of IC subcategories disclosed per report | 19 |

As shown in Table 6.5, with one exception, all analyst reports contain some IC information. On average, 9.97 IC subcategories (from 34) are referred to in an analyst report, and an average of 55.73 references to IC is found per report. However, the number of IC references varies greatly among analyst reports. The maximum number of IC references per report is 273 and the maximum number of IC subcategories referred to in an analyst report is nineteen, in this study. Similarly, the minimum IC references as well as minimum number of IC subcategories per report are zero, as one analyst report did not contain any IC information.

### 6.3.1. Discussion of results on the overall use of IC information

This study finds a relatively high-level use of IC information by sell-side analysts (55.73 IC references per analyst report), in comparison to prior studies (see, Section 3.3.2.5). An investigation into NFI in analyst reports by Flöstrand and Ström (2006) revealed the presence of only 5.33 information categories, on average, out of a total of 70 categories. In another study by Flöstrand (2006) only an average of 2.48 out of 76 IC indicators was observed in *initiating coverage reports*. This indicates that sell-side analysts of Australian companies appreciate the importance of IC, in general.

The high level of IC references found in this study, compared to prior studies, indicates that sell-side analysts use more IC information in *initiating coverage reports* than in *results* and *company reports*. This is plausible as *initiating coverage reports* are used to discuss information that is important to the valuation of a company in an informative and a comprehensible manner. Hence future studies investigating IC information in analyst reports ought to use *initiating coverage reports.*

Although the average number of IC references per analyst report was high, the study failed to find a consistent use of IC information across analyst reports, as indicated by the great variation of the amount of IC references between analyst reports. This could be attributed to two things. First, the importance placed by sell-side analysts on IC information may be dependent on other factors such as industry or firm risk (see, Sections 7.4.3 and 7.4.4). Second, not all sell-side analysts may appreciate the importance of IC or they may not have been trained in dealing with IC information in firm valuation (Bukh and Johanson, 2003; Holland, 2003; Mouritsen, 2003).

Further, this study failed to find any evidence of a systematic analysis of IC information in any of the analyst reports. In addition, there were no references in the analyst reports to the term *IC* or the key academic terminology used in respect of IC subcategories. These findings could be interpreted in several ways. First, sell-side analysts may be lacking proper education and training in the use of IC information. Second, sell-side analysts may be using IC information in forecasting and valuations in a manner that is difficult to be expressed in justifying their decisions. Third, they may not have the necessary tools and analytical models to analyse IC information in the context of other information or express how they use IC information. Lastly, sell-

side analysts' conception of IC could be quite different to what academics and practitioners theorise as IC.

### 6.4. Results on the topic dimension

Descriptive statistics of IC categories and subcategories investigated under the *topic* dimension are reported in the following Table 6.6.

**Table 6.6: Descriptive statistics for IC categories and subcategories**

| | Frequency of references | Mean | Rank by frequency | No. of reports |
|---|---|---|---|---|
| **Panel A: Main IC categories** | | | | |
| ExtC | 1607 (45%) | 25.11 | 1 | 62 |
| HumC | 1329 (37%) | 20.77 | 2 | 48 |
| IntC | 631 (18%) | 9.86 | 3 | 53 |
| Total | 3567 (100%) | 55.73 | | 63 |
| **Panel B: IC subcategories** | | | | |
| Work experience | 703 (19.71%) | 10.98 | 1 | 26 |
| Employees (other) | 402 (11.27%) | 6.28 | 2 | 46 |
| Business collaborations | 293 (8.21%) | 4.58 | 3 | 48 |
| Brands | 272 (7.63%) | 4.25 | 4 | 17 |
| Market share | 235 (6.59%) | 3.67 | 5 | 34 |
| Customers (other) | 223 (6.25%) | 3.48 | 6 | 39 |
| Financial relations | 196 (5.49%) | 3.06 | 7 | 35 |
| Strategy | 144 (4.04%) | 2.25 | 8 | 40 |
| Management processes, policies and practices | 130 (3.64%) | 2.03 | 9 | 27 |
| Corporate image & reputation | 125 (3.50%) | 1.95 | 10 | 41 |
| Favourable contracts, licensing and franchising agreements | 122 (3.42%) | 1.91 | 11 | 29 |
| Distribution | 96 (2.69%) | 1.50 | 12 | 23 |
| Organisational & management structure | 88 (2.47%) | 1.38 | 13 | 33 |
| Educational qualifications | 81 (2.2.7%) | 1.27 | 14 | 11 |
| Business model | 79 (2.2.1%) | 1.23 | 15 | 25 |
| Organisational & business expertise | 58 (1.63%) | 0.91 | 16 | 24 |
| Management team | 55 (1.54%) | 0.86 | 17 | 28 |
| Corporate governance | 43 (1.21%) | 0.67 | 18 | 12 |
| Remuneration and incentive schemes | 34 (0.95%) | 0.53 | 19 | 11 |
| Skills and capabilities | 26 (0.73%) | 0.41 | 20 | 11 |
| Customer relationships, satisfaction and loyalty | 25 (0.70%) | 0.39 | 21 | 11 |
| IT & Information Systems (IS) | 23 (0.64%) | 0.36 | 22 | 9 |
| Technology | 23 (0.64%) | 0.36 | 22 | 10 |
| Government and other relationships | 20 (0.56%) | 0.31 | 24 | 11 |
| Employee entrepreneurship | 16 (0.45%) | 0.25 | 25 | 10 |
| Research & development | 15 (0.42%) | 0.23 | 26 | 5 |
| Corporate culture | 14 (0.39%) | 0.22 | 27 | 2 |
| Working environment | 10 (0.28%) | 0.16 | 28 | 5 |
| Quality | 10 (0.28%) | 0.16 | 28 | 9 |
| Management philosophy | 3 (0.08%) | 0.05 | 29 | 2 |
| Training and development | 2 (0.06%) | 0.03 | 30 | 2 |
| IP | 1 (0.03%) | 0.02 | 31 | 1 |
| Employee attitudes, commitment and satisfaction | 0 (0.00%) | 0.00 | 32 | 0 |
| Equality | 0 (0.00%) | 0.00 | 32 | 0 |
| Total IC | 3567 (100%) | 55.73 | | |

Panel A of this table reveals the frequency (both absolute and relative) and mean number of references to the three main IC categories, rankings based on frequency, and the number of analyst reports that include at least one reference to each IC category. Panel B of the table presents the same information for IC subcategories.

As shown in the Panel A of the above table, ExtC category accounts for 45 per cent of IC information used in analyst reports. It is also the IC category used in the most number of analyst reports. HumC (37 per cent) and IntC (18 per cent) information are used by sell-side analysts less frequently than ExtC. Whilst the use of HumC information is greater than IntC information, information belonging to the latter category is found in more analyst reports than information belonging to the former category.

### 6.4.1. External capital

Panel B of Table 6.6 shows that several ExtC subcategories contain high levels of IC references relative to total IC references. For instance, after 'work experience' and 'employees (other)', which are the two most referred to IC subcategories in this study, the next five most used IC subcategories relate to the ExtC category. 'Business collaborations' (293 references) is the most referred to ExtC subcategory followed closely by 'brands' (272 references). Further, 'business collaborations' is the most commonly used IC subcategory having being used in 48 analyst reports.

Business collaborations are an important growth strategy for most companies, and they are commonplace among large listed firms (Lamont and Anderson, 1985). Managers embarking on such collaborations often justify these based on the impact on future profits and cash flows. The financial implications of business collaborations are often mentioned in analyst reports, as depicted by the following analyst report extracts:

> The acquisition of Coles is expected to result in EPS decline of -3.2% in FY08, but this is expected to reverse in FY09 with EPS growth of 7.9% and 8.6% the following year (Wesfarmers Limited).

> Management expect to extract net synergies of $40-50M FY06E (run-rate of ~$95M at year end); $115M FY07E and $145M by FY08E (Fosters Group Limited).

The following Table 6.7 shows the frequency distribution of references to the five types of business collaborations investigated in this study. It also provides the number of analyst reports in which each type of business collaboration is referred to, at least once. Both absolute and relative frequencies are provided in this table.

**Table 6.7: Frequency of references to business collaborations**

| Types of business collaborations | Frequency of references | No. of analyst reports |
|---|---|---|
| Mergers and acquisitions | 150 (51%) | 31 (48%) |
| Joint ventures | 52 (18%) | 21 (33%) |
| Subsidiaries and associates | 44 (15%) | 17 (27%) |
| Strategic alliances | 41(14%) | 10 (16%) |
| Private-public partnerships | 6 (2%) | 1 (2%) |
| **Total business collaborations** | **293 (100%)** | |

As the above Table 6.7 highlights, 'mergers and acquisitions' are the most frequently mentioned type of business collaboration, accounting for 51 per cent of references to this subcategory. 'Mergers and acquisitions' are also mentioned in almost half the sample analyst reports. Levels of IC references to 'joint ventures', 'strategic alliances', and 'subsidiaries and associate companies' vary from 14 per cent to 18 per cent of total IC references, while only one analyst report on a health care company mentioned IC related to private-public partnerships.

Sell-side analysts' emphasis on information related to the 'mergers and acquisitions' subcategory can be attributed to two reasons. First, mergers and acquisitions are commonplace among large companies (Lamont and Anderson, 1985). Examination of narratives in analyst reports indicates that mergers and acquisitions are an important, and sometimes the only, way to achieve growth when scope for organic growth through market expansion is limited:

> Spark Infrastructure intends to seek growth both organically and via and acquisitions. Organic growth will be limited given load growth rates across the networks (between 1-2.5% p.a.), however Spark will seek opportunities in the global utilities infrastructure market (Spark Infrastructure Limited).

> With the rollout of unlisted property funds being slower than Management and the market had anticipated at listing, the acquisition of ICA has provided a significant boost for VPG's funds management operations. Through ICA, VPG has improved the

> diversification of its product offering and acquired both an experienced management team and a new investor base (Valad Property Group).

Second, mergers and acquisitions are expected to provide important synergistic benefits in terms of cost reduction and revenue generation for the company. Hence, this information warrants inclusion in analysts' forecasts. The following analyst report extracts exemplify this:

> The acquisition of Dow Jones, News Corp.'s most recent strategic initiative, offers potential value creation and synergies with other News Corp. assets (News Corporation Inc.)

> On the positive side, the company's integration of the Jupiters and NSW TAB businesses have exceeded expectations, with synergies from the Jupiters acquisition upgraded from A$28m to A$53m (Tabcorp Holdings Limited).

Similarly, JVs, strategic alliances, subsidiaries and associate companies provide further scope for expansion and additional capabilities to companies:

> The recent joint venture established with Australian retailer, Beachculture, provides BBG with a larger retail footprint in the specialised airport-based retail market (Billabong International Limited).

> As well as using multi-managers to help spread the investment choices for investors, CGF has entered into alliances with other investment managers to on-sell its products (Challenger Financial Services Group Limited).

Turning to the 'brands' subcategory, although the extent of 'brands' related references is high, references to this subcategory are only found in seventeen analyst reports, suggesting that the analyst reports using information on 'brands' often make several references to this category. A further examination finds a sector effect in relation to the use of information on 'brands', where only a few sectors account for the majority of references and some sectors have no references to the 'brands' subcategory. 'Brands' related references are highly skewed towards consumer discretionary and consumer staples sectors, indicating the importance of branding in valuing companies belonging to those sectors (see, Appendix K).

Since companies with reputed brands are better positioned to capture and retain market share than companies with less reputed or unknown brands, it is possible that sell-side analysts use 'brands' related information, when available, to justify their (optimistic) forecasts and valuations. For instance:

> We forecast strong double digit profit growth for the next five years as BBG's newer brands increase distribution penetration and new product lines are launched (Billabong international Limited).

> FGL aims to leverage and improve returns from its global Foster's Beer brand (Foster's Group Limited).

This is a plausible argument as it has also been found that companies over-report on brands in their annual reports to appear more convincing to shareholders (Abeysekera, 2003).

Information on 'market share' (235 references: 34 reports), 'customers (other)' (223 references: 39 reports), and 'financial relations' (196 references: 35 reports) included in the ExtC category, are frequently used by sell-side analysts, and are commonly found in their reports. Together, with 'business collaborations' and 'brands' these ExtC subcategories account for 34 per cent of total IC information used in analyst reports.

High levels of references to 'market share' and 'customers' subcategories in analyst reports are consistent with the prior literature (see, Section 3.3.2.5). These two subcategories are interrelated. The 'customers' subcategory is a *flow* concept, which includes references relating to the importance of end customers to a firm and its customer focus. On the other hand, the 'market share' subcategory is a *stock* concept, which encompasses references to the extent and changes in the market share of a company. A further examination of the narratives coded into these subcategories finds that sell-side analysts tend to use these two subcategories of IC to convey the stability and growth potential of a company, or sometimes lack thereof, as can be seen from the following excerpts:

> CCL aims to leverage its customer and distribution platforms to grow the food division revenues in the short-term (Coca-Cola Amatil Limited).

> It is a major supplier to the $4 billion convenience or route trade and its customers include Shell, Mobil, BR, Caltex, 7-Eleven and independent operators (Metcash Limited).
>
> With its clear leadership in the multi-channel pay-TV market in Italy, we believe Sky Italia is positioned to deliver strong growth as Italians continue to demonstrate a willingness to pay for subscription television, and soccer programming in particular (News Corporation Ltd).

One plausible explanation for the use of 'market share' information is its ability to be linked to analyst's forecasts, as the following excerpts exemplify:

> We value Crown's businesses at the upper end of this range given the strong forecast earnings growth of Burswood and the *strong market position* of Crown Melbourne [emphasis added] (Crown Limited).
>
> We forecast EBITDA [Earnings Before Interest, Taxes, Depreciation and Amortization] growth in the order of 10.5% pa over FY07-09, driven by increasing efficiencies in this division from the control of costs and benefits from increased private insurance premiums, *due to HSP's expanding market power* [emphasis added] (Healthscope Limited).

Alternatively, by commenting on a company's market leadership/dominance or the high proportion of a market being controlled, sell-side analysts are able to justify their optimistic forecasts. This aspect of use of IC information is further investigated later in this chapter.

Looking at the 'financial relations' subcategory, many references to this subcategory comprise names and shareholdings of investors, including employee shareholdings, as illustrated by the following excerpts:

> TIM works with around 15,000 grower investors, about 30% of which have invested more than once (Timbercorp Limited).
>
> […] Schroders is traditionally a long-term and conservative investor (Australian Pharmaceutical Industries Limited).

> Following the recent sell-down, BNB staff ownership is 47% and while further stock comes out of escrow in the next two years we estimate staff ownership is likely to remain above 33% in the medium term (Babcock & Brown Limited).

In addition, sell-side analysts often mention credit ratings issued by rating agencies on the company, also classified under 'financial relations'. The following excerpt from the analyst report on the Westpac Banking Corporation Limited is a typical example of a reference to credit ratings:

> On 30 September 2004, Standard & Poor's rated only 1% of the bank's exposures to business, government and other financial institutions below B+, a sub-investment grade, which is a positive measure of the bank's asset quality.

Thus, information on 'financial relations' used by sell-side analysts invariably conveys messages as to the confidence of investors in the company and its credit worthiness, both being qualitative indicators of companies' financial stability.

The 'corporate image and reputation' subcategory included within the ExtC category ranks third in terms of the number of analyst reports referring to it and tenth according to the extent of references. In contrast to the 'market share' and 'customers (other)' subcategories, 'corporate image and reputation' information does not have an immediate direct impact on the bottom line and therefore cannot be easily incorporated into analysts' forecasts. Thus, it is possible that sell-side analysts use this information to portray a company in a positive light, as indicated by the following excerpts:

> The company has a strong position in gaming machine design and manufacture, as well as gaming systems, and despite the moribund Australian market, international opportunities are strong (Aristocrat Leisure Limited).

> TIM has a strong track record in the agribusiness investment management sector and has been developing agribusiness projects since 1987 and issuing prospectuses since 1992 (Timbercorp Limited).

This contention is supported by the significantly high level of positive tenor (94 per cent) references in the 'corporate image and reputation' subcategory (see, Section 6.6.3).

The least used subcategories in the ExtC category are 'government and other relationships' and 'customer relationships, satisfaction and loyalty', which together account for a mere 2.8 per cent of the overall ExtC information used. These are also the two ExtC subcategories found in the least number of analyst reports (18 reports).

### 6.4.2. Human capital

Panel B of Table 6.6 shows that all but two of the investigated IC subcategories are represented in analyst reports. The unused IC subcategories are 'employee attitudes, commitment and satisfaction' and 'employee equality', both belonging to the HumC category. Several other subcategories belonging to HumC also contain low levels of references. For example, 'training and development' (2 references), 'working environment' (10 references), 'employee entrepreneurship' (16 references), 'skills and capabilities' (26 references) and 'remuneration and incentive schemes' (34 references) together account for less than 2.5 per cent of total IC references and none of these subcategories is individually found in more than 11 analyst reports.

Although the HumC category consists of the highest number subcategories with the lowest levels of references, the two most referred to IC subcategories in this study: 'work experience' (703 references) and 'employees (other)' (402 references) belong to this category. These two subcategories, together, account for almost 31 per cent of all IC information used by sell-side analysts. Further, the 'employees (other)' category is present in 46 analyst reports and ranks second in terms of number of analyst reports referring to an IC subcategory.

In this thesis, HumC information related to 'employees (other)', 'remuneration and incentive schemes', 'skills and capabilities' and 'work experience' are analysed by employee type. These four HumC subcategories account for 88 per cent of total HumC references. The following Table 6.8 provides the frequency distribution of references to each of the above four HumC subcategories across types of employees.

**Table 6.8: Human capital references by employee type**

| HumC subcategories | Frequency of references | | | |
|---|---|---|---|---|
| | CEO | Executives & director | Other employees | Total Sample |
| Employees (other) | 67 (17%) | 284 (70%) | 51 (13%) | 402 |
| Remuneration & incentive schemes | N/A | 23 (68%)* | 11 (32%) | 34 |
| Skills & capabilities | 3 (12%) | 23 (88%) | 0 (0%) | 26 |
| Work experience | 100 (14%) | 601 (86%) | 2 (0%) | 703 |
| **Total** | **170 (15%)** | **931 (80%)** | **64 (5%)** | **1165** |

*References relating 'remuneration and incentive schemes' are recorded only for two groups: 'executives and directors', and 'other employees'. References to 'remuneration and incentive schemes' for CEO are included under 'executives and directors'.

As highlighted in the above Table 6.8, references to HumC overwhelmingly relate to company management, including board of directors. In addition, the majority of information relating to 'educational qualifications' and 'management team' predominantly pertains to company management. These references relating to senior executives and members of the Board are often sourced from short bio-profiles published on them in analyst reports, either within the body of the report or as an appendix. These bio-profiles include information on previous work experience, educational qualifications, current positions, and expertise. The following is a typical profile piece extracted from an analyst report on Challenger Financial Services Group Limited:

> Greg Kirk joined Challenger from AMP Financial Planning where he had been MD for the past six years. Mr. Kirk has worked in financial services for more than 25 years and prior to joining AMP, held a number of senior distribution and sales management roles with ANZ Group.

### 6.4.3. Internal capital

As highlighted in Table 6.6, in the IntC category, 'strategy' is the most referred to subcategory with 144 references (4.04 per cent). Information on 'management processes, policies and practices' is the second most referred to (130 references: 3.64 per cent) IntC subcategory. However, these two subcategories rank seventh and eighth respectively, in relation to total IC references. Information on 'strategy' is often used by sell-side analysts as evidenced by 40 analyst reports referring to this subcategory (*i.e.,* the fourth highest). The use of information on 'organisational and management structures' (88 references: 33 reports) is also high and common compared to other IntC subcategories. The relative importance placed by sell-side analysts on these IntC

subcategories, especially 'strategy', is consistent with prior studies (see, Section 3.3. 2).

The high level of 'strategy' references is consistent with sell-side analysts' task of forecasting, as future firm performance is dependent on current strategies in place and proposed strategies. The following excerpts from analyst reports show the nexus between strategy and financial performance, as articulated in analyst reports:

> [… ] Crown will continue to seek new opportunities to invest or acquire assets, which meet internal financial and strategic criteria, in existing and new markets to generate strong returns on its investments (Crown Limited).

> We think this hybrid strategy, similar to the previous model of the online edition of the New York Times, could increase both subscription revenues and advertising revenues from greater reach eclipsing what would likely be lower CPMs and the loss of some subscribers (News Corporation Limited).

A similar link to future and current firm performance can be observed in references to the 'management processes, policies and practices' subcategory. This subcategory includes, inter alia, systems, policies, practices, procedures and/or techniques that support and enable the practical implementation of corporate strategy (Unerman *et al.*, 2007). Examples of items commonly coded under this category are business process improvements, outsourcing of management functions, operational strategies for reducing costs and increasing efficiency and flexibility, and supply chain management. As well as disclosing strategies employed by companies, it is important to mention how strategies are implemented and the interim results of such implementation. This information may provide credibility to the sell-side analysts' *value-creation story* for the company and help justify their forecasts and valuations, as the following excerpts indicate:

> The company is undertaking trials with most of the largest grocery suppliers in Australia and delivering improvements in logistics costs and level of on time delivery (Woolworths Limited).

> The Review identified $15–20m of cost savings (including depreciation and amortisation) to be recognised by FY07 (Australian Stock Exchange Limited).

> Another challenge for the company is to manage its suppliers given its strict working guidelines, while matching its needs for growth, cost reduction and innovation (Cochlear Limited).

Unlike for the 'strategy' and 'management processes, policies and practices' subcategories a direct nexus with financial performance cannot be envisaged for 'organisational and management structure' information. A further examination of narratives coded into this category finds that this information has mainly been used as background information or as part of the scenario for explaining the *value-creation story* of a company:

> Billabong's management structure is centred on the geographic segments it competes in (Billabong International Limited).

> The management structure also provides stability as most of the key management personnel have spent more than 10 years with either Crown Melbourne Limited or Burswood Limited (Crown Limited).

> The Trust's 30% indirect economic interest in the Kawasaki Dice mall will be held through the Tokutei Mokuteki Kaisha (TMK) structure, a special purpose company created under the Japanese Asset Liquidation Law (Babcock & Brown Japan Property Trust).

The least used IntC subcategories are 'IP' (1 reference), 'management philosophy' (3 references), and 'quality' (10 references). Further, within the IntC category, 'corporate culture', 'R&D', 'technology (other)', and 'IT & IS' subcategories account for less than 1 per cent of total IC references on a standalone basis. None of these subcategories is found in more than ten analyst reports.

The next section discusses the results reported in this section.

### 6.4.4. Discussion of results on the topic dimension

The discussion of results on the use of various types of IC information is presented in this section. Subsection 6.4.4.1 discusses the results broadly at IC category level, and Subsection 6.4.4.2 provides a discussion of results at the IC subcategory level.

#### 6.4.4.1. Main IC categories

The results of this study at the IC category level concur with prior research evidence that sell-side analysts' use more ExtC information than HumC and IntC information (see, Section 3.3.2.5). However, the finding that HumC is the second most referred to IC category, contradicts prior research that finds IntC is the second most frequently used category (Flöstrand, 2006; Orens and Lybaert, 2007). However, this inconsistency needs to be interpreted in the light of: (1) differences in the scope and function of *initiating coverage reports* and other types of analyst reports; and (2) research method differences among the studies.

Looking at the relative emphasis of ExtC information in analyst reports, at least, four possible reasons can be found to explain this. First, as Flöstrand (2006) points out, there is a nexus between ExtC and financial performance. A major part of sell-side analysts' work when valuing a company is forecasting future financial performance, cash flows, and growth rates. By definition, IC has the potential to enhance companies' future financial performance, and hence the types of IC information most widely used by sell-side analysts in their reports are arguably those that they believe to have the most impact on future earnings and cash flows. Thus, a possible explanation for the widespread use of ExtC information is the likelihood to be closely linked to cash flows and earnings.

Second, products of HumC and IntC are often manifested in ExtC, and it is the point where the efforts of the former two categories are visible. Flöstrand (2006, p.472) explains that "relational [or external] capital is the fruit of what human capital and structural [or internal] capital contribute to the creation of value" and "relational capital is not always discernible from human and structural capital". The interrelationships between these three categories of IC and their interactive impact on future value creation have been empirically validated (Hermans and Kauranen, 2005). Therefore, the relative emphasis on ExtC by sell-side analysts cannot be interpreted as ExtC having superiority over the other two IC categories in value creation, but as outputs of the interaction among the three elements being materialised more often in terms of ExtC. For instance, information on synergistic benefits accruing to companies from business collaborations is commonly found in analyst reports, and has been categorised under ExtC in this study. These synergistic benefits may pertain

to rationalising and collaborating, for example, systems, process, technology and expertise that are generally included under IntC.

Third, sell-side analysts may be placing more emphasis on ExtC and less on HumC and IntC as a mechanism for dealing with the complexity of information in the latter IC categories. This is consistent with the position held by Almqvist and Henningsson (2009) that capital market actors reduce the complexity of information by shifting the focus to a more familiar and manageable surrogate.

Fourth, ExtC relates to relationships with stakeholders. These relationships are often impacted by changes in the external environment. Organisational reactions to environmental changes, such as rationalisation of distribution channels, reconfiguration of firm value chains, reassessment of customer value, and globalisation and segmentation of markets may have significant impact on the ExtC of firms. These aspects need to be evaluated and criticised if one is to recommend a company as an investment. However, the impact of the changes in the external environment on HumC and IntC is comparatively less visible. This has been pointed out as a reason for the higher proportion of ExtC observed in annual reports in prior studies (e.g., Guthrie and Petty, 2000; Whiting and Miller, 2008).

On the use of HumC information, this study supports the prior literature by confirming that information relating to general employees, working conditions/environment and employee satisfaction are rarely used by sell-side analysts (see, Section 3.4.2.5). For instance, it has previously been found through interviews with analysts that information about employees and their working environment are least desired by sell-side analysts and information about employee related investments is not used at all (Eccles and Mavrinac, 1995). However, the results indicate that HumC references are predominantly devoted to the discussion of company management and the quality and credibility of the management team. Moreover, this study finds that references to the 'management team' subcategory are forward-looking, and emphasise management's potential future contributions. Hence, these findings support observations made in prior studies that an important task of sell-side analysts is to judge *management quality* as a surrogate for the quality of HumC (see, Sections 3.4.2).

Almqvist and Henningsson (2009) provide an explanation of the sell-side analysts' disinterest in information on corporate personnel and work environment, and their interest in company management instead. They contend that capital market actors reduce complexity of information on corporate personnel and work environment by "admit[ting] to the difficulties inherent in calculating the worth of personnel – and thereby exclud[ing] them as value-contributors" (Almqvist and Henningsson, 2009, p.52). This is arguably done by relying on management, who has the onus of putting the corporate personnel to their best use and managing the work environment to facilitate employee productivity.

In assessing the use of IntC information, it was revealed that the majority of IntC subcategories have a very low frequency of references in analyst reports. For instance, IP, management philosophy, quality, corporate culture, R&D, technology, and IT & IS subcategories accounted for less than 1 per cent of IC references relative to total IC references. Prior studies have also reported low frequency of use of some of these IntC subcategories in analyst reports (see, Section 3.3.2.5).

The finding that information on employees, working environment, and most types of IntC are infrequently utilised by sell-side analysts is counter-intuitive to the extant research evidence on the profitability of HumC and IntC investments (see, Section 3.2.2). This could be due to at least three reasons. First, disclosure of HumC and IntC information by companies is limited compared to ExtC information (see, Section 2.5), suggesting the relative unavailability of these types of information to capital market participants (García-Meca, 2005). Second, as suggested by Johansson (2003), this could perhaps be due to the difficulty sell-side analysts have in envisaging the impact of these types of information on earnings and firm value due to their entangled nature — especially problems with comprehending the nexus between specific HumC/IntC indicators and firm vision, strategies, and idiosyncratic value creation processes.

Third, when firms disclose HumC and IntC indicators, which are essentially disentangled manifestations of otherwise entangled resources; sell-side analysts may find it difficult to revert to seeing its entangled form. For instance, Mouritsen (2003, p.23) contends that:

> The more disentangled the resource is, the more it is made separate; the more the resource has been made separate, the more it is different from the material from which it gained its power and action. Therefore, the more the resource is disentangled, the more it is transformed into something quite different, governed not by logic of the complementarity of assets, but by logic of the institutional rules found outside the *locus* of complementarity (emphasis in original).

When a resource is presented devoid of its relationships to other resources, the user of such information may find limited utility. Therefore, the cause of the problem may lie in the way certain HumC and IntC information is presented by firms.

#### 6.4.4.2. IC subcategories

Turning to frequently referred to IC subcategories, this study finds that sell-side analysts have varying uses of IC information. First, certain types of IC information are used by sell-side analysts to communicate the value creation potential of a company, and therefore to justify their forecasts and recommendations. For instance, references to 'business collaborations' are frequently used by sell-side analysts to indicate future growth and market expansion opportunities and potential synergistic benefits. This intention of sell-side analysts is observed particularly in relation to the use of 'mergers and acquisition' related information. Similarly, 'brand' related references are made in analyst reports to indicate the possibility of future profit growth through leveraging strong brands owned by the firm.

Second, IC information is used to explain how a firm is intending to create value in the future, as against its value creation potential as perceived by sell-side analysts. For instance, the high emphasis sell-side analysts place on the 'strategy' subcategory indicates that they utilise IC in communicating the means of future value creation. Similarly, frequent use of information on 'management processes, policies and practices' suggests that sell-side analysts consider it important to explain and justify how future value is intended to be extracted though strategy implementation.

Third, the results indicate that sell-side analysts favour IC information that can be incorporated into their valuation models. For instance, this is evident in relation to the frequent use of information on cost and revenue synergies arising from business collaborations and changes in market share by sell-side analysts. These types of

information are often associated with sell-side analysts' earnings and cash flow estimates.

It is found that despite most ExtC subcategories being frequently referred to in analyst reports, information on 'government and other relationships' and 'customer relationships, satisfaction and loyalty' are least referred to in analyst reports. Also, prior research has found limited reference to such relationships in analyst reports (Nielsen, 2004; Orens and Lybaert, 2007). Although these relationships are considered important from a company's point of view, it has been found through interviews with sell-side analysts that little attention is paid to these types of information when provided, and they are seen as irrelevant in report preparation (Campbell and Slack, 2008). For instance, an analyst interviewed in Campbell and Slack (2008, p.23) is reported to have said in relation to the use of social and environmental disclosure that "these are more soft issues and they wouldn't be driving the [forecasting] model. We are about numbers. We are putting numbers in a spreadsheet and coming up with a forecast". (p. 23). This evidence further supports the premise that sell-side analysts prefer IC information that has a direct nexus with financial estimates.

Fourth, IC information is frequently used to promote the company to current and potential shareholders. For instance, references to the 'customers' and 'corporate image and reputation' subcategories are mostly made positively to convey the company's ability to be competitive and thus generate sustainable profits. Abeysekera (2003) states that information relating to 'corporate image' is frequently disclosed in annual reports as it is invaluable in promoting the company to shareholders. Thus, it is possible that sell-side analysts use information relating to 'corporate image and reputation' to promote the company as a reliable investment. In addition, references made frequently to market dominance and leadership, captured under the 'market share' subcategory, indicate an ability to maintain future cash flows. On a related note, information on 'financial relations' is included in analyst reports in such a way as to build investors' and creditors' confidence in the company.

Fifth, certain types of IC information, such as 'organisational and management structure' and 'organisational and business expertise', are mainly used by sell-side analysts to explain the company and its operations, as part of background information.

It can be argued that the role of these types of information is to develop the mosaic of information, as referred to in the prior literature, with a view to building the *value-creation story* of the firm (see, Section 3.4).

The differential use of IC topics identified in this thesis highlights the importance of many types of IC to the capital market that value-relevance research has been unable to establish (see, Section 3.2.2). In addition, it identifies the broader role of IC ranging from its use in the construction of the *value-creation story* to its role in financial forecasting and utility in justifying sell-side analysts' position to promote the firm as a good investment. This highlights sell-side analysts' role as an intermediary, particularly in relaying IC information and firms' IC linkages.

### 6.5. Results on the evidence dimension

The *evidence* dimension of IC information use is analysed using four categories: discursive, numerical (non-monetary), monetary and visual (see, Section 5.6.2). In this section, the results on the *evidence* dimension are presented under three subsections: overall findings; IC category level findings; and IC subcategory level findings.

#### 6.5.1. Overall findings

The following Table 6.9 reports the frequency distribution of references to the four *evidence* categories. It also provides the number of analyst reports in which each *evidence* category is referred to, at least once. Both absolute and relative frequencies are provided in this table.

**Table 6.9: General observations for evidence categories**

| | **Frequency of references** | **No. of reports (N=64)** |
|---|---|---|
| Discursive | 2398 (67%) | 62 (97%) |
| Numerical (non-monetary) | 984 (28%) | 58 (91%) |
| Visual | 100 (3%) | 41 (64%) |
| Monetary | 85 (2%) | 31(48%) |
| **Total** | **3567 (100%)** | |

The above Table 6.9 highlights that IC information is presented overwhelmingly in discursive form. However, it is interesting to note that a significant amount of IC information is quantified (30 per cent). Reiterating previous research findings on IC

information use in analyst reports (see, Section 3.3.2.5), this study too finds that monetary expressions of IC are rare. This is the first study to investigate IC communicated through visuals in analyst reports. The results indicate that although a small proportion of IC information is communicated visually, these references are found in 64 per cent of the analyst reports in the sample.

### 6.5.2. IC category level findings

The following Table 6.10 shows the frequency distribution (both absolute and relative) of references to the main IC categories across the four *evidence* categories.

**Table 6.10: Specific observations for evidence categories**

| IC categories | Frequency of references | | | | |
|---|---|---|---|---|---|
| | **Total** | **Visual** | **Discursive** | **Numerical (non-monetary)** | **Monetary** |
| ExtC | 1607 | 65 (4%) | 866 (54%) | 616 (38%) | 60 (4%) |
| HumC | 1329 | 1 (0%) | 998 (75%) | 319 (24%) | 11 (1%) |
| IntC | 631 | 34 (5%) | 534 (85%) | 49 (8%) | 14 (2%) |
| **Total** | **3567** | **100 (3%)** | **2398 (67%)** | **984 (28%)** | **85 (2%)** |

As shown in the above Table 6.10, all IC categories are predominantly referred to discursively. However, the proportion of discursive statements in these categories ranges from 54 per cent in ExtC to 85 per cent in IntC. In contrast, the proportion of numerical expressions (both monetary and non-monetary together) is greatest for ExtC (42 per cent) and smallest for IntC (10 per cent). HumC falls in between ExtC and IntC in terms of proportion of references of discursive and numerical (both monetary and non-monetary together) nature. Whilst monetary expressions are scarce in all three categories, they are scarcer in the HumC category. A similar conclusion can be drawn from the data about the use of imagery in communicating IC across the three IC categories, except that visual expressions are not found at all in relation to HumC.

### 6.5.3. IC subcategory level findings

The following Table 6.11 shows the frequency distribution (both absolute and relative) of references to the IC subcategories across the four *evidence* categories.

**Table 6.11: Frequency per IC subcategory for evidence of IC references**

| Selected IC subcategories* | Frequency of references | | | | |
|---|---|---|---|---|---|
| | Total | Visual | Numerical | Discursive | Monetary |
| **ExtC** | | | | | |
| Brands | 272 | 14 (5%) | 125 (46%) | 132 (49%) | 1 (0%) |
| Business collaborations | 293 | 1 (0%) | 59 (20%) | 194 (66%) | 39 (13%) |
| Corporate image & reputation | 125 | 1 (1%) | 41 (33%) | 77 (62%) | 6 (5%) |
| Customers (other) | 223 | 10 (4%) | 55 (25%) | 156 (70%) | 2 (1%) |
| Distribution | 96 | 1 (1%) | 18 (19%) | 77 (80%) | 0 (0%) |
| Favourable contracts, licensing … | 122 | 0 (0%) | 30 (25%) | 83 (68%) | 9 (7%) |
| Financial relations | 196 | 2 (1%) | 148 (76%) | 45 (23%) | 1 (1%) |
| Market share | 235 | 36 (15%) | 135 (57%) | 62 (26%) | 2 (1%) |
| **HumC** | | | | | |
| Educational qualifications | 81 | 0 (0%) | 0 (0%) | 81 (100%) | 0 (0%) |
| Employees (other) | 402 | 1 (0%) | 97 (24%) | 302 (75%) | 2 (0%) |
| Management team | 55 | 0 (0%) | 1 (2%) | 54 (98%) | 0 (0%) |
| Work experience | 703 | 0 (0%) | 207 (29%) | 494 (70%) | 2 (0%) |
| **IntC** | | | | | |
| Business model | 79 | 3 (4%) | 1 (1%) | 75 (95%) | 0 (0%) |
| Corporate governance | 43 | 0 (0%) | 1 (2%) | 42 (98%) | 0 (0%) |
| Management processes, policies … | 130 | 4 (3%) | 33 (25%) | 85 (65%) | 8 (6%) |
| Organisational & business expertise | 58 | 0 (0%) | 1 (2%) | 57 (98%) | 0 (0%) |
| Organisational & management structure | 88 | 23 (26%) | 1 (1%) | 64 (73%) | 0 (0%) |
| Strategy | 144 | 2 (1%) | 2 (1%) | 139 (97%) | 1 (1%) |

*Only the IC subcategories representing at least 1 per cent of total IC references are included in this table.

The results presented in the above Table 6.11 are explained under separate subheadings for each *evidence* category, except discursive category.

### 6.5.3.1. Numerical (non-monetary) expressions of IC

The above Table 6.11 highlights that IC subcategories are included in analyst reports overwhelmingly in discursive form except for the 'market share' and 'financial relations' subcategories, which are dominated by numerical (non-monetary) expressions. The high count of numerical expressions in the 'financial relations' subcategory is the result of the number of shares held by shareholders and their percentage shareholding being coded into that subcategory. For instance:

> Major shareholder Japanese brewer Kirin (46%) currently has three board members (Lion Nathan Limited).

It is possible that shareholding in a company is expressed numerically in order to build confidence among investors by indicating that large proportions of the company are owned by named investors.

In addition, frequent references are made in analyst reports to shareholdings of employees and managers of the company, as shown by the following excerpts. These references are also captured under the 'financial relations' subcategory. For instance:

> The staff, including principals, owned approximately 18.2% of the vehicle as at 30 June 2004. Stephen Day and Peter Hurley owned approximately 10.5m securities each, while Barry Wynne owned 8.0m (Valad Property Group).

> Importantly, key members of the management team still have equity (roughly 6% of the company) and performance incentives (receive additional equity after five years if 10% IRR or greater is achieved) (Challenger Infrastructure Fund).

Perhaps, referring to shareholdings of employees and managers in the context of other information in analyst reports may be an attempt by sell-side analysts to communicate the alignment of objectives of the management and shareholders. This is particularly important as the more the evidence of reduction in agency costs the more favourable is the ultimate company valuation.

The high level of numerical (non-monetary) expressions in the 'market share' subcategory can be explained by 'market share' information often being presented in analyst reports as percentages. The types of IC information generally coded into this subcategory are the proportion (or analysts' estimated proportion) of the total market served by a company and changes in these proportions over time, as shown by the following analyst report excerpts:

> With $179bn of FUA, it is estimated that Perpetual has 70–80% market share in the corporate trust market (Perpetual Limited).

> We peg ResMed's market share in the global OSA market at 41% in calendar 2Q06, up from 38% in the beginning of calendar 2005 (Resmed Inc.)

A further examination of the narratives coded into the 'market share' subcategory finds that at times market share proportions are projected or estimated by sell-side analysts so that they can be incorporated into the company valuation process. For instance, the analyst report for Metcash Limited notes "MTT's national market share at April 2003 was 16.1%. We believe MTT's market share can grow to 16.5% by the

end of 2004". Similarly, market share proportions are being used with market growth rates as an indication of prospective revenue growth:

> Officeworks is the largest player in the fragmented Australian office retail supplies industry with ~16% retail market share, with the industry growing revenue at circa 5%pa (Wesfarmers Limited).

Moreover, information on the current market position of a company vis-à-vis its competitors is used in making financial estimations. The following extract from an analyst report on Consolidated Media Holdings Limited exemplifies that the market position of the company is an input in the calculation of the Enterprise Value (EV)/EBITDA multiple:

> In the case of magazines we have applied an EV/EBITDA multiple of 9.0 times which reflects the leading market position of ACP Magazines offset by increasing competition from Pacific Magazines, News Corporation and others in the context of the relatively mature nature of the magazine market in Australia.

Information on 'brands' are expressed nearly half the time in numerical (non-monetary) form. A further examination of 'brands' related coding references finds that they refer to proportionate contributions of specific brands to sales. For instance, the analyst report on Billabong International Limited states 'Billabong brand contributes about 70% to sales'. Thus, sell-side analysts seem to evaluate the performance of a company's brands relative to other brands in the company as well as competitive brands. They also analyse longitudinal changes in the contribution of brands to sales, as exemplified by the following excerpt from the analyst report on Foster's Group Limited:

> FGL's main beer brand, VB, fell 2% YoY on a value basis (volumes fell 6.2% YoY), with beer brands the only declining brands in the top 20 (three owned by FGL and one owned by LNN).

#### 6.5.3.2. Monetary expressions of IC

As shown in Table 6.11 above, a significant proportion of monetary expressions (13 per cent) of IC is observed in relation to the 'business collaborations' subcategory. Further examination of the narratives code as monetary-'business collaborations'

related references indicates that the bulk of them are about synergistic benefits resulting from business collaborations (see, Appendix K for excerpts of references) that can readily be incorporated into analysts' estimation and forecasting processes.

#### 6.5.3.3. Visual expressions of IC

Only a few IC subcategories are expressed visually. However, a significant proportion of information in the 'organisational and management structure' (26 per cent) and 'market share' (15 per cent) subcategories are communicated this way.

Sell-side analysts' discussion of a company's group structure, divisional structure or management structure using tree diagrams explains the high incidence of visual information in the 'organisational and management structure' subcategory. A few examples of such visual IC references provided in the analyst report on Crown Limited are reproduced in Figures 6.1 and 6.2 below.

**Figure 6.1: An example of a reference to a company's management structure**

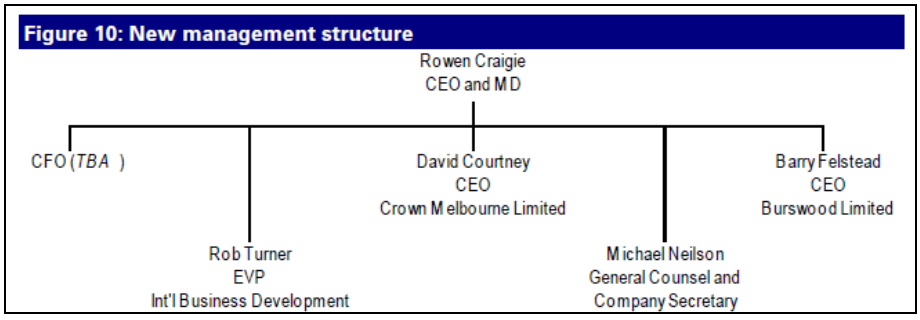
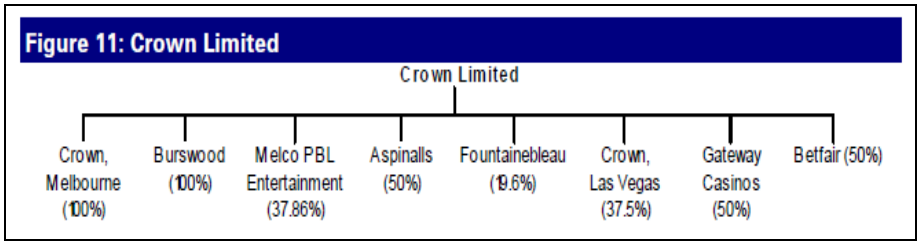



**Figure 6.2: An example of a reference to a company's divisional structure**




Visual communication of market share information mainly takes the form of pie charts and bar charts, depicting either analysed company's market share compared to other players in the market or changes in the market share of the company over time. Figures 6.3 and 6.4 exemplify typical visual expressions coded into the 'market share'

subcategory that have been extracted from the analyst report on Foster's Group Limited.

**Figure 6.3: An example of a reference to changes in market share**

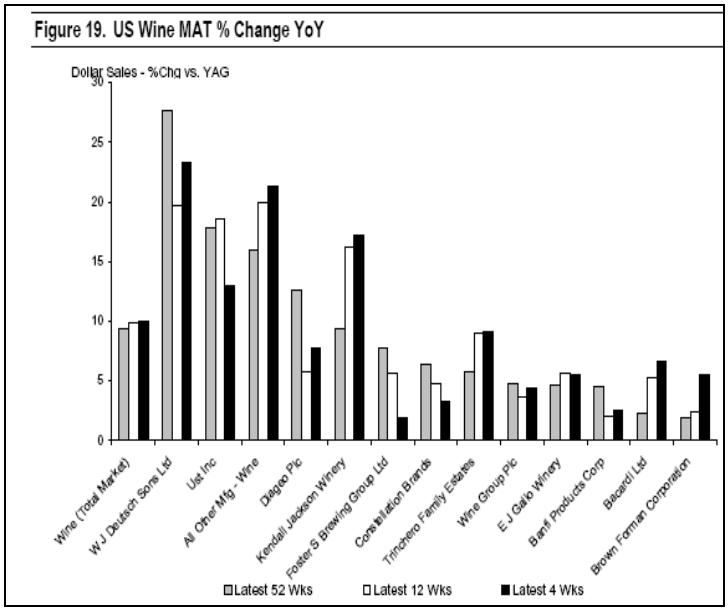
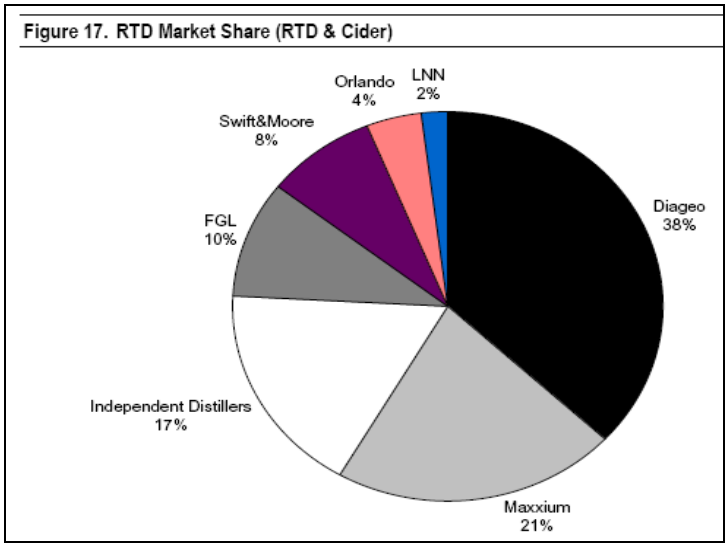



**Figure 6.4: An example of a reference to a market share relative to competitors**




The next section discusses the results reported in this section.

### 6.5.4. Discussion of results on the evidence dimension

IC information is referred to overwhelmingly in discursive form in analyst reports and the predominance of discursive references is observed across the ExtC, HumC and

IntC categories. Nonetheless, a significant proportion of IC is disclosed quantitatively (both monetary and non-monetary) with ExtC accounting for the highest proportion of quantitative references. The high proportion of numerical expressions in the ExtC category indicates that ExtC is relatively easily measurable by sell-side analysts and capable of being incorporated into their forecasts and valuations compared to HumC and IntC. Also, this probably justifies the relative popularity of ExtC information over HumC and IntC information, as discussed in Section 6.4.4.1. For instance, references coded into ExtC subcategories such as 'market share', 'business collaborations' and 'brands' are amenable to direct inclusion in the company valuation process. On the other hand, numerical references to the financial interests of stakeholders seem to play a different role. These references can be seen as an attempt to build confidence in the company and communicate goal congruence between the management and shareholders.

Visual expressions and monetary quantification of IC are very limited in analyst reports. This pattern is observed across all IC categories, although some IC subcategories contain more monetary or visual expressions than other categories. Although limited in extent, visual expressions of IC information, for example, 'market share' and 'organisational and management structure' subcategories, by way of charts, graphs and figures can be understood as attempts made by sell-side analysts to provide clarity in the understanding of IC information within a given context. For instance, it can be observed that sell-side analysts discuss a company's group, divisional, and management structures using diagrams in a bid to explain how the company is structured. This in turn provides a foundation to understand other aspects of the company and its IC linkages.

On the other hand, IC is generally expressed in monetary terms when such information can be related to sell-side analysts' forecasts and valuation models. This is evidenced by monetary references to 'business collaborations', dwelling predominantly on costs and benefits resulting from business combinations to the firm in the future. Moreover, 'business collaborations' was found to be the only IC subcategory with a significant number of monetary references.

In summary, consistent with prior research evidence, IC information is predominantly communicated discursively (see, Section 3.3.2.5). It was discussed in Section 6.4.4

that IC information is used discursively to justify sell-side analysts' forecasts and estimates. However, for the most part, sell-side analysts tend to use quantification (both monetary and non-monetary) when there is a link between the type of IC information and a financial indicator, such as earnings or cash flows. On the other hand, discursive and visual techniques are used to explain the *value-creation story* of the company using IC and in setting the scene to construct arguments.

### 6.6. Results on the news-tenor dimension

The *news-tenor* of IC information is investigated in terms of positive, neutral and negative references to IC (see, Section 5.6.3). As in the previous section, this section presents the results of the *news-tenor* dimension under three subsections: overall findings; IC category level findings; and IC subcategory level findings.

#### 6.6.1. Overall findings

The following Table 6.12 reports the frequency distribution of references to the three *news-tenor* categories. It also provides the number of analyst reports in which each *news-tenor* category is present, at least once. Both absolute and relative frequencies are provided in this table.

**Table 6.12: General observations for news-tenor categories**

| | Frequency of references | No. of reports (N=64) |
|---|---|---|
| Positive | 2001 (56%) | 63 (98%) |
| Neutral | 1438 (40%) | 62 (97%) |
| Negative | 128 (4%) | 34 (53%) |
| **Total** | **3567 (100%)** | |

The above Table 6.12 highlights that IC information is mostly used to portray a company positively. In other words, sell-side analysts communicate IC as strengths of a company and relate IC to current or potential benefits it may provide. At the same time, 40 per cent of IC information is expressed without any value attribution (*i.e.,* neutral tenor). Negative tenor is the least used in communicating IC information. For instance, although negative tenor in IC references is found in 34 analyst reports, it only accounts for 4 per cent of total IC references.

The following Table 6.13 shows the frequency distribution (both absolute and relative) of references to the *news-tenor* categories across the three *evidence* categories.

**Table 6.13: Frequency distribution of news-tenor by evidence**

| News-tenor | Frequency of references | | | |
|---|---|---|---|---|
| | **Total IC** | **Visual** | **Numerical (monetary and non-monetary)** | **Discursive** |
| Positive | 2001(56%) | 8 (8%) | 449 (42%) | 1544 (64%) |
| Neutral | 1438 (40%) | 92 (92%) | 598 (56%) | 748 (31%) |
| Negative | 128 (4%) | 0 (0%) | 22 (2%) | 106 (4%) |
| **Total** | **3567 (100%)** | **100 (100%)** | **1069 (100%)** | **2398 (100%)** |

As the above Table 6.13 highlights, IC information that is disclosed discursively has a significantly higher proportion of positive attributions compared to IC information containing numerical expressions.

### 6.6.2. IC category level findings

The following Table 6.14 shows the frequency distribution (both absolute and relative) of references to the main IC categories across the three *news-tenor* categories.

**Table 6.14: Specific observations for news-tenor categories**

| IC categories | Frequency of references | | | |
|---|---|---|---|---|
| | **Total** | **Positive** | **Neutral** | **Negative** |
| ExtC | 1607 | 776 (48%) | 761 (47%) | 70 (4%) |
| HumC | 1329 | 906 (68%) | 406 (31%) | 17 (1%) |
| IntC | 631 | 319 (51%) | 271 (43%) | 41 (6%) |
| **Total** | **3567** | **2001 (56%)** | **1438 (40%)** | **128 (4%)** |

As the above Table 6.14 shows, positive information is dominant in all three IC categories and negative tenor is the least used in communicating IC. Use of positive tenor in HumC information is significantly greater than the use of this tenor in relation to other IC categories. The dominance of 'work experience' references in the HumC category (53 per cent of HumC references) that are mostly coded as positive may partly account for the high proportion of positive HumC references (see, also, Table 6.15 below). On the other hand, there is less use of negative tenor in communicating HumC information, compared to the use of negative tenor in relation to ExtC and IntC categories.

### 6.6.3. IC subcategory level findings

The following Table 6.15 shows the frequency distribution (both absolute and relative) of references to the IC subcategories across the three *news-tenor* categories.

**Table 6.15: Frequency per IC subcategory for news-tenor of IC references**

| Selected IC subcategories* | Frequency of references | | | |
|---|---|---|---|---|
| | Total | Positive | Neutral | Negative |
| **ExtC** | | | | |
| Brands | 272 | 64 (24%) | 193 (71%) | 15 (6%) |
| Business collaborations | 293 | 172 (59%) | 114 (39%) | 7 (2%) |
| Corporate image & reputation | 125 | 118 (94%) | 3 (2%) | 4 (3%) |
| Customers (other) | 223 | 109 (49%) | 109 (49%) | 5 (2%) |
| Distribution | 96 | 63 (66%) | 29 (30%) | 4 (4%) |
| Favourable contracts, licensing & franchising… | 122 | 70 (57%) | 42 (34%) | 10 (8%) |
| Financial relations | 196 | 35 (18%) | 158 (81%) | 3 (2%) |
| Market share | 235 | 109 (46%) | 105 (45%) | 21 (9%) |
| **HumC** | | | | |
| Educational qualifications | 81 | 81 (100%) | 0 (0%) | 0 (0%) |
| Employees (other) | 402 | 57 (14%) | 341 (85%) | 4 (1%) |
| Management team | 55 | 45 (82%) | 2 (4%) | 8 (15%) |
| Work experience | 703 | 657 (93%) | 42 (6%) | 4 (1%) |
| **IntC** | | | | |
| Business model | 79 | 49 (62%) | 26 (33%) | 4 (5%) |
| Corporate governance | 43 | 21 (49%) | 17 (40%) | 5 (12%) |
| Management processes, policies & practices | 130 | 49 (38%) | 75 (58%) | 6 (5%) |
| Organisational & business expertise | 58 | 54 (93%) | 0 (0%) | 4 (7%) |
| Organisational & management structure | 88 | 16 (18%) | 65 (74%) | 7 (8%) |
| Strategy | 144 | 56 (39%) | 76 (53%) | 12 (8%) |

*Only the IC subcategories representing at least 1 per cent of total IC references are included in this table.

The results presented in the above Table 6.15 are discussed below under separate subheadings for each IC category.

#### 6.6.3.1. External capital

As highlighted in the above Table 6.15, in the ExtC category the majority of subcategories contain positive references. The highest incidence of positive references is found in the 'corporate image and reputation' subcategory. The following excerpts exemplify how sell-side analysts try to portray a company positively in the minds of the reader through 'corporate image and reputation' related information:

> TTS has held the lotteries licence in Victoria since 1954 and is the only non-government-owned licence operator in Australia (Tatts Group Limited).

> TIM has a strong track record in the agribusiness investment management sector and has been developing agribusiness projects since 1987 and issuing prospectuses since 1992 (Timbercorp Limited).

> Founded in the United States in 1977, Babcock & Brown (BNB) is a global investment and advisory firm with longstanding capabilities in structured finance, syndication and investment management (Babcock & Brown Limited).

Information on 'brands' and 'financial relations' are distinguishable from the rest of the ExtC subcategories as they are least often expressed positively. These two subcategories overwhelmingly convey neutral connotations. Although the use of negative tenor is rare in the 'market share' and 'brands' subcategories, they have relatively high proportions of negative statements compared to other ExtC subcategories.

These findings suggest that sell-side analysts do not always try to show positive aspects of ExtC. This is particularly the case in analysts' discussions using ExtC information, such as 'brands' and 'market share'. Perhaps this could be due to these types of IC information having a direct impact on the financial estimations and analysts forecasts, as discussed in the previous section. The following excerpts support this contention:

> In FY07, sales on Sigma's Simvar, Lipostat and Xydep products decreased $37m on the pcp after the expiry of its exclusive distribution licences and the entry of new generic suppliers (Sigma Pharmaceuticals Limited).

> Accordingly, even assuming ALM will gain share from the direct market, we believe it will struggle to increase from its current —34% market share (Aristocrat Leisure Limited).

#### 6.6.3.2. Human capital

As highlighted in the above Table 6.15, in the HumC category, all but the 'employees (other)' subcategory is predominantly expressed positively. The positive-tenor in HumC references can be attributed to the nature of the subcategories it contains. For instance, HumC information, such as 'educational qualifications' and 'work experience' are coded positively unless sell-side analysts mention that, for example,

an employee lacks experience in a certain area or is not properly qualified. Such negative references are extremely rare in the analyst reports examined.

On the other hand, the 'employee (other)' subcategory contains 85 per cent of neutral statements. Content coded into this subcategory generally pertains to the names and dates of appointment of senior executives and Board members, and roles and responsibilities of employees including managers. These types of information essentially carry a neutral tenor.

Although references to the 'management team' subcategory are overwhelmingly positive, there are a considerable number of negative references (15 per cent). It was also found that negative statements about a company's management team are not direct, but generally are of the form of casting doubt about their future performance:

> However, the recent profit downgrade has highlighted the industry risk associated with generics and cast doubt on management's ability to handle these external market failures (Sigma Pharmaceuticals Ltd).
>
> Investors so far appear unwilling to back what is still a relatively new and unproven management team (Challenger Financial Services Group Ltd).
>
> In turn, concern remains about new management's ability to rebuild the company and to capitalise on the growth opportunities […] (Australian Pharmaceutical Industries Limited).

Nonetheless, as explained in Section 6.4.1, 'management team' is not the only HumC subcategory that captures references to company management – it only contains references to the management as a collective. Other HumC subcategories such as 'employees (other)', 'remuneration and incentive schemes', 'skills and capabilities' and 'work experience' predominantly contain references to senior managers and the board of directors of the company. Negative references in those subcategories are especially rare.

#### 6.6.3.3. Internal capital

Similar to the observations in relation to ExtC and HumC, *news-tenor* used in referring to the majority of IntC subcategories is predominantly positive. For instance, IntC categories, such as 'business model', 'corporate culture', 'IT & IS',

'management philosophy', 'organisational and business expertise', 'quality', 'R&D' and 'technology' contain high proportions of positive references. As these types of IC are more often discussed and evaluated from a sell-side analysts' perspective, the dominance of positive tenor in these statements suggests that sell-side analysts are positively biased in their evaluations of companies' IntC. For example, the following analyst report excerpts pertaining to the 'business model' subcategory support this contention:

> The franchise structure works to Harvey Norman's benefit (Harvey Norman Limited).
>
> While transparency on concentrate pricing is low, the 'Coke System' appears to be currently supporting all parties (Coca Cola Amatil Limited).
>
> In our view, FCL has the best financial services model of its competitors as its loan book is largely funded by retail deposits, with limited wholesale funding (Futuris Corporation Limited).

On the other hand, when discussing IntC, such as 'management processes, policies and practices', 'organisational and management structure' and 'strategy' sell-side analysts take a neutral stance. These types of IC information tend to be used in explaining the company and its value creation processes rather than being subject to evaluation by sell-side analysts, as shown below:

> Billabong's management structure is centred on the geographic segments it competes in (Billabong International Limited).
>
> SMS operates across three separate business lines: SMS Consulting, M&T Resources, & Technology Services (SMS Management & Technology Limited)
>
> In FY03, CPU restructured management organisation, appointing managing directors for each geographic region of operation (Computershare Limited).

Although, there are only 43 references to 'corporate governance', sell-side analysts have pointed out weaknesses in corporate governance practices five times, making it the IC subcategory with the second highest proportion of negative references. This indicates that sell-side analysts tend to be critical about corporate governance practices adopted by companies. Generally negative references to 'corporate

governance' concern weaknesses in reporting and accountability, perhaps because they constitute an information constraint from sell-side analysts' perspective:

> In particular the measurement and recognition of both base and performance fees are still a relatively opaque area for most observers (Macquarie Group Ltd).

> These problems exposed weaknesses in management reporting and accountability within the company (Aristocrat Leisure Ltd).

The next section discusses the results reported in this section.

### 6.6.4. Discussion of results on the news-tenor dimension

Sell-side analysts mostly express IC information positively in their reports. Consistent with the analyst literature that indicates sell-side analysts are disproportionately resistant to 'bad news' (Fogarty and Rogers, 2005), this study finds that lack of IC or having comparatively less IC than other firms in the industry is rarely communicated. This pattern of use of *news-tenor* is observed across ExtC, HumC, and IntC categories, while the relative use of positive (negative) tenor is greatest (least) in the HumC category.

IC information on employees, their educational qualifications, skills and capabilities, work experience and management team are overwhelmingly referred to positively in analyst reports. Given that the majority of HumC information, in fact, refers to company management, the results support the contention that sell-side analysts talk positively of the management on whom they depend for information. For instance, Fogarty and Rogers (2005), analysing the characterisation of management in analyst reports, found that positive statements about company management are fifteen times as likely as negative statements. In addition, the results of this PhD study indicate that even when sell-side analysts are compelled to criticise company management they are not forthright with negative comments. Therefore, this study confirms analysts' bias established in previous research (Das *et al.*, 1998; Fogarty and Rogers, 2005).

The results highlight that IC subcategories less (more) frequently referred to positively (neutrally) are the ones that contain a significant proportion of numerical expressions that can readily be linked to financial estimates. For example, ExtC subcategories, such as 'brands', 'financial relations', and 'market share' that have

high proportions of numerical expressions also have the least (largest) proportion of positive (neutral) references. This could be due to IC with numerical expressions being least amenable to value attribution by sell-side analysts.

On the other hand, sell-side analysts have more discretion in using discursive IC information as it can be manipulated to carry a favourable tenor. However, it was found in this study that discursive IC information is not always positively biased. An examination of IntC subcategories reveals that some IntC subcategories, such as 'management processes, policies and practices', 'organisational and management structure' and 'strategy' are used to explain the company and its value, and therefore mostly referred to neutrally. Nonetheless, subcategories such as 'organisational and business expertise' and 'business model' tend to be used in an evaluative manner in the discussion of the value creation potential of the company. These IC information categories are predominantly referred to positively.

### 6.7. Results on the time orientation dimension

According to the *time orientation* dimension, IC references are categorised into past-oriented, non-time-specific and forward-looking information. As in the previous two sections, this section presents the results under three subsections: overall findings; IC category level findings; and IC subcategory level findings.

#### 6.7.1. Overall findings

Table 6.16 shows the absolute and relative frequency of IC information expressed in a forward-looking, past-oriented and non-time-specific manner.

**Table 6.16: General observations for time orientation categories**

| Time orientation categories | Frequency of use |
|---|---|
| Non-time-specific | 1767 (49%) |
| Past-oriented | 991 (28%) |
| Forward-looking | 809 (23%) |
| **Total** | **3567 (100%)** |

As the above Table 6.16 highlights, nearly half of all IC information is expressed in non-time-specific terms and the other half is divided between forward-looking and

past-oriented statements, where the proportion of past-oriented statements is slightly higher than the proportion of forward-looking statements.

The significant proportion of past-oriented statements of IC found in this study indicates that IC is used to explain value realisation by companies. An examination of narratives coded as past-oriented IC finds numerous examples:

> We believe the increase in ROC [Return on Capital] is the direct result of acquisitions combined with management's ability to integrate new assets and drive returns from existing assets (Wesfarmers Limited).

> Over the past five years, the BPL tie-up has delivered an average 10% return on capital for Henderson (Henderson Group Plc).

Past-oriented IC does not always communicate value realisation. Two alternative uses of IC could be identified through further examination of the coded content, whereby IC is linked to future value-creation. First, sell-side analysts seem to use past-oriented IC to build a story about the company's possible future performance based on its past performance. The following analyst report excerpts support this contention:

> The company has historically been strong in mid-west and Native American markets in the US, and will continue to build on this presence, as well as expanding their share of the Nevada market, which remains important (Aristocrat Leisure Limited).

> The Australian franchise network generated sales of $3.53 billion in FY05 and we forecast it will have sales of $3.76 billion in FY06e, growth of 6.5% (Harvey Norman Limited).

Second, references to investments in IC made in the past are coded as past-oriented. However, their potential is expected to be realised in the future. Therefore, invariably some past-oriented IC references are linked to the communication of the future value-creation in analyst reports. The following analyst report excerpts exemplify this:

> The one significant acquisition in its recent past is the A$110m takeover of Bankers Trust Investment Bank (Macquarie Group Limited).

> Perpetual has mitigated key man risk with stock incentives for the asset management staff (Perpetual Limited).

We understand that, over the past two years, SYB management has been aiming to increase the amount of benchmarking and standardisation of ordering across SYB's pathology labs (Healthscope Limited).

### 6.7.2. IC category level findings

The following Table 6.17 reports the frequency distribution of references to the three *time orientation* categories. It also provides the number of analyst reports in which each *time orientation* category is present, at least once. Both absolute and relative frequencies are provided in this table.

**Table 6.17: Specific observations for time orientation categories**

| IC categories | Frequency of references | | | |
|---|---|---|---|---|
| | **Total** | **Forward-looking** | **Non-time-specific** | **Past-oriented** |
| ExtC | 1607 | 421 (26%) | 807 (50%) | 379 (24%) |
| HumC | 1329 | 56 (4%) | 758 (57%) | 515 (39%) |
| IntC | 631 | 332 (53%) | 202 (32%) | 97 (15%) |
| Total | 3567 | 809 (23%) | 1767 (49%) | 991 (28%) |

As highlighted in the above Table 6.17, there are differences in the way IC categories are referred to in analyst reports, in terms of their *time orientation*. The highest proportion of forward-looking references is found in relation to IntC (53 per cent) and least in relation to HumC (4 per cent), showing a great variation in the use of forward-looking information across IC categories. Conversely, the highest proportion of past-oriented references is found in relation to HumC (39 per cent) while the IntC category contains the lowest proportion (15 per cent). Around half of ExtC related references and 57 per cent of HumC related references could not be assigned to either forward-looking or past-oriented categories (*i.e.,* coded as non-time-specific).

### 6.7.3. IC subcategory level findings

The following Table 6.18 shows the frequency distribution (both absolute and relative) of references to the IC subcategories across the three *time orientation* categories.

**Table 6.18: Frequency per IC subcategory for time orientation of IC references**

| Selected IC subcategories* | Frequency of references | | | |
|---|---|---|---|---|
| | Total | Forward-looking | Non-time-specific | Past-oriented |
| **ExtC** | | | | |
| Brands | 272 | 53 (19%) | 146 (54%) | 73 (27%) |
| Business collaborations | 293 | 100 (34%) | 72 (25%) | 121 (41%) |
| Corporate image & reputation | 125 | 13 (10%) | 87 (70%) | 25 (20%) |
| Customers (other) | 223 | 72 (32%) | 108 (48%) | 43 (19%) |
| Distribution | 96 | 32 (33%) | 51 (53%) | 13 (14%) |
| Favourable contracts, licensing & franchising… | 122 | 48 (39%) | 35 (29%) | 39 (32%) |
| Financial relations | 196 | 25 (13%) | 149 (76%) | 22 (11%) |
| Market share | 235 | 60 (26%) | 143 (61%) | 32 (14%) |
| **HumC** | | | | |
| Educational qualifications | 81 | 0 (0%) | 78 (96%) | 3 (4%) |
| Employees (other) | 402 | 19 (5%) | 289 (72%) | 94 (23%) |
| Management team | 55 | 21 (38%) | 10 (18%) | 24 (44%) |
| Work experience | 703 | 1 (0%) | 338 (48%) | 364 (52%) |
| **IntC** | | | | |
| Business model | 79 | 40 (51%) | 32 (41%) | 7 (9%) |
| Corporate governance | 43 | 16 (37%) | 21 (49%) | 6 (14%) |
| Management processes, policies & practices | 130 | 85 (65%) | 25 (19%) | 20 (15%) |
| Organisational & business expertise | 58 | 25 (43%) | 17 (29%) | 16 (28%) |
| Organisational & management structure | 88 | 17 (19%) | 63 (72%) | 8 (9%) |
| Strategy | 144 | 110 (76%) | 16 (11%) | 18 (13%) |

*Only the IC subcategories representing at least 1 per cent of total IC references are included in this table.

The results presented in the above Table 6.18 are presented below under separate subheadings for each IC category.

### 6.7.3.1. External capital

According to the above Table 6.18, among the more frequently disclosed subcategories in the ExtC category, a low proportions of forward-looking expressions are observed for the 'corporate image and reputation', 'financial relations', 'brands', and 'market share' subcategories. IC references coded into these ExtC subcategories are mostly non-time-specific. Information relating to 'corporate image and reputation' is generally non-time-specific as it describes how the company is currently perceived, as shown by the following excerpt from the analyst report for Cochlear Limited:

> Cochlear Limited is a worldwide leader in the manufacture and sale of cochlear implant systems used for the treatment of individuals with profound and severe hearing loss.

The dominance of non-time-specific information in the 'financial relations' subcategory can be attributed to the majority of information coded into this subcategory referring to the current shareholders and their respective shareholdings (see, Section 6.5.3.1). Similarly, the 'brands' subcategory mainly contains references to the current position of the company's brands and the 'market share' subcategory generally includes references to the company's current market share. These references explain the higher proportion of non-time-specific information in these subcategories.

The only ExtC subcategory with a majority of forward-looking references is 'favourable contracts, licensing and franchising agreements'. When an analyst report states that a company has entered into a new contract or an agreement with a third party, it can be implied that its benefits will accrue to the company in the future. Therefore, the majority of references in this subcategory are coded into the forward-looking category by default, unless referring to contracts and agreements entered into in the past.

#### 6.7.3.2. Human capital

As shown in the above Table 6.18, HumC subcategories are generally referred to either in past-oriented or non-time-specific terms. All HumC subcategories except the 'management team' subcategory included in the table above have negligible amounts of forward-looking references. This reflects that when discussing information related to employees, sell-side analysts tend to dwell on past educational achievements, past work experiences, skills and capabilities already acquired, and the roles and responsibilities in the current and past positions held by employees. The following excerpts illustrate this:

> A number of new senior executives have been employed, including Chris Roberts, who was an executive vice president of ResMed (Cochlear Limited).

> Has extensive experience in the Australian gas market gained from a successful career in key commercial roles (Hastings Diversified Utilities Fund).

> Mr de Alwis is a Past President of the National Pharmaceutical Services Association and Medicine Partnership of Australia (Sigma Pharmaceuticals Limited).

The use of information relating to the 'management team' as a collective is significantly different to other types of HumC information as described previously. Although most referred to in a past-oriented manner, the 'management team' subcategory includes 38 per cent of forward-looking expressions. An emphasis on relating capabilities of the management to the future firm performance can be observed in forward-looking statements relating to the 'management team' subcategory, as exemplified by the following analyst report excerpts:

> The company's strategy will be to enhance value, particularly revenue and profitability (including via acquisition), by utilising its strong management team and casino expertise (Crown Limited).

> Since 2005, the division has delivered improved margins and margin growth, with the strong management team and clear strategic direction likely to result [in] a continued trend upward (Wesfarmers Limited).

#### 6.7.3.3. Internal capital

In contrast to subcategories of ExtC and HumC, several IntC subcategories (*e.g.*, 'business model', 'management processes, policies and practices', 'strategy', and 'organisations and business expertise') contain more forward-looking references than past-oriented or non-time-specific references.

Of the references coded as 'management processes, policies and practices' 65 per cent are forward-looking. This proportion of forward-looking information is only second to that of the 'strategy' subcategory. A further investigation of the coded content indicates that sell-side analysts often attempt to link 'management processes, policies and practices' adopted by the company to future benefits in terms of enhanced operational or financial performance, as shown by the following analyst report excerpts:

> The manufacturing operations underwent significant restructuring aimed at improving delivery performance and product quality (Sims Metal Management Limited):

> Management has embarked on a programme to improve the economic and production efficiency of its operations (Zenifex Limited).

Similarly, the majority of information relating to 'organisational and business expertise' is analysed in terms of future impact by sell-side analysts. For example:

> The asset management business would bolster APA's asset management capabilities and complement the ownership of GasNet and Allgas (APA Group).

> It is the breadth of the distribution network, as well as the technical know-how and delivery time, that helps to stem imports in greater quantity (Onesteel Limited).

Also, forward-looking references to the 'business model' subcategory, in general, convey future implications. The following analyst report excerpts illustrate this:

> MDT offers a relatively low risk exposure to US retail property – the strong fundamentals of the community centre format, combined with the management skills of the top US owner/operator in the sub-sector, should provide income security (Macquarie DDR Trust).

> Going forward, we expect lower growth by design as SMS shifts the model to higher-margin permanent-placement recruitment versus high-volume contractor recruitment (SMS Management & Technology Limited).

The overwhelming amount of forward-looking references to the 'strategy' subcategory is self-explanatory as strategy information by definition is forward-looking. A typical reference to 'strategy' is shown in the following excerpt from the analyst report on Aristocrat Leisure Limited:

> The strategy in the US for Aristocrat is to increase their presence and penetration into existing markets, take advantage of new markets opening, and increase the number of units on participation.

The next section discusses the results reported in this section.

### 6.7.4. Discussion of results on the time orientation dimension

The majority of IC information used in analyst reports is neither forward-looking nor past-oriented. Forward-looking IC references that are associated with communicating the value-creation potential of a firm are almost one quarter of all references. This is contrary to expectations due to two reasons. First, IC information is defined in the literature as information on a firm's capacity to create and deliver value now and in

the future (Boedker *et al.*, 2005). Hence, value-creation is the corollary of IC. Second, sell-side analysts' work is forward-looking in that it concerns forecasting and making recommendations. Thus, the low frequency of forward-looking IC references may indicate that IC serves other purposes in analyst reports in addition to communicating companies' value-creation potential, such as justifying sell-side analysts' previous earnings forecasts, price targets and stock recommendations.

A little more than one quarter of all IC references are past-oriented, indicating that a significant amount of IC information is used in explaining the value realised by companies. However, not all past-oriented IC information is used to communicate value realisation. In some instances, past performance of IC is explained by sell-side analysts as a basis for formulating future performance expectations and in other instances past investments in IC are mentioned in order to infer benefits to be expected in the future.

The results suggest that the purpose for which IC information is used in analyst reports differs by IC categories. HumC information is used in analyst reports predominantly to establish that employees are capable, having relevant work experience, educational and professional qualifications, and skills. Their current roles and responsibilities are also described. It is possible that the purpose of disclosing HumC information in this manner is to build investor confidence in the abilities of the company's employees and managers. With respect to a company's management team, there is more emphasis on their future contributions to the success of the company as evidenced by a significantly high proportion of forward-looking references in the 'management team' subcategory.

The proportionately greater use of forward-looking information in the IntC category suggests that IntC information is generally used more often in the communication of future value creation than ExtC and HumC information. In analyst reports, many IntC subcategories are discussed and evaluated in terms of their impact on future operational and financial performance. It is surprising that ExtC information, which is generally more easily linked with future value creation, is not directly analysed for future impact. ExtC information is generally used in analyst reports to discuss a company's current position and relationships. However, its impact on future performance is not often made explicit.

## 6.8. Use of IC information by GICS® sector

This section presents the results of the use of IC information in analyst reports across eight GICS® sectors: (1) consumer discretionary; (2) consumer staples; (3) financials; (4) health care; (5) information technology; (6) materials; (7) REIT; and (8) utilities. It only concerns the descriptive results. The results of testing of the hypotheses on the differential impact of the IC information use of sell-side analysts between firms in high and low IC-intensive sectors are presented in the next chapter (see, Section 7.3.2). In this section, use of IC information is analysed under three subsections: overall findings; IC category level findings; and IC subcategory level findings.

### 6.8.1. Overall findings

Table 6.19 shows the expected IC intensity of each sector, as explained in Section 5.5.2, mean IC references per analyst report, rank based on the means, and the mean market capitalisation for each sector.

**Table 6.19: Sector analysis**

| GICS® Sector | Expected IC intensity | Mean of total IC references | Rank based on the mean | Mean market capitalisation (AUD Million) |
|---|---|---|---|---|
| Consumer staples | Medium | 143.29 | 1 | 9060 |
| Consumer discretionary | Medium | 60.50 | 2 | 6832 |
| Information technology | High | 55.38 | 3 | 495 |
| Health care | High | 51.12 | 4 | 2418 |
| Financials | Medium | 45.50 | 5 | 8074 |
| Materials | Low | 44.67 | 6 | 2529 |
| Utilities | Low | 44.00 | 7 | 1281 |
| REIT | Low | 13.75 | 8 | 5290 |

As shown in the above Table 6.19, analyst reports in the consumer staples sector have the highest level of IC references with 143.29 IC references per report. This is somewhat distantly followed by the consumer discretionary sector with a mean of 60.5 IC references. The information technology sector is a close third having 55.38 IC references per report. This is followed by the health care, financials, materials and utilities sectors where the mean number of IC references ranges from 51.12 to 44 per analyst report. The REIT sector records the lowest level of IC references per analyst report with a mean of 13.75 references per analyst report.

As the above Table 6.19 highlights, the pattern of IC information use does not correspond to the expected IC intensity of sectors. In sample selection, it was assumed that analyst reports for information technology and health care sector companies should have the highest amount of IC references, as companies in these sectors rely more on IC value drivers and utilise more IC than other sectors. However, the results indicate that analyst reports on companies in consumer staples and consumer discretionary sectors have the most IC references, while the information technology sector ranks third and health care ranks fourth according to the mean number of IC references per analyst report. Nonetheless, mean number of IC references per analyst report for financials sector companies is between the two high IC-intensive sectors and the three low IC-intensive sectors, as expected in the sample selection. Similarly, the mean number of IC references per analyst report for the three low IC-intensive sectors is as expected.

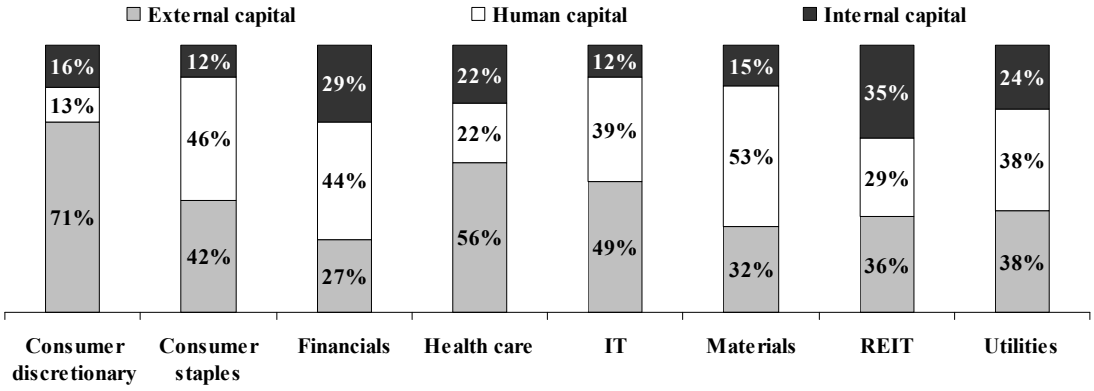
The above Table 6.19 shows that the mean market capitalisation of companies in the consumer staples and consumer discretionary sectors are greater than that of the information technology and health care sectors. Hence, it could be speculated that the above counter-intuitive finding may be due to the size effect confounding inter-sectoral variations in the use of IC in analyst reports on companies in the consumer discretionary and consumer staples sectors. However, as shown in this table, size does not seem to have an influence on the extent of IC references in analyst reports on companies from low IC-intensive sectors. For instance, the REIT sector companies, which have the least number of IC references per analyst report, are greater in size by market capitalisation compared to companies in several other sectors. Therefore, further investigation is necessary to determine the influence of IC intensity of a sector on the extent of IC references in analyst reports. In Section 7.4.4, the differential impact of the IC intensity of sectors on the extent of IC information use in analyst reports is statistically tested.

### 6.8.2. IC category level findings

The following Figure 6.5 shows sectoral difference in the use of ExtC, HumC, and IntC information. As can be seen from this Figure, there is no clear pattern of use of IC information relating to any of the IC categories across the eight GICS® sectors. The proportion of references in analyst reports to ExtC exceeds that of HumC and

IntC for companies in the consumer discretionary, health care, and information technology sectors, while it is marginally high in analyst reports on companies in the REIT sector. In analyst reports on companies in the utilities sector, there is a balance between the amounts of ExtC and HumC references. HumC is the dominant category in three sectors: consumer staples, financials and materials. The proportion of IntC references in analyst reports is markedly high for the REIT sector companies (35 per cent) compared to the same for companies in the other sectors. A tie between the proportion of IntC and HumC references for the second place is observed in the health care sector.

**Figure 6.5: Relative IC references by IC category and sector**




### 6.8.3. Sector differences in the quality of IC information used

In Section 5.6.1.1, HHI was introduced as a measure of disclosure quality that can be used to investigate differences in the use of IC information in analyst reports across sectors. The following Table 6.20 shows the HHI scores for the use of IC information as well as ExtC, HumC, and IntC information by sector.

As shown in this table, HHI scores for total ICD quality ranges from 0.07 in the health care sector to 0.16 in the consumer staples sector. This indicates that while IC is used by sell-side analysts across sectors, the number of IC subcategories referred to varies by sector. However, given that an even spread of IC references across all IC subcategories is associated with a HHI score of 0.02, the HHI scores for the sectors, as shown in the above table, indicate a considerably even spread of IC references across the majority of IC subcategories for all the GICS® sectors investigated.

**Table 6.20: Measurement of disclosure quality**

| GICS® Sector | HHI | | | |
|---|---|---|---|---|
| | Total IC | ExtC | HumC | IntC |
| Consumer discretionary | 0.09 | 0.15 | 0.37 | 0.21 |
| Consumer staples | 0.16 | 0.25 | 0.55 | 0.28 |
| Financials | 0.10 | 0.19 | 0.38 | 0.16 |
| Health care | 0.07 | 0.16 | 0.31 | 0.15 |
| IT | 0.11 | 0.25 | 0.30 | 0.20 |
| Materials | 0.12 | 0.18 | 0.35 | 0.16 |
| REIT | 0.10 | 0.29 | 0.30 | 0.33 |
| Utilities | 0.11 | 0.21 | 0.35 | 0.46 |
| Total sample | 0.08 | 0.13 | 0.38 | 0.15 |
| Minimum score possible | 0.02 | 0.10 | 0.09 | 0.08 |

The results suggest that there is a greater variation in disclosure quality across the sectors in relation to IC categories utilised. For instance, HHI scores vary between 0.15 (consumer discretionary) and 0.29 (REIT) for ExtC, 0.30 (IT and REIT) and 0.55 (consumer staples) for HumC, and 0.16 (materials and financials) and 0.46 (utilities) for IntC. This indicates that sell-side analysts' emphasis on types of IC information pertaining to each IC category varies by GICS® sector. In other words, sell-side analysts' emphasis on different subcategories of IC information based on the GICS® sector is not ad hoc but is concentrated at IC category level. For instance, in the consumer discretionary sector, ExtC references are spread more evenly across the respective subcategories whilst the spread of IC references across IntC and HumC categories is relatively uneven. This indicates that most ExtC subcategories are considered important to sell-side analysts in the consumer discretionary sector but only selected types of information from HumC and IntC are important to them.

### 6.8.4. IC subcategory level findings

Table 6.21 in the next page shows the four most referred to IC subcategories and the IC subcategories not referred to at all in analyst reports by the GICS® sector. The 'equality' and 'employee attitude, commitment and satisfaction' subcategories are omitted from Table 6.21 as these subcategories are not referred to in any of the analyst reports in the sample. In addition, Appendix J provides the mean number and relative proportion of references to IC subcategories by the GICS® sector.

According to Table 6.21, no IC subcategory dominates all the GICS® sectors, in terms of mean IC references per analyst report, per sector. Nonetheless, total references relating to the 'work experience', 'employees (other)' and 'business collaborations' subcategories are considerably high for the majority of the sectors, and are included in the top four most referred to subcategories for six GICS® sectors. In addition, the 'customers' subcategory is represented in the top four most referred to IC subcategories for three sectors.

The table also highlights the non-referred to IC subcategories for each sector, in addition to the 'equality' and 'employee attitudes, commitment and satisfaction' subcategories. Accordingly, the 'IP', 'management philosophy', 'corporate culture' and 'training and development' subcategories are not present in analyst reports on companies in six GICS® sectors. In addition, the 'R&D' and 'working environment' subcategories are absent in analyst reports on companies in at least half the sectors.

As shown in Table 6.21, some IC subcategories considered as important in one or more sectors are not used at all in the other sectors. For instance, 'brands' is represented in the top four most disclosed subcategories for the consumer discretionary and consumer staples sectors, while analyst reports on companies in the REIT and utilities sectors do not include any information related to 'brands'.

The IC subcategories referred to most frequently in relation to each GICS® sector are further analysed in Appendix K. It provides the reasons for the emphasis on particular IC subcategories in each sector and how such information has been used.

**Table 6.21: Most and none referred to IC subcategories by GICS® sector**

| | Consumer discretionary | Consumer staples | Financials | Health care | IT | Materials | REIT | Utilities |
|---|---|---|---|---|---|---|---|---|
| **Three most referred to subcategories** | Brands | Work experience | Employees (other) | Market share | Financial relations | Work experience | Business collaborations | Work experience |
| | Business collaborations | Brands | Work experience | Work experience | Work experience | Employees (other) | Organisational & management structure | Management processes, policies & practice |
| | Customers | Employees (other) | Business collaborations | Business collaborations | Employees (other) | Business collaborations | Strategy | Customers |
| | Favourable contracts, licensing/ franchising agreements | Market share | Business model | Customers | Business collaborations | Educational qualifications | Employees (other) | Employees (other) |
| **IC subcategories with nil references** | Corporate culture | Government & other relationships | Customer relationships, satisfaction & loyalty | Corporate culture | Corporate culture | Corporate culture | Brands | Brands |
| | Educational qualifications | Management philosophy | Educational qualifications | Employee entrepreneurship | IP | Corporate governance | Corporate culture | Corporate culture |
| | IP | R&D | Government & other relationships | IP | Management philosophy | IP | Distribution | Customer relationships, satisfaction & loyalty |
| | Management philosophy | | IP | Management philosophy | | IT & IS | Educational qualifications | Distribution |
| | Remuneration & incentive schemes | | R&D | Skills & capabilities | | Management philosophy | Employee entrepreneurship | Employee entrepreneurship |
| | R&D | | Training & development | Training & development | | Remuneration & incentive schemes | Favourable contracts, licensing/ franchising | IP |
| | Training & development | | Working environment | | | Training & development | IP | IT & IS |
| | | | | | | Working environment | IT & IS | Management philosophy |
| | | | | | | | Management philosophy | R&D |
| | | | | | | | Quality | Training & development |
| | | | | | | | R&D | Working environment |
| | | | | | | | Skills & capabilities | |
| | | | | | | | Technology | |
| | | | | | | | Training & development | |
| | | | | | | | Working environment | |

### 6.8.5. Discussion of results on IC information use by sectors

This thesis finds that the extent of IC information used in analyst reports differs by GICS® sectors. However, there is inconclusive evidence to support the contention that the IC intensity of a sector drives the inter-sectoral variations in the use of IC information by sell-side analysts[59]. On the one hand, this study finds a lack of correlation between the expected IC intensity of the consumer staples, consumer discretionary, information technology and health care sectors and the extent of IC information found in analyst reports belonging to those sectors. For instance, the IT and health care sectors were considered the most IC intensive of the sectors examined in this thesis. However, the analyst reports on companies from these sectors ranked below consumer staples and consumer discretionary sector companies (which were assumed to have moderate levels of IC) in relation to the extent of IC references. Similarly, the extent of IC references observed in analyst reports on companies in the financials, materials, utilities and REIT sectors perfectly aligns with the expected IC intensity of those sectors.

The observed pattern of inter-sectoral variation in the extent of IC references in this thesis supports the findings of García-Meca and Martínez (2007). They found that IC references occur less often in analyst reports on companies in less knowledge-intensive industries. However, they did not find that more IC references occur in analyst reports on companies in more knowledge-intensive industries. Further, in line with the findings of this PhD study, García-Meca and Martínez (2007) reported a medium level of IC references in analyst reports on banks and financial firms and a low level of IC references in analyst reports on companies in the utilities industry. Similarly, Flöstrand (2006) found a medium level of IC indicators in analyst reports on health care sector companies and a low level of IC indicators in analyst reports on materials sector companies, consistent with the findings of this PhD study.

Two explanations can be provided for the counter-intuitive finding in relation to high IC-intensive sectors. First, as explained in Section 6.8.1, the size of the companies in the consumer discretionary and consumer staples sectors may have an influence over

[59] This is addressed in Section 7.4.4 of this thesis by statistically testing whether analyst reports on companies in high IC-intensive sectors are more likely to have greater extent of IC references than analyst reports on low IC-intensive sector companies.

the extent of IC references in analyst reports on those companies. Second, sell-side analysts prefer to use ExtC information (see, Section 6.4.4), and the importance of ExtC information, such as 'brands', 'market share', 'customers' and 'distribution' in analyst reports on consumer retailing companies are high compared to that of IT and heath care sector companies. Companies in the latter sectors are more reliant on the intellectual capabilities of employees and IntC. However, sell-side analysts are found to be ambivalent towards the use of these types of IC information (see, Section 6.4.4).

The results of this study show that the relative importance placed by sell-side analysts on ExtC, HumC, and IntC information differs across GICS® sectors. In other words, analyst reports on companies in some sectors show a disproportionate use of one IC category over others. For instance, ExtC information dominates analyst reports on companies in half the GICS® sectors studied while HumC information is dominant in analyst reports on companies in three other GICS® sectors. The HHI measures for IC categories indicate that the dominance of a particular IC category in a sector is not caused by IC references being concentrated on few IC subcategories belonging to that IC category. In fact, the results indicate a spread of IC references across most IC subcategories within the dominant IC category. For instance, the high level of ExtC references in analyst reports on companies in the consumer discretionary sector does not relate to one or two ExtC subcategories being heavily loaded but is represented by most ExtC subcategories being referred to in analyst reports on companies in this sector. However, a similar spread of references cannot be observed across subcategories of the HumC and IntC categories for the consumer discretionary sector.

The proportions of ExtC, HumC, and IntC related information found in analyst reports in the consumer discretionary sector, in this study, are broadly comparable with the results of Flöstrand (2006). He observed 70 per cent ExtC, 20 per cent IntC, 10 per cent HumC indicators in analyst reports on companies in the consumer discretionary sector. However, Flöstrand's results for other sectors, namely, consumer staples, health care, information technology and materials are not consistent with the results of this thesis except that he too found analyst reports on companies in the health care and information technology sectors to be dominated by ExtC information. Nonetheless, when comparing the results against Flöstrand (2006), one should be aware that there are method differences (see, Section 3.5.1.1).

Narrowing the focus of the discussion from IC categories to IC subcategories, this thesis finds that none of the IC subcategories is dominant in analyst reports on companies in all sectors and there is a considerable variation in the IC subcategories most referred to by sector. This can be justified as circumstances unique to each sector determine the corporate value drivers in that sector. For instance, the rationale for including more 'brands' related information in analyst reports on consumer staples and consumer discretionary sector companies can be due to the emphasis of companies in both these sectors on creating and maintaining brand awareness. In contrast, analyst reports on companies, which are not concerned about brand awareness, such as those in the REIT and utilities sectors make no references to the 'brands' subcategory. Therefore, the results of this PhD study indicate that sell-side analysts place particular emphasis on value driving IC indicators specific to sectors in their company valuation process and/or in communicating their valuations and recommendations.

On the other hand, the results support that, to a certain extent, there is a common emphasis (and de-emphasis) on certain IC categories regardless of the sector. For instance, the frequency of references to IC subcategories such as 'work experience', 'employees (other)' and 'business collaborations' are considerably high in the majority of the GICS® sectors investigated. Similarly, some IC subcategories are rarely referred to in analyst reports belonging to the majority of the GICS® sectors. These findings indicate that there are common types of IC information that sell-side analysts consider as important or unimportant regardless of the sector concerned.

Extending this analysis, a closer examination of the content coded into IC subcategories dominant in more than one sector identifies that the types of IC information included under those subcategories differ. For instance, although 'business collaborations' is a dominant IC subcategory in many sectors, analyst reports emphasise different types of business collaborations, such as 'JVs', 'strategic alliances', 'mergers and acquisitions', 'PPPs' or 'subsidiary and associate companies', depending on the sector (see, Appendix K). Moreover, even when the same types of IC information are emphasised in analyst reports on companies in two or more sectors the way that information is presented and used in analyst reports may differ (see, Appendix K). For instance, the majority of information related to 'employees (other)'

and 'work experience' are derived from profiles of senior executives and Board members, while for some sectors these references are embedded in analysts' narrative discussions and analyses. Therefore, the emphasis placed by sell-side analysts on a particular IC subcategory in analyst reports on companies in one sector may sometimes needs to be interpreted differently from the emphasis placed on the same IC subcategory in analyst reports on companies in another sector.

### 6.9. Use of IC information by analyst recommendation type

This section presents descriptive results for the use of IC information by sell-side analysts in analyst reports with buy, hold and sell recommendation types. The results of the statistical tests on the differential impact of IC information use in analyst reports with favourable and unfavourable recommendations are presented in the next chapter (see, Section 7.3.3). In this section, *topic*, *evidence*, *news-tenor* and *time orientation* of IC information in analyst reports are analysed by the type of investment recommendation.

Table 6.22 shows the mean number and the relative proportion of IC references to the main IC categories per analyst report for the total sample and for analyst reports with buy, hold, and sell recommendations, separately.

**Table 6.22: General observations by recommendation type**

| Main IC categories | Mean number of references per analyst report | | | |
|---|---|---|---|---|
| | **Total sample (N = 63)** | **Buy** | **Hold** | **Sell** |
| ExtC | 24.73 (45%) | 20.32 (36%) | 31.85 (53%) | 16.13 (46%) |
| HumC | 21.05 (38%) | 25.25 (45%) | 19.41 (32%) | 11.88 (34%) |
| IntC | 9.57 (17%) | 10.50 (19%) | 9.33 (15%) | 7.13 (20%) |
| **Total IC** | **55.35 (100%)** | **56.07 (100%)** | **60.59 (100%)** | **35.13 (100%)** |

As shown in the above Table 6.22, the mean number of IC references per analyst report is greatest for analyst reports carrying hold recommendations (60.59) and lowest for analyst reports with sell recommendations (35.13). The extent of IC information contained in analyst reports carrying buy recommendations is close to that of hold recommendations with a mean of 56.07 IC references per analyst report.

As the above Table 6.22 highlights, there is no clear pattern of use of ExtC and HumC information across the three recommendation types, while IntC is the least referred to category for all the recommendation types. The proportion of HumC references (45

per cent) is higher than the proportion of ExtC references (36 per cent) when the analyst report carries a buy recommendation. However, for analyst reports with hold and sell recommendations the opposite is true. The proportion of ExtC references for a recommendation type is highest for analyst reports with hold recommendations (53 per cent). Analyst reports recommending a sell have the highest proportion of IntC references (20 per cent).

The following Table 6.23 shows the five most frequently referred to IC subcategories by recommendation type.

**Table 6.23: Five most frequently referred to IC subcategories**

| Buy | Hold | Sell |
|---|---|---|
| Work experience | Work experience | Work experience |
| Employees (other) | Brands | Employees (other) |
| Business collaborations | Employees (other) | Distribution |
| Customers | Business collaborations | Market share |
| Financial relations | Market share | Customers |

As shown in the above Table 6.23, IC references to the 'work experience' subcategory are dominant for all recommendation types, consistent with the results for the full sample. The 'employees (other)' subcategory, is the second mot frequently referred to IC subcategory in analyst reports carrying buy and sell recommendations and the third most frequently referred to in analyst reports with a hold recommendation. Further, in analyst reports carrying a buy recommendation, information on 'business collaborations', 'customers' and 'financial relations' are more frequently used. Similarly, information on 'brands', 'business collaborations' and 'market share' are more frequently used in analyst reports with a hold recommendation, in addition to the 'work experience' and 'employees (other)' subcategories. After the 'work experience' and 'employees (other)' subcategories, the three most frequently referred to IC subcategories in analyst reports carrying a sell recommendation are 'distribution', 'market share' and 'customers'.

The following Table 6.24 shows the mean number and the relative proportion of IC references pertaining to the positive, neutral and negative *news-tenor* categories across analyst reports carrying buy, hold, and sell recommendations and for all valid cases in the sample.

**Table 6.24: Frequency per news-tenor category by recommendation type**

| Recommendation type | Mean number of references per analyst report | | | |
|---|---|---|---|---|
| | **Total sample (N = 63)** | **Buy** | **Hold** | **Sell** |
| Negative | 2.03 (4%) | 1.00 (2%) | 2.78 (5%) | 3.13 (9%) |
| Neutral | 21.98 (40%) | 21.39 (38%) | 25.59 (42%) | 11.88 (34%) |
| Positive | 31.34 (56%) | 33.68 (60%) | 32.22 (53%) | 20.13 (57%) |
| **Total** | **55.35 (100%)** | **56.07 (100%)** | **60.59 (100%)** | **35.13 (100%)** |

As the above Table 6.24 highlights, the relative emphasis on the three *news-tenor* categories is consistent across the three recommendation types, although the proportions differ. An interesting observation is that the proportion of negative IC references per analyst report is highest in analyst reports carrying sell recommendations (9 per cent) and lowest in those carrying buy recommendations (1 per cent). Similarly, compared to analyst reports with buy recommendations, those with sell recommendations have a comparatively low proportion of positive IC expressions. A similar pattern is observable for neutral IC references. However, the proportion of positive IC references in analyst reports with sell recommendations is greater than for the ones with hold recommendations, counter-intuitive to expectation.

The following Table 6.25 shows the mean number and the relative proportion of IC references pertaining to the four *evidence* categories across analyst reports carrying buy, hold, and sell recommendations and for all valid cases in the sample.

**Table 6.25: Frequency per evidence category by recommendation type**

| Recommendation type | Mean number of references per analyst report | | | |
|---|---|---|---|---|
| | **Total sample (N= 63)** | **Buy** | **Hold** | **Sell** |
| Discursive | 37.27 (67%) | 39.96 (71%) | 37.44 (62%) | 27.25 (78%) |
| Monetary | 1.29 (2%) | 1.25 (2%) | 1.59 (2%) | 0.37 (1%) |
| Numerical (non-monetary) | 15.29 (28%) | 13.64 (25%) | 19.74 (33%) | 6.00 (17%) |
| Visual | 1.51 (3%) | 1.21 (2%) | 1.81 (3%) | 1.50 (4%) |
| **Total** | **55.35 (100%)** | **56.07 (100%)** | **60.59 (100%)** | **35.13 (100%)** |

As shown in the above Table 6.25, the relative emphasis on the four *evidence* categories is roughly consistent across the three recommendation types, with some differences in the relative proportions. IC is predominantly communicated discursively with numerical (non-monetary), visual, and monetary expressions being used respectively in that order, across the three recommendation types and for all valid cases in the sample.

The proportion of discursive statements relating to IC is highest in analyst reports carrying sell recommendations (78 per cent) and lowest in analyst reports carrying hold recommendations (62 per cent). The converse is true for the two quantitative categories. The proportion of IC expressed visually is greatest for analyst reports with sell recommendations (4 per cent) and smallest for analyst reports with buy recommendations (2 per cent). These results indicate that analyst reports with sell recommendations contain more discursive and visual expressions and less quantification compared to analyst reports with buy or hold recommendations.

The following Table 6.26 shows the mean number and the relative proportion of IC references pertaining to the three *time orientation* categories across analyst reports carrying buy, hold, and sell recommendations and for all valid cases in the sample.

**Table 6.26: Frequency per time orientation category by recommendation type**

| Recommendation type | Mean number of references per analyst report | | | |
|---|---|---|---|---|
| | **Total sample (N = 63)** | **Buy** | **Hold** | **Sell** |
| Forward-looking | 12.38 (22%) | 12.29 (22%) | 13.85 (23%) | 7.75 (22%) |
| Past-oriented | 15.59 (28%) | 16.57 (30%) | 15.78 (26%) | 11.50 (33%) |
| Non-time-specific | 27.38 (50%) | 27.21 (48%) | 30.96 (51%) | 15.88 (45%) |
| **Total** | **55.35 (100%)** | **56.07 (100%)** | **60.59 (100%)** | **35.13 (100%)** |

As the above Table 6.26 shows, the relative emphasis on the three *time orientation* categories is consistent across the recommendation types with non-time-specific statements being the most frequently used, past-oriented statements the second most frequently used and forward-looking statements the least frequently used for all three recommendation categories. However, there are differences in the relative proportions of forward-looking, past-oriented and non-time-specific IC statements across the recommendation categories, with the latter two *time orientation* categories showing the greatest difference.

The proportion of forward-looking IC references is roughly the same for buy, hold and sell recommendation categories, ranging from 22 per cent (buy) to 23 per cent (hold). Past-oriented expressions of IC are highest in analyst reports carrying sell recommendations (33 per cent) and lowest in those carrying hold recommendations (26 per cent). For the buy recommendations category, the proportion of past-oriented IC is 30 per cent. The proportions of non-time-specific IC references are roughly

similar among analyst reports with buy (48 per cent), hold (51 per cent) and sell recommendations (45 per cent).

The next section discusses the results reported in this section.

### 6.9.1. Discussion of results on IC information use by recommendation type

The results indicate that the extent of IC information used by sell-side analysts differs by recommendation type with analyst reports carrying sell recommendations having the least amount of IC references. Hence, it can be argued that, when issuing sell recommendations, sell-side analysts are reluctant to refer to IC information, possibly to avoid any contradiction in communicating value drivers when the recommendation points toward possible future value depletion. Another explanation might be that if IC information is included, the references might need to take a negative tone (as a company's value is expected to reduce in the future). However, sell-side analysts are reluctant to implicate pessimism beyond a threshold that is necessary to communicate an unfavourable recommendation (see, Section 1.5.4.2). On the other hand, IC information both contributes to, and complements, sell-side analysts' buy and hold recommendations.

In relation to sell-side analysts' relative use of information relating to the three IC categories across the recommendation types, a pattern does not emerge. However, HumC information is more prevalent in analyst reports with buy recommendations compared to those with hold or sell recommendations, suggesting that sell-side analysts portray HumC as a contributing factor to future company performance. Nonetheless, the high frequency of 'employee (other)' and 'work experience' related information in analyst reports across the three recommendation types, where these references are predominantly about senior executives and Board members, suggests that sell-side analysts communicate capabilities of the management team regardless of the recommendation they carry.

The findings on the use of IC with positive, negative, and neutral expressions across recommendation types indicate that sell-side analysts use a tenor that is more negative and less positive in referring to IC in analyst reports with sell recommendations compared to analyst reports with buy recommendations. This also suggests that IC

plays an important role in analyst reports in supporting analysts' contentions and justifying recommendations.

Looking at the way IC is communicated in terms of discursive, numerical (non-monetary), monetary and visual means across recommendations types, this thesis finds that, on average, analyst reports with sell recommendations carry significantly more discursive and visual IC references and significantly less numerical (non-monetary) expressions of IC compared to analyst reports carrying hold recommendations. Although the same pattern exists between analyst reports with sell and buy recommendations, the differences in proportions are comparatively small. These findings could imply that sell-side analysts having issued a sell recommendation may use IC discursively and visually to lessen the degree of negativity surrounding an unfavourable recommendation. This is particular the case with discursive communications as narratives can be manipulated and subjected to different interpretations. In contrast, verifiability of numerical expressions hinders similar usage. On the other hand, as hold recommendations are argued to be interpreted by users of analyst research similarly to sell recommendations, due to analysts' optimism bias (e.g., Bradshaw, 2002; Fogarty and Rogers, 2005; Hong *et al.*, 2000; Malloy, 2005), sell-side analysts issuing sell recommendations may need to better convince the readers through substantial claims. Thus, the relatively high degree of numerical expressions of IC found in analyst reports with hold recommendations would support this contention, as using IC quantitatively is more substantive.

Concerning the *time orientation* of IC used in analyst reports, some differences are found for the relative use of past-oriented and non-time-specific IC references across the three recommendation categories. Especially, more past-oriented and less non-time-specific references to IC are found in analyst reports with sell recommendations. Poor performing companies attract sell recommendations as the market values are expected to fall in the future. Invariably, such companies lack IC that drives future company value. Therefore, when a company lacks IC with future implications, sell-side analysts may resort to discussing its past investments in IC to portray it less negatively, suggesting analysts' optimism bias.

The next section summarises this chapter.

## 6.10. Chapter summary

The purpose of this chapter was to present and discuss the results obtained from the content analysis of the sample of *initiating coverage reports*.

First, the results were presented and discussed on the extent of the use of IC information in analyst reports. It was found that analyst reports on Australian companies contain a relatively high level of IC information, indicating awareness among (at least some) sell-side analysts on the importance of IC in firm valuation. However, it was revealed that IC information is not used consistently across analyst reports, IC and its key constituents were not explicitly referred to by sell-side analysts, and IC information is not systematically analysed in analyst reports. These findings illustrate the need for: (1) proper education and training for sell-side analysts for them to be able to fully appreciate IC and its impacts; and (2) the introduction and promotion of analytical models for dealing with IC information in firm valuation

Second, the types of IC information used by sell-side analysts were discussed. It was found that sell-side analysts rarely use IntC information, when compared to ExtC and HumC information, and HumC information predominantly related to the assessment of *management quality*. The limited use of several types of IntC and HumC (other than that relating to management) highlights the need to: (1) improve transparency of how these types of IC contribute to firm value creation through better firm disclosure; and (2) the need for training and education for sell-side analysts to deal with the *soft* aspects of IC, in particular.

Third, this chapter assessed *how* IC is communicated in analyst reports. It was found that IC is communicated discursively in building the company *value-creation story*, which subsequently becomes the platform for valuing the company. Also, it is used directly in the financial forecasting and estimation processes, as evidenced by quantitative (both monetary and non-monetary) IC references. It was also revealed that IC is mostly (rarely) expressed positively (negatively). This indicates that sell-side analysts use IC information to portray the company positively, implying analysts' optimism bias, as discussed in Section 1.5.4. Another interesting observation is that IC is used by sell-side analysts to communicate both value creation (through forward-looking IC references) and value realisation (through past-oriented IC references). It

was found that the utility of IntC was greatest in relation to the former while ExtC and HumC were more often used for the latter purpose. These findings highlight the need for future research to appreciate the use of IC information by sell-side analysts as a multi-faceted phenomenon.

Fourth, this chapter discussed the extent and *topics* of IC information used in analyst reports by GICS® sector. It was found that, while sell-side analysts place a common emphasis or de-emphasis on particular types of IC information across sectors, they also place a special emphasis on IC value drivers specific to the particular sector. This highlights the need for companies to communicate IC information specific to the industry/sector as part of their ICD agenda.

Finally, the differences in the use of IC information by type of analyst recommendation were discussed in this chapter. It was found that the extent of IC references as well as *topic*, *evidence, news-tenor*, and *time orientation* of IC references found in analyst reports differ by type of analyst recommendation. Especially, it seems that the way of communicating IC information by sell-side analysts is a result of their deliberations, given the type of recommendation they intend to communicate. These findings highlight that IC plays an important role in the communication of sell-side analysts' recommendations.

# 7. RESULTS OF HYPOTHESES TESTS

## 7.1. Introduction

This chapter presents and discusses the results of the hypotheses developed in Chapter 4. These hypotheses concern factors influencing the extent of IC information in analyst reports. The remainder of this chapter is organised as follows. Section 7.2 presents the descriptive statistics. Section 7.3 presents the results of the hypothesis testing on whether the extent of IC information used in analyst reports can be distinguished by firm size, profitability of the firm, beta, sector and type of recommendation. Section 7.5 discusses the results. Finally, Section 7.6 provides a summary.

## 7.2. Descriptive statistics

Table 7.1 provides descriptive statistics of the continuous explanatory variables investigated in this study.

**Table 7.1: Descriptive statistics for explanatory variables**

| | | | | | Mean | | | |
|---|---|---|---|---|---|---|---|---|
| | N | Min | Max | Median | Sample | Low group | High group | SD |
| Market capitalisation | 64 | 145 | 36,388 | 2214 | 4395 | 834 | 7955 | 6739 |
| ROE | 59 | -9.23 | 46.69 | 10.41 | 13.35 | 4.95 | 22.03 | 11.68 |
| Beta | 45 | 0.50 | 1.72 | 1.12 | 1.13 | 0.93 | 1.33 | 0.25 |

Market capitalisation is the market value of equity in millions of AUD as at date of the analyst report; ROE is measured at the last financial year-end prior to the date of the analyst report; and beta is the equity beta reported in the analyst report.
All variables have been partitioned into two groups containing equal number of cases for statistical testing. Low and high groups pertain to the groups with low values and high values respectively in either side of the median of each variable.

As shown in the above Table 7.1, the number of valid cases differs between the market capitalisation and ROE variables due to unavailability of data in DatAnalysis or FinAnalysis databases for some companies included in the sample. In addition, only analyst reports for 45 companies out of the entire sample present an equity beta figure.

From Table 7.1, the sample shows a wide range in firm size with market capitalisation ranging from a low of AUD 145 million to a high of AUD 36.4 billion. The two groups with small and large firms show mean values of AUD 834 million and the

AUD 7,955 million respectively, further indicating that the small and large firms in the sample are widely apart. As highlighted by a sample median of AUD 2214 million, the larger firms can be clearly distinguished from the smaller firms, indicating the suitability of the sample for testing the relevant hypothesis in this study.

On average, the sample firms appear to be profitable with mean and median ROE values of 13.53 and 10.41 respectively. However, the sample firms vary widely in terms of profitability, with the least profitable firm having a ROE of -9.23 and the most profitable firm having a ROE of 46.69. Further, the least profitable group has a mean ROE of 4.95 and the most profitable group has a mean ROE of 22.03. Thus, the two groups are clearly distinguishable.

The sample firms seem to have stock price volatility around that of the market volatility as indicated by mean beta of 1.13. Thus, the average firm in this sample is slightly riskier than the market. The beta ranges from a low of 0.50 to a high 1.72. Thus, the mean systematic risk of the low beta group is slightly below the market risk, and that of the high-risk group is clearly more than the market risk.

The differences in the descriptive statistics for the two groups (for each variable) have important implications for the research design. The broader range in the distribution of values and the difference between the mean values for low and high group for each variable highlights the appropriateness of the research design adopted in this thesis.

The results of the statistical tests on the impact of these explanatory variables on the use of IC information are presented in the following section.

### 7.3. Results of hypothesis tests

Non-parametric[60] Mann-Whitney U tests are applied to check whether the differences in the extent of IC references in analyst reports across high and low levels of each explanatory variable are significant. The following Table 7.2 reports the mean and standard deviation of total IC references for each group of the explanatory variables and the results of the Mann-Whitney U tests of difference between the groups.

[60] The assumption of normality of the distribution of scores for total IC references is checked using the Kolmogorov-Smirnov test. The distribution was found to be non-normal.

**Table 7.2: Univariate results for total IC references**

| Variable | Categories | N | Mean TIC | SD TIC | Z Statistic |
|---|---|---|---|---|---|
| Size | 145<MktCap=<1869 | 32 | 52.47 | 41.51 | -0.27 (0.788) |
| | 1869<MktCap=<36388 | 32 | 59.00 | 64.41 | |
| ROE | -9.23<ROE=<10.41 | 30 | 55.63 | 57.56 | -0.20 (0.844) |
| | 10.42<ROE=<46.69 | 29 | 55.38 | 51.30 | |
| Beta | 0.50<ß=<1.10 | 23 | 54.13 | 68.98 | -2.29** (0.022) |
| | 1.10<ß=<1.72 | 22 | 74.91 | 44.34 | |
| Sector | Low IC-intensive | 33 | 37.21 | 53.41 | -3.568*** (0.000) |
| | High IC-intensive | 31 | 75.45 | 57.46 | |
| Recommendation | Favourable (buy) | 28 | 56.07 | 46.07 | -0.66 (0.507) |
| | Unfavourable (hold/sell) | 35 | 54.77 | 60.58 | |

Size is measured by the market value of equity in millions of AUD as at the date of the analyst report; ROE is measured at the last financial year-end prior to the date of the analyst report; beta is the equity beta reported in the analyst report; and sector is the IC intensity of the GICS® sector to which the analysed firm belongs to (high IC-intensive sectors are considered to be consumer discretionary, consumer staples, information technology and health care; and low IC-intensive sectors include financials, materials, REIT and utilities). All continuous variables have been partitioned into two groups containing equal number of cases. Z statistic is the Z value from the Mann-Whitey U test for the differences between the groups.
Figures in parentheses are *p*-values.
* The difference between the groups is significant at the 0.1 level.
** The difference between the groups is significant at the 0.05 level.
*** The difference between the groups is significant at the 0.01level.

As shown in the above Table 7.2, the results highlight that the overall level of IC references significantly differ by beta ($p = 0.022$) and IC intensity of the sector ($p = 0.007$). This indicates that, on average, significantly more IC references are found in analyst reports on companies with a high beta than on companies with a low beta. In addition, the mean number of IC references for high IC-intensive sectors are significantly greater than for low IC-intensive sectors. Therefore, hypotheses H3 and H4 are supported by the results. However, none of the other explanatory variables shows a statistically significant difference between the groups for the overall extent of IC references. Accordingly, hypotheses H1, H2, and H5 are not supported by the results.

The next subsection provides the results of the tests carried out to ascertain the robustness of the main results.

### 7.3.1. Robustness of results of main hypotheses

In order to test the robustness of the results presented above, tests of differences are conducted on a measure of ICD that is based on the number of IC subcategories represented per analyst report. The following Table 7.3 reports the mean and standard deviation of the total number of IC subcategories per analyst report for each group of

the explanatory variables and the results of the Mann-Whitney U tests of difference between the groups.

**Table 7.3: Results of the robustness check**

| Variable | Categories | N | Mean | SD | Z statistic |
|---|---|---|---|---|---|
| Size | 145<MktCap=<1869 | 32 | 10.28 | 5.04 | 0.54 (0.596) |
| | 1869<MktCap=<36388 | 32 | 9.65 | 4.96 | |
| ROE | -9.23<ROE=<10.41 | 30 | 10.17 | 4.87 | -0.30 (0.976) |
| | 10.42<ROE=<46.69 | 29 | 10.24 | 5.10 | |
| Beta | 0.50<ß=<1.10 | 23 | 8.74 | 5.45 | -1.90*(0.057) |
| | 1.10<ß=<1.72 | 22 | 11.86 | 4.27 | |
| Sector | Low IC-intensive | 33 | 7.79 | 4.90 | -3.61***(0.000) |
| | High IC-intensive | 31 | 12.29 | 3.94 | |
| Recommendation | Favourable (buy) | 28 | 9.39 | 4.47 | -0.92(0.356) |
| | Unfavourable (hold/sell) | 35 | 10.34 | 5.41 | |

Size is measured by the market value of equity in millions of AUD as at the date of the analyst report; ROE is measured at the last financial year-end prior to the date of the analyst report; beta is the equity beta reported in the analyst report; and sector is the IC intensity of the GICS® sector to which the analysed firm belongs to (high IC-intensive sectors are considered to be consumer discretionary, consumer staples, information technology and health care; and low IC-intensive sectors include financials, materials, REIT and utilities). All continuous variables have been partitioned into two groups containing equal number of cases.
Z statistic is the Z value from the Mann-Whitey U test for the differences between the groups.
Figures in parentheses are *p*-values.
* The difference between the groups is significant at the 0.1 level.
** The difference between the groups is significant at the 0.05 level.
*** The difference between the groups is significant at the 0.01level.

As shown in the above Table 7.3, among all explanatory variables, significant differences exist by beta ($p$ = 0.057) and IC intensity of the sector ($p$ = 0.000). The results also indicate that the mean of the number of IC subcategories referred to in analyst reports on companies with a high beta and on companies in high IC-intensive sectors are significantly greater than that on companies with a low beta and on companies in low IC-intensive sectors, respectively. Hence, the results on the number of IC subcategories referred per analyst report are consistent with the results on the total IC references reported. Therefore, it can be concluded that the significant differences in the use of IC information by beta and sector are robust.

The next subsection provides the results of the tests of differences between analyst reports on companies in high IC-intensive and low IC-intensive sectors for IC subcategories investigated in this thesis. The purpose of this analysis is to understand the types of IC information that significantly differ between the two sectors.

### 7.3.2. Differences in use of IC subcategories by sector

Table 7.4 shows the results of the Mann-Whitney U tests on the extent of references to each IC subcategory between analyst reports on the high IC-intensive and low IC-intensive-sector companies.

**Table 7.4: Tests of differences between high and low IC-intensive sectors**

| | Mean | | Z statistic | P-value |
|---|---|---|---|---|
| | Low | High | | |
| **ExtC** | | | | |
| Brands | 0.15 | 8.61 | **-3.458*****| 0.001 |
| Business collaborations | 3.15 | 6.10 | **-2.680***** | 0.007 |
| Corporate image & reputation | 1.21 | 2.74 | **-3.058***** | 0.002 |
| Customer relationships, satisfaction & loyalty | 0.06 | 0.74 | **-2.506**** | 0.012 |
| Customers (other) | 2.03 | 5.03 | **-3.341***** | 0.001 |
| Distribution | 0.55 | 2.52 | **-3.789**** | 0.000 |
| Favourable contracts, licensing & franchising agreements | 1.45 | 2.39 | **-1.847*** | 0.065 |
| Financial relations | 2.27 | 3.90 | -1.329 | 0.184 |
| Government & other relationships | 0.12 | 0.52 | **-1.821*** | 0.069 |
| Market share | 1.06 | 6.45 | **-4.125***** | 0.000 |
| **HumC** | | | | |
| Educational, professional & vocational qualifications | 1.48 | 1.03 | -0.276 | 0.783 |
| Employee attitudes, commitment & satisfaction | 0.00 | 0.00 | 0.000 | 1.000 |
| Employee entrepreneurship | 0.12 | 0.39 | -1.500 | 0.134 |
| Employees (other) | 6.00 | 6.58 | -1.273 | 0.203 |
| Equality | 0.00 | 0.00 | 0.000 | 1.000 |
| Management team | 0.79 | 0.94 | -0.614 | 0.540 |
| Remuneration & incentive schemes | 0.58 | 0.48 | -0.112 | 0.910 |
| Skills and capabilities | 0.39 | 0.42 | -0.440 | 0.660 |
| Training & development | 0.00 | 0.06 | -1.471 | 0.141 |
| Work experience | 6.97 | 15.26 | **-1.874*** | 0.061 |
| Working environment | 0.00 | 0.32 | **-2.382**** | 0.017 |
| **IntC** | | | | |
| Business model | 1.18 | 1.29 | **-1.979**** | 0.048 |
| Corporate culture | 0.33 | 0.10 | -0.022 | 0.982 |
| Corporate governance | 1.12 | 0.19 | -0.721 | 0.471 |
| IP | 0.00 | 0.03 | -1.032 | 0.302 |
| IT & IS | 0.12 | 0.61 | **-1.923*** | 0.055 |
| Management philosophy | 0.09 | 0.00 | -1.382 | 0.167 |
| Management processes, policies & practice | 2.48 | 1.55 | -0.607 | 0.544 |
| Organisational & business expertise | 0.33 | 1.52 | **-2.319**** | 0.020 |
| Organisational & management structure | 1.27 | 1.48 | -0.553 | 0.580 |
| Quality | 0.18 | 0.13 | -0.301 | 0.764 |
| Research & development | 0.06 | 0.42 | -1.472 | 0.141 |

**Table 7.4: Tests of differences between high and low IC-intensive sectors (contd.)**

| | Mean | | Z statistic | P-value |
|---|---|---|---|---|
| | Low | High | | |
| Strategy | 1.21 | 3.35 | **-2.943*****| 0.003 |
| Technology | 0.30 | 0.42 | -0.053 | 0.958 |

The columns entitled low and high show the mean number of IC references in analyst reports on companies in low IC-intensive sectors and high IC-intensive sectors, respectively.
* The difference between the groups is significant at the 0.10 level.
** The difference between the groups is significant at the 0.05 level.
*** The difference between the groups is significant at the 0.01level.

As shown in the above Table 7.4, all ExtC subcategories, except the 'financial relations' subcategory, significantly differ between analyst reports on low IC-intensive-sector companies and high IC-intensive-sector companies. Similar results are observed for the 'business model', 'IT & IS', 'organisational and business expertise' and 'strategy' subcategories in the IntC category. 'Work experience' and 'working environment' are the only HumC subcategories that differ significantly between sectors.

Looking at IC subcategories that show significant differences between high and low IC-intensive sectors, significantly more references, on average, are found in relation to each of these subcategories in analyst reports on companies in high IC-intensive sectors than on low IC-intensive sectors.

The next subsection provides the results of the tests of differences on the use of IC subcategories between analyst reports with favourable and unfavourable recommendations. Although the overall extent of IC references does not differ between favourable and unfavourable recommendations, it is still possible for particular types of IC information to differ significantly between types of investment recommendations (Breton and Taffler, 2001).

### 7.3.3. Differences in use of IC subcategories by recommendation type

Table 7.5 shows the results of the Mann-Whitney U tests on the extent of references to each IC subcategory, between analyst reports with buy recommendations and hold or sell recommendations.

## Table 7.5: Tests of differences between recommendation types

| | Mean | | Z statistic | P-value |
|---|---|---|---|---|
| | Favourable | Unfavourable | | |
| **ExtC** | | | | |
| Brands | 5.74 | 2.54 | -1.487 | 0.137 |
| Business collaborations | 4.43 | 4.82 | -0.280 | 0.780 |
| Corporate image & reputation | 2.26 | 1.29 | **-1.821*** | 0.069 |
| Customer relationships, satisfaction & loyalty | 0.66 | 0.07 | **-2.009**** | 0.045 |
| Customers (other) | 3.43 | 3 | -0.279 | 0.780 |
| Distribution | 1.69 | 1.32 | -1.091 | 0.275 |
| Favourable contracts, licensing & franchising agreements | 1.97 | 1.86 | -0.038 | 0.970 |
| Financial relations | 2.91 | 2.89 | -0.110 | 0.912 |
| Government & other relationships | 0.37 | 0.25 | -0.638 | 0.523 |
| Market share | 4.80 | 2.29 | **-1.693*** | 0.090 |
| **HumC** | | | | |
| Educational, professional & vocational qualifications | 0.66 | 2.07 | -0.941 | 0.347 |
| Employee attitudes, commitment & satisfaction | 0.00 | 0.00 | 0.000 | 1.000 |
| Employee entrepreneurship | 0.31 | 0.18 | -0.381 | 0.703 |
| Employees (other) | 5.31 | 7.64 | -0.645 | 0.519 |
| Equality | 0.00 | 0.00 | 0.000 | 1.000 |
| Management team | 1.14 | 0.50 | -1.624 | 0.104 |
| Remuneration & incentive schemes | 0.29 | 0.86 | -0.878 | 0.380 |
| Skills and capabilities | 0.17 | 0.71 | -1.496 | 0.135 |
| Training & development | 0.03 | 0.04 | -0.159 | 0.873 |
| Work experience | 9.69 | 13.00 | -0.225 | 0.822 |
| Working environment | 0.09 | 0.25 | -0.767 | 0.443 |
| **IntC** | | | | |
| Business model | 1.37 | 1.11 | -0.503 | 0.615 |
| Corporate culture | 0.09 | 0.39 | -0.182 | 0.855 |
| Corporate governance | 0.17 | 1.04 | -0.900 | 0.368 |
| IP | 0.03 | 0.00 | -0.894 | 0.371 |
| IT & IS | 0.29 | 0.46 | -0.716 | 0.474 |
| Management philosophy | 0.00 | 0.11 | -1.594 | 0.111 |
| Management processes, policies & practice | 1.23 | 2.68 | -0.497 | 0.619 |
| Organisational & business expertise | 0.57 | 1.36 | -0.676 | 0.499 |
| Organisational & management structure | 1.49 | 1.25 | -1.016 | 0.310 |
| Quality | 0.17 | 0.07 | -1.175 | 0.240 |
| Research & development | 0.23 | 0.25 | -1.077 | 0.281 |
| Strategy | 2.77 | 1.50 | -1.396 | 0.163 |
| Technology | 0.43 | 0.29 | -0.283 | 0.777 |

The columns entitled favourable and unfavourable show the mean number of references per each IC subcategory in analyst reports with buy and hold or sell recommendations, respectively.
* The difference between the groups is significant at the 0.10 level.
** The difference between the groups is significant at the 0.05 level.
*** The difference between the groups is significant at the 0.01level.

As shown in the above Table 7.5, only the extent of references to the 'corporate image and reputation', 'customer relationships, satisfaction and loyalty', and 'market share' subcategories show significant differences between analyst reports with favourable and unfavourable investment recommendations. Interestingly, all three of these subcategories relate to ExtC. Further, significantly more references are found in relation to each of these subcategories in analyst reports with favourable recommendations compared to analyst reports with unfavourable investment recommendations.

The results of the hypothesis tests presented in this section need to be interpreted in light of the theoretical underpinnings of those hypotheses and prior research. The next section discusses and interprets the results of the five hypotheses tested in this thesis.

## 7.4. Discussion of results

This section provides a discussion of the results of the five hypotheses tested. The following five subsections are dedicated to the discussion of the results in relation to each hypothesis.

### 7.4.1. Impact of firm size on the use of IC information

The results of this PhD study do not support the hypothesis H1, which propose that the extent of IC references is significantly greater in analyst reports on large companies compared to those on relatively smaller companies. Therefore, this study supports the findings of García-Meca and Martínez (2007), whose results were robust to different proxies of firm size, including natural logarithm of turnover, number of employees, and natural logarithm of total assets. It is plausible that size may not have affected sell-side analysts' use of IC information in this study as the sample companies are drawn from the largest companies included in the *S&P/ASX 200/300* indices. In other words, sell-side analysts covering the sample companies may have similar levels of access to IC information due to all companies facing similar information costs regardless of firm size (García-Meca and Martínez, 2007).

### 7.4.2. Impact of firm's profitability on the use of IC information

This study finds no evidence to claim that the extent of IC references in analyst reports differs between highly profitable firms and less profitable firms. The non-significant result reported in this study is also robust to the use of an alternative measure of IC information in analyst reports. Therefore, no support is provided for hypothesis H2.

This finding is inconsistent with García-Meca and Martínez (2007). They reported that scores of an analyst-disclosure index significantly differ by the level of company profitability. However, there are method differences in the disclosure index García-Meca and Martínez (2007) constructed and the one that is used in this study for comparison. For instance, their disclosure index measures the percentage of IC items referred to over a predefined list of items considered communicable by sell-side analysts, whereas this study used both absolute count of IC subcategories per analyst report and total IC references in analyst reports. Hence, inconsistent results can at least be partially attributed to method differences.

### 7.4.3. Impact of firm's beta on the use of IC information

This study finds that the extent of total IC references is significantly greater in analyst reports on companies whose beta is perceived by sell-side analysts as high compared to analyst reports on companies with a relatively low perceived beta. Hence, hypothesis H3 is supported.

The observed relationship between the extent of IC references and firms' risk can be interpreted in several ways. First, sell-side analysts may be responding to the greater demand for IC information on risky companies from the capital market (see, Section 4.2.3). Second, more IC information may be available on risky companies to sell-side analysts, as it will help reduce their beta estimates (Thomas, 2003). Third, perhaps sell-side analysts may be disseminating IC information in their reports in order to reduce information asymmetry that leads to the dilution of the markets' perception of firms' risk. In other words, they may be attempting to emphasise the potential value of companies (by discussing its IC), which would otherwise be undervalued by the market due to high perceived risk.

### 7.4.4. Impact of firm's sector on the use of IC information

The study finds support for the hypothesis H4, which states that the extent of IC references is significantly greater in analyst reports on companies belonging to high IC-intensive sectors compared to analyst reports on companies in low IC-intensive sectors.

A further analysis finds that the extent of IC information pertaining to several IC subcategories significantly differs between analyst reports on companies in high IC-intensive sectors and low IC-intensive sectors. These include 'brands', 'business collaborations', 'corporate image and reputation', 'customer relationships, satisfaction and loyalty', 'customers (other)', 'distribution', 'favourable contracts, licensing and franchising agreements', 'government and other relationships', 'market share', 'work experience', 'working environment', 'business model', 'IT & IS', 'organisational and business expertise' and 'strategy'. Each of these subcategories is referred to more often in analyst reports on companies in high IC-intensive sectors. This differential use of IC information in analyst reports based on the IC intensity of the sector has important implications for corporate managers in deciding the types of information that should be more efficiently provided to capital market participants.

As explained earlier in the thesis, greater use of IC information in analyst reports of high IC-intensive sector firms could be explained by the increased supply of IC information by those firms, increased demand for information on such firms by the capital market or a combination of both. The inter-sectoral variation in the use of IC information also suggests that when a firm possesses IC, analysts are not reluctant to discuss and evaluate it in their reports. This further supports the results presented in Section 6.3.1, where it was established that sell-side analysts appreciate the importance of IC.

### 7.4.5. Impact of recommendation type on the use of IC information

This study fails to find a statistically significant difference in the extent of overall IC references between analyst reports with favourable recommendations and those with unfavourable recommendations (hypothesis H5). Similarly, García-Meca and Martínez (2007) did not find the overall use of IC information in analyst reports to differ among types of investment recommendations. Nonetheless, this study finds that

sell-side analysts use of three ExtC subcategories (*i.e.,* 'corporate image and reputation', 'customer relationships, satisfaction and loyalty' and 'market share') significantly differs between favourable and unfavourable recommendations. This is consistent with the findings of prior studies that show only a limited number of information items significantly differ among investment recommendation types (Breton and Taffler, 2001). Hence, it can be argued that particular types of IC information drive sell-side analysts' judgements.

A possible explanation for the rejection of hypothesis H5 is that no difference exists in the use of IC information between buy and hold recommendations. This could be due to sell-side analysts trying to use more IC information when communicating a hold recommendation in order to distinguish it from a sell, as it has been argued that the capital market interprets hold recommendations as similar to sell recommendations. This is supported by (untabulated) results that show analyst reports with hold recommendations contain on average the highest level of IC information (60.59 references) that is even greater than the extent of IC references found in analyst reports with buy recommendations (56.04 references). Thus, although the results of this study do not lend credence to hypothesis H5 (due to the extent of IC information in analyst reports with buy and hold recommendations not differing from each other significantly) the rationale for the low level of IC references in analyst reports with sell recommendations may still be valid. However, the sample used in this PhD study only contains a small number of analyst reports with sell recommendations thereby limiting the ability to explore this in more detail.

The next section summarises this chapter.

### 7.5. Chapter summary

This chapter presented and discussed the results of hypothesis tests in relation to factors influencing the extent of IC references in analyst reports.

It was found that the extent of IC references in analyst reports on companies with high beta risk is significantly more than in analyst reports on companies with relatively low beta risk. Similarly, the extent of IC information in analyst reports on companies from high IC-intensive sectors was found to be significantly more than in analyst reports on companies from relatively low IC-intensive sectors. However, this PhD study did not

find that the extent of IC information in analyst reports is distinguishable by firm size, profitability of the firm or the type of investment recommendation in the analyst report. These findings highlight that sell-side analysts appreciate the importance of IC information and use IC information strategically in analyst reports on high risk companies and on high IC-intensive companies.

# 8. SUMMARY AND CONCLUSION

## 8.1. Introduction

This chapter summarises and concludes this thesis. Section 8.2 provides an overview of the entire thesis, summarising the research motivations, objectives, hypotheses and research methods. Section 8.3 includes a discussion of the theoretical, practical and methodological contributions of this PhD study. Section 8.4 discusses the implications of the findings reported in this thesis. Section 8.5 addresses the limitations of the present research study and impact of these limitations on the interpretation of the findings. Suggestions for future research are provided in Section 8.6, and Section 8.7 summarises the chapter.

## 8.2. Thesis summary

A substantial body of theoretical and empirical literature has demonstrated the importance of IC information to the capital market in determining firm value, especially given the evidence that financial information alone is insufficient for this purpose. Several projects have been carried out in the last decade aimed at improving the availability, transparency and understanding of firms' IC. Consequently, management, measurement and reporting of IC by firms have been topics of interest to academics and subjects of extensive academic research.

However, comparatively little academic research has been directed at the use of IC information by capital market participants. Although, the value relevance literature provides some evidence on the impact of certain types of IC information on firm value, the nature of IC resources that is different to conventional assets has rendered such investigations into most types of IC futile. Thus, many questions on the importance of types of IC information to the capital market and the role of IC in the valuation decision-making processes of capital market participants remain unanswered. This gap in the knowledge is the main motivation for this PhD study.

Sell-side analysts are capital market participants, who are generally portrayed as market intermediaries and sophisticated processors of corporate information. It was discussed in Section 1.5.2.2 that the company research they produce has a significant impact on market prices of stocks. Thus, one way to understand the use of IC

information by the capital market is to examine sell-side analysts' use of such information. This type of investigation has the potential to inform corporate managers about the type and nature of IC information warranted by the capital market and to benefit other constituents, such as policy makers. Since sell-side analysts' main method of communicating with other capital market participants is the research reports they produce, the analyst reports provide an opportunity to examine the use and communication of IC information by sell-side analysts.

It is believed that the main purpose of an analyst report is to arrive at a recommendation for a stock based on a valuation, where the valuation is founded on various financial and possibly non-financial, including IC, information. Prior research reviewed in Section 3.4 has found that information gathered by sell-side analysts in their valuation decision-making process forms a mosaic (Day, 1986; Holland, 2004; Nielsen, 2008). For sell-side analysts this mosaic acts as a springboard for problematising and analysing the company (Holland, 2006). Particular types of IC information form part of the mosaic that sell-side analysts build (Holland and Johanson, 2003, p.12), while other IC information is ignored. When sell-side analysts communicate their forecasts, price targets, and stock recommendations in their reports, they are expected to utilise the mosaic to build a *value-creation story* to justify their claims. Therefore, an analyst report bares evidence of information that was used in valuation decisions and the utility of various types of information used in that process. Of different types of analyst reports that sell-side analysts produce, *initiating coverage reports* are the most articulate. They provide all motivations and reasons for sell-side analysts' decisions (Flöstrand, 2006).

The motivations to understand the role of IC information in valuation decision-making processes of capital market participants and the pivotal role of sell-side analysts in the capital market underpin the research objectives formulated in this PhD study. The key objectives of this research are to examine the extent and types of IC information used by sell-side analysts in *initiating coverage reports* produced by them; how IC information is used and communicated, and factors influencing the use of IC information in analyst reports.

In order to understand the extent of use of IC information and how IC information is used and communicated this PhD study employed manifest semantical content

analysis of analyst reports (see, Section 5.2). Using a pre-tested coding instrument the manifest content of 64 *initiating coverage reports* belonging to *S&P/ASX 200/300* companies was analysed for the *topic*, *evidence*, *news-tenor* and *time orientation* of IC information. By *topic*, IC information in analyst reports was categorised into three main categories (*i.e.,* ExtC, HumC, and IntC) and 34 subcategories. The frequency with which each IC category/subcategory appears in the sample analyst reports was used as a proxy for the importance sell-side analysts attach to each IC category/subcategory. By *evidence*, the IC information that was initially identified was further classified into discursive, numerical (non-monetary), monetary and visual categories. Similarly, according to the *news-tenor* dimension, IC was categorised into positive, negative, and neutral; and from a *time-orientation* perspective IC information was classified into forward-looking, past-oriented and non-time-specific categories. In addition, the extent of total IC information and types of IC information in analyst reports were examined by eight GICS® sectors to which the sample companies belonged. Further, the four dimensions of IC information in analyst reports were investigated by the type of analyst recommendation they carry.

For the investigation of factors influencing the use of IC information, this study specifically concentrated on the impact of firm size, firm profitability, beta, IC intensity of the sector and type of analyst recommendation on the extent of IC information used in analyst reports. Hypotheses were developed to test whether the extent of IC information used in analyst reports differs significantly between high and low levels of firm size, firm profitability, and beta; between high and low IC-intensive sectors; and between favourable (buy) and unfavourable (hold or sell) recommendations.

The next section summarises the findings of this thesis and discusses their contributions to the current literature.

### 8.3. Thesis findings and contributions

The research presented in this thesis makes contributions that are empirical, theoretical and methodological in nature. The empirical contributions extend the current understanding of *what* and *how* IC information is used and communicated in analyst reports and the factors influencing the use of IC information by sell-side

analysts. From a theoretical point of view, the findings of this study confirm certain theoretical perspectives espoused in the prior literature. The methodological contributions of this thesis concern the application of content analysis to the investigation of the use and communication of IC information by sell-side analysts.

The following three subsections discuss respectively the empirical, theoretical and methodological contributions of this thesis.

### 8.3.1. Empirical contributions

This thesis makes several empirical contributions to the existing literature. First, it provides an understanding of the importance of IC information to sell-side analysts. A number of empirical studies have been conducted on the importance of IC information to sell-side analysts using content analysis of analyst reports. However, none of the previous studies has examined sell-side analysts' use of IC information in initiating *coverage reports* or in analyst reports on Australian companies. Therefore, this PhD study extends the current literature in these two respects. This thesis finds that sell-side analysts use relatively high levels of IC information in *initiating coverage reports* of Australian companies. This suggests that Australian sell-side analysts appreciate the importance of IC in firm valuation, and thus are not ambivalent to the use of IC information in general.

In exploring the IC topics important to sell-side analysts, it was observed that sell-side analysts place more importance on particular types of IC information over others, and several types of IC information are rarely or never used. In addition, this study found: (1) inconsistency in the use of IC information; (2) lack of systematic analysis of IC information; and (3) an absence of any explicit references to key terminology used in the academic literature in relation to IC. These findings perhaps indicate that sell-side analysts are unaware of the intricate nature of (some) IC and the impact of particular types of IC information in determining long-term firm value. Alternatively, it can be argued that although sell-side analysts use IC information in their valuations and in making recommendations, they are not using the same to build a case for their decisions or IC information is communicated in private client meetings. More research, especially using interviews with sell-side analysts, is necessary to form conclusions in this respect. Provided the former conclusion was true, there would be a

need to undertake work at a policy level to educate and train sell-side analysts to deal with IC information. Further, the findings highlight the need for more models and guidelines for analysing IC information and the promotion of them for use by sell-side analysts.

Second, this thesis adds to the current understanding of *how* IC information is used and communicated in *initiating coverage reports*. In this regard, this PhD study finds that sell-side analysts have varying uses for IC information, ranging from forecasting and valuations to convincingly communicating stock recommendations to readers. It was also found that IC is predominantly used discursively, positively, and in a past-oriented manner; and in doing so IC is used as a tool to further the sell-side analysts' agenda for the company analysed (see, Sections 6.5.4, 6.6.4, and 6.7.4). These findings, on the one hand, extend current research on analyst optimism to the role of IC in this process, and on the other hand, alert future researchers to the wider role played by IC beyond its use in generation of forecasts and valuations.

Third, this thesis extends the current literature on the importance of IC information to sell-side analysts by providing an understanding of the inter-sectoral differences in eight GICS® sectors (see, Section 6.8). The current understanding in this area is limited to inter-industry/inter-sectoral differences in the use of the main IC categories. This PhD study finds that while there is a common emphasis (de-emphasis) on a limited number of IC subcategories regardless of the sector, the reliance sell-side analysts place on IC categories, as well as most IC subcategories, differs by sector. These observations are supported statistically by finding that the use of IC information significantly differs between analyst reports on high IC-intensive firms and low IC-intensive firms. It was also observed that the types of IC information mostly relied upon by sell-side analysts correspond to the value drivers unique to each sector. Together, these findings highlight the need to improve the ICR practices of firms by including such additional information on industry-specific IC value drivers.

Fourth, this study contributes by providing insight on *how* the use and communication of IC information varies with the type of investment recommendation. It was found that that extent of overall IC references in analyst reports does not significantly differ between favourable and unfavourable recommendations. However, it was observed that analyst reports with buy recommendations contain substantially more IC

information than analyst reports with sell recommendations; and the above non-significant finding is attributable to analyst reports with hold recommendations accounting for the highest extent of IC references. Nonetheless, this PhD study finds that the extent of references to the 'corporate image and reputation', 'customer relationships, satisfaction and loyalty', and 'market share' subcategories drive favourable recommendations. Together, these findings indicate that sell-side analysts rely on IC information in making buy and hold recommendations and on particular types of IC in making buy recommendations.

In addition, it was found that favourable recommendations are accompanied by more positive and less negative references to IC compared to analyst reports with unfavourable recommendations, which carry comparatively more negative and less positive IC references. This demonstrates that IC information is an important part of sell-side analysts' communication strategy.

Also, it was observed that sell-side analysts use IC information strategically to subdue the negative impact of a sell recommendation. This is evidenced by the greater use of discursive and past-oriented IC references and lesser use of numerical and forward-looking IC references. Hence, particular care should be taken when reading analyst reports as the negativity of forecasts, valuations and recommendations may be softened by the semantics.

Lastly, this study contributes to the identification of determinants of IC information use in analyst reports. In doing so, this study investigated the impact of firm size, profitability, systematic risk, IC intensity of the sector and type of analyst recommendation on the extent of IC references in analyst reports. The literature shows in general that the availability of voluntary information (including IC information) is greater for larger firms. However, this study does not find support for the conjecture that analyst reports on larger firms include more IC information. This indicates that the extent of information availability alone does not drive the use of IC information by sell-side analysts. Further, this study contributes to the literature by supporting the findings of García-Meca and Martínez (2007), that there is no impact on the use of IC information in analyst reports based on firm profitability.

In addition, the hypothesis that analyst reports on risky companies use significantly more IC information than analyst reports on less risky companies is supported in this thesis. This highlights that sell-side analysts play a key role in facilitating dissemination of IC information, where a company is perceived as risky by the capital market. Moreover, it implies that it is important for companies perceived as risky to focus on their ICR strategy to sell-side analysts, as they seem to be playing an information intermediation role that ultimately results in the reduction of the perceived risk of the firm.

### 8.3.2. Theoretical contributions

The findings of this thesis provide support for several theoretical perspectives. First, it justifies sell-side analysts' role in the capital market as an information intermediary. As IC is a difficult resource to understand (Mouritsen, 2003), evidence on sell-side analysts' use of IC information in analyst reports suggests that sell-side analysts act as information intermediaries by aggregating publicly available information and adding insights through their analyses (Lui *et al.*, 2007). Further, it was found that sell-side analysts respond to the information demands of market participants, especially in relation to high risk and high IC-intensive companies by including more IC information in analyst reports on such companies. On the other hand, absence of support for the two hypotheses on the impact of firm size and profitability on the use of IC information in analyst reports rejects the contention that supply of information purely drives the use of IC information in analyst reports. Thus, the results of hypothesis tests highlight that sell-side analysts' contribution to the capital market is greatest when the extent of information asymmetry is high. Therefore, sell-side analysts adds incremental 'informativeness' in the capacity of an information intermediary (Lang and Lundholm, 1996).

Second, this study provides support for analysts' optimism bias, which has a strong grounding in institutional theory. The foci of institutional theory are on organisations and organisational participants, and the power struggles and exchange processes that occur within the key organisational constituents (Fogarty and Rogers, 2005). As explained in Section 1.5.4, sell-side analysts work within an institutional framework that influences them and provides incentives to be optimistic in relation to the companies they analyse. Two key findings of this PhD study provide evidence to

support an optimism bias in sell-side analysts. These include: (1) analyst reports having a high level of positive IC references compared to negative IC references; and (2) the dominance of positive references to company management.

Third, the findings in relation to the use of IC information in general and HumC information in particular by sell-side analysts provide some support for the theoretical perspective espoused by Almqvist and Henningsson (2009) in explaining the paradox relating to the use of HumC information by market participants, which is based on a combination of systems and network theory. Using these theories Almqvist and Henningsson (2009, p.50) explain that:

> [A] variety of social forces is imposed on capital market actors, when they observe corporate information vis-à-vis personnel and work environment. As cultured observers, they are, to various degrees, forced to reduce the complexity of their environment by using the rationales of the social networks to which they are related.

They used this theoretical perspective to explain the ambivalence and disinterest shown by capital market actors concerning information on company employees and the work environment. Almqvist and Henningsson observed that fund managers excluded company personnel as value contributors and relied instead on the management of the company, as it was a convenient way of approaching the complexity of valuing personnel. They further observed that complexity of information on the work environment was similarly dealt with by evaluating the company management and its judgment. This PhD study finds evidence to support these arguments in relation to sell-side analysts. For instance, it was found that information on employees and work environment are rarely used by sell-side analysts while information on the management and directors, incorporating their skills, capabilities, qualifications and experience, is mostly referred to in analyst reports (see, Section 6.4.4).

### 8.3.3. Methodological contributions

The main methodological contribution of this study is the development of an IC classification scheme and a coding instrument to be used in the investigation of IC information in analyst reports. The IC classification scheme used in this PhD study

was developed subsequent to an extensive review of the IC literature and several iterations of amendments upon testing on analyst reports (see, Section 5.7). This IC classification scheme provides greater situational specificity into the coding of IC information in analyst reports. Similarly, the coding instrument provides detailed guidance for making reliable coding decisions (see, Appendix G). Hence, this IC classification scheme and the coding instrument can be adopted by future researchers when conducting research into the use of IC information. In addition, this coding instrument contains detailed coding instructions for coding *evidence*, *news-tenor* and *time orientation* of IC references (see, Appendix G – Panels II, III and IV). These instructions can be adopted by future researchers in examining these dimensions of business communications, not only in analyst reports but also across other types of corporate reports.

The next section discusses the implications of the findings reported in this thesis.

### 8.4. Implications of the study

The findings presented in this thesis have broader implications in terms of enhancing the relevance of corporate reporting to sell-side analysts (and other key user constituencies) and educating them in the use IC information for firm valuation.

First, the findings of this PhD study suggest that the corporate reporting process could be improved by including additional types of IC information. It also highlights the need to consider differences between industries or sectors in this regard (see, Section 6.8). In addition, the findings presented in Section 6.4.4.1 highlight the need for a more effective approach to disclosing IC that enables users to visualise the interrelationships between resources (both tangible and intangible) and outcomes. In this regard, the popular metrics approach recommended in many ICR guidelines/frameworks (*e.g.,* DATI, JMETI, SKE etc.) is inadequate. As an alterantive, for instance, Roslender and Fincham (2001) argued for calling upon organisational participants to offer emancipatory accounts of their own lived organisational experiences as a means of increasing the transparency of IC. They suggest that these self-accounts could be published in the form of a yearbook and complement the traditional annual reporting package. For example, Roslender and Fincham (2001, p.393) note:

> for those employees who are recipients of the opportunity to have their education extended or skills enhanced to provide their own accounts of what this process means to them: why they are engaged in the process; where it promises to lead; what sacrifices are involved; what unexpected benefits (and "costs") have been encountered, etc.

Therefore, the findings of this study may be considered by firms, accounting policy makers and standards setters in enhancing the utility and relevance of corporate reports to key users. Firms should re-evaluate their current ICR practices and the role of investor relations in enhancing not only the transparency of their IC related activities but also understandability of that information in light of these findings. Given the importance sell-side analysts place on IC information, Australian regulators should introduce reporting standards or guidelines (at least to be adopted on a voluntary basis). Such reporting standards/guidelines are in operation in other parts of the world (see, Appendix D). In addition, these reporting standards should codify ICR by industry or sector.

At the same time, there is a need to enhance reliability of key IC information provided, as sell-side analysts are found to discount unauthenticated information (Barker, 1999; Catass and Grojer, 2003; Nielsen, 2008). From a policy setting perspective, this requires re-evaluation of the role of auditing and assurance services in relation to this new information (Rogers and Grant, 1997). Further, these insights help national and international bodies involved in the development of IC and non-financial reporting guidelines, models and frameworks to assess and evaluate their current initiatives.

Second, the findings reported in this thesis demonstrate that while sell-side analysts appear to appreciate IC information in the main, their communication of IC information in analyst reports is inconsistent, unsystematic and inadequate in relation to certain types of IC. As discussed in Section 1.4.1, being oblivious of IC information that drives future firm financial performance results in undervaluation of firm equity. The impact of this is greatest when it is observed in sell-side analysts, who are primary users of corporate information and key information intermediaries. Nonetheless, further research with sell-side analysts is required to obtain conclusive evidence as to whether these findings translate into demonstrating any lack of

knowledge of IC on the part of sell-side analysts. However, the results of this study indicate at least a need to provide training and education to sell-side analysts so that they are abreast with the current academic developments in the IC space. This has implications for organisations providing training and education for financial analysts such as, Institute of Chartered Financial Analysts, Financial Services Institute of Australia, and universities. Particularly, it is important that courses offered by these institutions include modules on analysis of IC information. Further, analysts, who are members of professional bodies, should be periodically updated on contemporary developments in the field of IC research through continuous professional development programs.

Another area of improvement is expanding sell-side analysts' tool kit for dealing with IC information. The existing models and guidelines for analysing IC information are limited and inadequate to deal with IC information that is provided in an unstructured manner. For example, DMSTI has introduced a model for analysing IC statements, which provides IC information in a structured manner (see, Appendix D and Section 2.4.2). The unsystematic analysis of IC information observed in analyst reports highlights the need for models, guidelines and analytical tools for understanding and analysing firm provided IC information. On the other hand, the findings indicate the need to re-evaluate initiatives such as the EAI, which has an agenda to encourage sophisticated analysis of the impact of extra-financial issues on long-term investments (see, Section 2.4.3).

The next section outlines the main limitations of this PhD study.

### 8.5. Limitations

The findings of this thesis need to be interpreted subject to several limitations. While some of the limitations are specific to this study, others are common to studies utilising content analysis.

The main limitation specific to this study is the small sample size. First, the time restriction imposed on a PhD study makes it difficult to expand the sample size beyond the number of companies investigated in this thesis, given the extensive analysis performed on analyst reports. Second, the difficulty in establishing access to *initiating coverage reports* issued within five years on *S&P/ASX 200/300* companies

made the sample expansion problematic. Looking at the impact of this research limitation, a sampling validity threat could exist due to the limited number of stockbroking firms represented in the sample. The analyst reports sampled in this study are those issued by a few large stockbroking firms in Australia. To the extent that the reports issued by these firms are different to those of other brokerages, a sample validity threat exists. Moreover, the small sample size limits to a certain extent the generalisability of findings.

The second limitation specific to this study relates to the premise that information that is considered useful to sell-side analysts is included in their reports. However, analyst reports may not include all IC information that is considered by sell-side analysts in basing their recommendation or valuation. Therefore, the measurement procedure used in this study may not capture all IC information considered by analysts. Hence, the validity of this study may be limited by the extent to which there is a discrepancy between IC information used and disclosed. Govindarajan (1980) argues that the content of an analyst report provides a formal explanation of the stock recommendation made in the report but not a record of the analyst decision processes. However, it has been argued that although sell-side analysts do not disclose in their reports all IC information that they consider important, they do disclose most of it (Orens and Lybaert, 2007).

Third, the IC coding framework used in this study may not capture all IC referred to in analyst reports. IC is a loosely defined concept in the literature and no uniformly accepted categorisation method or scheme for the classification of IC exists. Therefore, IC content categories defined in this study may not capture all IC that is actually used in analyst reports (Abbott and Monsen, 1979). Consequently, the inferences made in relation to the use of IC information by sell-side analysts is constrained by the author's conception of IC and the categorisation scheme used in this thesis. Since the author has created his own IC categorisation scheme, cross-comparability of the findings of this PhD study is also limited.

Fourth, content analysis was applied to analysts' *initiating coverage reports* to investigate the use of IC information by sell-side analysts in this thesis. Given the differences between types of analyst reports, caution needs to be exercised when the results of this study are compared with studies conducted using of other types of

analyst reports. Similarly, the results of this study may not be generalisable to all types of analyst reports, as sell-side analysts may have a specific agenda when they write *initiating coverage reports*.

Looking at the limitations of the content analysis method, human involvement in content analysis can introduce error and subjectivity into the data generating process. Firstly, human coders can be fallible and may err by coding content that should not be coded, omit content that should be coded, or code content into wrong categories. This is a threat to reliability. Secondly, the ambiguity of the texts and content analysts' perceptions and predispositions may influence coding decisions. Krippendorff (2004a, p.150) explained:

> Text typically affords multiple interpretations, whether because readers with different backgrounds and interests come up with unique but, in aggregate, divergent interpretations or because ambiguity leads a single reader to alternative and equally valid interpretations.

It has also been argued that the meaning ascribed to a text by the author of the text, content analyst and readers can differ even for seemingly straightforward statements (Ahuvia, 2001). Subjectivity in coding is acknowledged as a major limitation associated with content analysis (e.g., Carney, 1972; Deegan and Rankin, 1996; Guthrie *et al.*, 2004; Wilmshurst and Frost, 2000). Hence, a level of subjectivity cannot be fully eliminated when human coders are involved, although measures are taken in this study to enhance reliability and validity of the data generating process (see, Section 5.11). However, safeguards taken and the level of reliability achieved in the coding process enable valid inferences to be drawn from the data.

Lastly, as for several other content analysis studies, this PhD study uses frequency of references as the sole method for inferring the importance attached to IC categories and subcategories. This could be a limitation given the dynamic nature of sell-side analysts' work. Although the use of a second research method, such as interviews with sell-side analysts would have complemented the findings of this study, it is beyond the scope of this thesis given the time restrictions imposed on a PhD degree.

The next section discusses further research possibilities emanating from this PhD study.

## 8.6. Suggestions for future research

Six avenues of future research are identified in light of the findings of this PhD study and limitations discussed in Section 8.5. First, future research could use interviews with sell-side analysts to complement the research conducted in this study using content analysis. Interviews with sell-side analysts could provide insights in to some unanswered questions in this PhD study. In particular, the possibility of use of IC information by sell-side analysts differing from disclosure in analyst reports was discussed in Section 8.5. Also, it was found that the communication of IC information in analyst reports is inadequate in relation to certain types of IC (see Section 8.4). the reasons for these observations could be explored through interviews. Moreover, interviews would enable a comparison to be made of sell-side analysts' communication of IC information in their private client meetings with that in analyst reports, as found in this study. Not only triangulation using interviews and content analaysis provides a complete/holistic view of the phenomena studied in this thesis but it also increases the *dependability* of the research findings (Johnson *et al.*, 2006; Shields, 1997).

Second, this study investigated analyst reports written on a cross section of companies from the *S&P/ASX 200/300* indices. Hence, future research may look at a few companies in more detail. In other words, there is scope for case study based research into sell-side analysts' use of IC information in order to gain a greater understanding. For instance, case studies can be conducted on selected companies to investigate both the IC related developments in those companies and changes in the business environment that may influence firms' IC and the commensurate changes in sell-side analysts' products. Such a study may entail an examination of all analyst reports written on a selected company or a small number of companies by several sell-side analysts throughout a period. It can also be extended by supplementing the content analysis with in-depth interviews with sell-side analysts.

An important finding in this study is the differential use of IC information in analyst reports by sector (GICS® two-digit sectors). However, the limited sample size was an inhibitor in conducting analyses at better than sector level. Therefore, as a third future research avenue, researchers could look at GICS® four-digit industry group or GICS® six-digit industry level variations in the use of IC information. Such a study may

focus on few industry groups or industries. Alternatively, a much larger study could be conducted with a large sample size representing many industry groups or industries.

Fourth, this study could be replicated with analyst reports on other types of companies, such as emerging companies, or on companies listed in other capital markets (*e.g.,* listed companies in developing economies). These types of studies could provide valuable insights into the role of sell-side analysts and the importance of IC information in different setting.

Fifth, researchers could endeavour to trace the information found in analyst reports to other public corporate disclosure media in order to ascertain the level of public disclosure of important IC information. Such a study may reveal the level of IC information asymmetry in the market and thus the need to regulate the disclosure of IC information.

Lastly, future research could look at possible theoretical perspectives to explain reasons for *what* and *how* IC information is used by sell-side analysts as found in this study. Abhayawansa and Abeysekera (2009) argue that positive as well as critical theories may contribute towards a greater understanding of these phenomena and suggest the use of theoretical perspectives such as signalling, analysts' incentives and influences, the political economy view and globalisation.

The next section summarises this chapter.

### 8.7. Chapter summary

This chapter provided an overview of the thesis, discussed contributions, implications and limitations of this PhD study, and speculated on future research opportunities.

This thesis contributes to the literature from empirical, theoretical and methodological points of view. Empirically, it provided an understanding of the importance of IC information to sell-side analysts, *how* IC information is used in their work and communicated to readers, and the factors driving its use and communication. Thus, the thesis extends both the IC literature and the literature on analysts information use.

From a theoretical point of view, the findings of this study support several theoretical perspectives that have been introduced in relation to sell-side analysts' behaviour in the capital market. Methodologically, this study extended the current literature by using content analysis to examine all references to IC in initiating coverage analyst reports. It also introduced an IC classification scheme and a coding instrument that can be used by future researchers not only to investigate IC information in analyst reports but also other aspects of their communications.

The findings of this PhD study have implications for firms, policy makers and standards setters for enhancing the relevance of corporate reporting to sell-side analysts. On the other hand, the findings highlight the need for better analyst education and training in recognising and analysing IC information in company valuation. More work could be undertaken in devising analytical models and frameworks to enable analysts to deal with IC information.

The main limitations of this study concern sampling validity, suitability of the chosen proxy to measure sell-side analysts' IC information use, reliability and validity of the IC classification scheme adopted, and limitations common to the content analysis method. It was suggested that future research might adopt different research methods, extend this study to different samples, examine the gap in ICD and IC use, and evaluate the applicability of different theoretical perspectives.

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## List of Appendices

## Appendix A: Sell-side analysts vs buy-side analysts

This appendix compares sell-side analysts with buy-side analysts on several aspects. Moizer and Arnold (1984) emphasise the need to distinguish between sell-side and buy-side analysts in conducting research involving financial analysts due to the differences they share. This appendix assists in an understanding of sell-side analysts' roles and activities, which is discussed in Section 1.5.

| | **Sell-side analysts** | **Buy-side analysts** |
|---|---|---|
| **Employer** | Stockbroking houses.<br>Investment banking firms. | Institutional investors such as mutual funds and pension funds. |
| **Objective** | Make stock recommendations and justify the recommendations through earnings forecasts, price targets, and narrative content in their reports. | Make exclusive recommendations on stocks in the asset portfolio of the institution employing the analyst. |
| **Motivation** | Persuade clients to buy and sell shares frequently through the stockbroking firm employing the analyst.<br>Persuade potential investors to buy securities in a new issue that their firm is underwriting or distributing (Groysberg *et al.*, 2008). | Maximise portfolio returns of the institution employing the analyst subject to risk and other conditions. |
| **Audience** | Reports are publicly available and disseminated to institutional and retail clients. | Reports are proprietary and only available to portfolio managers of the firm employing the analysts. |
| **Scale of coverage** | Cover comparatively less number of companies than buy-side analysts. According to Groysberg *et al.* (2008), sell-side analysts follow 10-15 companies and write reports on them at any given time. | Cover comparatively more number of companies than sell-side analysts. Groysberg *et al.* (2008) note that buy-side analysts typically follow 50 – 100 companies but write reports on roughly 15 stocks. |
| **Scope of coverage** | Specialise in a particular industry or a segment within an industry. | Generalists – cover an entire sector such as technology. |
| **Level of analysis** | In-depth analysis of the industry and the companies followed. | Shorter reports. Use analyst reports to complement their general analysis. |
| **Information sources** | Use fewer information sources. | Use a variety of information sources. |

## Appendix B: A combined list of IC items from the prior literature

This appendix enumerates a combined list of IC items that has been compiled as a result of a comprehensive review of the IC literature. The purpose of this literature review is to draw boundaries around the three main IC categories, define them and to formulate IC subcategories under them. Further, the synthesis of IC items provided in this appendix assists in the formulation of the preliminary IC categorisation scheme that forms the foundation of the final IC classification scheme and the coding instrument used in this PhD study. Section 2.2.3 discusses how this list of IC terms has been used in forming boundaries around the three main IC categories and in defining them. Also, Section 5.6.1 explains the development of the preliminary IC categorisation scheme.

| Internal capital | External capital | Human capital |
|---|---|---|
| **1. Business model** | **1. Brands** | **1. Employees** |
| **2. Business vision, objectives and consistency of strategy** | 1.1. Brand / Statements of image and brand | 1.1. Agreements with employees |
| **3. Corporate culture** | 1.2. Brand awareness survey ranking | 1.2. Changes in employment |
| **4. Corporate governance / Corporate governance quotient** | 1.3. Main brands of the company | 1.3. Comments on changes in number of employees |
| **5. Corporate know-how** | 1.4. Perception of the firm's products and services | 1.4. Confidential information |
| **6. Corporate quality performance** | **2. Business partnering and combinations** | 1.5. Dependence on key personnel |
| **7. Firm's years of experience in industry** | 2.1. Acquisitions | 1.6. Description of employee contracts/contractual issues |
| **8. Intellectual Property** | 2.2. Business collaborations - Effects of the collaboration | 1.7. Employee costs |
| 8.1. Cost of IP developed during the year | 2.3. Business collaborations - partners | 1.8. Employee expenses / number of employees |
| 8.2. Distribution of IP held | 2.4. Business collaborations - Objectives and reasons | 1.9. Employee satisfaction / satisfaction measures |
| 8.3. Increase in value per IP item | 2.5. Comments on the effects of strategic alliances | 1.10.Employees featured in annual reports |
| 8.4. IP investments/purchased during year | 2.6. Franchise agreements | 1.11.Employees thanked |
| 8.5. IP renewed | 2.7. Licensing agreements | 1.12.Income or revenue by employee |
| 8.6. Number of patents and licences etc | 2.8. Objectives and reason for strategic alliances | 1.13.Number of employees / Number of new employees |
| 8.7. Reputation of IP developed | 2.9. Research collaborations | 1.14.Production by employee |
| 8.8. Software assets | 2.10. Strategic alliances - effects of the alliance | 1.15.Revenue/employee |
| 8.9. Trademarks | 2.11. Strategic alliances - alliance partners | **2. Employee diversity** |
| 8.10. Copyrights | 2.12. Strategic alliances - objectives and reasons | 2.1. Geographical distribution of employee |
| 8.11. Designs | **3. Competitors** | 2.2. Racial distribution of employees |

| Internal capital | External capital | Human capital |
|---|---|---|
| 8.12. Details of company patents | **4. Customers** | 2.3. Staff breakdown by age / age distribution of employees / median age of employees |
| **9. Leadership** | 4.1. Average customer size | 2.4. Staff breakdown by department |
| **10. Management philosophy** | 4.2. Average number of products sold per account | 2.5. Staff breakdown by gender / gender distribution of employees |
| **11. Organisation/Business structure** | 4.3. Average revenue per customer/year | 2.6. Staff breakdown by job function / structure of employees by functionality |
| 11.1. Organisation chart of the group / company | 4.4. Churn | 2.7. Staff breakdown by level of education |
| 11.2. Organisational flexibility / adaptability | 4.5. Customer groups | 2.8. Staff breakdown by nationality / Number of foreign employee |
| 11.3. Organisational structure | 4.6. Customer involvement / engagement (*e.g.,* policy on customer involvement) | 2.9. Staff breakdown by part time / fulltime status |
| **12. Processes & procedures** | 4.7. Customer loyalty | 2.10.Staff breakdown by seniority / employee seniority |
| 12.1. Best practice | 4.8. Customer orientation strategy | **3. Remuneration and incentive systems** |
| 12.2. Cost per process | 4.9. Customer relations | 3.1. Employee benefits |
| 12.3. Error rate in processing | 4.10. Customer satisfaction / Customer satisfaction measures (customer ratings) | 3.2. Employee share and option ownership plans |
| 12.4. Human resource distribution by process | 4.11.Customer breakdown by product or business | 3.3. Executive and employee compensation plans |
| 12.5. Investments in organisational routines and processes | 4.12.Customers by employee | 3.4. Executive share and option ownership plans |
| 12.6. Management processes | 4.13.Customers' geographical breakdown | 3.5. Fringe benefits |
| 12.7. Processes - Lead time | 4.14.Customers with long-term relations | 3.6. Other employee incentive programs |
| 12.8. Processes - Product development time | 4.15.Dependence on key customers | 3.7. Pensions |
| 12.9. Processes - Running in expenses for new organisational units | 4.16.Education/training of customers | 3.8. Top management incentive programs |
| 12.10. Proprietary processes | 4.17.Marketing expense per customer | **4. Skills and capabilities** |
| 12.11. Quality of processing activities | 4.18.New customers | 4.1. Abilities of CEO |
| 12.12. Technological processes | 4.19.Number of customers | 4.2. Abilities of employees |
| 12.13. Time required to perform activities such as production, delivery of products, development of new products | 4.20.Percentage of sales to top X customers | 4.3. Abilities of the board members |
| 12.14. Waiting time for processes | 4.21.Production by customer | 4.4. Abilities of the top management team |
| 12.15. Utilisation of energy, raw materials and other input goods | 4.22.Product breakdown on customers | 4.5. Average education level |
| 12.16. Efficiency | 4.23.Relative bargaining power of customers | 4.6. Average professional experience |
| 12.17. Innovation - processes | 4.24.Repurchase | 4.7. Years of experience |
| 12.18. Restructuring costs | 4.25.Repurchase intention of current customers (percent) | 4.8. Educational background of board members |
| **13. Product/** | 4.26.Retention rates, or | 4.9. Educational background |

| Internal capital | External capital | Human capital |
|---|---|---|
| **Production/Distribution capability** | percentage of work from repeat customers | of CEO |
| 13.1. Average age of product portfolio | 4.27.Sales breakdown by customers | 4.10.Educational background of directors/management team |
| 13.2. Average miles from distribution centre to store | 4.28.Second line penetration (percentage of customers with two phone lines) | 4.11.Efficiency ratios: value added per employee |
| 13.3. Average store age | 4.29.Usage per day (web traffic per customer) | 4.12.Efficiency ratios: value added per expert |
| 13.4. Covered population | 4.30.Value added per customer | 4.13.Employee flexibility |
| 13.5. Exploration as percentage of sales | 4.31. Web customers | 4.14.Employee involvement in the community |
| 13.6. Exploration success rate | **5. Distribution** | 4.15.Employee productivity |
| 13.7. Installed capacity | 5.1. Description of the network of suppliers and distributors (sales network) | 4.16.Employee utilisation |
| 13.8. Innovation - new products | 5.2. Distribution and delivery methods | 4.17.Level of education |
| 13.9. Investment in new business | 5.3. Distribution channels | 4.18.Entrepreneurial skills / spirit, innovativeness, proactive and reactive abilities, changeability |
| 13.10. Length of product cycle (time between new releases) | 5.4. Number of stores, restaurants, outlets | 4.19.Initiative, motivation and dedication |
| 13.11. New products | 5.5. Number of suppliers | 4.20.Know-how |
| 13.12. Number of products in portfolio | 5.6. Orders backlog | 4.21.Mention of board members |
| 13.13. Percentage of E&P spent on exploration | 5.7. Product delivery lead times | 4.22.Mention of CEO |
| 13.14. Percentage of sales from new products | **6. External contracts** | 4.23.Mention of directors or top management team |
| 13.15. Production capacity | 6.1. Favourable contracts | 4.24.Number of Six Sigma certified employees |
| 13.16. Production facilities | 6.2. Financial contracts | 4.25.Team work capacity and spirit |
| 13.17. Quality of products or services | 6.3. Financial entities | 4.26.Vocational qualifications |
| **14. Research & development** | **7. Externalities** | 4.27.Work experience of board members |
| 14.1. Aims of the research | 7.1. Charity policy | 4.28.Work experience of CEO |
| 14.2. Strength of R&D activities in relation to competitors | 7.2. Community involvement | 4.29.Work experience of directors/management team |
| 14.3. Employees in R&D | 7.3. CSR and policy | 4.30.Work-related competence |
| 14.4. Future prospects regarding R&D | 7.4. Environmental programs, plans and certification | 4.31.Work-related knowledge |
| 14.5. Number of development days on IP | 7.5. Environmental approvals and statements / policies | **5. Management quality** |
| 14.6. Number of employees involved in development of IP | 7.6. Environmental investments | 5.1. Management experience |
| 14.7. Number of IP items held/developed | 7.7. Environmental policy | **6. Training and Development** |
| 14.8. Number of research centres | 7.8. Information on CSR and objective | 6.1. Competence development program and activities |
| 14.9. Number of research projects | 7.9. Investment in the environment | 6.2. Development costs per gender of employees |
| 14.10. Number of researchers | 7.10.Litigations / Number of | 6.3. Development costs per |

| Internal capital | External capital | Human capital |
|---|---|---|
| | lawsuits or claimants | racial group of employees |
| 14.11. Organisation of the research area | 7.11.Measure of internal or external failures | 6.4. Education and training expense per employee |
| 14.12. Patents pending | 7.12.Transactions and relationships among stakeholders and the company | 6.5. Education and training policy |
| 14.13. Percentage of R&D budget invested in labs | **8. Investors** | 6.6. Employee education and training costs / investment |
| 14.14. Percentage of R&D spent on segments | 8.1. Investor relations | 6.7. Number of development days per employee |
| 14.15. Percentage of revenue spent on R&D | 8.2. Investors | 6.8. Number of employee participant at the training activities |
| 14.16. Policy, strategy and /or objectives of R&D activities | 8.3. Major shareholders of the company's stock | 6.9. Policy on competence development |
| 14.17. R&D - application process registration / sales / FDA | 8.4. Shareholders structure | 6.10.Share of employees participating in development plans |
| 14.18. R&D expenses | **9. Market** | 6.11.Training activities description |
| 14.19. R&D expenses/sales | 10. Access line loss rate (telecom) | 6.12.Training programs / Hours of training activities |
| 14.20. R&D invested in basic research | 10.1.Average ticket size (sales per transaction) | **7. Working environment** |
| 14.21. R&D invested in product design/development | 10.2.Circulation (media) | 7.1. Absence / Absenteeism index |
| 14.22. R&D projects by position in pre-clinical and clinical stage | 10.3.Claimed days of processing time | 7.2. Career development |
| 14.23. Software costs as percentage of revenue | 10.4.Geographical concentration in the sales base | 7.3. Career opportunities |
| 14.24. Administration costs per unit of IP development expenditure | 10.5.Market penetration | 7.4. Company social programs |
| 14.25. Number of products in pipeline | 10.6.Market share (including breakdown by country/segment/product) | 7.5. Efforts related to the working environment |
| 14.26. Statements of policy, strategy and/or objectives and R&D activities | 10.7.New products | 7.6. Equity issue relating to disability |
| 14.27. NPV of the product pipeline | 10.8.Number of access lines | 7.7. Equity issue relating to gender |
| **15. Systems** | 10.9.Percentage of contracts on fixed prices | 7.8. Equity issue relating to race |
| 15.1. External sharing of knowledge and information | 10.10. Portfolio orders | 7.9. Equity issue relating to religion |
| 15.2. Information systems / IT systems | 10.11. Products breakdown by country | 7.10.Hours of strike |
| 15.3. Internal communication policy | 10.12. Quality of products | 7.11.HRM department, division or function |
| 15.4. Internal sharing of knowledge and information | 10.13. Quality standards | 7.12.Insurance policies |
| 15.5. Knowledge management system | 10.14. Refill rates (medicine) | 7.13.Job rotation opportunities |
| 15.6. Network systems | 10.15. Sales breakdown by product / business | 7.14.Number of workers' claims (accidents) |
| 15.7. Number of information systems | 10.16. Sales, general and administrative cost as percentage of sales | 7.15.Occupational health and safety |
| 15.8. Percentage of CAPEX inventory in systems | 10.17. Value added per segment/business | 7.16.Percentage of employees on union contracts |

| Internal capital | External capital | Human capital |
|---|---|---|
| **16. Technology** | 10.18. Website hits/month | 7.17.Policy on employee participation / involvement |
| 16.1. Description of IT facilities | 10.19. Win rate contracts | 7.18.Recruitment policies |
| 16.2. Description of new production technology | **11. Marketing** | 7.19.Social caring |
| 16.3. Extent of IT literacy in the company | 11.1. Administrative cost per unit of marketing expenditure | 7.20.Staff interview |
| 16.4. Investment in IT (objectives and reasons for IT investment) | 11.2. Consumer research $ annually | 7.21.Staff turnover |
| 16.5. Investment in technology | 11.3. External networking systems | 7.22.Union activity |
| 16.6. IT expenditure per employee | 11.4. Frequency of marketing campaigns | 7.23.Working shifts |
| 16.7. IT expenditure to turnover | 11.5. Information about marketing | |
| 16.8. IT Expense/sales or IT expense | 11.6. Marketing expenditure | |
| 16.9. New technology | 11.7. Policy on external communication activities | |
| 16.10. Number of seen web pages, visits to the web | 11.8. Price policy | |
| 16.11. Online working | 11.9. TV ratings (viewer statistics) | |
| 16.12. Personal computers per employee | **12. Reputation** | |
| 16.13. Percentage of budget spent on technology | 12.1. Company name | |
| 16.14. Portable personal computers per employee | 12.2. Reputation of the company | |
| 16.15. Status of production technology | | |
| 16.16. Technological know-how | | |
| 16.17. Technologies implemented | | |
| 16.18. Web transactions | | |
| 16.19. Working from home | | |

*Sources: Abdolmohammadi (2005), Abeysekera (2008a; 2008b), Abeysekera and Guthrie (2004; 2005), April et al. (2003), Arvidsson (2003), Ashton (2005), Beattie and Thomson (2007), Beaulieu et al. (2002), Bergamini and Zambon (2002), Bontis (2003), Bozzolan et al. (2003; 2006), Brennan (2001), Bukh et al. (2005), Canibano et al (2000), Carnaghan (1999), Citron et al. (2005), Cordazzo (2007), de Pablos (de Pablos, 2003), Dumay and Tull (2007), Edvinsson and Sullivan (1996), Firer and Williams (2005), Flöstrand (2006), Flöstrand and Ström (2006), Gallego and Rodríguez (2005), García-Meca (2005), García-Meca and Martínez (2007), García-Meca et al. (2005), Goh and Lim (2004), Guthrie (2001), Oliveira et al. (2006), Oliveras and Kasperskaya (2005), Olsson (2001; 2004), Orens and Lybaert (2007), Petty and Cuganesan (2005), Petty and Guthrie (2000), Rimmel et al. (2009), Steenkamp (2007a), Striukova et al (2008), Sveiby (1989; 1997), Tan et al (2008), Van der Meer-Kooistra and Zijlstra (2001), Vandemaele et al. (2005), Vergauwen and van Alem (2006; 2005), Whiting and Miller (2008) and Williams (2001)*

## Appendix C: Various popular IC taxonomies

This appendix provides Guthrie and Petty's (2000) IC taxonomy and its various derivations that have been adopted in prior ICD research. The purpose of this appendix is to provide a frame of reference for drawing boundaries around the main IC categories and formulating IC subcategories under them to subsume the numerous IC related concepts/terms listed in Appendix B. Sections 2.2.3 and 5.6.1 explain the use of these IC taxonomies in the development of the preliminary IC categorisation scheme used in this thesis.

| Research study | External capital (Relational/customer capital) | Human capital (employee competence) | Internal capital (structural capital) |
|---|---|---|---|
| Guthrie and Petty (2000) | Brands | Know-how | Copyrights |
| Brennan (2001) | Customers | Education | Patents |
| April *et al.* (2003) | Customer loyalty | Vocational qualification | Trademarks |
| Goh and Lim (2004) | Company (firm) names | Work-related knowledge | Management philosophy |
| Guthrie *et al.* (2006)[1] | Distribution channels | Work-related competences | Corporate culture |
| Sujan and Abeysekera (2007)[2] | Business collaborations | Entrepreneurial spirit | Management processes |
| | Licensing agreements | | Information systems |
| | Favourable contracts | | Networking systems |
| | Franchising agreements | | Financial relations |
| Bozzolan *et al.* (2003) | Brands | Know-how | Copyrights |
| Bozzolan *et al.* (2006) | Customers | Education | Patents |
| Vandemaele *et al.*(2005) | Customer loyalty | Employees | Trademarks |
| | Distribution channels | Work-related knowledge | Corporate culture |
| | Business collaborations | Work-related competences | Management processes |
| | Research collaborations | | Information systems |
| | Financial contacts | | Networking systems |
| | Licensing agreements | | Research projects |
| | Franchising agreements | | |
| Abeysekera and Guthrie (2005) | Brand building (brands, customer satisfaction and quality standards) | Training and development<br>Entrepreneurial skills | Processes (management and technological) |

| Research study | External capital (Relational/customer capital) | Human capital (employee competence) | Internal capital (structural capital) |
|---|---|---|---|
| | Corporate image building (company names and favourable contracts)<br>Business partnering (business collaboration, licensing agreements, franchising agreements)<br>Distribution channels<br>Market Share | Equity issues<br>Employee safety<br>Employee relations<br>Employee welfare<br>Employee-related measurements | Systems (information and networking)<br>Philosophy and culture<br>IC property<br>Financial relations |
| Oliveira *et al.* (2006) | Brands and perception of the firm's products and services<br>Customers<br>Customers loyalty<br>Portfolio orders<br>Company image<br>Distribution channels and structures<br>Business collaborations<br>Agreements and favourable contracts<br>Suppliers<br>Competitors<br>Investors<br>Community involvement<br>Environmental activities<br>Financial entities | Employees<br>Know-how and experience<br>Education<br>Formal training<br>Incentives and remuneration<br>Initiative, motivation and dedication<br>Teamwork capacity and spirit<br>Flexibility<br>Productivity<br>Occupational health and safety | Corporate culture<br>Management process<br>Management philosophy Information systems<br>Networking systems<br>Patents, copyrights and trademarks<br>Research and development activities<br>Corporate know-how |
| Oliveras and Kasperskaya (2005) | Brands<br>Customers<br>Company names<br>Distribution channels<br>Business collaborations<br>Licensing agreements<br>Favourable contracts<br>Franchising agreements<br>Financial relations<br>Supplier relations<br>Social responsibility | Know-how<br>Education<br>Vocational qualification<br>Work-related knowledge<br>Work-related competences<br>Work environment | IP<br>Patents, trademarks<br>Copyrights<br>Management philosophy<br>Corporate culture<br>Management processes<br>Information systems<br>Networking systems |

| Research study | External capital (Relational/customer capital) | Human capital (employee competence) | Internal capital (structural capital) |
|---|---|---|---|
| Steenkamp (2007a) | Financial relations<br>Brands<br>Customers/ Customer satisfaction<br>Corporate image building<br>Distribution channels<br>Business collaborations<br>Licensing and franchising agreements | Employee<br>Education<br>Training<br>Work-related knowledge<br>Entrepreneurial spirit | IP<br>Management philosophy<br>Corporate culture<br>Management and technological processes<br>Information/networking systems |
| Whiting and Miller (2008) | Brands<br>Customers<br>Customer satisfaction<br>Company names<br>Distribution channels<br>Business collaborations<br>Licensing agreements | Employee<br>Education<br>Training<br>Work-related knowledge<br>Entrepreneurial spirit | IP<br>Management philosophy<br>Corporate culture<br>Management processes<br>Information/networking systems<br>Financial relations |

1. Entrepreneurial spirit includes innovativeness, proactive and reactive abilities, and changeability.
2. Also includes 'training' as a human capital subcategory.

## Appendix D: National and international initiatives on ICR

This appendix briefly explains several initiatives promoting ICR that have been undertaken by various governmental and non-governmental bodies at national and international levels. The initiatives discussed here are reviewed in Section 2.3 in order to comprehend the issues surrounding the reporting and use of IC information. For other reviews see Boedker *et al.* (2008), Ricceri (2008) and SKE (2007). The initiatives discussed in this appendix are presented chronologically.

### 1. AICPA Jenkins Committee (1994)

One of the early initiatives of the accounting profession relating to enhanced voluntary disclosure of NFI was the appointment of a special committee under the chairmanship of Edmund L. Jenkins by the AICPA in 1991. The main objective of this committee was to "determine the information needs of users to identify the types of information most useful in predicting earnings and cash flows for the purpose of valuing equity securities and assessing the prospect of repayment of debt securities or loans" (AICPA, 1994, Chapter 1). Towards this aim, the Jenkins Committee studied the information needs of investors and creditors and published a report in 1994 making recommendations. The study identified five categories of company-specific information that are of importance to users (AICPA, 1994, Chapter 3):

a) Financial and non-financial information that include financial statements and related disclosures, and high-level operating data and performance measurements that is used for internal management.

b) Management's analysis of financial and non-financial data (*e.g.,* reasons for changes in the financial, operating, and performance-related data and analysis of trends and their past effects).

c) Forward-looking information in terms of opportunities, risks and management's future plans together with assumptions about critical success factors.

d) Information about managers and shareholders (*e.g.,* background, compensation and share ownership of directors and executive management, details of major shareholders and related party transactions).

e) Background of the company (*e.g.,* broad objectives and strategies, scope of business, industry impact on company structure).

The committee made three major recommendations on extending and streamlining corporate reporting with the information needs of investors and creditors: (1) provide more information with a forward-looking perspective, including managements plans, opportunities, risks, and measurement uncertainties; (2) focus more on the factors that create longer term value, including non-financial measures indicating how key processes are being performed; and (3) better align information reported externally with the information reported to senior management to manage the business (AICPA, 1994, p.5).

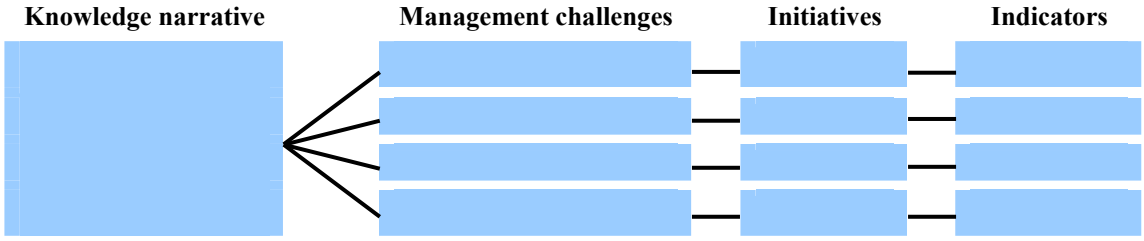
**2. DATI (2000)/ DMSTI (2003)**

In 2000, DMSTI published *A Guideline for Intellectual Capital Statements – A Key to Knowledge Management* providing recommendations on the process of preparing an IC statement and the presentation of it for external publication (DATI, 2000). These guidelines were based on the experience of 17 companies in preparing IC statements and provided a practical perspective to the preparation of IC statements. A revised version of these guidelines was published by DMSTI entitled *Intellectual Capital Statements – The New Guideline,* in 2003 (DMSTI, 2003).

DMSTI guidelines explain an IC statement as comprising four elements: a knowledge narrative; management challenges; initiatives; and indicators, which together explain the company's knowledge management. According to DMSTI, the process of developing an IC statement starts with a knowledge narrative. A knowledge narrative is explained as a description of the "[…]company's ambition to increase the value a user receives from the company's goods or services" (DMSTI, 2003, p.12) and "[…] types of knowledge resources required to create the use value the company wants to supply" (DMSTI, 2003, p.12). The knowledge narrative forms a bridge between the users' and company's knowledge resources.

The second step in this process is to derive a well-defined set of knowledge management challenges that highlight opportunities to develop the company's knowledge resources[61]. Once this is done, initiatives need to be launched to deal with the challenges. For instance, these may be to "compose, develop and procure knowledge resources and to monitor their extent and effects" (DMSTI, 2003, p.12). The last stage is the introduction of a set of indicators that enable the company to monitor the progress of the initiatives. The role of the indicators, as explained in the guidelines, is to "make initiatives visible by making them measurable" (DMSTI, 2003, p.13). Therefore, an IC statement prepared according to these guidelines will show the linkages between the knowledge narrative and the other three elements in relation to the four types of knowledge resources. The following Figure A illustrates these linkages.

**Figure A: Knowledge Management Model**




*Source: DMSTI (2003, p.13)*

### 3. FASB (2001)

In 1999, the FASB commissioned a study aimed at enhancing voluntary corporate disclosure (FASB, 2001a) as a follow-on to the work of the Jenkins Committee. The steering committee appointed by the FASB researched the existing voluntary disclosure practices of leading companies in eight industries, investigating their annual and quarterly reports, SEC filings, press releases, fact books, corporate websites and transcripts of presentations to shareholders, analysts and potential investors. Examples extracted from these voluntary disclosure practices in the sample firms were presented as evidence for other companies to improve their corporate reporting. The focus here was to identify voluntary disclosures that address the

[61] Knowledge resources are classified into employees, customers, processes and technologies (DMSTI, 2003, P.10).

information needs of investors. Emerging from the research, the FASB developed a framework to enhance voluntary disclosure, and recommended improvements in the voluntary disclosure of: (1) critical success factors of companies as determined by the management; (2) performance against plans; and (3) internal management matrices and unrecognised intangible assets, such as human resources, customer relationships and innovation. This framework included recommendations for the disclosure of IC.

With a view to further extend the work on enhancing voluntary disclosure inspired by the FASB's special report – *Business and Financial Reporting, Challenges from the New Economy,* a study was conducted by Wayne S. Upton, Jr., a FASB Senior Project Manager. The objective of this study was to examine the recommendations developed by other organisations in the USA and other countries with regard to voluntary disclosure of NFI, forward-looking information and information about intangible assets (Upton, 2001). Insights from this project were expected to provide a foundation for potential projects to be added to FASB's agenda. Upton's (2001, p.126) report concluded by calling attention from standards setters on:

a) recognition of internally generated intangible assets in financial statements and improved measures of those assets;
b) expanded and systematic use of non-financial performance metrics;
c) expanded use of forward-looking information.

**4. MERITUM (2002)**

MERITUM was a EU funded research program that operated between November 1998 and April 2001. Six European countries (*i.e.,* Denmark, Finland, France, Norway, Spain and Sweden) participated in this program. The main objective of this project was to develop a set of guidelines to measure, manage and disclose information on intangibles in order to improve the decision making processes of management, shareholders and creditors (MERITUM, 2002).

The project consisted of four main activities:

a) a classification study aimed at developing a set of classification schemata of intangibles that can facilitate management control and valuation of firms by investors;

b) a management control study that investigates the role played by intangibles in management control;
c) a capital market study aimed at ascertaining the value-relevance of categories of intangibles;
d) drafting and testing a set of guidelines for the measurement, management and disclosure of intangibles.

In 2001, the MERITUM project was wound up with the development of a set of guidelines. The guidelines consisted of three components:

a) a conceptual framework comprising a set of definitions and classification of intangibles;
b) a management model for the identification, measurement and management of intangibles;
c) a framework for an IC report describing how intangible resources and activities of a company are linked to the achievement of strategic objectives.

The MERITUM project contributed immensely to the development of IC measurement, management and reporting within business enterprises and as a research topic. The tripartite IC classification framework (*i.e.,* HumC, structural capital and relational capital) adopted by MERITUM has been widely used in the accounting literature. In addition, the IC literature is abundant with contributions that are direct or indirect offshoots of this project (Bukh and Johanson, 2003; Canibano *et al.*, 1999; Catass and Grojer, 2003; Eronen and Ahonen, 1999; Johanson *et al.*, 1999a; Johanson *et al.*, 1999b; Johanson *et al.*, 2001). Researchers who were involved in the MERITUM project are still active in the IC domain, and continue to contribute as academics and consultants.

In light of the success of MERITUM, a follow-on project was initiated in September 2001 by the EU named *E*Know-Net* (Bjurström *et al.*, 2003), with the aim of exploiting, enhancing and communicating the results of the former project and creating a European research and communication arena on intangibles. E*Know-Net had three specific objectives (Bukh and Johanson, 2003, p.580):

a) create a virtual network among a set of excellence centres on intangibles research and existing and potential users of information and knowledge on IC by networking main European and international bodies in this field;

b) make the results obtained in the MERITUM project available to a larger number of interested parties and investigate possibilities to improve the guidelines;

c) promote discussion with users in order to define both the research agenda that might better help policy and decision making process and to explore new training needs at a European level with regard to the measurement, reporting and management of intangibles.

As a result, the MERITUM guidelines were further refined and distributed widely through various networks. E*Know-Net acted as a virtual network on intangibles, facilitating individuals and institutions throughout the world to exchange new knowledge emanating from research or practice (García-Ayuso, 2003b).

**5. JMETI (2002)**

Japanese government, under the sponsorship of JMETI, has undertaken a number of projects in order to promote and assist Japanese companies manage, measure and report IC. The *Intellectual Property Policy Outline* (2002) is the first guideline issued by the Japanese government in this regard. This document promotes the creation, protection and exploitation of IP (Johanson *et al.*, 2006).

Two other initiatives of the JMETI include a *Pilot Model for Disclosing Patent and Technical Information* (2003) and GIPID (2004). The objective of GIPID was to help companies be transparent in relation to corporate IP management, which comprises business strategy, R&D strategy and IP strategy. Disclosure items proposed in GIPID and examples thereof are presented in Table A. As shown in this table, many items proposed in GIPID are IC information. GIPID also recommended accompanying disclosure of underlying assumptions and quantitative data to avoid any misinterpretations and to entice an appropriate valuation (JMETI, 2004). These guidelines attempt to achieve competing aims of improving transparency and at the same time protecting secrets and fostering comparability (Johanson *et al.*, 2006).

**Table A: Disclosure items and corresponding examples within GIPID**

| Disclosure Items | Examples |
|---|---|
| 1. Core technology and business models | Core technology<br>R&D expenditure for R&D segments<br>Direction of R&D and business models |
| 2. Business strategy for R&D segments | Overview and direction of business strategy for R&D segments |
| 3. R&D segments and intellectual property overview | Type, use or possible use of major intellectual property |
| 4. Analysis of marketability and market advantages of technologies | Information concerning intellectual property and market advantages<br>Use of technology, potential customers and market growth potential |
| 5. R&D and intellectual property organisational chart, R&D alliances | R&D organisational chart<br>R&D corporations and alliances |
| 6. Intellectual property acquisition and management, trade secret management and policies on technology leakage prevention, including guideline implementation | Description of how to properly handle leaks and abuse of technology information by the promulgated guidelines |
| 7. Relevance of licensing activities to the company's business | Revenue gained and expenses paid through patent licensing arrangements and their strategic relevance<br>Patents and licensing arrangements policy and implementation of cross licensing |
| 8. Significance of the patent portfolio to the company's business | Number of patents held for major segments and their strategic relevance<br>Number of patents held based on the type of use |
| 9. Intellectual property portfolio policies | Intellectual property management based on intellectual property portfolio policies |
| 10. Information of risk countermeasures | Legal countermeasures against intellectual property infringement<br>Effect of changes in patent licensing contracts and laws on cash flows |

*Source: Johanson et al. (2006, p.478).*

A recent work in the area of corporate ICD by JMETI is the *Guidelines for Disclosure of Intellectual Assets Based Management* released in October 2005. These guidelines, similar to those published previously, are for voluntary adoption by Japanese firms, and guide information disclosure concerning Intellectual Assets Based Management (IABM)[62]. JMETI (2005a, p.1) explains IABM as:

[62] Intellectual assets are defined in the *Interim Report by Subcommittee on Management and Intellectual Assets* that was issued prior to the Guidelines. Accordingly, intellectual assets are the sources of a firms' excess earnings power or corporate value that is not represented by financial capital.

> Each corporation has its peculiar intellectual assets. Combination and utilization of them brings about value. Therefore, intellectual assets based management is hard to be imitated by other companies. Top managers should bear in mind this fact more than ever. They are required to reassess current management, recognize its strengths, its own value creation method, and peculiar intellectual assets that are the source of them, and then implement management taking full advantage of them […]

IABM reports are used mainly for external reporting and should present: (1) business characteristics and the direction of management; (2) performance including predicted performance; (3) intellectual assets and value creation method (4) identified future uncertainties and how to deal with them; and (5) intellectual assets indicators and KPIs to support the above (JMETI, 2005a).

The proposed structure of an IABM report includes a section on general information, and two sections on the relationship between intellectual assets and the strategic intent of a company. The first section may include a general description of the business, discussion of the aims, purposes and philosophy of the company management, competitive environment of the business and main stakeholders. The second section assesses how previous strategies and actions have affected the development of intellectual assets. The final section describes the future management strategy in relation to intellectual assets. The Guidelines also include a set of proposed intellectual asset measures that can be used to justify and complement the narrative content in the report (JMETI, 2005a; SKE, 2007).

## 6. AFMESC (2004)

Austria, under the aegis of the AFMESC, enacted the University Organisation and Studies Act 2002, requiring all state owned universities in Austria to prepare an IC

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The report explicitly states that it is the same concept as what the western world refers to as IC or intangibles. Some examples of intellectual assets are provided by JMETI (2005b, p.9):

> Persistence regarding details of products, technology and know-how represented by "adjustment to resolve issues" during manufacturing process; rapid[ity] in the development of products and services with which a problem is solved through communication with customers, and the organisations and systems that make it possible (including requests from client side for the development of the next-generation products); existence of high level consumers who can provide feedback on high level demand, and the relationship between consumers and corporations (high quality network); brand power of products, services, and corporation that is based on the credit, proven by the quality, medium- and long-term stable presence, and medium-term business relationships; maintenance of motivation and application of the abilities of high level employees, and the system for employment and the organization that has made it possible; and ability of intellectual creation supported by a broad base of engineers and technicians.

statement for external reporting. This Act, which came in to effect on 1 January 2004, was the first of its kind to mandate the preparation of an IC statement. Accordingly, an IC statement is required to be submitted annually to the Federal Minister of Education, Science and Culture, and it serves as a basis for budgetary reimbursement and performance oriented budget allocation from the AFMESC (Schaffhauser-Linzatti, 2004). In addition, the IC statement is expected to serve as an external communication tool of universities' performance to the public as universities are funded by the government (SKE, 2007).

Article 13(6) of this Act demands the following items be included in an IC statement prepared by an Austrian university:

a) university's activities, social goals, self-imposed objectives, and strategies;

b) intellectual capital categorised into human, structural and relationship capital;[63]

c) the processes set out in the performance agreement, including outputs and impacts.

A set of IC indicators prescribed by the AFMESC is needed to be published by each university while additional indicators may be disclosed at each university's discretion (Leitner, 2004). These indicators may be at both university and discipline level.

## 7. GFMEL (2004)

In 2004 the German Federal Ministry of Economics and Labour issued guidelines for the preparation of IC statements mainly by small and medium enterprises (SME) entitled *Intellectual Capital Statement – Made in Germany* (GFMEL, 2004). The purpose of these guidelines are to enable German SME, who generally lack expertise in dealing with IC, to disclose IC value drivers in an organised/structured manner (GFMEL, 2004). The Guidelines recommend IC to be categorised into human,

[63] According to Art 12 (11) RV, "human capital is defined as the knowledge of the academic and non-academic staff that is relevant to perform all university tasks, structural capital as non-personal equipment, and relationship capital as networks of social relations that support universities' performances and help acquire knowledge from outside the university" (Schaffhauser-Linzatti, 2004) .

relational and structural capital when preparing IC statements. They include detailed guidance, explanations and examples for preparing IC statements.

**8. SKE (2005)**

SKE is an Australian initiative encouraging better management of knowledge and innovation with a view to improving organisational productivity and performance. SKE was established in June 2005, following a mandate from the Australian Government Consultative Committee on Knowledge Capital and the Australian Government Information Management Office. SKE recently published the *Australian Guiding Principles on Extended Performance Measurement*, which acts as a guide to measure, manage and report on IC (SKE, 2005). These guidelines provide a framework for developing an Extended Performance Account (EPA). The EPA proposed in this Guideline reports knowledge-intensive resources (or IC) categorised under relational, structural and human capital categories (SKE, 2005).

According to SKE, an EPA differs from the traditional financial accounts in that it emphasises knowledge-intensive resources and activities that are often overlooked in traditional financial accounts. Therefore, it is recommended to be the fourth performance account complementing the balance sheet, income statement and cash flow statement. SKE (2005, p.13) notes that EPAs are:

> *strategic in nature*, placing knowledge-intensive resources within the strategic business context in which they rightfully belong; *forward looking*, providing insights into how an organisation is positioned to create value across different time horizons; and *often simple in structure*, providing a one page snapshot of the organisation's knowledge-intensive resources and activities (emphasis in original).

Figure B illustrates the proposed framework for structuring an EPA. This framework highlights the organisation's efforts in managing IC relative to its strategic objectives. In addition, an attempt is made in this framework to monitor managerial efforts by recommending external/internal indicators. A meaningful use of these indicators is promoted by requiring measures of past performance as well as a target measure to be disclosed in relation to each indicator.

**Figure B: Proposed framework for structuring an EPA**

| | Strategic Objectives | Managerial efforts | | Indicators (External and Internal) | | |
|---|---|---|---|---|---|---|
| | | Current Activities | Planned Actions | Indicators | Past/Current | Target |
| **Relational Capital** | | | | | | |
| **Structural Capital** | | | | | | |
| **Human Capital** | | | | | | |

*Source: SKE (2005, p.39)*

SKE also introduces a sample set of extended performance measures classified into 'stock', 'investments' and 'effects'. SKE (2005, p.32) explains that::

> [Stock measures] record the level and types of the knowledge-intensive resources and shows the position of the resources at a given point in time. Some of these resources may be classified as a liability (i.e. a high level of workplace accidents) or an asset (i.e. an increase in the number of strategic customers).

On the other hand, investment measures relate to a broader set of measures from capital investments to resource investments, such as time, energy and expert knowledge. Effects measures depict the impact of a given investment in a knowledge-intensive resource.

The EPA is recommended for both internal management purposes and external reporting purposes.

## 9. IASB (2005)

The IASB has been involved in developing a standard on presenting NFI since October 2002. It is now in the process of developing guidance for a type of narrative report referred to as the *Management Commentary* to address the information needs of users of financial statements that are not met by financial statements. The IASB intends to eventually include the requirement for a narrative report in IAS 1 – *Presentation of Financial Statements* and non-mandatory implementation guidance on information to be included in a *Management Commentary* (IASB, 2005). This project is now part of the active agenda of the IASB (IASB, 2008b).

The objective of the *Management Commentary* is to provide NFI that supplements and complements financial statements. The relevant discussion paper issued by the IASB considered comparable narrative disclosure statements adopted elsewhere in the word, such as the *Management Discussion and Analysis* in the USA and Canada, *OFR* in the UK and the *Management Report* in Germany. It outlines a proposed structure for the *Management Commentary*, which requires preparers of financial statements to disclose separately; (a) nature of the business, (b) objectives and strategies, (c) key resources, risks, and relationships, (d) results and prospects, and (e) performance measures and indicators (IASB, 2005).

**10. VMRC (2005)**

VMRC is a coalition of thought leaders assembled to develop global principles for value measurement and reporting (VMR). Members of the VMRC include AICPA, Canadian Institute of Chartered Accountants, CPA Australia, Institut der Wirtschaftprüfer e.V. and South African Institute of Chartered Accountants (VMRC, 2005).

VMR is an initiative to provide a view of value realisation as well as value creation potential of organisations to investors and creditors. VMRC holds that the traditional accounting framework is designed to measure and report realisation of value and therefore it is incapable of measuring and disclosing the value-creating activities that precede the sale of goods or services. Value-creation depends on IC of an organisation.

VMRC intends to supplement the traditional accounting model with a reporting model that provides a comprehensive and a forward-looking view of companies to investors and creditors. VMRC also identifies the need to develop a reporting structure to standardise ICD across organisations, and within and between industries (VMRC, 2005).

**11. EBRC (2006)**

EBRC is a US based independent, market driven non-profit collaboration of organisations that have come together for the common purpose of "improving the quality, integrity and transparency of information used for decision-making in a cost

effective, time efficient manner" (EBRC, 2007, p.1). AICPA's Special Committee for Enhanced Business Reporting initiated the EBRC, with other founding members being Grant Thornton LLP, Microsoft Corporation and PriceWaterhouseCoopers.

The main purpose of the consortium is to develop an international framework for voluntary business reporting with special emphasis on disclosure of KPIs that are leading indicators of financial results and intangible assets that are absent in companies' balance sheets (EBRC, 2007). This framework is intended to provide a structure for the presentation of NFI so that external reporting is closely aligned with internal reporting (Anderson *et al.*, 2005).

The EBRC issued the Enhanced Business Reporting Framework in November 2006. This document prescribes information to be presented on four key areas – business landscape, strategy, resources and processes, and performance. It is recommended that information on IC (separately categorised as ExtC, HumC, and IntC) be presented alongside monetary and physical capital under the resources and processes category (EBRC, 2006).

**12. UK ASB (2006)**

The UK Department of Trade and Industry, in March 2005, mandated the preparation of an OFR as part of an annual report for all quoted companies, for financial years beginning on or after 1 April 2005. Consequently, the ASB issued *Reporting Statement 1: Operating and Financial Review*, which stipulated the content for and provided guidance on preparation of an OFR (ASB, 2006).

At an earlier stage in the process of introducing an OFR, the *White Paper on Modernising Company Law* emphasised the importance of an OFR by stating that "companies are increasingly reliant on intangible assets such as the skills and knowledge of their employees, their business relationships and their reputation" (UK Trade and Industry Committee, 2003, p.18). The White Paper proposed that an OFR should include information on relationships with employees, customers and suppliers and the company's impact on the wider community among other things (UK TIC, 2003).

The statutory requirement for publishing an OFR was repealed in November 2005,

and *Reporting Statement 1* was withdrawn[64]. Therefore, the reporting statement is now intended to have persuasive rather than a mandatory force (ASB, 2006).

The *Reporting Statement* states that an OFR should include the following information (ASB, 2006, para.27):

a) nature of the business, including a description of the market, competitive and regulatory environment in which the entity operates, and the entity's objectives and strategies;

b) development and performance of the business, both in the financial year under review and in the future;

c) resources, principal risks and uncertainties, and relationships that may affect the entity's long-term value;

d) position of the business including a description of the capital structure, treasury policies and objectives and liquidity of the entity, both in the financial year under review and the future.

Under the above categories, the OFR encourage companies to disclose IC information.

A description of the business, which is recommended as an element of the OFR, requires information about an entity's main products, services, customers, business processes and distribution methods, the structure of the business, and its economic model, including an overview of the main operating facilities and their locations to be presented (ASB, 2006, para.31). Under the information to be included about the key strengths and resources are IC information such as corporate reputation and brand strength, employees, research and development, licences, patents, copyrights and trademarks, and market position (ASB, 2006, para.51). Information about an entity's relationships with customers, suppliers, employees, contractors, lenders, creditors and regulators (*i.e.,* ExtC) are also recommended to be included in an OFR (ASB, 2006, para.58).

[64] The UK Government decided to withdraw Reporting Statement 1 as UK businesses were required to prepare a Business Review under an EU directive (EU Accounts Modernisation Directive 2003), which is a document largely identical to the OFR.

There is also a direct mention of IC as an important resource of which presentation is recommended in an OFR (ASB, 2006, para.51). An OFR should also disclose KPIs. The implementation guidance section in the *Reporting Statement* provides examples of these KPIs. The KPIs that may be presented in an OFR relating to IC consist of ExtC, HumC, and IntC, as illustrated in the following Table B.

**Table B: ICDs specified in the OFR as KPIs**

| IC Category and KPI | Examples |
|---|---|
| **ExtC** | |
| Profiles of the stakeholders and nature of the relationships | Length of relationship, is it subject to contract, if so when does the contract expire |
| Level of dependence on various stakeholders | |
| Satisfaction with relationships | Feedback results, levels of complaints, fines, customer churn |
| Market position and market share | Average revenue per user, number of subscribers, number of products sold per customer |
| Social and community issues | |
| **HumC** | |
| Information about employee health and safety | Lost days to injury, level of occupational related diseases, compliance level with working hours directives |
| Recruitment and retention | Employee turnover, retention rates, remuneration policies, number of applicants per post, offer/acceptance statistics, levels of skills shortages |
| Training and development | Hours spent on training, number of courses taken, leadership/career development |
| Employee morale/ motivation | Employee feedback results, absence rates, levels of employee engagement |
| workforce performance and profile | Employee productivity, revenue/profit per employee, diversity, number of professionally qualified employees |
| **IntC** | |
| Percentage of revenue from new products | |
| Products in development pipeline and performance indicators | |

*Source: Adapted from ASB (2006).*

## 13. EFFAS CIC (2008)

Founded in 2006, the CIC is a body established under the aegis of EFFAS to encourage the disclosure of IC information by companies and use of IC information by financial analysts in company valuation.

The aims of EFFAS CIC (2008) are as follows:

a) promote the measurement and disclosure of IC by companies, highlighting financial professionals' needs and expectations regarding the reported information;
b) promote standardisation of the disclosure format to keep additional costs to a minimum and facilitate inter-company benchmarking;
c) foster the valuation of information on intangibles by financial analysts, boosting the required expansion of their valuation competences.

In 2008, the CIC issued a document entitled *CIC Principles for Effective Communication of Intellectual Capital,* which provides ten principles for the development of sector-specific sets of IC indicators (EFFAS CIC, 2008) . CIC claims that the needs of analysts and investors can be best served by complying with these principles when disclosing IC information. Future plans of CIC include the development of valuation techniques for financial analysis and collaborating with standards setters to integrate IC in disclosure guidelines and standards (EFFAS CIC, 2008).

## Appendix E: The importance of types of IC – A comparison

This appendix highlights the importance attached to a list of IC items by sell-side analysts that have been investigated (*inter alia* other information items) in four comparable survey-based research studies. The purpose of this appendix is to emphasise the importance sell-side analysts attach to various IC items. Section 3.3.2.1 briefly reviews these studies.

| | Buzby[a] | B&S[b] | Firth[c] | D&G[d] |
|---|---|---|---|---|
| **Human capital** | | | | |
| Absentee rates | | | | 1.71 |
| Amount expended on human resources (*e.g.,* training and welfare facilities) | | 1.50 | 3.01 | |
| Annual compensation paid to officers and directors | | 1.94 | | |
| Employee involvement | | | | 2.45 |
| Employee share ownership plans | | | | 2.53 |
| Employee training | | | | 2.44 |
| Employee turnover | | | | 2.65 |
| Equal Employment opportunity | | | | 1.69 |
| Experience/reputation of management | | | | 4.20 |
| Functional responsibilities of senior management | 3.23 | | 4.24 | |
| Indication of employee morale (*e.g.,* staff turnover, strikes and absenteeism) | 1.58 | | 3.55 | |
| Information on major labour contract | | 2.86 | | |
| Information relating to company's employee pension plan | 2.88 | 3.15 | 1.84 | |
| Involvement of the Board | | | | 2.86 |
| Labour / Management relations | | | | 3.12 |
| Names and salaries of senior directors | | | 3.90 | |
| Names and salaries of senior management | 3.23 | | 4.42 | |
| Names of company officers and directors | 2.93 | 2.43 | | |
| Number and types of employees | 2.82 | 2.26 | 3.69 | |
| Number of shares of the company owned by its officers | | | 4.01 | |
| Operating cost per employee | | | | 2.94 |
| Profit sharing | | | | 2.80 |
| Responsibilities of company directors and their major outside affiliations | 2.93 | | 4.01 | |
| Sales per employee | | | | 3.23 |

| | Buzby[a] | B&S[b] | Firth[c] | D&G[d] |
|---|---|---|---|---|
| Terms of share option plans and the number of shares involved | | | 3.46 | |
| **Internal capital** | | | | |
| Ability to customise products | | | | 2.36 |
| Continuity of management | | 2.35 | | 3.93 |
| Independence of Board | | | | 3.01 |
| Information on major research activities in the past year / R&D expenditure | | 2.93 | | 3.70 |
| Manufacturing cycle time | | | | 2.37 |
| Measures of physical level of output and capacity utilisation | 3.11 | | 4.26 | 3.65 |
| Money value of the firms order backlog | 3.33 | 3.20 | 4.20 | |
| Number of new patents | | | | 2.63 |
| Order to delivery time | | | | 2.32 |
| Percentage of on time delivery | | | | 1.94 |
| Percentage of patented products | | | | 2.86 |
| Product development time | | | | 2.49 |
| Safety record | | | | 2.10 |
| Service responsiveness | | | | 2.18 |
| Warranty claims | | | | 1.69 |
| **External capital** | | | | |
| Brand awareness | | | | 3.41 |
| Break down of sales revenue by product lines, customer classes etc | 3.67 | | 4.82 | |
| Breakdown of earnings by major product lines, customer classes etc | 3.75 | | 4.82 | |
| Breakdown of net income for the past year by customers /industry served | | 2.86 | | |
| Breakdown of net income for the past year by major product lines | | 3.34 | | |
| Breakdown of total sales for the past year by customers /industry served | | 2.90 | | |
| Breakdown of total sales for the past year by major product lines | | 3.31 | | |
| Community involvement | | | | 1.91 |
| CSR (*e.g.*, company attitude and expenditure) | | 1.75 | 3.48 | |
| Customer complaints | | | | 1.87 |
| Customer diversification | | | | 3.64 |
| Customer surveys | | | | 2.28 |
| Description of major products produced / sold or product diversification | 3.37 | 3.12 | 4.01 | 3.83 |
| Description of marketing network | | | 2.48 | 3.73 |
| Discussion of the progress of any recent acquisitions | | | 4.14 | |
| Environmental performance | | | | 2.70 |

| | Buzby[a] | B&S[b] | Firth[c] | D&G[d] |
|---|---|---|---|---|
| Extent of dependence on a few customers | | | 4.08 | |
| Advertising and publicity (*e.g.*, past expenditures and future commitments) | | | 4.01 | |
| R&D (*e.g.*, NPD progress and planned expenditures) | 3.28 | 2.85 | 4.46 | |
| Infringement/ anti-trust litigation | | | | 2.91 |
| Market share | | 3.01 | 4.46 | 4.22 |
| Number of new products | | | | 3.32 |
| Percentage of repeat sales | | | | 2.44 |
| Percentage of sales from new products | | | | 3.38 |
| Percentage of sales from proprietary products | | | | 3.45 |
| Planned advertising expenditure for the next fiscal year | | 2.11 | | |
| Product quality litigation | | | | 3.08 |
| Shareholder disputes | | | | 2.64 |
| Social responsibility litigation | | | | 3.18 |
| Strategic Alliances | | | | 3..30 |

Only those information categories related to IC (based on the author's view) investigated in each study are included in this table.

a. Buzby (1974b) investigated the degree of importance to financial analysts of having particular information categories in a corporate annual report, using a five point scale. According to this scale, zero indicated that a particular category does not need to be included, and four indicated that a category needs to be included in the annual report.

b. Benjamin and Stanga (1977) used a five point scale where zero meant the item was unimportant, one meant slightly important, two meant moderately important, three meant very important, and four meant essential.

c. Firth (1978) used a 5-point Likert scale which ranged from one (unimportant) to five (very important).

d. Dempsey and Gatti (1997) measured the frequency of use of various performance measures using a 5 point scale ranging from one (never used) to five (always used).

## Appendix F: The main sample

This appendix provides details of the sample of initiating coverage analyst reports examined in the main study reported in this thesis. For each analyst report, it provides the company represented by the analyst report, the ASX code of the company, the GICS® sector to which the company belongs, the market capitalisation of the company, the issue date of the analyst reports, the brokerage firm issuing the analyst report, and the number of pages in the analyst report. The main sample is discussed in Section 5.5.2.

| ASX Code | Company | GICS® sector | Market cap* (AUD $Mn) | Report date | Brokerage firm | No. of pages |
|---|---|---|---|---|---|---|
| NWS | News Corporation Ltd | Consumer Discretionary | 15,531 | 01 Feb 08 | Cowan and company | 28 |
| CWN | Crown Ltd | Consumer Discretionary | 6,949 | 03 Dec 07 | Deutsche Bank | 32 |
| TAH | Tabcorp Holdings Ltd | Consumer Discretionary | 5774 | 19 July 05 | Deutsche Bank | 14 |
| HVN | Harvey Norman Holdings Ltd | Consumer Discretionary | 3,559 | 31 Oct 05 | Citigroup Global Markets Inc. | 32 |
| ALL | Aristocrat Leisure Ltd | Consumer Discretionary | 3,322 | 10 Nov 04 | Citigroup Global Markets Inc. | 27 |
| TTS | Tatts Group Ltd | Consumer Discretionary | 3,227 | 15 Sep 05 | ABN AMRO Equities Australia Ltd | 11 |
| BBG | Billabong International Ltd | Consumer Discretionary | 2,551 | 28 Nov 05 | Citigroup Global Markets Inc. | 25 |
| CMJ | Consolidated Media Holdings Ltd | Consumer Discretionary | 2,338 | 03 Dec 07 | Deutsche Bank | 21 |
| WOW | Woolworths Ltd | Consumer Staples | 34,470 | 07 July 05 | Citigroup Global Markets Inc. | 28 |
| WES | Wesfarmers Ld | Consumer Staples | 24,657 | 04 Dec 07 | Deutsche Bank | 37 |
| FGL | Foster's Group Ltd | Consumer Staples | 10,357 | 09 Dec 05 | Citigroup Global Markets Inc | 36 |
| CCL | Coca-Cola Amatil Ltd | Consumer Staples | 5,854 | 30 Nov 05 | Citigroup Global Markets Inc. | 37 |
| LNN | Lion Nathan Ltd | Consumer Staples | 4,878 | 01 Dec 05 | Citigroup Global Markets Inc. | 28 |
| MTS | Metcash Ltd | Consumer Staples | 3,250 | 17 July 03 | Deutsche Bank | 23 |
| FCL | Futuris Corporation Ltd | Consumer Staples | 1,420 | 20 June 08 | ABN AMRO Equities Australia Ltd | 15 |
| ASX | ASX Ltd | Financials | 5,591 | 14 Feb 07 | Macquarie Research Equities | 6 |
| BNB | Babcock & Brown Ltd | Financials | 3,720 | 01 May 06 | Deutsche Bank | 26 |
| WBC | Westpac Banking Corporation Ltd | Financials | 42,730 | 21 July 05 | Independent International investment Research Plc | 7 |
| BOQ | Bank of Queensland Ltd | Financials | 2,308 | 22 Apr 05 | Citigroup Global Markets Inc. | 36 |
| PPT | Perpetual Ltd | Financials | 2.093 | 07 Feb 07 | Macquarie Research Equities | 6 |
| CGF | Challenger Financial Services Group Ltd | Financials | 1,261 | 28 Nov 06 | ABN AMRO Equities Australia Ltd | 40 |

| ASX Code | Company | GICS® sector | Market cap* (AUD $Mn) | Report date | Brokerage firm | No. of pages |
|---|---|---|---|---|---|---|
| MQG | Macquarie Group Ltd | Financials | 15,389 | 07 Oct 03 | ABN AMRO Equities Australia Ltd | 38 |
| HGG | Henderson Group plc | Financials | 1,095 | 03 May 05 | ABN AMRO Equities Australia Ltd | 11 |
| CSL | CSL Ltd | Health care | 22,566 | 10 Nov 04 | ABN AMRO Equities Australia Ltd | 25 |
| SHL | Sonic Healthcare Ltd | Health care | 4,899 | 14 Mar 05 | ABN AMRO Equities Australia Ltd | 42 |
| RMD | ResMed Inc. | Health care | 3,209 | 20 Sep 06 | Kaufman Bros. L.P. | 13 |
| COH | Cochlear Ltd | Health care | 2,809 | 14 Jan 05 | ABN AMRO Equities Australia Ltd | 35 |
| RHC | Ramsay Health Care Ltd | Health care | 1,873 | 22 June 07 | ABN AMRO Equities Australia Ltd | 62 |
| API | Australian Pharmaceutical Industries Ltd | Health care | 272 | 27 Sep 07 | Commonwealth Securities Limited | 20 |
| HSP | Healthscope Ltd | Health care | 1,087 | 22 June 07 | ABN AMRO Equities Australia Ltd | 79 |
| SIP | Sigma Pharmaceuticals Ltd | Health care | 996 | 19 July 07 | Commonwealth Securities Limited | 18 |
| CPU | Computershare Ltd | IT | 5,106 | 08 Jan 04 | ABN AMRO Equities Australia Ltd | 20 |
| CUS | Customers Ltd | IT | 115 | 05 Nov 07 | Commonwealth Securities Limited | 14 |
| UXC | UXC Ltd | IT | 234 | 31 Aug 05 | BBY Limited | 10 |
| MYO | MYOB Ltd | IT | 540 | 07 May 07 | ABN AMRO Equities Australia Ltd | 12 |
| OKN | Oakton Ltd | IT | 303 | 23 May 07 | Macquarie Research Equities | 6 |
| SMX | SMS Management & Technology Ltd | IT | 294 | 07 Nov 06 | ABN AMRO Equities Australia Ltd | 19 |
| RDF | Redflex Holdings Ltd | IT | 266 | 15 June 07 | Macquarie Research Equities | 13 |
| MLB | Melbourne IT Ltd | IT | 259 | 08 April 08 | ABN AMRO Equities Australia Ltd | 10 |
| OST | Onesteel Ltd | Materials | 6,634 | 15 July 05 | RBC Capital Markets | 39 |
| AWC | Alumina Ltd | Materials | 6,364 | 17 Feb 06 | Davenport & Company LLC | 9 |
| BLD | Boral Ltd | Materials | 4,233 | 05 Sep 07 | Commonwealth Securities Limited | 45 |
| ZFX | Zinifex Ltd | Materials | 4,562 | 07 April 06 | ABN AMRO Equities Australia Ltd | 29 |
| AQP | Aquarius Platinum Ltd | Materials | 4,657 | 02 June 04 | Deutsche Bank | 32 |
| MRE | Minara Resources Ltd | Materials | 1,802 | 14 Dec 04 | RBC Capital Markets | 19 |
| WSA | Western Areas N.L. | Materials | 1,620 | 21 Nov 05 | Tricom Equities Limited | 15 |
| SGM | Sims Metal Management Ltd | Materials | 6,920 | 10 Mar 04 | Wilson HTM Ltd | 21 |
| TIM | Timbercorp Ltd | Materials | 347 | 12 May 06 | ABN AMRO Equities Australia Ltd | 34 |
| WDC | Westfield Group | REIT | 33,891 | 21 July 04 | Citigroup Global Markets Inc. | 8 |
| SGP | Stockland | REIT | 8,950 | 25 Nov 04 | ABN AMRO Equities Australia Ltd | 7 |
| GMG | Goodman Group | REIT | 6,777 | 07 July 05 | Deutsche Bank | 20 |
| MDT | Macquarie DDR Trust | REIT | 502 | 01 Oct 04 | Citigroup Global Markets Inc. | 50 |
| VPG | Valad Property Group | REIT | 1,592 | 23 Nov 04 | Citigroup Global Markets Inc. | 36 |
| CER | Centro Retail Group | REIT | 915 | 08 Dec 05 | Deutsche Bank | 24 |

| ASX Code | Company | GICS® sector | Market cap* (AUD $Mn) | Report date | Brokerage firm | No. of pages |
|---|---|---|---|---|---|---|
| BJT | Babcock & Brown Japan Property Trust | REIT | 570 | 31 May 05 | Deutsche Bank | 23 |
| IIF | ING Industrial Fund | REIT | 2,220 | 24 Nov 04 | Citigroup Global Markets Inc. | 16 |
| CIF | Challenger Infrastructure Fund | Utilities | 880 | 08 Aug 06 | ABN AMRO Equities Australia Ltd | 17 |
| TSI | Transfield Services Infrastructure Fund | Utilities | 380 | 19 July 07 | ABN AMRO Equities Australia Ltd | 5 |
| SPN | Sp Ausnet | Utilities | 2,553 | 18 Jan 06 | DBS Vickers Research (Singapore) Pte. Ltd. | 35 |
| HDF | Hastings Diversified Utilities Fund | Utilities | 561 | 01 Sep 08 | ABN AMRO Equities Australia Ltd | 20 |
| SKI | Spark Infrastructure Group | Utilities | 1,805 | 02 Nov 05 | Merrill Lynch | 60 |
| BBW | Babcock & Brown Wind Partners Ltd | Utilities | 1,524 | 25 May 06 | Deutsche Bank | 42 |
| APA | APA Group | Utilities | 1,438 | 27 Feb 07 | ABN AMRO Equities Australia Ltd | 7 |
| BBP | Babcock & Brown Power Ltd | Utilities | 948 | 26 Oct 07 | Commonwealth Securities Limited | 40 |

* Market capitalisation as at 05 June 2008

## Appendix G: Coding instrument

This appendix provides the coding instrument used in this PhD study. It includes operational definitions, coding rules and coding examples for all IC subcategories, *evidence* categories, *news-tenor* categories and *time orientation* categories. The coding instrument provided in this appendix is divided into four panels. Panels I, II, III, and IV pertain to IC subcategories, *evidence* categories, *news-tenor* categories and *time orientation* categories, respectively. The development of this coding instrument is explained in Section 5.7.

### Panel I: IC subcategories

| | IC category | Operational definition | Coding rules | Examples |
|---|---|---|---|---|
| **1** | **TOPIC** | | | |
| **1.1** | **ExtC** | | | |
| **1.1.1** | ***Brands*** | "A brand is a name, term, sign, symbol, or design, or a combination of them, intended to identify the goods and services of one seller or group of sellers and to differentiate them from those of competitors" (Kotler, 1998). A brand name can be registered as a trademark and include ® in superscript at the end of the brand name or claim ownership for the brand name without registering it by including ™ at the end of the brand name.<br>Although, potentially a brand name can be classified as IP, it is separately categorised due to | • Reference to the word "brand" (as owned by the firm).<br>• Reference to competitive advantage derived from ownership or development of brands.<br>• Reference to position of brand(s) in specific markets.<br>• Identification of firm's brands by name.<br>• Reference to active management of a brand including branding strategies.<br>• Reference to sales, profits or market share by brands.<br>• Reference to brand promotion and advertising.<br>• Reference to brand equity and building brand equity.<br>**Exclude**<br>• Reference to franchised or licensed brand names are excluded from this category and | • BBG has two strengths: powerful brands and strong distribution (BBG).<br>• We forecast strong double digit profit growth for the next five years as BBG's newer brands increase distribution penetration and new product lines are launched (BBG).<br>• Element is a street wear brand (BBG).<br>• Quiksilver uses 'Roxy' to market its surf wear to women and 'Quiksilver' to men (BBG).<br>• The Element brand represents 15% of sales and Von Zipper (predominantly eyewear) is 3% of sales (BBG).<br>• Brands are promoted through associations with high profile athletes and events around the world (BBG).<br>• We view the Tattersall's brand as strong and trusted (TTS). |

| | IC category | Operational definition | Coding rules | Examples |
|---|---|---|---|---|
| | | its value creation capability distinct from other types IP. | included under "favourable contracts, licensing and franchising". | |
| **1.1.2** | ***Business collaborations*** | A business collaborations is a close (often long-term) relationship which enables partners to pursue opportunities together that they may not have been able to pursue independently (Unerman *et al.*, 2007). These relationships may enable access to technology, information, know-how and other capabilities and/or provide synergistic benefits to the collaborating companies. Types of business collaborations include mergers and acquisitions, obtaining a stake in an associate firm, JVs, strategic alliances and PPPs. | This category includes references to mergers or acquisitions, relations with associate companies and subsidiaries, strategic alliances, PPPs and JVs.<br>This includes objectives, advantages and outcomes of the aforementioned types of business collaborations and mention of names of those collaboration partners in the relevant context.<br>Items in this category should be further categorised in to one of the following five categories.<br>1. JVs<br>2. Mergers or acquisitions<br>3. PPPs<br>4. Strategic alliances<br>5. Subsidiaries and associates | • See examples under each subcategory. |
| **1.1.2.1** | ***Joint ventures (JV)*** | A JV is a contractual arrangement whereby two or more parties undertake an economic activity that is subject to joint control (Paragraph 3 of IAS 31: *Interest in Joint Ventures*). In a JV, no one party alone can control operating, investing and financing policies but all the venturers together can do so. IAS 31 identifies 3 forms of JVs namely, jointly controlled operations, jointly controlled assets, and jointly controlled entities. All these | • Reference to the existence of a JV where the firm is venturing partner.<br>• Reference to objectives of or reasons for forming JVs.<br>• Reference to intangible outcomes of JVs.<br>• Mention of names of JV partners, exemplifying their relationships.<br>• Reference to synergistic benefits from a JV.<br>**Exclude**<br>• Reference to activities of the JV (where intangible benefits to the firm are not addressed).<br>• Reference to roles played by venturers without referring to intangible benefits. | • Financially, MYOB entered into the JV agreement (November 2005) with Jin Cai, a local SME software provider in China, based in Chengdu (MYO).<br>• PBL entered into a joint venture with The Sporting Exchange Limited (Betfair UK) to operate an online betting exchange in Australia and New Zealand, being Betfair Australia (CWN).<br>• If successful, the JV (67% Tabcorp) will provide lottery operating systems, terminals, proprietary intellectual property rights and other technological support services to the Keno lottery market operators authorised by the Chinese Government (TAH).<br>• The business is conducted under a long-term joint |

| | IC category | Operational definition | Coding rules | Examples |
|---|---|---|---|---|
| | | forms of JVs are considered under this category. | • Reference to tangible outcomes/benefits of JVs to the firm | venture agreement with the Victorian Racing Industry (TAH). |
| **1.1.2.2** | ***Mergers and acquisitions*** | An acquisition (also known as takeover) is one firm obtaining the controlling interest in another firm by purchasing the majority of outstanding shares of that firm. In other words, it is the buying of one firm by another. Acquisitions can be hostile or friendly. In the former case, the target firm's management participates in negotiations with the acquirer and they support the acquisition whereas in the latter case, the target firm's management is against the acquisition or they have not been notified or consulted before making the offer by the acquirer.<br>A merger occurs when two companies combine to form a single firm. In a merger the control of one or more entities passes to another entity, hence it is a form of acquisition. However, it differs from a typical takeover in that the entities involved retain a shared interest in the newly formed entity. | • Reference to a successfully executed merger or an acquisition.<br>• Reference to objectives of or reasons for a merger or acquisition.<br>• Reference to ***intangible*** outcomes of acquisitions/mergers.<br>• Mention of names of acquired firms in the context of the acquisition.<br>• Reference to synergies achieved from acquisitions/mergers or potential synergies.<br>**Exclude**<br>• Reference to activities of the acquired/merged entity.<br>• Reference to **tangible** outcomes of acquisitions/mergers. | • [...] acquisition of Solution 6 for A$180m in 2004 catapulted MYOB to dominate a leading market positions in both the SME market and accountant markets (MYO).<br>• The strategic rationale for the acquisition is to expand BBG's distribution at airport-based outlets (BBG).<br>• We believe there is also potential for the combined HSP/SYB pathology lab network to increase margins through developing IT synergies (HSP).<br>• Dow Jones acquisition should drive long-term value and growth (NWS).<br>• TAH acquired Star City in 1999 (TAH).<br>• Overall, we believe that News Corp. will be able to realise approximately $100MM in cost synergies with Dow Jones on an annual basis (NWS). |
| **1.1.2.3** | ***Private Public Partnerships*** | PPP can be defined as a "partnerships between the public | • Reference to the existence of a PPP where the firm is involved. | • SHL is in a good position to receive a large amount of this new funding, as it has been involved in |

| | IC category | Operational definition | Coding rules | Examples |
|---|---|---|---|---|
| | ***(PPP)*** | sector and the private sector for the purposes of designing, planning, financing, constructing and/or operating projects which would be regarded traditionally as falling within the remit of the public sector." (Webb and Pulle, 2002) | • Reference to proposed PPPs that has a high probability of occurring.<br>• Reference to objectives of or reasons for forming a PPP.<br>• Reference to intangible outcomes of PPPs.<br>**Exclude**<br>• Reference to activities of the PPP (where intangible benefits to the firm are not addressed).<br>• Reference to the roles of parties.<br>• Reference to tangible benefits/outcomes of a PPP formed. | public-private partnerships with various hospital trusts (through its subsidiary the TDL group) since March 2002 (SHL).<br>• TDL has been at the forefront of private-public partnerships (PPPs) with the NHS (SHL). |
| **1.1.2.4** | ***Strategic alliances*** | A strategic alliance is two or more companies agreeing to cooperate with each other and utilise each partner's resources and expertise to pursue a set of agreed goals or meet business needs, while remaining independent organisations. Unlike a JV a strategic alliance does not necessarily require equity sharing by the partners to create a separate entity (Onkvisit and Shaw, 2000, p.352). The partners may provide the alliance with resources such as products, distribution channels, funding, manufacturing capability, capital equipment, technology, R&D capabilities, skills, knowledge, expertise, information and IP. All parties | • Reference to the existence of a strategic alliance where the firm is an alliance partner.<br>• Reference to proposed strategic alliances with high probability of occurring.<br>• Reference to objectives of or reasons for forming strategic alliances.<br>• Reference to ***intangible*** outcomes of strategic alliances.<br>• Mention of names of alliance partners, exemplifying their relationships.<br>• Reference to synergistic benefits from strategic alliances.<br>**Exclude**<br>• Reference to activities of the strategic alliance (where intangible benefits to the firm are not addressed).<br>• Reference to tangible outcomes of strategic alliances. | • TTS entered a strategic relationship with EssNet in 2003 (TTS).<br>• Strategic alliance struck with Bank of Hawaii - issued with 5.4m convertible notes (BOQ).<br>• One of these partnerships is with QIC, enabling CGF to leverage the investment capabilities of QIC, while keeping the funds with CGF (CGF).<br>• CGF uses its boutique investment partnerships to gain access to this rapidly increasing investment pool (CGF).<br>• Select Harvests Ltd (11.8% TIM) – Australia's leading integrated producer, processor and marketer of almonds (TIM). |

| | IC category | Operational definition | Coding rules | Examples |
|---|---|---|---|---|
| | | to the alliance expect to obtain benefits that they cannot obtain by operating alone. | | |
| **1.1.2.5** | ***Subsidiaries & associates*** | Associate firm "is an entity, including an unincorporated entity such as a partnership, over which the investor has significant influence and that is neither a subsidiary nor an interest in a JV". (Paragraph 2 of IAS 28- *Investment in Associate*). According to para 6 of IAS 28 "if an investor holds, directly or indirectly (*e.g.*, through subsidiaries), 20 per cent or more of the voting power of the investee, it is presumed that the investor has significant influence…" and therefore becomes an associate firm.<br><br>"A subsidiary is an entity, including an unincorporated entity such as a partnership, that is controlled by another entity" (Paragraph 4 of IAS 27- *Consolidated and separate financial statements*). According to para 13 of IAS 27 "Control is presumed to exist when one firm owns, directly through subsidiaries, more than half of the voting power of an entity[…]". | • Reference to ownership interest (*e.g.*, shareholding) in associate companies/subsidiaries.<br>• Reference to names of subsidiaries/associate companies.<br>• Reference to objectives of subsidiary and associate companies.<br>• Reference to benefits or potential benefits of ***intangible*** nature from associate companies / subsidiaries.<br>• Reference to valuation of subsidiaries or associate companies as part of firm valuation.<br>**Exclude**<br>• Reference to activities of associate companies or subsidiaries (where intangible benefits to the firm are not addressed).<br>• Reference to profits or revenue of associate or subsidiary companies.<br>• Reference to tangible benefits of associate or subsidiary companies. | • HVN also has a 55% interest in Rebel Sports, a sport clothing and equipment retailer (HVN).<br>• TTS is the sole shareholder of Thuo Gaming KwaZulu Nata and Thuo Gaming North West (TTS).<br>• This business owns the Kustom and Palmers brands (BBG).<br>• GPL is a fully-owned media buying company for HVN (HVN).<br>• BBW, through its access to Babcock & Brown's global network and experience, is well positioned to take advantage of this growth in the wind energy market (BBW).<br>• CNP, or wholly owned subsidiaries thereof, will act as RE, provide all property management, development management, and leasing services for the portfolio (CER).<br>• We value the company's 37.9% investment in MPEL on a DCF basis at the lower end of the range and at market value at the top end of the range (CWN). |

| | IC category | Operational definition | Coding rules | Examples |
|---|---|---|---|---|
| **1.1.1** | ***Corporate image and reputation*** | Corporate image is the set of beliefs, ideas, and impressions that people hold regarding a firm (Kotler, 1998, p.607). It is how various stakeholders perceive a firm. | • Reference to how the firm is perceived by others (*e.g.,* mature, innovative, good track record).<br>• Reference to events that shape the way in which the firm is perceived by third parties (*e.g.,* awards won by the firm, sponsorships etc).<br>• Reference to reputation of firm's products and processes (without the mention of a brand).<br>• Reference to firm's age (or date of formation) only if the long-standing nature of the firm or firm's experience in the industry is emphasised.<br>• Reference to protecting firm names.<br>• Reference to firm's scale or size only in the context of competitive advantage (*e.g.,* claim to be the largest operator in the industry).<br>• Reference to longevity of the firm or its activities/products in the industry/market.<br>• Reference to track record of the firm (not that of the management team).<br>• Reference to assets of the firm only if their uniqueness or attractiveness is emphasised.<br>**Exclude**<br>• Reference to any of the above in the context of market share.<br>• Reference to the reputation of a brand (reference to brand image and reputation is categorised under "brands").<br>• Reference to a firm's social, community and environmental involvements - although contributing towards corporate image are | • The firm has been very successful in building a reputation for assessing and managing projects that address industry change domestically and offshore (SMX).<br>• In 2005, Crown Towers was inducted into the Victorian Tourism Awards Hall of Fame […] (CWN).<br>• TTS has held the lotteries licence in Victoria since 1954 and is the only non-government-owned licence operator in Australia (TTS).<br>• HVN is well represented in Australia with more than 163 complexes (HVN).<br>• They have been broadcasting throughout the Sydney region for 76 years, expanding in recent years throughout NSW on narrow re-transmission facilities (TAH).<br>• Aristocrat is a leading manufacturer of casino-style gaming machines (ALL).<br>• Given TTS's longevity in the gaming industry, it appears to be well placed (TTS).<br>• TTS's track record is a key advantage when entering a new market (TTS).<br>• TTS listed in July and, based on market capitalisation of A$2bn plus, we believe it will be a strong candidate for inclusion in the ASX200 (TTS). |

| | IC category | Operational definition | Coding rules | Examples |
|---|---|---|---|---|
| | | | categorised separately as government and other relations.<br>• Reference to market leaderships or industry dominance by virtue of firm's market share – categorised as "Markey share". | |
| **1.1.4** | ***Customer relationships, satisfaction and loyalty*** | Customer relationship refers to building and maintaining an ongoing relationship with existing customers. Retention of customers and ensuring their continual satisfaction with the firm is the cornerstone of customer relationships. The emphasis here is neither on attracting new customers nor on treating contacts with customers as once off transactions. A strong customer relationship generates customer satisfaction and loyalty. | • Reference to the status or development (by the firm) of customer relations and continuing relations with customers.<br>• Reference to a firm's policies, strategies and systems for building and retaining customer relationships.<br>• Reference to strategies for developing and retaining customer satisfaction and loyalty.<br>• Reference to market research aimed at identifying the needs of existing customers or their satisfaction (not including other market research).<br>• Reference to a firm's dependence on existing customers and repeat business/contracts with existing customers.<br>• Reference to the satisfaction of firm's customers and customer loyalty.<br>• Indicators of customer satisfaction and customer loyalty (*e.g.,* customer retention rates).<br>• Reference to customer trust.<br>• Reference to customer service only in the context of building customer relations or increasing customer satisfaction and loyalty.<br>• Reference to customers' confidence in firm's products (without mentioning brand).<br>• Reference to marketing programs encouraging repeat sales and referrals by existing clients. | • Relationships with new clients typically begin at the planning level, after which Oakton seeks to develop the relationship by engaging the client at as many service lines as possible along the business lifecycle (OKN).<br>• The Fox Sports multiple is below the multiple of Foxtel which we consider reasonable given the fact that Fox Tel owns the customer relationship whereas Fox Sports is a content aggregator (CMJ).<br>• In particular, this focus will also support further development of the VIP gaming business, as its success is largely determined by customer service levels and by the strength of the underlying client relationships (CWN).<br>• The Crown Club loyalty program helps to retain and expand patronage and promotes responsible gaming (CWN).<br>• Customer relationships also provide strength to the franchise (CCL).<br>• A key part of MYOB's initial success in securing the top spot was its focus on penetrating the accounting community as a referral base to SMEs to use MYOB's product (MYO). |

| | IC category | Operational definition | Coding rules | Examples |
|---|---|---|---|---|
| | | | • Reference to building networks of existing clients such as alumni associations.<br>• Reference to taking a long-term perspective in relation to customers/clients.<br>**Exclude**<br>• Reference to other market research (not aimed at identifying needs of existing customers or their satisfaction) is categorised under "customers (other)".<br>• Reference to customer service in general is categorised under "customers (other)". | |
| **1.1.5** | ***Customers (other)*** | This category includes information indicating the importance of end customers to the firm that are not captured under another category. This category captures a firm's customer focus. References to firm's customers who are intermediaries in the distribution network (*e.g.*, wholesale customers such as retailers) are excluded from this category and included under "distribution" category. | • Reference to status or development (by the firm) of a customer base (but not relating to customer loyalty, satisfaction and development of relationships).<br>• References to firm's customers (other than those included under 'customer relationship') by names or as identifiable groups.<br>• Reference to policies, strategies and systems for attracting new customers.<br>• Reference to promotional activities including advertising (but not in relation to brands).<br>• Reference to market research aimed at identifying the wants or needs of potential customers (but not research aimed at identifying existing customers or their satisfaction).<br>• Indicators such as per customer profitability, viewership, program ratings, occupancy rates, market penetration levels, number of customers/subscribers etc.<br>• Reference to value of firm's customer base. | • BBG has more than 3,000 customer accounts globally which are fragmented and provide BBG with significant market power (BBG).<br>• Foxtel is showing strong earnings growth in line with consistent subscriber growth and an improved product offering (CMJ).<br>• We have applied a marginally higher multiple of 10.5 times to NBN given the lower level of fragmentation in regional markets and the network's stronger ratings position (CMJ).<br>• Sky Italia sill has relatively low penetration at approximately 18% of Italy's 24MM TV households (NWS).<br>• Fox News' ratings are well ahead of the ratings of CNN, its nearest competitor (NWS).<br>• In less than three years since opening, Crown Promenade Hotel has achieved an annualised occupancy result of more than 90%, making it the busiest hotel of its class in Melbourne (CWN).<br>• It will target the international leisure market but will also focus heavily on the global conventions and conferences industries (CWN).<br>• The complex is strongly marketed throughout Asia, a |

| | IC category | Operational definition | Coding rules | Examples |
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| | | | • Reference to NPD, product improvements or modifications, services, product and package innovations, and rollout of existing or new products in the context of attracting customers.<br>• Reference to wining new customers/contracts and expanding into new market.<br>• Reference to the achievement of preferred bidder status in **private** contracts.<br>• Reference to market targeting and positioning strategies (not related to brands).<br>• Reference to products and services offered by a firm to specific customer groups (but only in the context of a target market).<br>• Reference to increasing visibility and exposure to customers/clients.<br>• Reference to consumer insight.<br>• Reference to changes in customer demand.<br>**Exclude**<br>• Reference to market research aimed at identifying the needs of existing customers or their satisfaction.<br>• Reference to revenue per products.<br>• Reference to tenants in property trusts.<br>• Reference to refurbishment or development of buildings or other fixed assets.<br>• Reference to target markets in which the firm operates. | feature of which is the promotion of Melbourne and Victoria as attractive tourist destinations (CWN).<br>• The Crown VIP corporate jet provides comfort and service to international patrons (CWN).<br>• TTS has been advised of preferred-bidder status in KwaZulu Natal, while North West is still pending (TTS). |
| **1.1.6** | ***Distribution*** | Distribution channels are the set of interdependent organisations and other mechanisms involved in the process of making a firm's product or service | • Reference to the status, development or improvement of distribution channels between the firm and its suppliers and customers.<br>• Reference to the network of suppliers and | • BBG distributes its products to specialty retailers that target the youth action sports market (BBG).<br>• Wagering activities are conducted in a network of agencies, hotels and clubs in Victoria as well as on-course totalisators at metropolitan and country |

| IC category | Operational definition | Coding rules | Examples |
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| | available to the market. They move resources and goods from the suppliers to the firm and from the firm to consumers. This category encompasses references to firm's relationship with its distribution channel members, enhancement of such relationships and the impact thereof. | distributors, including names of channel members and types of distributors/suppliers.<br>• Evaluative statements about firm's distribution network or strength of distribution (but not the store network or distribution capabilities that should be coded under "organisational and business expertise" category).<br>• Reference to a firm's wholesale customers who constitute a node in the firm's distribution network.<br>• Reference to policies for dealing with suppliers and distributors.<br>• Reference to the status and development of distributor or supplier relations.<br>• Reference to trials with suppliers.<br>• Distributors share of firm's sales.<br>• Reference to product sourcing advantages from suppliers.<br>• Reference to better buying terms or buying power of the firm in relation to suppliers.<br>• Reference to initiatives of the firm to improve loyalty of distribution channel members (*i.e.,* trade promotions).<br>• Reference to access to distribution channels.<br>• Reference to in-store compliance in the retail sector that result in better buying terms from suppliers.<br>• Reference to obtaining and maintaining access to distribution outlets.<br>**Exclude**<br>• Reference to store network or distribution and delivery methods.<br>• Indicators of the strength of the distribution | Victorian race meetings (TAH).<br>• In the Japanese market, Aristocrat uses a local Japanese manufacturer, Sammy Corporation, to manufacture Pachislo gaming machines, but develop the games themselves (ALL).<br>• BBG has a powerful distribution network (BBG).<br>• The single largest account is Pacific Sunwear, a US retailer that has more than 900 stores (BBG).<br>• BBG's relationship with the retailers will provide the opportunity to increase sales of the newer brands (BBG).<br>• Additionally, MYOB has set itself targets of training 250 distributors by end 2007 (MYO).<br>• Figure 4 shows that Priceline and Priceline Pharmacy customers are the leading health and beauty product suppliers to the under 30 age group (API).<br>• The combined 274 Priceline and Priceline Pharmacy stores have strong buying power (API).<br>• The suppliers have been encouraged by API's store layout compliance and its growth (API).<br>• Banner groups provide a wholesale service to the pharmacy and support services in exchange for an exclusive distribution agreement and banner group fees (API). |

| | IC category | Operational definition | Coding rules | Examples |
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| | | | channel such as number of stores (or other places of servicing clients) /distribution centres, number of suppliers, product delivery lead times, location of stores (or other places of servicing clients) / distribution centres, floor area of stores/distribution centres, sales per square meter, sales by geographic markets.<br>• Reference to a firm's retail operations that describe its physical store network.<br>• Reference to geographic areas in which the firm operates (or geographic markets).<br>• In relation to gaming companies – number and location of gaming machines.<br>• In relation to financial institutions – reference to the ATM network (including number of machines and locations).<br>• In relation to health care companies – number of hospital beds, locations of hospitals etc.<br>• Reference to strategic alliances that cater to distribution needs of the firm should be categorised under the "strategic alliances" category. | |
| **1.1.7** | ***Favourable contracts, licensing and franchising*** | A licensing agreement is a contractual agreement whereby one party (licensor) authorises another party (licensee) to use or sell an IP belonging to the former, subject to terms and conditions, for an initial fee and/or a royalty.<br>A franchise agreement is a contractual agreement whereby | • Reference to licensing and franchising agreements including details of such agreements (but does not include terms and conditions of such agreements).<br>• Reference to objectives of licensing/franchising agreements.<br>• Reference to a firm's contracts with third parties with special conditions that would not have been available to all potential bidders. | • The Australian franchise network generated sales of $3.53 billion in FY05 (HVN).<br>• The firm has licensed operations in a number of countries including South Africa, Indonesia and Argentina (BBG).<br>• Betfair obtained an operating licence from the Tasmanian Government in February 2006 (CWN).<br>• The licence provides for a ten year exclusivity period for casino gaming within a 60km radius of the casino location (TAH). |

| IC category | Operational definition | Coding rules | Examples |
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| | one party (franchisor) authorises another party (franchisee) to use a proven method of doing business and a brand name for a fee and/or a commission based on the output produced (sales revenue or profits) by the latter using the said method and brand. The franchisor normally provides the franchisee with various tangible and intangible resources such as raw materials, products, advertising, training, and other services.<br>Favourable contracts are special contracts formed with government or other businesses which provide the firm with an advantage that is not available to others, for example by being the successful bidder in a tender or selected by the counter party due to the special position of the firm (Brooking, 1996, pp.33-34). | • Reference to the names of contracting parties.<br>• Reference to franchised or licensed brand names.<br>• Reference to special contracts formed with governments or other businesses (does not include private-public partnerships).<br>• Reference to value of the franchise.<br>• Reference to management contracts won by the firm.<br>• Reference outsourcing contracts won by the firm.<br>• Reference to outsourcing contracts offered by the firm (but not in relation to managing and operating activities of the firm) (*e.g.,* supply or construction contracts).<br>• Reference to ***intangible*** benefits under licensing/franchising and other contracts mentioned under this category (does not include tangible benefits).<br>• References to licences granted by an authority (*e.g.,* government department) after a competitive process.<br>• Reference to sales of franchisees, franchise structure and changes to franchise arrangements.<br>• Reference to contract renewal and renegotiations.<br>**Exclude**<br>• Reference to contracts of the nature of alliances and JVs.<br>• Reference to terms and conditions of these contracts or responsibilities under these contracts. | • In 2002, in partnership with Hammersmith Hospitals NHS Trust, TDL won the joint contract to supply pathology services to the West Middlesex and Ealing Hospitals (SHL).<br>• Franchise restructure – the move to a new franchise system based on AV/IT and whitegoods and small appliances should improve cross-sell rates, but the short-term cost will be the loss of motivation for franchisees that are assigned smaller franchises (HVN).<br>• Microsoft announced that it had signed a deal with News Corp. to serve as the exclusive third-party provider of contextual and paid search advertising for Dow Jones' network of websites, including WSJ.com, Barrons.com, and MarketWatch.com (NWS). |

| | IC category | Operational definition | Coding rules | Examples |
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| **1.1.8** | ***Financial relations*** | Financial relations are relationship between firm and its financiers (*i.e.,* lenders and investors). | • Reference to individual or groups of shareholders by name.<br>• Reference to change in shareholding overtime.<br>• Percentage shareholding by various shareholder or groups of shareholders (*e.g.,* 20 largest shareholders).<br>• Reference to initiatives undertaken by the firm to make it attractive to investors/potential investors (*e.g.,* listing shares in foreign stock exchanges).<br>• References to inclusion of firm securities in a stock index of a stock exchange.<br>• Information on the potential attractiveness or unattractiveness of firm's shares.<br>• Reference to employee ownership of shares (not in the context of employee share ownerships schemes).<br>• Reference to shareholder activism.<br>• Reference to ownership structure (*e.g.,* group structure) where the firm is a subsidiary in that group.<br>• Reference to individual or groups of lenders by name.<br>• Reference to a firm's borrowing policy and special terms received from lenders.<br>• Reference to information indicating the potential attractiveness or unattractiveness of firm's debt instruments.<br>• Reference to credit ratings provided by rating agencies. | • Criag Winkler is the largest MYOB shareholder (MYO).<br>• Similarly, Schroders is traditionally a long-term and conservative investor (API).<br>• Chuma will hold 6.6% of the enlarged AQPSA (AQP).<br>• Following the recent sell-down, BNB staff ownership is 47% and while further stock comes out of escrow in the next two years we estimate staff ownership is likely to remain above 33% in the medium term (BNB).<br>• A number of shareholders have commenced a class action against the firm in relation to the period between 20 September 2002 and 26 May 2003, claiming the firm failed to inform the market of its financial performance during this period and this led to losses being incurred by shareholders (ALL).<br>• Crown's ability to raise funds for project development at competitive rates has an important bearing here (CWN).<br>• Despite the strong balance sheet, Moodys Investors Service stated that it would most likely lower the senior unsecured ratings by one notch to Baa2 with a stable outlook […] (CWN)<br>• TTS issued a release stating that more than 50% of the group's shares had been traded since listing (TTS). |
| **1.1.9** | ***Government and other relationships*** | This category includes firm's relationships with its stakeholders other than | • Reference to a firm's relationships with local, state, federal and foreign governments. | • As Crown builds up its international gaming presence, it will aim to further strengthen existing relationships and develop new relationships with |

| | IC category | Operational definition | Coding rules | Examples |
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| | | customers, distributors, suppliers, creditors, employees, and shareholders.<br>A firm may form relationships with governments, society, local community, industry groups, fellow investors and other competing businesses.<br>Social/community relations may result from being socially and environmentally responsible and significantly contributing to the national or state economy.<br>Industry relations refer to a firm's involvement with other firms in the same industry. | • Reference to a firm's relationship with community and society.<br>• Reference to a firm's policies and practices in protecting the environment and upholding business ethics.<br>• Reference to a firm's involvement in the industry that benefits the industry or industry participants as a whole (*e.g.,* provision of training to industry participants).<br>• Reference to the level of influence the firm has in the industry, society or government.<br>• Reference to consortiums that the firm is a part of.<br>• Reference to the achievement of preferred bidder status in government contracts.<br>• When the firm is an investor, reference to the firm's relationship with partner shareholders of the investee. | local casino and hotel operators in various regions around the world (CWN).<br>• Crown has been interested in other US gaming markets, having previously been part of a consortium to operate casinos at racetracks in New York and it has also been associated with Trump Entertainment Resorts Ltd (CWN).<br>• With its investments in MPEL, Aspinalls, Fontainebleau Resorts, Gateway and Betfair Australia, Crown has established strong relationships with partner investors who each have a strong track record and reputation for running successful businesses (CWN).<br>• Both Betfair and Tabcorp appear to be offering incentives to persuade the Tasmanian Government (TAH).<br>• SMS maintains its status as a preferred consultancy for improving the delivery of Federal and State Government services (SMX). |
| **1.1.10** | ***Market share*** | Market share is the proportion of the total available market that is being serviced by a firm. Market share can be stated in relation to a firm, segment of a firm or a product or service offered by a firm. It can be expressed as the firm's sales revenue divided by the total sales revenue attainable in a market or as the proportion of a firm's unit sales volume compared to the total volume of units sold in a market. | • Reference to companies market share in relation to its competitors (such as market leadership, monopoly status) including numerical or graphical representation of the market share of the firm, any of its business segments or a product or service.<br>• Reference to market power (*i.e.,* market dominance) or gaining market share from another player in the market.<br>• Reference to privileged market position and strength in the market by virtue of the firm's market share.<br>• Reference to the strength in firm's market position. | • The company dominates the Australian market and also sells into most international gaming markets (ALL).<br>• MYOB's attraction stems from its dominant market position (MYO).<br>• CCL currently has an estimated market share of 56% in the grocery channel (CCL).<br>• SEK is the clear market leader in on-line employment classifieds in Australia, with more than twice the unique browsers and three times the job listings of the nearest competitor site (CMJ). |

| | IC category | Operational definition | Coding rules | Examples |
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| | | | **<u>Exclude</u>**<br>• Reference to the market share of a particular brand when that brand is explicitly mentioned should be categorised under "brands".<br>• Reference to market penetration levels and changes therein or sales growth/decline.<br>• Reference to the number of customers/subscribers/clients.<br>• Reference to the firm as the leading company or dominant manufacturer/producer (as the emphasis is not on its share of sales in the total market) – these references are categorised as "corporate image and reputation". | |
| **1.2** | **HumC** | | | |
| **1.2.1** | ***Educational qualifications*** | Educational, professional and vocational qualifications of all employees (including board of directors) indicating the suitability of individuals for the relevant job.<br>Also include employees (including directors) memberships in professional bodies (*e.g.*, directors being members of Australian Institute of Firm Directors) | • Reference to education that is not specifically aimed at a certain career.<br>• Reference to qualifications relating to a specific career but not to a specific job or task at a specific firm.<br>• Reference to technical qualifications not related to a specific firm or organisation.<br>• Reference to training that relates to the work area but not specifically to the job or firm situation.<br>• Membership of professional bodies and associations. | • FJ Swan FAICD (FGL).<br>• Peter Hofbauer holds a Bachelor of Business degree from Swinburne University of Technology (BBW).<br>• Mr Scott is a community pharmacist … (SIP).<br>• Mr McKeon is a Fellow of the Australian Institute of Company Directors (MYO). |
| **1.2.2** | ***Employee attitude, commitment and satisfaction*** | Employee attitude refers to the way an employee feels about his role in the organisation. This directly affects his/her | • Reference to dedication and commitment of employees.<br>• Reference to employee satisfaction.<br>• Reference to enthusiasm of employees. | |

| | IC category | Operational definition | Coding rules | Examples |
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| | | commitment to work and will be reflected in their satisfaction levels. | • Reference to willingness of board members to be reappointed.<br>• Reference to HRM strategies for building employee commitment. | |
| **1.2.3** | ***Employee entrepreneurship*** | Employee entrepreneurship refers to the entrepreneurial qualities displayed by employees such as boldness, willingness to take risks, motivation to succeed, need for achievement, independence, ingeniousness and resourcefulness, creativity and optimism etc. | • Reference to employees' ability to input ideas and to affect practises.<br>• Reference to ingenuity or innovativeness of employees.<br>• Reference to proactive and reactive abilities of employees, and their adaptability to change.<br>• Reference to other entrepreneurial skills of employees such as leading the development of new businesses.<br>• Reference to a person as a founder or a co-founder of a business.<br>• Reference to development of new business or making radical changes to existing businesses by an employee, consultant or director. | • He pioneered the franchise business structure and the bulky goods retailing concept in Australia (HVN).<br>• This has allowed the group to generate substantial profits from new business initiatives developed at the grass-roots level within the divisions (MQG).<br>• Peter has successfully initiated major growth of the wholesale business through the establishment of an effective network of Campbells and C store Distribution warehouses which service the hospitality, liquor and convenience sectors in Australia (MTS).<br>• Mr Hance co-founded the group in 1987… (TIM). |
| **1.2.4** | ***Employees (other)*** | References to employees of the firm that cannot be included under another category. Employees of the firm, for the purpose of this study, include executive and non-executive directors and consultants employed by the company on a contractual basis. | • Reference to employees that cannot be included in another category should be classified under this category and re-classified either under CEO, other employees and other executives and directors. | • See examples under each subcategory. |
| **1.2.4.1** | ***CEO / MD*** | References to the CEO/MD of the firm that cannot be classified under another category. | • Name of CEO/MD.<br>• Reference to dependence on CEO/MD.<br>• Reference to honorary titles of CEO/MD (*e.g.,* AOM).<br>• References to resignation of existing | • MYOB was co-founded by the current CEO Craig Winkler in 1996 (MYO).<br>• The company's CEO is Mr Derek O'Neill (BBG).<br>• A CEO is likely to be appointed in the near term (CWN). |

| | IC category | Operational definition | Coding rules | Examples |
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| | | | CEO/MD, appointment of a new CEO/MD.<br>• Age of CEO/MD.<br>• Other positions held in the firm by the CEO/MD (does not include directorships in subsidiaries or related companies).<br>• Reference to CEO/MD recruitment.<br>• Reference to responsibilities and duties assigned to CEO/MD.<br>• Reference to the date of appointment to the post or years of experience in the current post.<br>• Reference to performance of CEO/MD.<br>**Exclude**<br>• Directorships held in subsidiary or associate companies – such references are classified under work experience of the CEO/MD. | • Tim Wildash, Executive Director and Managing Director (CUS).<br>• Wildash is now responsible for all of the Australian operations of CUS (CUS).<br>• Roger Corbett has built WOW into Australasia's largest retailing empire (WOW). |
| **1.2.4.2** | ***Other employees*** | References to the general employees (including junior managers) of the firm that cannot be classified under another category. | • Reference to distribution of employees by age, sex etc.<br>• Mention of key employees.<br>• HumC indicators such as employee numbers and volume by employees.<br>• Reference to dependence on employees.<br>• Reference to productivity of employees.<br>• Any other references to employees that cannot be included in other categories.<br>• Reference to HRM policies and practices (*e.g.,* recruitment and selection, performance appraisal and remuneration) in relation to normal employees.<br>• Reference to responsibilities and duties assigned.<br>**Exclude**<br>• Reference to layoffs and retrenchments of employees as a means of cutting cots. | • SMS has undertaken a large recruitment drive since 2005, lifting its total number of employees by more than 100 in 2005 (SMX).<br>• Crown Melbourne is Victoria's largest single site employer, with ~7,000 employees (CWN).<br>• The divisional operators have all come from within the Harvey Norman system and operate the relevant division on a global basis (HVN).<br>• It has more than 400 staff nationwide… (HSP).<br>• This principally involves intensive recruitment screening… (MQG).<br>• To counter this, SMS has become a sponsoring employer, allowing it to recruit overseas staff under the 457 visa program (SMX).<br>• …and is responsible for the daily operation, management and marketing of IIF including all financial, reporting, administrative functions (IIF). |

| | IC category | Operational definition | Coding rules | Examples |
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| | | | • Reference to employee data in the context of firm expenditure. | |
| **1.2.4.3** | ***Other executives and directors*** | References to the senior management and board of directors of the firm that cannot be classified under another category. | • Names of directors and senior management<br>• Reference to dependence on specific directors or senior managers.<br>• Reference to appointment and resignation of executives and directors.<br>• Reference to honorary titles of Board members (*e.g.,* AOM).<br>• Age of directors.<br>• Other positions held within the firm by directors and senior management (*e.g.,* membership in the audit committee).<br>• Reference to responsibilities and duties assigned.<br>• Reference to the date of appointment to the post or years of experience in the current post.<br>**<u>Exclude</u>**<br>• Directorships held in subsidiary or associate companies – such references are classified under work experience of other executives. | • Korea is currently being managed by Reg Randal Sales Director and Peter Kelly (CCL).<br>• As a result, many senior executives and several board members left the company during 2003 (ALL).<br>• Peter Casey, the Global Operations Manager is responsible for ensuring supply chain efficiency across all regions (BBG).<br>• Peter Casey, the Global Operations Manager is responsible for ensuring supply chain efficiency across all regions (BBG).<br>• Dr Moss joined the Boral Board in 1999 and became the Chairman of Directors in 2000 (BLD). |
| **1.2.5** | ***Equality*** | Firm's policies and practices related to discrimination, harassment and victimisation of employees on the grounds of disability/impairment; race/ethnicity; sex; age; political belief/activity; religious belief/activity; pregnancy; breast feeding; parental/carer status; marital status; gender identity or sexual orientation; physical features; industrial | • Reference to disable employees, equal opportunities, non-discrimination, or harassment and victimisation free working environments.<br>• Reference to policies and practices in place to create an environment free from discrimination, harassment and victimisation | No examples found. |

| | IC category | Operational definition | Coding rules | Examples |
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| | | activity; or personal association with a person in one of the above categories (Swinburne University of Technology, 2008) | | |
| **1.2.6** | ***Management team*** | This category includes all references to firm's management as a collective. | • Reference to the reputation of firm management.<br>• Reference to changes in management.<br>• Reference to the performance and track record of firm's management.<br>• Reference to performance of firm management.<br>• Reference to the attitude of firm management as a whole (*e.g.*, conservativeness of the management team).<br>• Reference to expertise of the management team.<br>• Reference to commitment of the management team.<br>• Reference to a motivated management team.<br>**Exclude**<br>• References individual members of the management team – these are included under the respective categories. | • In FY04, BBG changed management in Europe (BBG).<br>• …a longer track record from management on delivering to targets, in particular delivering double-digit EPS growth in FY07 (CGF).<br>• The new management team has delivered store number growth and revenue growth (API).<br>• The company's strategy will be to enhance value, particularly revenue and profitability (including via acquisition), by utilising its strong management team … (CWN).<br>• Crowns management team has extensive experience in the domestic gaming industry (CWN).<br>• …management's stewardship of the core Victorian lottery and gaming businesses has been sound… (TTS). |
| **1.2.7** | ***Remuneration and incentive schemes*** | Remuneration and incentive schemes refer to all payments, both monetary and non-monetary and benefits/entitlements provided to employees as part of their employment or as inducements to perform better in the future. | • Remuneration and incentive schemes offered to firm's executives and directors, and other employees are included under this category and should be reclassified into the appropriate third tier categories thereafter. | • See examples under each subcategory. |
| **1.2.7.1** | ***Executives and*** | Remuneration and incentive | • Reference to executive compensation plans, | • Management claim strongly performing OMs can be |

| | IC category | Operational definition | Coding rules | Examples |
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| | ***directors*** | schemes offered to firm's senior executives and directors (both executive and non-executive) including CEO/MD. | executive incentive schemes, executive share ownership schemes, share option schemes and profit sharing schemes.<br>• Reference to benefits provided to executives.<br>• Reference to other perquisites and incentives provided to executives. | earning returns of A$200k or even A$300k after the first two years (~2x their typical previous salaries) (BOQ).<br>• …performance incentives (receive additional equity after five years if 10% IRR or greater is achieved) (CIF).<br>• Baker holds […] options to acquire and additional 40.0m shares (CUS).<br>• For executive directors (EDs), bonuses paid only completely vest at the end of 10 years (MQG). |
| **1.2.7.2** | ***Other employees*** | Remuneration and incentive schemes offered to employees of the firm who are either junior managers or general employees. | • Reference to employee compensation plans, employee incentive schemes, employee share ownership schemes, share option schemes and profit sharing schemes.<br>• Reference to benefits provided to employees.<br>• Reference to other perquisites and incentives provided to employees. | • As a franchisee is promoted, the person has the incentive to drive sales and gross profit to improve their own income (HVN).<br>• We believe SYB management was in the process of incentivising its radiologists on a percentage-of-profit-per-practice basis (HSP).<br>• DDR employees are compensated based on the performance of the overall portfolio (MDT). |
| **1.2.8** | ***Skills and capabilities*** | Skills and capabilities refer to soft or generic skills and capabilities of employees that cannot be classified under another category.<br>Recording units in this category needs to be further categorised into third tier categories under CEO, other employees or other executives and directors. | • Reference to work related skills, knowledge and abilities of employees.<br>• Reference to other skills and abilities of employees (*e.g.,* reference to softer skills such as "communication" and "teambuilding".)<br>• Reference to job specific or functional experiences.<br>**<u>Exclude</u>**<br>• Reference to experiences without relating to a specific area or function (*e.g.,* experience in a particular industry) – these are categorised as work experience.<br>• Reference to entrepreneurial skills – these should be included under 'employee entrepreneurship'. | • See examples under each subcategory. |

| | IC category | Operational definition | Coding rules | Examples |
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| **1.2.8.1** | ***CEO/MD*** | Soft or generic skills and capabilities of the CEO/MD that cannot be classified under another category. | • Reference to the abilities, skills and performance of the CEO/MD.<br>• Reference to activities performed in the current job by the CEO/MD.<br>• Reference to job specific or functional experiences of CEO/MD. | • An extensive background in technical marketing and business development across Australia and the UK… (HDF).<br>• Mr Murray has extensive knowledge of fast moving consumer goods, sales and marketing having worked for Procter & Gamble and Spillers Petfoods (LNN). |
| **1.2.8.2** | ***Other employees*** | Soft or generic skills and capabilities of other employees (including junior managers) which cannot be classified under another category | • Reference to abilities, skills and performance of general employees and junior managers.<br>• Reference to activities performed in the current job by the other employees. | • The tester (be it a radiographer, CT scanner or ultrastenographer) must have a high degree of skill in order to perform the procedure" (SHL). |
| **1.2.8.3** | ***Other executives and directors*** | Soft or generic skills and capabilities of other executives or directors that cannot be classified under another category. | • Reference to the abilities, skills, and performance of executives and directors (excluding CEO).<br>**Exclude**<br>• Reference to the skills and capabilities of the management team without specifically referring to an individual or a position (*e.g.*, skilled management team, excellent management, and management have done a very good job etc) – these should be categorised under management team. | • He has led the development of Babcock & Brown's energy sector capability in Australia and New Zealand, including the renewable energy business, and has specialised in the development of new projects in the infrastructure sector (BBW).<br>• Mr. Silcock has post qualification experience of over ten years in the field of accounting and corporate finance (BBW).<br>• Skill base of typical OMs suggest they will draw a decent share of SME business (B OQ). |
| **1.2.9** | ***Training and development*** | Training and development refers to workplace learning of both job related skills and soft skills. It can include orientation programs offered to new employees and on-the-job and off-the-job training. | • Reference to on-the-job and off-the-job training provided to its employees by the firm.<br>• Reference to firm sponsoring employees to undertake academic/professional/vocational qualifications.<br>• References to policies and procedures in the firm to enhance knowledge and capabilities of employees.<br>• Internal promotion policies and systems. | • Additionally, MYOB has set itself targets of hiring and training 50 new sales people (MYO).<br>• While Woolworths strongly endorses its internal succession planning… (WOW). |
| **1.2.10** | ***Work experience*** | Work experience refers to information on previous and | • Reference to previous employment of current employees/directors. | • See examples under each subcategory. |

| | IC category | Operational definition | Coding rules | Examples |
|---|---|---|---|---|
| | | current employment of employees of the organisation that has the potential to enhance their work performance in current and/or future position. Work experience of the CEO, other employees, executives and senior managers of the firm are included under this category and reclassified into the appropriate third tier categories thereafter. | • Current positions held by employees/directors outside the firm, in addition to their main position in the firm.<br>• Reference to combining knowledge and/or experience held by members of groups or teams to benefit the organisation.<br>• Reference to activities performed in previous jobs.<br>• Reference to industry specific experience<br>**Exclude**<br>• Reference to job specific experiences or experiences related to specific functional areas – these are categorised as skills and capabilities.<br>• Reference to years of experience in (or date of appointment to) the current position should be categorised as 'employees'. | |
| **1.2.10.1** | ***CEO/MD*** | References to the work experience of the CEO/MD of the firm | • Current positions held outside the firm by CEO/MD (including current directorates in subsidiary and associate companies).<br>• Previous positions held both within the firm and outside the firm by CEO/MD.<br>• Years of experience in (or date of appointment to) previous positions.<br>• Reference to activities performed in the previous jobs by the current CEO/MD.<br>• Reference to industry specific experiences of the CEO.<br>**Exclude**<br>• Reference to job specific experiences or experiences related to specific functional areas – these are categorised as "skills and capabilities" – "CEO/MD" subcategory.<br>• Years of experience in (or date of | • Mr. Craigie […] is also a Director of Crown Melbourne Limited, Burswood Limited, Melco PBL Entertainment (Macau) and Aspinall Holdings (Jersey) Limited (CWN).<br>• Prior to joining Crown, Mr Craigie was with the TAB in Victoria (CWN).<br>• He is a Board Member of the Business Council of Australia (BLD).<br>• He has attained significant experience at the company holding various senior management positions including General Manager of BBG's European operations from 1992-2003 (BBG).<br>• Jamie Odell has more than 25 years' experience in the beverage sector in Australia, Asia and Europe (FGL). |

| | IC category | Operational definition | Coding rules | Examples |
|---|---|---|---|---|
| | | | appointment to) the current position – categorised as "employees" – "CEO/MD" subcategory.<br>• Reference to activities performed in the current position – categorised as "employees" – "CEO/MD" subcategory. | |
| **1.2.10.2** | ***Other employees*** | References to the work experience of general employees (including junior managers) of the firm | • Current position held outside the firm by its employees (including junior managers).<br>• Previous positions held both within the firm and outside the firm by employees.<br>• Years of experience in (or date of appointment to) previous positions.<br>• Reference to activities performed in previous jobs.<br>**Exclude**<br>• Reference to job specific experiences or experiences related to specific functional areas – these are categorised as "skills and capabilities" – "other employees" subcategory.<br>• Years of experience in (or date of appointment to) the current position – categorised as "employees" – "other employees" subcategory.<br>• Reference to activities performed in the current position – categorised as "employees" – "other employees" subcategory. | • Current Fund Manager, Doug Auchterlonie, has over 17 years experience in property and funds management and is responsible for the daily operation, management and marketing of IIF including all financial, reporting, administrative functions (IIF).<br>• Doug was previously portfolio manager for IIF (IIF). |
| **1.2.10.3** | ***Other executives and directors*** | References to the work experience of senior management and board of directors of the firm | • Current position held outside the firm by its directors and officers (including current directorates in subsidiary and associate companies).<br>• Previous positions held both within the firm and outside the firm by directors and | • Mr Casey was recently the General Manger Europe and has previously held managerial roles within BBG's sourcing and production departments (BBG).<br>• He has held that role since 1998 when he established BBG's presence (BBG).<br>• He has extensive experience in the surf wear and |

| | IC category | Operational definition | Coding rules | Examples |
|---|---|---|---|---|
| | | | officers<br>• Years of experience in (or date of appointment to) the current position.<br>• Reference to activities performed in the previous jobs by executives and directors (other than CEO)<br>**Exclude**<br>• Reference to job specific experiences or experiences related to specific functional areas – these are categorised as "skills and capabilities" – "other executives or directors" subcategory.<br>• Years of experience in (or date of appointment to) the current position – categorised as "employees" – "other executives or directors" subcategory.<br>• Reference to activities performed in the current position – categorised as "employees" – "other executives or directors" subcategory. | apparel industry […] (BBG)<br>• He served as CEO of Burswood Limited from 2004 to 2007 (CWN).<br>• Peter Hofbauer is a Babcock & Brown executive and is the global head of Babcock & Brown's infrastructure and Project Finance business since June 2005 (BBW). |
| **1.2.11** | ***Working environment*** | Working environment is the conditions of the physical and the mental space that employees perform their tasks in. | • Reference to union activities and occupational health and safety.<br>• Reference to employees' ability to build a career in the firm.<br>• Reference to work related policies such as seconding employees to different geographic locations.<br>• Reference to staff turnover. | • The Coke System allows executives to move globally with experienced managers in Australia, NZ and Indonesia (CCL).<br>• While the company regularly moves good franchisees from smaller stores to larger stores and vice versa, in FY06e it is doing it on a larger scale in a shorter amount of time (HVN).<br>• In FY06, SMS has managed to reduce its turnover to about 25%, but hopes to bring it closer to 20% which, again, would positively affect earnings (SMX). |
| **1.3** | **IntC** | | | |
| **1.3.1** | ***Business model*** | Business model is a conceptualisation of the way a | • Reference to the term business model and explanation of the business model. | • NetReturn claims its advantage lies in its ASP model (*i.e.,* customers "rent" the software via an Internet |

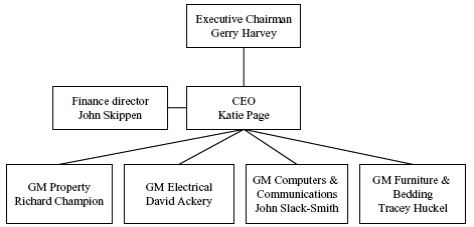
| | IC category | Operational definition | Coding rules | Examples |
|---|---|---|---|---|
| | | firm does business by identifying the elements and relationships that describe the business (Ostenwalder *et al.*, 2005). A business model may be explained by referring to the markets it serve and how it serves those markets. | • Description of the nature of firm's business activities that explain its business model.<br>• Explanation of franchising systems (if franchising is the firm's business model)<br>• Reference to the attractiveness, advantages and benefits of the firm's business model.<br>**Exclude**<br>• All other references to franchising operations are included under "franchising, licensing and external contracts". | channel rather than buying the software outright) (MYO).<br>• MYOB differs from its major domestic competitor in that it owns and develops the software (MYO).<br>• The emergence of "participation" as a sales model will continue to deliver expanded earnings and margins, through sales of Aristocrat jackpot game technology (ALL).<br>• Harvey Norman operates a franchise business structure in Australia with up to four franchisees within each Harvey Norman complex (HVN).<br>• Melco PBL Entertainment is a developer, owner and operator of Casino gaming and entertainment casino resort facilities focused exclusively on the rapidly expanding Macau market (CWN). |
| **1.3.2** | ***Corporate culture*** | Schein (1985) defines corporate culture as "…a pattern of basic assumptions – invented, discovered, or developed by a given group as it learns to cope with its problems of external adaptation and internal integration – that has worked well enough to be considered valuable and, therefore to be taught to new members as the correct way to perceive, think, and feel in relation to those problems." It is a set of shared values, meanings, norms, beliefs, understandings and expectations of an organisation's employees. | • Reference to employees shared beliefs, attitudes, values, expectations and modes of behaviour that characterise the firm.<br>• Explicit reference to the term culture in the business context.<br>• Reference to the type of behaviour encouraged by the firm. | • Development of this system has been assisted by a carefully cultivated 'entrepreneurial culture' within MBL (MQG).<br>• As a counterpoint to an entrepreneurial culture, MBL has sought to provide individual businesses with a balance between operating freedom and controls on risk limits (MQG). |
| **1.3.3** | ***Corporate*** | Corporate Governance is the | • Reference to composition of the board, | • In this respect it is pleasing to note BNB is currently |

| | IC category | Operational definition | Coding rules | Examples |
|---|---|---|---|---|
| | ***governance*** | framework of rules, relationships, processes and system by which companies are directed and controlled. | independence of directors, subcommittees of the board (*e.g.*, audit, remuneration and appointment committees), and separation of roles of the CEO and chairperson.<br>• Reference to minority shareholder protection.<br>• Reference to operational risk management policies and practices (excluding financial risk management strategies such as hedging).<br>• Reference to accountability and transparency of business operations.<br>• Reference to internal controls not included in "Management process, policies and practices". | implementing specialist fund corporate governance principles with completion expected in FY06 (BNB).<br>• Majority of fund Board directors are independent (BNB).<br>• Two directors of CCL's seven member board are nominated by TCCC (CCL).<br>• These problems exposed weaknesses in management reporting and accountability within the company (ALL).<br>• In this regard CMH will have board representation in each of its investments (CMJ). |
| **1.3.4** | ***IP*** | IP includes patents, copyrights, trademarks, service marks, trade secrets, mastheads, etc that can be protected by law. | • Reference to patents, copyrights, trademarks, service marks, trade secrets, mastheads etc<br>• Reference to developing and protecting aforementioned IP.<br>• Reference to income generated and other benefits derived from aforementioned IP.<br>**<u>Exclude</u>**<br>• Reference to brand names. | • In terms of innovation, Ms. Minnick stated that the company is creating products across a number of trademarks (CCL). |
| **1.3.5** | ***Information technology and information systems*** | Information systems are manual and/or technology based systems that enable to manage, share and disseminate knowledge and information. Information systems facilitate implementation of management processes.<br>Information technology refers to hardware, software and | • Reference to systems that convert data into information, store and manage information, disseminate information, share information and enable communication within the firm and between the firm and outside parties. | • IOS is an order routing and reporting system (*i.e.*, live order pad), which allows users to input orders, receive real time reporting, access indications of interest and allocate trades (Iress Market Technology Limited).<br>• In November 2007, MySpace announced a new platform to enable advertisers to analyse the performance of display advertisements called SelfServe by MySpace (NWS).<br>• The technology, which is expected to be introduced |

| | IC category | Operational definition | Coding rules | Examples |
|---|---|---|---|---|
| | | communication systems that enable information systems to operate. | | in early 2008, enables advertisers to design customised display ads, utilise ad-targeting tools to select for geography, demographics or user-interests, and select optimal ad placement within the MySpace network (NWS). |
| **1.3.6** | ***Management philosophy*** | Management philosophy is the way leaders of an organisation think about the organisation and its stakeholders, both internal and external (Guthrie *et al.*, 2003). It is a set of broad principles that shapes the firm's relationship with its stakeholders. Management philosophy guides management processes. | • References to guiding principles in any area of business management that guide management processes (Unerman *et al.*, 2007).<br>• Reference to broad objectives.<br>**Exclude**<br>• Reference to corporate objectives and strategy. | • MBL defines its management philosophy as 'freedom within boundaries' or "loosetight", which encourages every business to take responsibility for its growth, including defining strategy (MQG).<br>• … and has resisted temptation to acquire distribution with a philosophy to focus on higher margin business (BNB). |
| **1.3.7** | ***Management processes, policies and practices*** | Management processes are management activities that support and enable achievement of corporate strategy.<br>Management philosophy is translated into corporate strategy and operationalised through management processes.<br>Management processes include operational strategies and physical implementation of those strategies.<br>In addition to management process, this category also includes policies and practices that are used by firm management in day-to-day business operations and management decision making. | • Reference to an explicit set of systems, policies, practices, procedures and/or techniques that support, and enable the practical implementation of corporate strategy (Unerman *et al.*, 2007).<br>• Reference to the role of management.<br>• References to systems and structures through which management deal with day-to-day problems.<br>• Reference to execution of business plans.<br>• Reference to restructuring activities and improvements undertaken in various functional areas (includes restructure of business model).<br>• References to reviewing performance drivers and benchmarking exercises.<br>• Reference to transport management.<br>• Reference to the firms supply chain or | • For each investment opportunity, the Manager will develop and present investment proposals for each of Spark Infrastructure's Board of Directors (SKI).<br>• We understand that, over the past two years, SYB management has been aiming to increase the amount of benchmarking and standardisation of ordering across SYB's pathology labs (SHP).<br>• SMS has undertaken further restructuring in FY06, which resulted in only a modest A$0.7m impact on profits (SMX).<br>• UXC has a collaborative management style, where senior executives and business unit managers jointly set profit and revenue targets for each of the businesses (UXC).<br>• 'Project Productivity' includes the usual cost cutting measures such as reducing staffing levels by 450 positions and will also focus on making its operations safer (ZFX). |

| IC category | Operational definition | Coding rules | Examples |
|---|---|---|---|
| | | supply chain management, logistics and primary logistics systems (not related to information technology).<br>• Reference to improvements undertaken in various functional areas.<br>• Reference to agreements with third parties to outsource certain operations or functions of the firm.<br>• References to names of outsource partners (only when they are not strategic partners).<br>• Management contracts offered by the firm (including services performed under the contract conditions for termination and time period of the contract) for the performance of management or operational functions.<br>• Reference to cost control.<br>• Descriptions of the firm value chain.<br>• Reference to management empowerment.<br>• Reference to changes in cash conversion cycle (or working capital cycle).<br>• Reference to initiatives to reduce overhead costs and increasing efficiency.<br>• Reference to management style.<br>• Reference to HRM strategies, policies and practices.<br>**Exclude**<br>• Reference to information and network systems.<br>• Reference to marketing techniques and policies.<br>• Reference to HRM policies and practices (*e.g.,* recruitment and selection, performance appraisal and remuneration).<br>• Reference to outsourcing other activities of | • Management has embarked on a programme to improve the economic and production efficiency of its operations (ZFX).<br>• Additionally, WOW will lower costs through better transport management and the new distribution centres under construction (WOW).<br>• Day-to-day management of the portfolio will be undertaken by Kennards Self Storage for a fee calculated at 7% of gross revenue (VPG).<br>• TIM outsources operational management of these projects to industry specialists that are leaders in their field (eg, Select Harvest) (TIM).<br>• Structure is aimed at incentivising SPAM to achieve SPN's key performance indicators and to align SPN's interest with those of its investors (SPN).<br>• SPA Management (SPAM) has entered into a Management Services Agreement with SPN (SPN).<br>• This operation has required a very hands-on approach from both a mining and a processing perspective and will likely continue to challenge the AQPSA management (AQP). |

| | IC category | Operational definition | Coding rules | Examples |
|---|---|---|---|---|
| | | | the firm not relating to its management and operations. | |
| **1.3.8** | ***Organisational and business expertise*** | Expertise of the firm that cannot be related to other categories. | • Reference to a firm's strengths, capabilities, know-how, and core competences (not in relation to specific individuals of the firm).<br>• Reference to what firm has achieved in the past in the context that exemplifies its expertise (*e.g.,* specialised projects completed).<br>• Reference to flexibility, efficiency, productivity and innovativeness of the organisation and production processes.<br>• Reference to reduction in costs as a result of efficiency and operating leverage.<br>• Reference to a firm's ability to leverage its expertise (*e.g.,* ability to develop new products).<br>• Reference to a firm's ability to manage things (without specifically referring to the management of the firm).<br>• Reference to distribution capabilities (not relating to distribution network or store network).<br>**Exclude**<br>• Reference to the strengths of the firm management team is excluded (included under "employee skills and capabilities – executives and directors"). | • In both segments, we note that MYOB has historically been a product innovator (MYO).<br>• News Corp. is one of the best international managers of newspaper assets. […] (NWS).<br>• We believe that Fox Filmed Entertainment also benefits from a very strong international distribution operation (NWS).<br>• As a result of the company's high fixed-cost and low variable-cost structure, we expect that as Sky Italia's business scales, the company will benefit from significant operating leverage (NWS).<br>• Fox Studio's tight cost management in film production has yielded superior profitability (NWS). |
| **1.3.9** | ***Organisational and management structure*** | Organisation structure refers to the way in which a firm is organised. An organisation structure can be explained in many ways, such as, by referring to the various divisions | • Any reference to the organisational structure of a firm.<br>• Reference to benefits derived directly as a result of the way in which the particular firm is organised or structured (such as flexibility). | • The business is structured along five business lines: Real estate, infrastructure, operating leasing, structured finance, and corporate finance (BNB).<br>• Billabong's management structure is centred on the geographic segments it competes in. (BBG).<br>• Nonetheless a key differentiating factor is that |

| | IC category | Operational definition | Coding rules | Examples |
|---|---|---|---|---|
| | | (including subsidiaries or business units) it comprises, the way it is managed, its geographical dispersion, the markets it served, and products and services produced by it. | • Reference to the firm's management hierarchy.<br>• Reference to the group structure when the firm is the parent.<br>• Reference to the various divisions that comprise the firm in the context of explaining its structure.<br>**Exclude**<br>• Reference to how the firm fits within the broader group structure when it is a subsidiary (this is categorised under financial relations). | Austar does not have the complex ownership structure that Foxtel has (CMJ).<br>•<br>Figure 29. Harvey Norman management structure<br>  <br>(HVN) |
| **1.3.10** | ***Quality*** | Quality is generally defined as fitness for use, conformance to requirements or having all the characteristics that a product or service must have to function as intended. | • References to product quality.<br>• Reference to initiatives taken by a firm to achieve and sustain high quality in products and processes such as ISO quality certification.<br>• Reference to evidence of achieved quality such as wining quality awards.<br>• Reference to service quality. | • [...] both products [are] of excellent quality (MYO).<br>• There will be a continued focus on ensuring all gaming floors, hotels, food and beverage and retail facilities are maintained to the highest international standards (CWN).<br>• This process increases the in-situ mining grade from 2.6g/t (3 PGE and gold) to a head grade of 3.1 g/t (3 PGE and gold) (AQP).<br>• Low outage levels: CitiPower has produced the most reliable level of service of all Australian urban distributors (SKI). |
| **1.3.11** | ***Research & Development (R&D)*** | Research can be defined as the search for new or refined knowledge (scientific or technical) and ideas that will be useful in developing new or improved products, services, processes or techniques. Research is normally categorised into basic and applied research. The former | • Reference to R&D activities of the firm, R&D strategy, outcomes of R&D activities, firm emphasis on R&D, and future directions in relation to R&D.<br>• Reference to NPD that which is beneficial to the firm and indicate the strength of firm's R&D function.<br>• Reference to spending on R&D.<br>**Exclude**<br>• Reference to NPD R&D in the context of | • COH is fundamentally a technology integrating company that typically conducts applied R&D, watches for technology developments in the broader market and seeks alliances when advantageous (COH).<br>• COH has a strong track record in terms of R&D (COH).<br>• The formation of dedicated centres of excellence in R&D should help with development of valuable products (CSL). |

| | IC category | Operational definition | Coding rules | Examples |
|---|---|---|---|---|
| | | refers to original research directed primarily towards advancement of knowledge whereas the emphasis of the later is on solving recognised practical problems (AASB, 1983; Federal Accounting Standards Advisory Board [FASAB], 1996). Development is the application or use of such knowledge (or research findings) and ideas for the development of new or improved products, services, processes and techniques (AASB, 1983; FASAB, 1996) . | competitive advantage. | • Management forecasts CSL will spend A$150m on R&D in FY05, and generally spends 5% of sales on R&D each year (CSL). |
| **1.3.12** | ***Strategy*** | Johnson & Scholes (2002, p.10) define strategy as the direction and scope of an organisation over the long-term, which achieve advantages for the organisation through its configuration of resources within a changing environment and to fulfil stakeholder expectations. They classify strategy into corporate-level strategy, business unit level strategy, and operational strategies.<br>Accordingly, corporate strategy is concerned with the overall purpose and scope of an organisation and is the basis for | • Reference to all corporate-level, business-unit level and operational strategies (*e.g.,* strategies for improving efficiency, productivity, flexibility, adaptability and growth) which are not classified under another category.<br>• Reference to strategies for gaining market share from a competitor.<br>• Reference to other strategies for increasing market share.<br>• Reference to distribution strategies.<br>• Reference to advantages of strategies implemented or intending to be implemented by the firm.<br>**<u>Exclude</u>**<br>• Reference to broad objectives.<br>• Reference to branding strategies (should be | • With a mature market, MYOB's strategy is centred on the launch of new products into the existing channel (MYO).<br>• The strategy in the US for Aristocrat is to increase their presence and penetration into existing markets, take advantage of new markets opening, and increase the number of units on participation (ALL).<br>• Aristocrat has flagged their intention to pursue the Canadian market, and to continue to sell into South America (ALL).<br>• BBG remains committed to using specialty stores to distribute products, which will support the exclusivity and premium of the brands (BBG).<br>• The purpose of Crown's demerger is to enhance the focus and strategies of the gaming businesses and better align the capital structure and financial policies with industry peers (CWN). |

| | IC category | Operational definition | Coding rules | Examples |
|---|---|---|---|---|
| | | making business unit and operational strategies. | included under "brands").<br>• Reference to strategies for building and retaining customer relationships (should be included under "customer relationships, satisfaction and loyalty").<br>• Reference to strategies for attracting new customers and market positioning strategies (should be included under "customers").<br>• Plans to construct infrastructure, buildings etc or refurbishment of buildings. | |
| **1.1.1.** | ***Technology (other)*** | Technological activities and capabilities that contribute to the creation of organisational capital but cannot be categorised as information systems (Roos *et al.*, 1997). | • Reference to the use of technology in manufacturing, transportation and marketing etc.<br>• Reference to claims to having technical capability.<br>• In relation to banks - reference to ATM networks.<br>• Reference to investment/spending on technology. | • This should lead to increased efficiencies via the automation of pathology, and thus higher margins from FY05 and FY06 (SHL).<br>• In early 2006, Tabcorp expects to have an integrated account betting and single fixed-odds betting system with integrated retail betting by mid-2006 (TAH).<br>• The mining method used at KPM is fairly unique in PGM mining in that grade control and excess dilution is controlled through an underground and surface scalping process to remove waste rock (AQP). |

## Panel II: Evidence categories

| | Category | Operational definition | Coding rules | Examples |
|---|---|---|---|---|
| **2.** | **EVIDENCE** | | | |
| **2.1** | ***Discursive*** | A theme disclosed in narrative/written form only or a cell in a table which conveys a non-numerical meaning by corresponding to column and row headers. | • A theme that cannot be classified into either numerical (non-monetary), monetary or visual. | • The company has a strong position in gaming machine design and manufacture, as well as gaming systems, and despite the moribund Australian market, international opportunities are strong (ALL)<br>• After bidding on GasNet in August, APA acquired Allgas from the QLD Gov't in October and DirectLink in December (APA). |

| | Category | Operational definition | Coding rules | Examples |
|---|---|---|---|---|
| **2.2** | ***Monetary*** | Information disclosed using actual numbers of financial nature to communicate or emphasise a theme. | • Reference to a monetary value in a theme containing an IC reference. | • The expected synergies were estimated to be between $14m to $18m, to be recognised by CY08 (ASX).<br>• In addition, BBG purchased Palmers Surf Company in October 2004 for approximately $25 million (BBG). |
| **2.3** | ***Numerical (Non-monetary)*** | Information disclosed using actual numbers of non-financial nature to communicate or emphasise a theme. | • Reference to a number (not in relation to dates).<br>• Reference to a time period (*e.g.,* number of years, specification of two points in time indicating time duration, a decade etc).<br>• Reference to a ranking relative to others (*e.g.,* **the** leading position in the market, **the** largest player in the market, **the** dominant player, second most efficient producer etc).<br>• Reference to a percentage (*e.g.,* market share as a percentage, shareholding in investee companies as a percentage).<br>• Reference to a lease or contract period (or duration of a lease or contract).<br>• Reference to a date since a position was held by an employee/director, if the end date of the position is given or position is being held to date.<br>**<u>Exclude</u>**<br>• Reference to a number where the number does not provide any incremental meaning to the theme containing IC or where the number is not directly related to the theme containing IC.<br>• Reference to a date without indicating a time period.<br>• Reference to the firm or a firm/business | • TTS holds one of the two licences (along with Tabcorp) to own and operate up to 13,750 slot machines in clubs and pubs in Victoria (TTS).<br>• He has more than a decade of experience in the European sportswear industry… (BBG).<br>• He has attained significant experience at the company holding various senior management positions including general manager of BBG's European operation from 1992-2003 (BBG).<br>• Billabong is the leading surf wear apparel brand in Australia (BBG).<br>• Footwear accounts for 14% of pacific Sunwear's sales in the US (BBG).<br>• MPEL has signed a services agreement with New Cotai Entertainment and New Cotai Entertainment, LLC to operate the 500,000 sq ft gaming facilities comprising of more than 400 gaming tables at Macao Studio City (CWN).<br>• Betfair Australia is a JV between Betfair UK and PBL, and it operates an online betting exchange in Australia and Betfair Australia has two directors, with each joint venture partner having an equal number of board members (CWN).<br>• He has been with Crown Melbourne from 1994 and was appointed as CEO in September 2004. (CWN)<br>**<u>Exclude</u>**<br>• Aspers in Northampton is a 3,700 sq metres JV |

| | Category | Operational definition | Coding rules | Examples |
|---|---|---|---|---|
| | | | related to the firm as one of a number of leading/largest companies or a leading/dominant company.<br>• Credit ratings (*e.g.,* AAA rating)<br>• Reference to a firm's percentage holding in a JV.<br>• Star ratings in relation to hotels.<br>• Reference to the number of divisions in the firm. | project with Kerzner and is due to open in the second quarter of 2008.<br>• In 2005, Crown Towers was inducted into the Victorian Tourism Awards Hall of Fame… (CWN).<br>• Aristocrat is a leading manufacturer of casino-style gaming machines (ALL).<br>• Crown Towers is regarded as one of the leading luxury five-star hotels in Australia (CWN).<br>• Fox Sports is a profitable 50/50 JV between PBL and NWS (News Corporation Ltd) which supplies sports programming to over two million Foxtel, Austar and Optus subscribers (CMJ). |
| **2.4** | ***Visual*** | A theme communicated through a graph, chart or figure. | • Organisational charts.<br>• Graphs depicting IC (*e.g.,* market share).<br>• Figures explaining or emphasising various aspects of IC | • Figure 4: The breakdown of API's customer base by age group (API).<br>• Figure 5: Comparison of Priceline and its competitors (by range and stock levels) (API).<br>• Figure 1. Billabong sales contribution by brand (FY05) (BBG).<br>• Figure 20. Sales Team Channel Focus (CCL)<br>• Chart 46: Private hospital market share by revenue, FY05 (HSP). |

## Panel III: News-tenor categories

| | Category | Operational definition | Coding rules | Examples |
|---|---|---|---|---|
| **3** | ***NEWS-TENOR*** | | | |
| **3.1** | ***Negative*** | Information about a firm lacking IC, not deriving an expected or reasonable level of benefits from IC, or being in a disadvantaged position compared to another firm in relation to possession or utilisation of IC. | • Reference to lack of IC.<br>• Reference to an IC theme indicating shortcomings.<br>• Reference to an IC theme yet to be proven.<br>• Reference to loss of market share to competitors.<br>• Reference to change in market share | • … HVN has aggressively marketed on radio to promote brand awareness but doesn't have the retail store footprint to support the advertising budget (HVN).<br>• The appeal of BBG's brands is more limited in Europe given the cultural and seasonal differences (BBG). |

| | Category | Operational definition | Coding rules | Examples |
|---|---|---|---|---|
| | | | percentages that demonstrates a decrement in market share.<br>• Reference to a firm's disadvantaged position in relation to IC.<br>• Reference to a firm's disputes with stakeholders.<br>• Reference to less than optimal credit ratings, ***only if*** expressed in a negative way.<br>• Reference to a firm's inefficiencies, if related to IC.<br>• Reference to lower than expected performance and synergies.<br>• Reference to a firm's management in a negative light.<br>• Forward-looking statements indicating worse firm performance in future because of present strategy or IC.<br>• Explanation of firm's IC by using adjectives with negative association.<br>• Reference to resignation of employees.<br>**Exclude**<br>• Reference to the date of expiry of contracts and licences.<br>• Numerical expression of market share or other IC without explicitly stating its inadequacy. | • Although management's stewardship of the core Victorian lottery and gaming businesses has been sound, the group's track record for expansion in terms of both geography and business line has yet to be proved (TTS).<br>• Harvey Norman's dominant position in electrical and furniture is being pressured by competitors (HVN).<br>• Nonetheless a key differentiating factor is that Austar does not have the complex ownership structure that Foxtel has (CMJ).<br>• A number of shareholders have commenced a class action against the company in relation to the period between 20 September 2002 and 26 May 2003, claiming the company failed to inform the market of its financial performance during this period and this led to losses being incurred by shareholders (ALL).<br>• However, at this stage management's conservative approach and the inadequate return on capital offshore means that offshore expansion is very difficult to value (HVN).<br>• The company's lack of experience in constructing and operating an integrated resort, significant competition and it also currently lacks a local partner (TAH).<br>• As a result, many senior executives and several board members left the company during 2003 (ALL). |
| **3.2** | ***Neutral*** | Information disclosed about firm's IC that is neither a positive reference nor a negative reference. | • Reference to firm strategy (does not include analysts' evaluative statements).<br>• Reference to IC as contributing to firm performance numerically without explicitly referring to benefits or drawbacks of it.<br>• Reference to acquisitions made by the firm | • The strategy in the US for Aristocrat is to increase their presence and penetration into existing markets, take advantage of new markets opening, and increase the number of units on participation (ALL).<br>• Billabong brand contributes about 70% to sales (BBG). |

| | Category | Operational definition | Coding rules | Examples |
|---|---|---|---|---|
| | | | without explicitly referring to benefits or drawbacks from it.<br>• Reference to PPPs and investments in subsidiaries and associate companies without explicitly referring to benefits or drawbacks.<br>• Graphical representation of IC where there is no positive or negative connotation.<br>• Numerical representation of IC without explicit reference to its adequacy or inadequacy.<br>• Reference to responsibilities of employees.<br>• Reference to activities conducted by various forms of business collaborations that the firm is part of, without explicitly referring to benefits or drawbacks.<br>• Reference to changes in firm management with no indication of its positive or negative impact.<br>• Reference to names of employees/director and their dates of appointment. | • BBG purchased Palmers Surf Company in October 2004 for approximately $25 million (BBG).<br>• CMH's 25% stake in the PBL Media JV has been valued at $430m by capitalising the FY08 earnings of each operation within the JV at an appropriate EBITDA multiple (detailed in the table below) after deducting the debt within the JV (CMJ).<br>• Pacific Sunwear accounts for an estimated 20% of BBG's sales (BBG).<br>• If successful, the JV (67% Tabcorp) will provide lottery operating systems, terminals, proprietary intellectual property rights and other technological support services to the Keno lottery market operators authorised by the Chinese Government (TAH).<br>• Peter Casey, the Global Operations Manager is responsible for ensuring supply chain efficiency across all regions (BBG). |
| **3.3** | ***Positive*** | Information about benefits or potential benefits of firm's IC and beneficial utilisation of firm's IC and reference to IC as an indication of firm's strengths. | • Reference to firm's reputation<br>• Reference to a firm's dominant or competitive market share or position.<br>• Reference to possession of IC that can benefit the firm.<br>• Explanation of firm's IC by using adjectives with positive association.<br>• Reference to product and brand launches, entering into new markets etc because of strategy execution.<br>• Reference to opportunities to utilise firm's IC.<br>• Reference to employee work experience, | • Aristocrat is the **leading** manufacturer of casino-style gaming machines (ALL).<br>• The company **dominates** the Australian market and also most international gaming markets (ALL).<br>• BBG has **more than** 3,000 customer accounts globally which are fragmented and provide BBG with significant market power (BBG).<br>• BBG has recently launched Element branded shoes in the US and expects the product to be a top-three seller over time (BBG).<br>• The airport market provides high brand awareness for Billabong and utilises beachculture's expertise in supply chain and retail merchandising in these |

| Category | Operational definition | Coding rules | Examples |
|---|---|---|---|
| | | skills, capabilities and education.<br>• Reference to positions held by directors in other companies.<br>• Reference to JVs and strategic alliances formed by the company.<br>• Reference to positive implications of contracts, franchising and licensing agreements that the firm has entered into by own initiative.<br>• Reference to expected improvements in firm's IC or firm's performance due to its IC.<br>• Reference to change in market share percentages that demonstrates an increment in market share.<br>• Forward-looking statements indicating better company performance in future because of present strategy and IC.<br>• Reference to a quantity, using the prefix "more than" or the likes, in relation to IC or outcomes of IC.<br>• Reference to risk management strategy adopted by a firm in a positive manner.<br>• Reference to development or change of corporate culture by management initiative.<br>• Reference to performance improvements.<br>• Reference to management philosophy.<br>• Reference to expected synergies.<br>• Graphical representation of firm's future opportunities.<br>• Graphical representation of firm's market share only if it depicts the firm as having a superior market share or position compared to its competitors. | stores (BBG).<br>• He has attained significant experience at the company holding various senior management positions including General Manager of BBG's European operations from 1992-2003 (BBG).<br>• Prior to joining Crown Melbourne, he worked with Ernst & Young (CWN).<br>• Fox Sport is a **profitable** 50/50 JV between PBL and NWS…(CMJ)<br>• Aristocrat entered the Japanese market in 2000, through Sammy Corp. (6426, Not Rated), a Japanese manufacturer of both Pachislo and pachinko gaming machines (ALL).<br>• In August 2006, News Corp. and Google agreed to a $900MM search advertising deal which guaranteed step-ups in payments through FY10 (NWS).<br>• We expect Aristocrat to expand their share and margins in existing and international gaming markets… (ALL).<br>• We peg ResMed's market share in the global OSA market at 41% in calendar 2Q06, up from 38% in the beginning of calendar 2005 (RMD)<br>• CommSec argues that these milestones can be met given management's new retail strategy, and API's strong established position in the health and beauty market (API).<br>• It has **more than** 300 suppliers, many of which are the only source for the components supplied because COH is too small to spread volumes over more than one supplier (COH).<br>• We believe that MBL's strong emphasis within its remuneration system on deferred compensation and equity participation also institutionalises sound risk management practices (MQG). |

| | Category | Operational definition | Coding rules | Examples |
|---|---|---|---|---|
| | | | • Reference to awards won by the firm.<br>• Reference to the exclusivity of licences held by the firm.<br>• Reference to corporate governance initiatives that enhance performance, transparency and accountability and reduce operational risk.<br>• Reference to a firm's monopoly status in a market. | • As a counterpoint to an entrepreneurial culture, MBL has sought to provide individual businesses with a balance between operating freedom and controls on risk limits (MQG).<br>• …undertaken a Performance Enhancement Programme (PEP) (BOQ)<br>• MBL defines its management philosophy as 'freedom within boundaries' or "loosetight", which encourages every business to take responsibility for its growth, including defining strategy (MQG).<br>• It had also exceeded some of the synergy and cost savings targets set under its merger agreement with Arrow (SIP).<br>• The licence is exclusive until 2007 (TAH). |

## Panel IV: Time orientation categories

| | Category | Operational definition | Coding rules | Examples |
|---|---|---|---|---|
| **4** | ***TIME ORIENTATION*** | | | |
| **4.1** | ***Forward-looking*** | Communication of future value creation potential of a company through IC.<br>This category contains themes which relate<br>- to current investments in IC;<br>- current or past IC to benefits / losses that can (or expected to) accrue in the future; or<br>- to IC that may exist in the future due to current or past IC.<br>Forward-looking IC information is generally communicated through future tense sentences. | • References to all forward-looking IC related themes (*i.e.,* future tense sentences).<br>• Predictions by analysts about future firm performance based on current or past IC.<br>• Reference to possible future impacts of firms current activities relating to IC.<br>• Reference to a firm's strategy.<br>• Reference to opportunities created by or arising as a result of current or past IC.<br>• Reference to the potential of a firm's IC.<br>• Reference to present activities being undertaken which relate to IC and has implications in the future. | • The emergence of "participation" as a sales model will continue to deliver expanded earnings and margins, through sales of Aristocrat jackpot game technology (ALL).<br>• News Corp. is one of the best international managers of newspaper assets and we expect the company to leverage the reputation, content and brand of the Wall Street Journal across its businesses, particularly once the Journal's contract with CNBC expires in 2012 (NWS).<br>• These newer brands will leverage BBG's distribution and product development expertise (BBG). |

| | Category | Operational definition | Coding rules | Examples |
|---|---|---|---|---|
| | | | • Reference to IC that may be available in the future.<br>• Reference to current investments in IC (as its outcomes materialise in the future).<br>• Reference to IC in the context of firm valuation by the analysts (*e.g.*, in determining earnings multiples).<br>• Graphical representation of future market share of a firm.<br>• Reference to IC related challenges facing the company.<br>• Reference to business drivers.<br>• Reference to IC as a strength (not relating to the past).<br>• Reference to ongoing or future contracts entered into by the firm. | • The strategy in the US for Aristocrat is to increase their presence and penetration into existing markets, take advantage of new markets opening, and increase the number of units on participation (ALL).<br>• BBG has the opportunity to expand distribution of its newer brands; and extend the product lines for each of its brands (BBG).<br>• …all BBG's other brands have huge growth [potential] in both product range and distribution (BBG).<br>• Crown estimates that the new hotel will annually accommodate ~340,000 guests including 100,000 from overseas (CWN).<br>• Specific initiatives were introduced to improve growth, including restructuring the Crown Club program, implementing promotions aimed at mainstream segments and the expansion of interstate and international markets (CWN). |
| **4.2** | ***Past-oriented*** | Communication of value realisation by a company as a result of current or past IC. This category contains themes that relate to benefits currently accruing or had already accrued to the company due to current or past IC or reference to IC in a backward looking manner.<br>Past-oriented IC is generally communicated through past tense sentences. | • Reference to all past tense sentences that refer to IC without any link to future possibilities.<br>• Reference to IC both not in a forward-looking manner and not relating IC to possible future impacts/activities or performance.<br>• Reference to impact felt presently of firm's past actions relating to IC.<br>• Reference to IC that a firm has already developed/acquired.<br>• Reference to work experience of employees in past tense (*i.e.*, not as what they possess currently but as to what they have done in the past) | • These problems exposed weaknesses in management reporting and accountability within the company (ALL).<br>• As a result, many senior executives and several board members left the company during 2003 (ALL).<br>• The company has historically been strong in mid-west and Native American markets in the US (ALL).<br>• Mr Casey was recently the General Manger Europe and has previously held managerial roles within BBG's sourcing and production departments (BBG).<br>• September revenue was +55% compared to expectations of +75% and LVS reported disappointing results at its Macau properties given |

| | Category | Operational definition | Coding rules | Examples |
|---|---|---|---|---|
| | | | • Graphical representation of past market share of a firm.<br>• Reference to acquisitions that had already been executed.<br>• Reference to appointment date of employees/ directors.<br>• Reference to contracts entered into by the firm that has been performed. | poor hold rates, early inefficiencies at Venetian Macau and lower mass market volumes at Sands Macau (CWN).<br>• With its investments in MPEL, Aspinalls, Fontainebleau Resorts, Gateway and Betfair Australia, Crown has established strong relationships with partner investors who each have a strong track record and reputation for running successful businesses (CWN). |
| **4.3** | ***Non-time-specific*** | A theme containing IC, which is neither a forward-looking nor a backward-looking statement.<br>The main feature of content categorised here is that IC is not linked with value or any outcome. | • Reference to current IC a firm is having without reference to future or past outcomes.<br>• Reference to employee work experience, skill, capabilities and attitudes that is not linked to future value creation or present/past value realisation.<br>• Graphical representation of current market share of a firm.<br>• Reference to names of employees/directors<br>• Reference to current market share that is not related to future or past | • He has more than a decade of experience in the European sportswear industry (BBG).<br>• Quiksilver uses 'Roxy' to market its surf wear to women and 'Quiksilver' to men (BBG).<br>• Billabong is the leading surf wear apparel brand in Australia (BBG). |

## Appendix H: Pre-samples used in test coding

This appendix provides details of the pre-samples used in the test-coding phases of this PhD study. Test coding was done in three stages. Panels I, II and III show the details of the initiating coverage reports used in each of the three stages of test-coding. Section 5.8 explains the test-coding process.

### Panel I: Pre-testing – Stage 1

| ASX code | Company | GICS® sector | Report date | Brokerage firm |
|---|---|---|---|---|
| MPR | Macquarie ProLogis Trust Ltd. | REIT | 09/11/04 | Citigroup Global Markets Inc. |
| DJS | David Jones Ltd. | Consumer discretionary | 20/09/05 | Citigroup Global Markets Inc. |
| HSP | Healthscope Ltd. | Health care | 22/06/07 | ABN AMRO Equities |
| NUF | Nufarm Ltd. | Materials | 29/05/01 | Burdett Buckeridge Young Ltd |
| CSL | CSL Ltd. | Health care | 10/11/04 | ABN AMRO Equities |
| TLS | Telstra Corporation Ltd. | Telecommunication | 26/01/05 | ABN AMRO Equities |
| MTS | Metcash Trading Ltd. | Consumer staples | 17/07/03 | Deutsche Bank AG |
| DVC | DCA Group Ltd. | Health care | 07/07/04 | Citigroup Global Markets Inc. |
| WOW | Woolworths Ltd. | Consumer staples | 07/07/05 | Citigroup Global Markets Inc. |
| AWB | Australian Wheat Board Ltd. | Consumer staples | 18/07/02 | Deutsche Bank AG |
| ORI | Orica Ltd. | Materials | 28/10/02 | Citigroup Global Markets Inc. |
| SEK | Seek Ltd. | Industrials | 27/05/05 | ABN AMRO Equities |
| VPG | Valad Property Group | REIT | 23/11/04 | Citigroup Global Markets Inc. |
| ALS | Alesco Corporation Ltd. | Industrials | 24/11/06 | Deutsche Bank AG |
| FGL | Foster's Group Ltd. | Consumer staples | 09/12/05 | Citigroup Global Markets Inc. |

### Panel II: Pre-testing – Stage 2

| ASX code | Company | GICS® Sector | Report date | Brokerage firm |
|---|---|---|---|---|
| API | Australian Pharmaceutical Industries Ltd. | Health care | 27/09/07 | Commonwealth Securities |
| SDL | Sundance Resources Ltd. | Materials | 21/11/07 | Glodman Sachs JBWere Investment Research |
| WOW | Woolworths Ltd. | Consumer staples | 07/07/05 | Citigroup Global Markets Inc. |
| WOR | WorleyParsons Ltd. | Energy | 28/11/05 | Citigroup Global Markets Inc. |
| SIP | Sigma Pharmaceuticals Ltd. | Health care | 19/07/07 | Commonwealth Securities |
| MBL | Macquarie Bank Ltd. | Financial | 07/10/03 | ABN AMRO Equities |
| BBP | Babcock and Brown Power | Utilities | 26/10/07 | Commonwealth Securities Ltd |

| ASX code | Company | GICS® Sector | Report date | Brokerage firm |
|---|---|---|---|---|
| | Ltd. | | | |
| BIL | Brambles Industries Ltd. | Industrials | 07/07/04 | ABN AMRO Equities |
| CPU | Computershare Ltd. | IT | 08/01/04 | ABN AMRO Equities |

## Panel III: Pre-testing – Stage 3

| ASX code | Company | GICS® sector | Report date | Brokerage firm |
|---|---|---|---|---|
| HVN | Harvey Norman Holdings Ltd. | Consumer Discretionary | 31/10/05 | Citigroup Global Markets Inc. |
| BBG | Billabong International Ltd. | Consumer Discretionary | 28/12/05 | Citigroup Global Markets Inc. |
| NWS | News Corporation Inc. | Consumer Discretionary | 01/02/08 | Cowan and company |
| FGL | Foster's Group Ltd. | Consumer Staples | 09/12/05 | Citigroup Global Markets Inc |
| WOW | Woolworths Ltd. | Consumer Staples | 07/07/05 | Citigroup Global Markets Inc. |
| LNN | Lion Nathan Ltd. | Consumer Staples | 01/12/05 | Citigroup Global Markets Inc. |
| BOQ | Bank of Queensland Ltd. | Financial | 22/04/05 | Citigroup Global Markets Inc. |
| BNB | Babcock & Brown Ltd. | Financial | 01/05/06 | Deutsche Bank |
| WBC | Westpac Banking Corporation | Financial | 21/07/05 | Independent International investment Research Plc |
| SHL | Sonic Healthcare Ltd. | Health Care | 14/03/05 | ABN AMRO Equities |
| COH | Cochlear Ltd. | Health Care | 14/01/05 | ABN AMRO Equities |
| RHC | Ramsay Health Care Ltd. | Health Care | 22/06/07 | ABN AMRO Equities |
| HSP | Healthscope Ltd. | Health Care | 22/06/07 | ABN AMRO Equities |
| RMD | ResMed Inc. | Health Care | 20/09/06 | Kaufman Bros. LP |
| CPU | Computershare Ltd. | IT | 08/01/04 | ABN AMRO Equities |
| MYO | MYOB Ltd. | IT | 07/05/07 | ABN AMRO Equities |
| SMX | Sms Management & Technology Ltd. | IT | 07/11/06 | ABN AMRO Equities |
| RDF | Redflex Holdings Ltd. | IT | 15/06/07 | Macquarie Research |
| AWC | Alumina Ltd. | Material | 17/02/06 | Davenport & Company LLC |
| AQP | Aquarius Platinum Ltd. | Material | 02/06/04 | Deutsche Bank |
| OST | Onesteel Ltd. | Material | 15/07/05 | RBC Capital Markets |
| SGM | Sims Group Ltd. | Material | 10/03/04 | Wilson HTM Ltd |
| VPG | Valad Property Group | REIT | 23/11/04 | Citigroup Global Markets Inc. |
| IIF | ING Industrial Fund | REIT | 24/11/04 | Citigroup Global Markets Inc. |
| GMG | Goodman Group | REIT | 07/07/05 | Deutsche Bank |
| CER | Centro Retail Group | REIT | 08/12/05 | Deutsche Bank |
| APA | APA Group | Utilities | 27/02/07 | ABN AMRO Equities |
| SPN | Sp Ausnet | Utilities | 18/01/06 | DBS Vickers Securities |
| BBW | Babcock & Brown Wind Partners | Utilities | 25/05/06 | Deutsche Bank |

## Appendix I: Calculation of Scott's Pi ($\pi$)

This appendix explains and illustrates, through an example, the calculation of Scott's pi ($\pi$), which is used as the primary measure of inter-coder and intra-coder reliability in this thesis. Section 5.11.2 explains the reasons for using Scott's $\pi$ in this thesis to calculate reliability. Further, Sections 5.11.2.1 and 5.11.2.2 present the Scott's $\pi$ coefficients calculated for inter-coder and intra-coder reliability.

***Scott's $\pi$***

Scott (1955, p.323) explains that "$\pi$ is the ratio of the actual difference between obtained and chance agreement to the maximum difference between obtained and chance agreement".

$$\text{Scott's } \pi = \frac{P_0 - P_e}{1 - P_e},$$

where $P_0$ is the observed percent agreement and *P*e is the precent agreement to be expected based on chance.

$$P_e = \sum_{i=1}^{k} p_i^2 ,$$

where k is the total number of mutually exclusive categories and $P_i$ is the proportion of the recording units of the entire sample, which falls in the *i*th category.

Calculation of Scott's $\pi$ is illustrated through a hypothetical example below. The structure of this example has been adapted from Wimmer and Dominick (2006, p.168) while the hypothetical data are that of the author.

***Illustrative example***

The following Table A1 presents hypothetical data on the classification of 100 recording units in an analyst report into the three *news-tenor categories* (*i.e.,* positive, negative, and neutral) by two coders.

**Table A1: An agreement matrix**

| | | Coder A | | | |
|---|---|---|---|---|---|
| | **Category** | **Positive news** | **Negative news** | **Neutral news** | ***Marginal total*** |
| **Coder B** | **Positive news** | 20 | 4 | 4 | 28 |
| | **Negative news** | 6 | 14 | 2 | 22 |
| | **Neutral news** | 4 | 6 | 40 | 50 |
| | ***Marginal total*** | 30 | 24 | 46 | 100 |

Proportional agreement (or percentage of observed agreement) is obtained by adding the numbers in the diagonal and dividing by the total. Thus, proportional agreement can be calculated as:

$$P_0 = \frac{20+14+40}{100} = 0.74$$

As the distributions of frequencies of the two coders are different, it is necessary to compute the joint marginal proportions in order to determine the expected agreement ($P_e$). The following Table A2 presents the required calculations.

**Table A2: Calculation of joint marginal proportions**

| **Categories** | **Marginal totals for coder A** | **Marginal totals for coder B** | **Sum of marginal** | **Joint marginal proportions** |
|---|---|---|---|---|
| **Positive news** | 30 | 28 | 58 | 58/200 = 0.29 |
| **Negative news** | 24 | 22 | 46 | 46/200 = 0.23 |
| **Neutral news** | 46 | 50 | 96 | 96/200 = 0.48 |
| | 100 | 100 | 200 | 1.00 |

*Source: Adapted from Wimmer and Dominick (2006, p.168)*

The percentage of expected agreement can now be calculated by squaring the joint marginal proportions and summing them up:

$$P_e = 0.29^2 + 0.23^2 + 0.48^2 = 0.36$$

Scott's $\pi$ can now be calculated:

$$\text{Scott's } \pi = \frac{P_0 - P_e}{1 - P_e}, \quad = \frac{0.74 - 0.36}{1 - 0.36} = 0.59$$

## Appendix J: Detailed results of IC references by sector

This appendix provides the mean number and relative proportions of references to IC subcategories by GICS® sector. The purpose of this appendix is to highlight the importance attached to each IC subcategory by sector in analyst reports. Section 6.8.4 reports the results only for the four most referred to IC subcategories and IC subcategories with nil references in analyst reports by GICS® sector.

| Main IC categories & subcategories | Consumer discretionary | Consumer staples | Financials | Health care | IT | Materials | REIT | Utilities | Total (N=64) |
|---|---|---|---|---|---|---|---|---|---|
| Brands | 8.50 (14.05%) | 25.43 (17.75%) | 0.50 (1.10%) | 2.25 (4.40%) | 0.38 (0.69%) | 0.11 (0.25%) | 0.00 (0.00%) | 0.00 (0.00%) | 4.25 (7.63%) |
| Business collaborations | 8.38 (13.85%) | 6.86 (4.79%) | 3.88 (8.53%) | 5.00 (9.78%) | 4.25 (7.67%) | 4.78 (10.70%) | 2.25 (16.36%) | 1.50 (3.41%) | 4.58 (8.22%) |
| Corporate image & reputation | 4.50 (7.44%) | 2.57 (1.79%) | 1.25 (2.75%) | 2.25 (4.40%) | 1.63 (2.94%) | 1.78 (3.98%) | 0.50 (3.64%) | 1.25 (2.84%) | 1.95 (3.50%) |
| Customer relationships, satisfaction & loyalty | 0.88 (1.45%) | 0.57 (0.40 %) | 0.00 (0.00%) | 0.63 (1.23%) | 0.88 (1.59%) | 0.11 (0.25%) | 0.13 (0.95%) | 0.00 (0.00%) | 0.39 (0.70%) |
| Customers | 7.50 (12.40%) | 4.86 (3.39%) | 1.50 (3.30%) | 4.00 (7.82%) | 3.75 (6.77%) | 1.33 (2.98%) | 0.13 (0.95%) | 5.25 (11.93%) | 3.48 (6.24%) |
| Distribution | 2.38 (3.93%) | 4.43 (3.09%) | 0.88 (1.93%) | 2.88 (5.63%) | 0.63 (1.14%) | 1.22 (2.74%) | 0.00 (0.00%) | 0.00 (0.00%) | 1.50 (2.69%) |
| Favourable contracts, licensing/ franchising | 5.88 (9.72%) | 1.43 (1.00%) | 0.75 (1.65%) | 1.50 (2.93%) | 0.63 (1.14%) | 1.44 (3.23%) | 0.00 (0.00%) | 3.63 (8.25%) | 1.91 (3.43%) |
| Financial relations | 1.00 (1.65%) | 1.43 (1.00%) | 2.50 (5.49%) | 1.00 (1.96%) | 11.88 (21.45%) | 1.78 (3.98%) | 1.13 (8.225) | 3.75 (8.52%) | 3.06 (5.49%) |
| Government & other relationships | 0.63 (1.04%) | 0.00 (0.00%) | 0.00 (0.00%) | 0.88 (1.72%) | 0.50 (0.90%) | 0.22 (0.50%) | 0.13 (0.95%) | 0.13 (0.30%) | 0.31 0.56%) |
| Market share | 3.13 (5.17%) | 12.86 (9.00%) | 0.88 (1.93%) | 8.25 (16.14%) | 2.38 (4.30%) | 1.33 (2.98%) | 0.75 (5.45%) | 1.25 (2.84%) | 3.67 (6.59%) |
| **Total ExtC** | **42.75 (70.66%)** | **60.43 (42.17%)** | **12.13 (26.66%)** | **28.63 (56.01%)** | **26.88 (48.54%)** | **14.11 (31.59%)** | **5.00 (36.36%)** | **16.75 (38.07%)** | **25.11 (45.06%)** |
| Educational qualifications | 0.00 (0.00%) | 0.57 (0.40%) | 0.00 (0.00%) | 0.38 (0.74%) | 3.13 (5.65%) | 2.67 (5.97%) | 0.00 (0.00%) | 3.13 (7.11%) | 1.27 (2.28%) |
| Employee attitudes, commitment & | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Main IC categories & subcategories | Consumer discretionary | Consumer staples | Financials | Health care | IT | Materials | REIT | Utilities | Total (N=64) |
|---|---|---|---|---|---|---|---|---|---|
| satisfaction | (0.00%) | (0.00%) | (0.00%) | (0.00%) | (0.00%) | (0.00%) | (0.00%) | (0.00%) | (0.00%) |
| Employee entrepreneurship | 0.13 (0.21%) | 0.86 (0.60%) | 0.25 (0.55%) | 0.00 (0.00%) | 0.63 (1.14%) | 0.22 (0.50%) | 0.00 (0.00%) | 0.00 (0.00%) | 0.25 (0.45%) |
| Employees (other) | 3.00 (4.96%) | 15.29 (10.67%) | 9.63 (21.16%) | 3.25 (6.36%) | 5.88 (10.62%) | 8.22 (18.41%) | 1.50 (10.91%) | 4.38 (9.95%) | 6.28 (11.27%) |
| Equality | 0.00 (0.00%) | 0.00 (0.00%) | 0.00 (0.00%) | 0.00 (0.00%) | 0.00 (0.00%) | 0.00 (0.00%) | 0.00 (0.00%) | 0.00 (0.00%) | 0.00 (0.00%) |
| Management team | 0.75 (1.24%) | 0.71 (0.49%) | 0.75 (1.65%) | 1.50 (2.93%) | 0.75 (1.35%) | 0.78 (1.74%) | 1.38 (10.04%) | 0.25 (0.57%) | 0.86 (1.54%) |
| Remuneration & incentive schemes | 0.00 (0.00%) | 0.57 (0.40%) | 1.88 (4.13%) | 0.63 (1.23%) | 0.75 (1.35%) | 0.00 (0.00%) | 0.38 (2.76%) | 0.13 (0.30%) | 0.53 (0.95%) |
| Skills & capabilities | 0.13 (0.21%) | 1.43 (1.00%) | 0.13 (0.29%) | 0.00 (0.00%) | 0.25 (0.45%) | 0.78 (1.74%) | 0.00 (0.00%) | 0.63 (1.43%) | 0.41 (0.74%) |
| Training & development | 0.00 (0.00%) | 0.14 (0.10%) | 0.00 (0.00%) | 0.00 (0.00%) | 0.13 (0.23%) | 0.00 (0.00%) | 0.00 (0.00%) | 0.00 (0.00%) | 0.03 (0.055) |
| Work experience | 3.75 (6.20%) | 46.43 (32.40%) | 7.38 (16.22%) | 5.13 (10.04%) | 9.63 (17.39%) | 11.11 (24.87%) | 0.75 (5.45%) | 8.13 (18.48%) | 10.98 (19.70%) |
| Working environment | 0.25 (0.41%) | 0.14 (0.10%) | 0.00 (0.00%) | 0.38 (0.74%) | 0.50 (0.90%) | 0.00 (0.00%) | 0.00 (0.00%) | 0.00 (0.00%) | 0.16 (0.29%) |
| **Total HumC** | **8.00 (13.22%)** | **66.14 (46.16%)** | **20.00 (43.96%)** | **11.25 (22.01%)** | **21.63 (39.06%)** | **23.78 (53.23%)** | **4.00 (29.09%)** | **16.63 (37.80%)** | **20.77 (37.275)** |
| Business model | 1.63 (2.69%) | 0.57 (0.40%) | 3.38 (7.43%) | 1.63 (3.19%) | 1.25 (2.26%) | 0.89 (1.99%) | 0.25 (1.82%) | 0.25 (0.57%) | 1.23 (2.21%) |
| Corporate culture | 0.00 (0.00%) | 0.43 (0.30%) | 1.38 (3.03%) | 0.00 (0.00%) | 0.00 (0.00%) | 0.00 (0.00%) | 0.00 (0.00%) | 0.00 (0.00%) | 0.22 (0.39%) |
| Corporate governance | 0.50 (0.83%) | 0.14 (0.10%) | 3.13 (6.88%) | 0.00 (0.00%) | 0.13 (0.23%) | 0.00 (0.00%) | 0.13 (0.95%) | 1.38 (3.14%) | 0.67 (1.20%) |
| IP | 0.00 (0.00%) | 0.14 (0.10%) | 0.00 (0.00%) | 0.00 (0.00%) | 0.00 (0.00%) | 0.00 (0.00%) | 0.00 (0.00%) | 0.00 (0.00%) | 0.02 (0.04%) |
| IT & IS | 0.25 (0.41%) | 1.43 (1.00%) | 0.50 (1.10%) | 0.75 (1.47%) | 0.13 (0.23%) | 0.00 (0.00%) | 0.00 (0.00%) | 0.00 (0.00%) | 0.36 (0.65%) |
| Management philosophy | 0.00 (0.00%) | 0.00 (0.00%) | 0.38 (0.84%) | 0.00 (0.00%) | 0.00 (0.00%) | 0.00 (0.00%) | 0.00 (0.00%) | 0.00 (0.00%) | 0.05 (0.09%) |
| Management processes, policies & practice | 0.38 (0.63%) | 4.14 (2.89%) | 1.00 (2.20%) | 1.25 (2.45%) | 0.75 (1.35%) | 1.67 (3.73%) | 0.38 (2.76%) | 7.00 (15.91%) | 2.03 (3.64%) |
| Organisational & business expertise | 2.13 | 0.71 | 0.38 | 2.75 | 0.38 | 0.44 | 0.25 | 0.25 | 0.91 |

| Main IC categories & subcategories | Consumer discretionary | Consumer staples | Financials | Health care | IT | Materials | REIT | Utilities | Total (N=64) |
|---|---|---|---|---|---|---|---|---|---|
| | (3.52%) | (0.50%) | (0.84%) | (5.38%) | (0.69%) | (0.99%) | (1.98%) | (0.57%) | (1.63%) |
| Organisational & management structure | 1.50 | 1.29 | 1.38 | 0.88 | 2.25 | 1.33 | 2.00 | 0.38 | 1.38 |
| | (2.48%) | (0.90%) | (3.03%) | (1.72%) | (4.06%) | (2.98%) | (14.55%) | (0.86%) | (2.48%) |
| Quality | 0.13 | 0.14 | 0.13 | 0.13 | 0.13 | 0.33 | 0.00 | 0.25 | 0.16 |
| | (0.21%) | (0.10%) | (0.29%) | (0.25%) | (0.23%) | (0.75%) | (0.00%) | (0.57%) | (0.29%) |
| Research & development | 0.00 | 0.00 | 0.00 | 1.38 | 0.25 | 0.22 | 0.00 | 0.00 | 0.23 |
| | (0.00%) | (0.00% | (0.00%) | (2.70%) | (0.45%) | (0.50%) | (0.00%) | (0.00%) | (0.41%) |
| Strategy | 3.13 | 7.43 | 1.00 | 2.00 | 1.38 | 1.11 | 1.75 | 1.00 | 2.25 |
| | (5.17%) | (5.19%) | (2.20%) | (3.91%) | (2.49%) | (2.49%) | (12.73%) | (2.27%) | (4.04%) |
| Technology | 0.13 | 0.29 | 0.75 | 0.50 | 0.25 | 0.78 | 0.00 | 0.13 | 0.36 |
| | (0.21%) | (0.20%) | (1.65%) | (0.98%) | (0.45%) | (1.74%) | (0.00%) | (0.30%) | (0.65%) |
| **Total IntC** | **9.75** | **16.71** | **13.38** | **11.25** | **6.88** | **6.78** | **4.75** | **10.63** | **9.86** |
| | **(16.12%)** | **(11.66%)** | **(29.41%)** | **(22.01%)** | **(12.42%)** | **(15.18%)** | **(34.55%)** | **(24.16%)** | **(17.69%)** |
| **Total IC** | **60.50** | **143.29** | **45.50** | **51.12** | **55.38** | **44.67** | **13.75** | **44.00** | **55.73** |
| | **(100%)** | **(100%)** | **(100%)** | **(100%)** | **(100%)** | **(100%)** | **(100%)** | **(100%)** | **(100%)** |

## Appendix K: Intersectoral differences in IC information use

This appendix provides an analysis of sell-side analysts' use of selected IC subcategories most referred to in analyst reports. The focus of this analysis is to understand how the most referred to IC subcategories in each sector have been utilised by sell-side analysts. The results are presented by GICS® sector.

### 1. Consumer discretionary sector

Analyst reports for companies in the consumer discretionary sector include a significantly high proportion of ExtC information compared to the other seven sectors. The five most used IC subcategories (*i.e.,* brands, business collaborations, customers, favourable contracts, licensing and franchising agreements, and corporate image and reputation), on average, per analyst report for this sector relate to ExtC.

#### *Brands*

Although information on 'brands' is the most referred to IC subcategory in this sector, it is only referred to in analyst reports on half the companies in the sector. Analyst reports on Billabong International Limited and Harvey Norman Holdings Limited account for 90 per cent of brand related references. The former company belongs to 'consumer durable and apparels' and the latter company belongs to the 'retailing' industry group (according to GICS® four-digit industry group classification), suggesting that the importance of brand awareness in these industry groups may explain the emphasis on brand related information. The following are examples of brand related references found in the analyst report on Billabong International Limited:

> Billabong International Ltd (BBG) has relied heavily on its 'Billabong' brand for spectacular growth in the past.
>
> The company is entering a new phase with recently acquired brands providing the platform for further sales growth.
>
> These newer brands can be channelled through existing customer accounts and additional product lines will be established for these brands.

***Business collaborations***

Seven out of eight analyst reports in this sector refer to information relating to 'business collaborations', indicating that business collaborations are commonplace among the companies examined. The majority of references in this IC subcategory relate to 'joint ventures', and 'mergers and acquisitions'. In analyst reports on some companies in this sector, business collaborations are generally viewed as a growth strategy enabling companies to expand market share or enter into new markets:

> The recent joint venture established with Australian retailer, Beachculture, provides BBG with a larger retail footprint in the specialised airport-based retail market (Billabong International Limited).

> Fox Sports is a profitable 50/50 JV between PBL and NWS (News Corporation Ltd) which supplies sports programming to over two million Foxtel, Austar and Optus subscribers (Consolidated Media Holdings Limited).

Also, analysts view business collaborations as providing complementary expertise and creating synergies for the companies involved, as exemplified by the following analyst report excerpts:

> Formalises a JV with Mirvac Fini to develop 19.1 ha adjacent to the Complex; Enters into a JV with the InterContinental Hotels Group to operate the Burswood Hotel and a new Holiday Inn Hotel (Crown Limited).

> The acquisition of Dow Jones, News Corp.'s most recent strategic initiative, offers potential value creation and synergies with other News Corp. assets (News Corporation Limited).

***Customers***

The third most referred to IC subcategory in this sector is 'customers'. The importance placed by sell-side analysts on this subcategory is not surprising given that companies in this sector belong to 'retailing', 'consumer durables and apparels', and 'media and consumer services' industry groups, where meeting customer needs is central to business success. The information related to the 'customers' subcategory often includes references to the number of customers/subscribers and target markets, signalling this emphasis, as shown below:

> BBG has more than 3,000 customer accounts globally which are fragmented and provide BBG with significant market power (Billabong International Limited).
>
> Sky Italia sill has relatively low penetration at approximately 18% of Italy's 24MM TV households (News Corporation Limited).
>
> It will target the international leisure market but will also focus heavily on the global conventions and conferences industries (Crown Limited).

## 2. Consumer staples sector

In contrast to the consumer discretionary sector, analyst reports on companies in the consumer staples sector show a relatively balanced emphasis between ExtC and HumC, with HumC references outnumbering ExtC by just 4 per cent. In this sector, 'work experience' alone accounts for 32 per cent of IC references, and this together with 'brands', 'employees (other)' and 'market share', the next three most referred to subcategories, comprise 70 per cent of all IC references per analyst report for this sector.

### *Employees (other) and work experience*

The high proportion of references to the HumC category in general and 'employees (other)' and 'work experience' subcategories in specific can be attributed to six out of the seven analyst reports containing profiles of members of the executive management team and/or the Board. The analyst report on Wesfarmers Limited that did not include such profiles instead extensively referred to a consultant/advisor employed by the company and his role in 'turning around' a recently acquired company. Some examples are provides below:

> Mr George Adams has over 10 years experience in the Coca-Cola system in Europe in a number of finance, IT and commercial roles and joined CCA as the Managing Director – New Zealand and Fiji (Coca-cola Amatil Limited).
>
> Mr Norman who is known for the impressive turnaround of UK retailer Asda in 1990's has been hired to consult WES in turning around the Coles supermarkets business (Wesfarmers Limited).

***Brands***

Similar to the consumer discretionary sector, analyst reports in this sector too place a high importance on 'brands' related information, which accounts for 18 per cent of the total IC references in analyst reports on companies in this sector. All seven analyst reports representing this sector have some reference to the 'brands' subcategory. Generally, these are references to the brands owned by the company, branding strategies and brands' market performance:

> CCL currently owns the brand of Mount Franklin, Kirks, Deep Spring, L&P (NZ) and Pump (NZ only) (Coca Cola Amatil Limited).

> Campbells Cash & Carry has also been building a banner for its smaller retail outlets under the Lucky 7 brand with an expected 80 Lucky 7 stores to be operational by end of 2003 (Metcash Limited).

> Wolf Blass and Yellowglen continue to perform for FGL, with Jamiesons Run under pressure (Foster's Group Limited).

All sample companies representing this sector, except Futuris Corporation Limited, belongs to 'food and staples retailing' and 'beverage' industries (according to GICS® six-digit industry classification). These are industries heavily reliant on brand awareness. Hence, the emphasis by sell-side analysts on 'brands' related information is conceivable. In contrast, the analyst report on Futuris Corporation Limited, a company belonging to the 'food products' industry, contains only one reference to the 'brands' subcategory. This is possibly in line with the nature of its core business of dealing with farmers rather than retail consumers (FCL, 2009).

Closely aligned with the importance of building and maintaining brand awareness in this sector, a greater emphasis on 'market share' information could also be observed. On average, 9 per cent of the total IC references in analyst reports on companies in this sector relates to markets share.

**3. Financials sector**

The four most referred to IC subcategories, on average, in the analyst reports on companies from the financials sector are 'employees (other)' (21 per cent), 'work

experience' (16 per cent), 'business collaborations' (9 per cent) and 'business models' (7 per cent).

***Employees (other) and work experience***

The high emphases on 'employees (other)' and 'work experience' subcategories are not unique to this sector as similar emphases are generally observed across six other sectors. However, unlike in most other sectors, where references to the 'employees (other)' and 'work experience' subcategories are found in bio-profiles of senior executives and Board members, references to the 'employees (other)' subcategory in the majority of analyst reports on companies in this sector are embedded within analysts' discussions:

> This represents 8–11% of the combined cost base of both entities and at the lower end of typical in-market merger synergy targets, most likely reflecting in part the conservatism of the new CEO, Robert Elstone (Australian Stock Exchange Limited).

> The appointment of David Liddy to Managing Director in 2001 proved to be a positive catalyst for the bank — reflected in the share price and the board's recent decision to extend his contract to 2009 (Bank of Queensland).

Although the extent of references to the 'work experience' subcategory is high, references are not spread across many analyst reports in this sector. The differences in the use of information relating to the 'employees (other)' and 'work experience' subcategories suggest that the emphasis on these types of IC in analyst reports on companies in the consumer staples sector needs to be interpreted differently from similar emphases in analyst reports on companies in other sectors.

***Business collaborations***

It can be found that the majority of information coded into the 'business collaborations' subcategory refers to 'strategic alliance' type collaborations and 'mergers and acquisitions'. This can be contrasted with the special emphasis on 'JV' related information observed in analyst reports on companies in the consumer discretionary sector. Moreover, references to 'JVs' were absent in analyst reports on companies in this sector. The following excerpts illustrate the nature of 'strategic alliances' related information included in analyst reports:

> Strategic alliance struck with Bank of Hawaii – issued with 5.4m convertible notes (Bank of Queensland)
>
> As well as using multi-managers to help spread the investment choices for investors, CGF has entered into alliances with other investment managers to on-sell its products (Challenger Financial Services Group Limited).

This suggests that firms in the financials sector find mergers and acquisitions and strategic alliances as the most suitable structures to collaborate with potential partners, in contrast to firms in the consumer discretionary sector that prefer joint venturing.

***Business model***

The financials sector is the only sector in the sample with a relatively high proportion of references to the 'business model' subcategory. However, only three analyst reports contain references to this subcategory. Nonetheless, the detailed level of analysis done on the company business model in these analyst reports suggests its importance to sell-side analysts in building the value-creation story and in the company valuation task. Similarly, sell-side analysts may discuss a company's business model in detail, especially when that company is adopting a business model different to the business models of other companies in the sector. As financial services companies find it difficult to differentiate their services due to the generic nature of their business models, it is possible that companies in this sector are trying to find a competitive edge by differentiating based on business model; and thus sell-side analysts use this information to justify their (often positive) recommendations on this basis.

The analyst reports generally describe the company's business model before trying to link it to performance measures. For instance, the analyst report on Babcock & Brown Limited provides a thorough description of the company's business model before following it with extensive analyses throughout the report. The following is an extract from Babcock & Brown Limited's analyst report:

> At the heart of BNB's strategy is the specialist fund model, which delivers multiple revenue streams from a single investment idea. These revenues include annuity income which means assets continue to deliver earnings long after a transaction is completed. The model is based around third party funds management, although in

> addition to base and performance fees BNB receives advisory fees from its funds when they acquire/divest assets […] (Babcock & Brown Limited).

As shown in the analyst report excerpts below, the link between a company's business model and its performance suggests that sell-side analysts consider the business model as an important value driver:

> In our view, this model will generate superior long-term returns driven by a combination of: High growth annuity income in the form of base fees, Captive and acquisitive advisory clients, Capital efficiency (Babcock & Brown Limited)

> We see BOQ's OMB model as an innovative solution to minimising the risks associated with a rapid growth strategy (Bank of Queensland).

> MBL was seemingly unaffected by the falling international equity markets and benefited from the initial success of their specialist funds management model (Macquarie Group Limited).

### 4. Health care sector

The health care sector shows a comparatively balanced distribution of references across the IC subcategories with few individually large subcategories. 'Market share' (16 per cent), 'business collaborations' (10 per cent) 'work experience' (10 per cent) and 'customers' (8 per cent) are the four most referred to IC subcategories, on average, per analyst report for this sector.

#### *Market share*

In addition to being the most referred to IC subcategory in the health care sector, the 'market share' subcategory is referred to in all analyst reports representing this sector. As shown by the analyst report excerpts below, further examination of references to this subcategory reveals that sell-side analysts try to estimate or predict future market share of a company (probably based on its current levels):

> CommSec estimates that API has approximately 10-15% of the health and beauty market (Australian Pharmaceutical Industries Limited).

> In 2007, we forecast HSP/SYB will have a 13.1% share of the Australian DI market (Healthscope Limited).

The reasons for changes in the market share of companies in line with predictions, and the impact of market share estimates on analysts' valuations are also provided in analyst reports.

***Business collaborations***

The 'business collaborations' subcategory predominantly includes references to 'mergers and acquisitions'. As can be observed from coding references, the emphasis on 'mergers and acquisitions' can be attributed to them being considered by management as a growth strategy to increase market share, sales, and potential synergistic benefits:

> As a result, of the merger between HSP and SYB, we believe the combined business will be aiming to gain share in the higher margin specialist pathology market (Healthscope Limited).

> Synergies from the combination of the AB and ZLB Bioplasma businesses are estimated at just over US$110m, with most of those changes coming in FY06 and FY07, as management has issued guidance that it will take the full inventory cycle for them to become apparent (CSL Limited).

> Over the past 12 months, we estimate that the Saime acquisition added approximately $50 million in incremental sales (ResMed Inc)

References are also made to private-public partnerships, which are investigated in this study as a form of business collaboration, in one analyst report. This is the only analyst report from the total sample of 64 to refer to this IC subcategory. As the following excerpts from the analyst report on Sonic Healthcare Limited suggest, by referring to company's private-public partnerships, sell-side analysts have attempted to highlight the potential for entering into more of these arrangements in the future by leveraging on the current experiences:

> SHL is in a good position to receive a large amount of this new funding, as it has been involved in public-private partnerships with various hospital trusts (through the its subsidiary the TDL group) since March 2002.

> TDL's track record of PPPs has been very encouraging.

***Work experience***

All 'work experience' related references observed in analyst reports for this sector are from two analyst reports, with one report accounting for 39 of the total 41 references. These refer to senior executives and Board members. However, in interviews with the management of pharmaceutical and biotechnology companies Striukova *et al.* (2008) found that employees highly skilled in developing and marketing drugs are important for the success of those companies. However, this thesis does not find any references to employees' education, skills and experiences in the analyst reports on healthcare-sector companies.

***Customers***

All but one analyst report refers to the 'customers' subcategory. The most number of references to this subcategory comes from the analyst report on Australian Pharmaceutical Industries Limited, which is a company involved in beauty and health retailing. Accordingly, the high level of emphasis by sell-side analysts on 'customers' is consistent with this company's need to be customer focused as products are directly marketed to retail consumers. The importance sell-side analysts place on customer focus and differentiation strategies can be observed from the following references made in the analyst report on Australian Pharmaceutical Industries Limited:

> Comprehensive range and availability: Consumers stated that Priceline's range and availability of leading discount brands was superior to its retail competitors (Myer, Target, Kmart and Big W) as well as supermarkets and pharmacists.
>
> Convenient location of stores: Priceline stores are located in major shopping centres and major high streets providing easy access for most consumers.
>
> The stores have a consistent format, which makes them more appealing to their core customer base and helps them serve as a destination rather than a convenience store.

In contrast, other companies in the sub-sample for the health care sector market their products to institutions, such as hospitals, or via medical practitioners. Therefore, analyst reports on these companies generally refer to companies' marketing strategies and success of those strategies in serving hospitals and medical practitioners. For example:

> In the past, COH has primarily sought to influence the uptake of cochlear implants by marketing to clinics (intermediaries) rather than directly to potential recipients (Cochlear Limited).
>
> We believe the Gribbles service is aimed mainly at GPs, whereas SYB's is aimed more at higher-margin specialists (Healthscope Limited).
>
> The Schottdorf group services 14,000 doctors and 160 hospitals (Sonic Health Care Limited).

## 5. Information technology sector

The four most referred to IC subcategories, on average, in analyst reports on companies from the information technology sector are 'financial relations' (21 per cent), 'work experience' (17 per cent), 'employees (other)' (11 per cent) and 'business collaborations' (8 per cent).

### *Financial relations*

Although 'financial relations' is the most referred to IC subcategory in analyst reports on companies in this sector, it can mainly be attributed to two analyst reports in the sample providing lists of the 20 largest shareholders by number of shares and by percentage holding. Thus the observed importance of the 'financial relations' subcategory in this sector is not shared by most analyst reports pertaining to this sector.

### *Employees (other) and work experience*

HumC subcategories such as 'work experience' 'employees (other)' and 'educational qualifications' account for 38 per cent of IC references, on average, per analyst report for this sector. This may perhaps reflect the importance of skilled employees and knowledge capital to the success of these firms. Analyst reports on companies in this sector often discuss companies' recruitment activities and their staff numbers, suggesting that recruiting and retaining capable employees are essential to value creation, particularly for companies in this sector. For example:

> SMS has undertaken a large recruitment drive since 2005, lifting its total number of employees by more than 100 in 2005 and a further 59 in 2006, translating into

> employee growth of 27% over the past two years (SMS Management & Technology Ltd).
>
> Additionally, MYOB has set itself targets of hiring and training 50 new sales people (Myob Ltd).

***Business collaborations***

The 'business collaborations' subcategory accounts for 8 per cent of IC references in the analyst reports for this sector, and these references are found in five analyst reports. Although the majority of these references relate to 'mergers and acquisition', several references to other forms of business collaborations such as 'JVs', 'strategic alliance' and 'subsidiary and associate companies' are also present in analyst reports for this sector.

***Customers and customer relationships, satisfaction and loyalty***

The 'customers' and 'customer relationships, satisfaction and loyalty' subcategories together represent 9 per cent of IC references, on average, per analyst report for this sector. Striukova *et al.* (2008) investigated the importance of disclosing information relating to 'customers' and 'customer satisfaction' by companies in the information technology sector. They note that it is important for software companies to cultivate long-term contracts as their income is largely dependent on fees from annual licensing of software and selling regular upgrades. Evidence from analyst reports supports this claim, as shown below:

> Oakton is aiming to increase the number of service lines that engage with existing clients, thereby optimising the revenue derived from each of its existing clients (Oakton Limited)
>
> SMS has a fairly concentrated client base, with the top 20 clients accounting for 70-80% of revenues (SMS Management & Technology Ltd).
>
> The Australian Defence Department is a significant and long-term client for SMS (SMS Management & Technology Ltd).

This implies that sell-side analysts place a high level of importance on information relating to customer service and satisfaction, as do companies in this sector.

## 6. Materials sector

The materials sector has the highest proportion of HumC references compared to other sectors. More than half of all IC references in analyst reports on companies in this sector relate to HumC category with the 'work experience' (24 per cent), 'employees (other)' (15 per cent) and 'educational qualifications' (8 per cent) subcategories accounting for the majority of references, on average, per analyst report for this sector.

### *Employees (other), educational qualifications and work experience*

Similar to most other sectors, references to 'work experience', 'employees (other)' and 'educational qualifications' are predominantly derived from profiles of senior executives and Board members that are included separately in analyst reports. Nonetheless, several references to 'other employees' are also found in this sector. Five out of nine analyst reports in the sub-sample include references to the number of employees, as exemplified by the analyst report excerpt below:

> The mine currently employs 1,700 people, which should increase by a further 1,450 once full production is achieved in the middle of 2008 (Aquarius Platinum Limited).

### *Business collaborations*

'Business collaborations' is the third most referred to IC subcategory accounting for 11 per cent of IC references, on average, per analyst report for this sector. All analyst reports for this sector contain some IC information relating to 'business collaborations'. Most analyst reports refer to 'JVs' suggesting the increased importance of this type of collaboration in companies in the materials sector, probably given the large scale of projects (*e.g.*, mining) these companies invest in:

> ZCE Platinum is jointly owned with Impala Platinum (Aquarius Platinum Limited).

> Its concrete roof tiles operation through Monierlifetile, a 50:50 joint venture, is focussed in the west, south-western and Florida regions (Boral Limited).

> The company owns a 60% joint venture interest in the low-grade Murrin Murrin lateritic nickel mining and processing operation, with Glencore International AG owning 40% (Minara Resources Limited).

## 7. REIT sector

The REIT sector has the lowest level of IC references, on average, per analyst report, with a mean of 14. However, compared to other sectors, an average analyst report in this sector has the highest proportion of IntC references. The emphasis of sell-side analysts on IntC information is manifested in the high level of 'organisational and management structure' (15 per cent) and 'strategy' (13 per cent) information found in analyst reports. Both these IC subcategories are referred to in five out of eight analyst reports in the sub-sample for this sector.

### *Organisational and management structure*

References to the 'organisational and management structure' subcategory relates predominately to descriptions and visualisation of a company's asset ownership structure, as highlighted by the following analyst report excerpt:

> Management is exploring structures that will allow IIF to diversify its revenue stream to include income from land subdivision, strata-titling and turnkey projects (ING Industrial Fund).

Given that the REIT sector companies are in the business of owning and managing properties, often in many parts of the world, various ownership structures may be necessary to maximise returns under different business and taxation regulatory regimes of countries in which they operate. For instance, the analyst report for Babcock & Brown Japan Property Trust states that the particular structure was formed due to the prevailing laws in the country of operation:

> The Trust's 30% indirect economic interest in the Kawasaki Dice mall will be held through the Tokutei Mokuteki Kaisha (TMK) structure, a special purpose company created under the Japanese Asset Liquidation Law (Babcock & Brown Japan Property Trust).

***Strategy***

All analyst reports making strategy related references explicitly refer to the growth strategy of the company concerned, be it through acquisitions or organic growth, in terms of geographical markets. For example:

> The likely expansion strategy is to acquire existing properties in the Sydney area (where land costs have meant development is not feasible), acquire existing properties and develop new ones in Melbourne (depending on the area) and develop new facilities in Brisbane (where suitable locations are still available) (Valad Property Group).

> MGQ is a vertically integrated, focused industrial property group with a clearly defined strategy of growing its core earnings base of Australian / NZ industrial property ownership and development whilst also leveraging the platforms of its JV partners – Ascendas and Macquarie Bank Ltd (MBL Buy $59.80) to roll out third party funds management products throughout Asia (Goodman Group).

Company growth in this sector has to be achieved predominantly though expansion of the asset base under control, as the main revenue stream is lease rentals. The emphasis placed by sell-side analysts in companies' growth strategies can possibly be justified based on the importance of projecting future cash flows and justifying these projections to the reader in valuing companies in this sector.

***Business collaborations***

The highest proportion of IC references, on average, per analyst report for this sector relates to the 'business collaborations' subcategory. 'Business collaborations' can be seen in the REIT sector as an important strategy for asset acquisitions. In line with this contention, 'business collaborations' related references in this sector generally pertain to current or potential assets growth through joint ventures, strategic alliances, associate and subsidiary companies, and mergers and acquisitions, as highlighted by the analyst report excerpts below:

> MGQ has entered into a 50/50 JV agreement with Macquarie Bank to pursue opportunities for third party Asian funds, and in particular to take advantage of the anticipated growth of the Asian REIT sector (Goodman Group).

> We believe that DDR, as the largest community centre REIT-owner, has the connections and reputation to drive these deals and MDT should benefit from these relationships (Macquarie DDR Trsut).

## 8. Utilities sector

The four most referred to IC subcategories, on average, per analyst report for the utilities sector are, 'work experience' (18 per cent), 'management processes, policies and practices' (16 per cent), 'customers' (12 per cent) and 'employees (other)' (10 per cent).

### *Employees (other) and work experience*

The emphases on the 'work experience' and 'employees (other)' subcategories in this sector are similar to that of other sectors, where the coding references are predominantly from bio-profiles of senior executives and Board members. Particularly, in this sector, IC references to these two subcategories are overwhelmingly derived from three analyst reports.

### *Management processes, policies and practices*

The utilities sector is the only sector examined in this study that places a high level of emphasis on the 'management processes, policies and practices' subcategory. Half the analyst reports representing this sector refer to this IC subcategory. The references to 'management processes, policies and practices' predominantly relate to outsourcing of operations and maintenance functions, as shown by the following analyst report excerpts:

> CitiPower's operations and maintenance activities are outsourced to Powercor which maintains a base level of operations staff and then supplements this with contractors during peak periods (Spark Infrastructure Group).

> BBW has contracted out the operations and maintenance of Lake Bonney through a 5-year contract with Vestas (Babcock & Brown Wind Partners)

The common emphasis by sell-side analysts on outsourcing operations and maintenance functions and management service agreements may indicate that these are common practices in companies in the utilities sector, and their communication is

important. This is particularly so in relation to outsourcing arrangements where the reliability of the service output of companies is dependent largely on the proper management of contracts.

***Customers***

In relation to the 'customers' subcategory, the analyst reports show a common emphasis on companies' long-term commercial customers, as well as retail customer numbers. For example:

> Current customers include Alinta Ltd (For Electricity & RECs) and AGL Ltd. (RECs only) (Babcock & Brown Wind Partners).
>
> The other customers are the generators such as Loy Yang Power, Hazelwood Power, Yalbourn Energy Murraylink Transmission Co, and distributors such as CitiPower, Powercor Australia, United Energy distribution and Australia Gas Light (Sp AusNet).
>
> CitiPower's network services around 286,000 customers, the majority of which are residential electricity users (ca.83%) (Spark Infrastructure Group)

However, this information is generally declarative and has not been explicitly incorporated in the financial forecasts by sell-side analyst in their reports.

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