



Intellectual capital disclosures by Indian and Australian information technology companies

A comparative analysis

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Abstract

Purpose – The purpose of this paper is to investigate and compare the voluntary reporting of intellectual capital (IC) by the top 20 software and technology sector companies in a developing nation, India, and a developed nation, Australia. The paper aims to highlight the differences in IC disclosure practices of the companies operating in two different economies.

Design/methodology/approach – The study investigates the top 20 firms by market capitalisation listed on the Bombay Stock Exchange in India and the Australian Stock Exchange in Australia in the year 2007-2008. Using the content analysis method, the paper reviews the annual reports of these firms to determine IC disclosure trends in India and Australia. Statistical tools and graphs have been used to compare and contrast ICD disclosures in two countries.

Findings – The study has identified IC disclosure differences between Indian and Australian firms, and reports disclosures by Indian companies are on a higher scale than Australian Software and Technology Sector companies. However, Levels of voluntary IC disclosure are found to be low in both the nations and most of the disclosures are declarative in nature.

Research limitations/implications – This lack of consistency in reporting practices makes comparisons across countries difficult. The paper emphasises the need for a uniform and consistent framework for the reporting of intellectual capital items.

Practical implications – The results of this exploratory study on the knowledge based industrial sector can be used by researchers to explore different types of IC reporting initiatives pursued across specifically knowledge based industrial sectors.

Originality/value – This study offers insights into comparative trends in IC disclosure practices of software and technology sector companies operating in a developed and a developing country.

Keywords Intellectual capital, Disclosure, Annual reports, India, Australia, Content analysis, Information technology

Paper type Research paper

1. Introduction

Intellectual capital (IC) disclosures have been a subject of a number of studies. There has been an increasing awareness of the importance of measuring the extent of IC reporting in different parts of the world (Abeysekera and Guthrie, 2005; Abeysekera, 2007; Bontis, 2003; Brennan, 2001; Bruggen *et al.*, 2009; Goh and Lim, 2004; Guthrie and Petty, 2000; Guthrie *et al.*, 2006; Hossain *et al.*, 1995; Joshi *et al.*, 2010; Joshi and Ubha, 2009; Joshi *et al.*, 2011; Kamath, 2006-2008; Khan and Ali, 2010; Nurunnabi *et al.*, 2011;



Oliveras *et al.*, 2008; Olsson, 2001; Pablos, 2003a,b; Rimmel *et al.*, 2009; Schneider and Samkin, 2008; Singh and Kansal, 2011; Sujan and Abeysekera, 2007; White *et al.*, 2010; Whiting and Woodcock, 2011; Xiao, 2008). There is also a greater amount of research coming from developing countries which adds to the richness of literature on IC reporting practices. Comparative studies on reporting practices in different countries will further enrich literature in the area of IC disclosures.

The aim of this paper is to study and compare voluntary IC disclosures by companies of Australia and India. It also adds to the growing literature of comparative studies on voluntary IC disclosures by companies (Abeysekera, 2007; Abeysekera, 2008; Guthrie *et al.*, 2006; Pablos, 2003b; Sonnier, 2008; White *et al.*, 2010). There is a need for more comparative studies on IC disclosures between developed and developing countries (Abeysekera, 2007). This paper responds to such calls by comparing the IC disclosures of software and information technology sector companies in a developed nation Australia and a fast developing nation India. The sample consists of the top 20 companies from both nations on the basis of market capitalisation. Sample Australian companies are listed on the Australian Stock Exchange (ASX) and the Indian companies are listed on the Bombay Stock Exchange (BSE) in the 2008.

Some companies rely heavily on the skills, knowledge, experience, training and attitude of their employees. IC is a single popular term used for these categories of attributes and characteristics in contemporary academic research. Software and information technology sector companies also fall within this category because their productivity primarily depends on the skills of employees. Highly skilled employees, robust training and innovation largely decide the success of such companies. According to Abeysekera (2008) IC disclosures are an important and useful means to keep investors well informed and particularly in an ever increasing competitive world. However, until to this date, the fact remains that IC as a category of balance sheet or notes remains absent from most of the corporate annual reports. This is due to the non-mandatory requirements about IC disclosures. The majority of intellectual assets are not recognised in financial statements and such disclosures are mainly voluntary. This implies that companies have a choice to make IC disclosures whenever they feel it is important for them to disclose such disclosures. This leads to ad hoc practices being followed by companies in making disclosures and a consistent pattern of disclosures may not be possible. The current reporting model is unable to report an increase in the value of a firm which is not due to tangible assets. This leads to vast differences in the true and reported value of a firm. Guthrie *et al.* (2006) state that firms that have IC as a significant portion of their total value and corporate balance sheet provides insufficient information about their economic perspective. The quality information should have four characteristics, relevance, reliability, comparability and understandability. When the real value of a firm is not reported due to the non-existence of mandatory requirements, standards or legislation, then information will not be exactly relevant to stakeholders. One of the studied nations, Australia adopted International Financial Reporting Standards (IFRS) from 2005. The accounting standards now require companies to ensure that the recorded value does not materially differ from a fair value. One of the implications of these requirements is the adoption of a revaluation model. However, Deegan (2007) mentions that the standards adopt a conservative approach about the recording and reporting of intelligible assets. This leaves such assets outside the financial statements. The next section compares and contrasts some of the features of the Australian and Indian economies.

2. Economic comparisons: India and Australia

The Australian and Indian economies have vast differences in economic growth, features of the economies and future projections in economic development. Australia is a developed country and just like other developed countries, its economic growth is slow indicating a saturation level. In 2008 GDP growth was 2.3 per cent and in 2009 it fell to 0.8 per cent. One of the contributing factors in this fall was the international economic recession and its impact on the Australian economy. However, it is predicted that by 2012 the GDP growth rate will reach up to 3.6 per cent (Datamonitor Plc, 2010a). On the other hand, the second studied nation India is a big and stable economy. It is a developing nation and has the second fastest growth rate in the world. According to Datamonitor Plc (2010b) during 2009-2010 the GDP growth rate was 6.5 per cent and by 2013 it is expected to increase to 7.9 per cent. While many countries around the world were under the impacts of the recession, India did not register much economic slowdown and this reflects the inherent strength of the Indian economy. Table I shows GDP growth rate of India and Australia for five-year period from 2005 to 2009. India registered growth rate of 7.2 per cent in 2009 while Australian figure was 2.2 per cent. Being a developed country like any other Australia's GRP growth is lower than India.

The workforce number strength is another contrasting comparison between India and Australia. Australia's aging population is a worry for country's future economic productivity. Its effect on country's policies can be seen clearly in the aggressive migration policies and the rise of education sector exports. According to Datamonitor Plc (2010a) over next 20 years, the total proportion of the population aged <55 years is expected to fall significantly. Over the next 40 years people aged over 65 years will be around 25 per cent of the total national population. This literally means that every fourth person will be of retirement age. Conditions in India are exactly opposite where the class of workers in general and specifically in the area of IC are growing. Every year new 50,000 workers join the IT and software industry and a further 300,000 in engineering and technical traits. India had a total population of 1.1 billion in 2009 and the median age was 25.3 years. People above the age of 65 years comprised only 5.3 per cent of total population.

Another comparative edge that India has over Australia is a low wage rate in the area of IT and software development. Due to high costs, low R&D participation and low overall productivity Australia is performing poorly in research patents as compared to other developed countries. According to Datamonitor Plc (2010b) India has a strong position in intangible assets and R&D. Over the last few years a strong progress has been made by India in telecom, IT and IT-enabled services and it has led to a global recognition. The Indian software market generated total revenue of

Year	India		Australia	
	\$US billion	% Growth	\$US billion	% Growth
2005	648.8	9.1	453.4	2.8
2006	711.8	9.7	466.9	3.0
2007	776.8	9.1	484.8	3.8
2008	832.5	7.2	495.9	2.3
2009	892.5	7.2	507.1	2.2

Table I.
GDP size and growth
(constant 2,000 prices,
\$billion), 2005-2009

Sources: Datamonitor Plc (2010a,b)Software Industry Profiles, India and Australia

\$11.2 billion in 2008 and it is expected that this figure will rise to \$19.8 billion by 2013. The next section compares the strength and size of software industry of both countries. Although India is a global IT and software leader and it seem that the local use of technology is not highly promising and Australia appears to have a clear edge over India. The next section compares and contrasts features and the growth trends of software and information technology sector in Australia and India.

2.1 Software and information technology industry comparisons

2.1.1 Growth trends. According to Datamonitor Plc (2010b) India, the Indian software market's compound the annual growth rate (CAGR) for 2005-2009 was 32 per cent. For the same time period CAGR of the Australian software market was 5.5 per cent (Datamonitor). The value of the Indian software market was \$1.99 billion in 2009 and Australian software was valued at \$4.39 billion. According to Datamonitor India (2010d, p. 2) the annual growth rate of Indian software market in 2009 was 10.1 per cent and that of Australian software market was 5.4 per cent. It is expected that by 2014, the total value of Indian software market will be \$4.7 billion. Table II shows the Indian and Australian software market size in US dollar value for a five-year period 2005-2009.

Table III shows the projected growth in the value of software markets of both studied nations for the period of 2009-2014. The Australian software market is expected to grow to the value of \$6.3 billion by the end of 2014. The Indian software market was doubling in size every three years but this phenomenal growth has slowed down and this trend is expected to continue in future as well. Over five year period 2009-2014 the CAGR is expected to reach to 18.6 per cent as compared to last five year spell. For 2009-2014 CAGR of Australian software market is expected to be 7.4 per cent. Australia accounted for 9.9 per cent of the Asia-Pacific software market's value in 2009. Asia-Pacific market comprises of Australia, China, India, Japan, Singapore, South Korea and Taiwan.

2.1.2 Composition of markets. Table IV shows major segments of software markets in both India and Australia. The largest segment of the Indian software market is the network and database management softwares with 24.5 per cent share in total market value. The operating system software has the second largest share in the total market value with 21.2 per cent. On the other hand in the Australian software market the general business productivity software has the largest share of 22.6 per cent closely followed by network and database management with 22.2 per cent.

Table V shows the share of leading countries in the Asia-Pacific software market. Japan has the largest share of Asia-Pacific software market with nearly half of the total

Year	India		Australia	
	\$ million	% Growth	\$ million	% Growth
2005	656.3		3,555.5	
2006	1,017.8	55.1	3,720.1	4.6
2007	1,350.9	32.7	4,051.4	9.9
2008	1,807.4	33.8	4,172.5	3.0
2009	1,989.9	10.1	4,397.9	5.4
CAGR: 2005-2009		32.0		5.5

Sources: Datamonitor Plc (2010a,b) Software Industry Profiles, India and Australia

Table II.
Indian and Australian
software market value:
\$US million, 2005-2009

Table III.Software market size and
% growth forecast

Year	size \$US	India % Growth	Size \$US	Australia Growth
2009	1,989.9	10.1	4,397.9	5.4
2010	2,224.7	11.8	4,758.5	8.2
2011	2,668.9	20.0	5,102.9	7.2
2012	3,236.2	21.3	5,483.7	7.5
2013	3,856.9	19.2	5,844.4	6.6
2014	4,673.5	21.2	6,279.7	7.4
CAGR 2009-2014		18.6		7.4

Sources: Datamonitor Plc (2010a,b) Software Industry Profiles, India and Australia**Table IV.**Share of software market
segments in 2009: India
and Australia

Category	% share (Indian market)	% share (Australian market)
Network and database management	24.5	22.2
Operating system software	21.2	18.7
General business productivity	16.2	22.6
Other system software	15.1	9.4
Cross-industry and vertical application	14.1	20.5
Other application software	8.9	6.7
Total	100	100

Sources: Datamonitor Plc (2010a,b) Software Industry Profiles, India and Australia**Table V.**% share of leading
countries in Asia-Pacific
software market in 2009

Country	Japan	China	Australia	South Korea	India	Rest of Asia-Pacific
% share	50.3%	22.6%	9.9%	5.2%	4.5%	7.5%

Source: Datamonitor Plc (2010e) Software Industry Profiles: Asia-Pacific

value. China has the second place followed by Australia. Despite India being global IT leader and exporter to rest of the world, its domestic software market is quite small as compared to the USA and even other Asian economies like Japan and China. Indian software market accounted for only 4.5 per cent of the value the Asia-Pacific software market in 2009. The value of the US software market was 41.6 per cent of the world software market. However, the world software market share for India and Australia were 0.89 and 1.95 per cent, respectively.

3. Literature review

IC has greater importance for software and information technology companies as the skill sets of their staff plays a crucial role in successful operations. IC disclosures are voluntary in nature despite the facts that there is an absence of generally accepted reporting model for their reporting. Guthrie *et al.* (2006) pointed out that traditional balance sheets fail to promote a company that is otherwise equipped with intellectual resources. Abeysekera (2007) argued that investors do not get sufficient information to make well-informed decisions. Disclosure requirements are deficient and there is a need to re-examine the current disclosure practices. Abeysekera (2007) proposed that

research in this area can also impact on the perceptions about making IC disclosures. Abeysekera (2007) also found that there is no consensus about what forms good intellectual capital reporting (ICR) or IC. Recent trends in IC research have focused on measuring its value and examining disclosures by corporations in their annual reports. Contemporary debates in IC research have clearly escaped the need to provide a concise definition of what is referred to as IC. Researchers do propose their own set of definitions which are later referred to by different studies. Abeysekera (2007) proposed IC as knowledge that is capable of being converted into value and can be attributed as “unaccounted capital” (p. 330) of a firm. Assets that are created on the basis of accumulated knowledge are created using a knowledge-based equity.

Abeysekera (2007) argued that accounting regulators such as the International Accounting Standards Board have been neglecting the need to incorporate IC disclosures as part of financial statements. This poses an urgent need for a study of voluntary IC disclosures and further strengthens the purpose of these current and similar studies. In the absence of a framework for the reporting of IC, many measurement models have been proposed (Abeysekera, 2007). Abeysekera (2007) further mentions that with the adoption of the IFRS in many countries including Australia, the information gap between the fair value and reported value of a firm has decreased because the IFRS adopts the prudent approach for the recognition of assets. It is worth noting that India has not adopted IFRS.

There have been a number of studies over the past decade and more in the area of voluntary IC disclosures and some of the earlier studies, e.g. Hossain *et al.* (1995) studied voluntary intellectual disclosures by New Zealand firms. Guthrie and Petty (2000) analysed voluntary IC disclosures by the top 20 largest Australian companies and found that such disclosures were inconsistent and inadequate. In a Swedish study, Olsson (2001) studied voluntary intellectual disclosures in a sample of 18 companies. In an Irish study Brennan (2001) studied voluntary IC disclosures by 21 companies. A common finding of all studies has been the inadequacy of IC disclosures irrespective of what model was used to study such disclosures. Bontis (2003) studied companies in Canada and made a significant contribution to the contemporary literature. Goh and Lim (2004) examined IC disclosures of the top 20 profit making public listed companies in Malaysia. They primarily found that disclosures were qualitative and there were infrequent incidences of such disclosures.

Abeysekera and Guthrie (2005) and Abeysekera (2007) studied voluntary IC disclosures by Sri Lankan companies. They took the top 30 companies listed on the Colombo Stock Exchange as their sample for research and applied the content analysis approach used by Guthrie and Petty (2000). Companies were selected on the basis of their market capitalisation. Their findings indicated that disclosures were mainly qualitative and there was a subjective approach used. Kamath (2006-2008) conducted three studies in India and took the first initial research steps in the area of IC in India. In earlier studies, companies were selected from the BSE. Kamath (2008) studied a sector of the BSE that includes telecommunications, media and entertainment companies and it also includes software companies. Our current study is also using the same method used by Kamath (2006-2008) to analyse voluntary intellectual disclosures.

Schneider and Samkin (2008) studied IC disclosures by the local government sector in New Zealand in their annual reports. They took a sample of 82 local government authorities. Their study found that disclosures had a great variation. Bruggen *et al.* (2009) looked at factors determining decisions of companies making IC decisions in company annual reports. Their sample consisted of 125 companies. They found that

industry type was a key determinant of IC disclosures along with size of firm. Khan and Ali (2010) conducted a study of 20 private banks in Bangladesh and also tested the perceptions of various stakeholders about such disclosures. They found that there was no attention given to such disclosures by management. They further added that stakeholders perceived that such disclosures should be increased.

Oliveras *et al.* (2008) examined voluntary IC disclosures by leading Spanish firms for the 2000-2002 period. They found that there was a significant hidden value between examined firm's book and market value. They also noticed that during the period of study levels of IC disclosures increased. There were very low disclosures in internal capital and employee capital categories and the main area of disclosure was in the external capital category. Xiao (2008) studied IC disclosures by the top 50 companies listed on the Shanghai Stock Exchange in 2007. Findings of this study were not much different from other contemporary studies. The study concluded that Chinese companies were not making much IC disclosures.

In an initial study Joshi and Ubha (2009) analysed voluntary IC disclosures by the leading 15 IT and software companies in India. They found negligible disclosures in the annual reports. In a later extensive study Joshi *et al.* (2011) studied the top 20 information technology companies listed on the BSE. They found that the Indian companies made very low reporting of IC. Their study reported only a few companies making such disclosures and the number of disclosure lines were very low. Companies also adopted a range of different reporting styles in the absence of any framework for ICR. Joshi *et al.* (2010) studied voluntary IC disclosures by the top 20 software and information technology companies listed on the ASX. They found that the level of disclosures were primarily qualitative and were inadequate.

Rimmel *et al.* (2009) examined IC disclosures in Japanese IPO prospectuses from all stock exchange listings on the Japanese Exchange from 2003. They found that industry differences, managerial ownership and company size were not significant factors explaining voluntary disclosure of information. However, company size had a significant influence on the extent of disclosure by Japanese companies. Nurunnabi *et al.* (2011) looked at IC disclosures by 90 non-financial listed companies in Bangladesh and found that there was a lack of tendency among companies to make IC disclosures. They found that companies in the IT sector did not disclose extensively including matters relating to intellectual assets such as patents, trademarks and copyrights. Singh and Kansal (2011) examined IC disclosures by the top 20 listed Indian pharmaceutical companies. They found that IC disclosures were low, in narrative form and varied significantly among sample companies. They used a scale of disclosures with a maximum value of 96 and companies scored in the range of 4 and 36. External capital was the highest reported IC item. Whiting and Woodcock (2011) examined IC disclosures by Australian companies and the influence of company characteristics such as industry type, ownership concentration, listing age, leverage and auditor type. They found that that external capital was the most frequently reported item. They also found a positive correlation between IC disclosures and the level of technology and knowledge dependence of companies. Companies with auditors from the big four also had higher IC disclosures. However, they discovered that ownership concentration, leverage level and age of listing had no major influence on the occurrence of IC disclosures.

3.1 Comparative studies

Abeysekera (2007) examined voluntary IC disclosures commitments between a developing and a developed nation. Abeysekera (2007) conducted a study of 30

Sri Lankan companies selected on the basis of their market capitalisation for two-year period for their IC disclosures. The findings of this study were in harmony with that of an Australian study for the same period. In a later study by Sujan and Abeysekera (2007) an earlier study of Guthrie and Petty (2000) was replicated and both studies found changes in some categories of voluntary IC disclosures. However, such disclosures did not have a regular pattern amongst the studied companies. This can be attributed to the inherent nature of disclosure requirements being voluntary in nature.

Pablos (2003b) conducted a study in Spain and compared company reporting patterns between Danish, Swedish and Spanish companies and found Spanish firms to be behind. The study also found that the banking sector was ahead of other sectors in reporting IC.

A two-stage comparative study conducted by Guthrie *et al.* (2006) examined voluntary IC disclosures by the 20 largest listed Australian companies in Stage 1. In Stage 2 they examined the disclosures of 50 listed entities in Australia and 100 entities in Hong Kong. They found that voluntary IC disclosures were very low. They also established the view that there was a positive correlation between voluntary IC disclosures and company size.

Guthrie *et al.* (2006) compared voluntary IC disclosures by large listed companies from Australia and Hong Kong. They also made an evaluation of the effects of size, industry and time on voluntary IC disclosures. However, their study found that voluntary IC disclosures were primarily in qualitative form and quantitative disclosures were relatively low. This also adds considerable subjectivity in two ways. First companies would make *ad hoc* decisions about disclosures. Second, it is highly subjective to make an assessment of the quality of disclosures by companies.

In another comparative study Abeysekera (2008) studied the IC disclosures by the top 20 companies from Sri Lanka and Singapore. The former is a developing nation and the latter is moderately developed. He found differences in disclosure patterns and attributed them to the absence of a uniform approach for such disclosures. Abeysekera (2008) compared results of the Sri Lankan study with similar trends in Australian companies and found differences in reporting patterns. He found that economic, social and political factors can play a significant role in determining the extent of voluntary IC disclosures. Abeysekera (2008) further argued that context specific factors may also have a greater impact on IC disclosures. One such factor was the level of development – that is whether the nation was developed, moderately developed or developing. In this paper IC disclosures by the companies of two nations are compared, with each nation being developed and developing nation, respectively.

Sonnier (2008) compared the levels of IC disclosures by two sectors of the US economy, the high technology and traditional using a model based on the integration of the resource-based view of the company, the knowledge management and IC literature. The sample consisted of 143 high-tech and 141 traditional sector companies listed on the SEC. The study concluded that the high-tech firms had an overall higher IC disclosure, especially in the category of customer capital, organisational capital, human capital and intellectual property.

White *et al.* (2010) examined the extent and nature of IC disclosures by Australian and UK biotechnology companies. Their study also looked at whether the extent of IC disclosures by UK companies was more based on the premise that the UK biotechnology industry was more mature than the Australian biotechnology industry. Their sample consisted of 156 companies and employed 78 items based on the Danish

disclosure index. They found that country effect was significant in determining IC disclosures by companies.

The contemporary literature has shown that the voluntary nature of IC disclosures has made their reporting at the subjective discretion of companies and has led to a wide dissimilarity among reporting companies. The inclusion of IC disclosures as a category of balance sheet has always puzzled standard setters and regulators. A key common finding of majority of studies has been that IC disclosures are qualitative, inconsistent and inadequate when compared with other financial disclosures. Studies that compared IC disclosures by companies from different countries also did not report much variation in the level of disclosures between developed and developing countries. In addition to the study of largest companies by market capitalisations various studies over last few years have examined a number of different sectors including government sectors (e.g. local governments) among banks and other financial institutions, pharmaceutical companies, software and IT companies. An observation from literature studied is that most studies only analysed the largest companies from respective samples. There is also a need for study that examines companies of varied scales in terms of their market capitalisation and assets pool.

A key contribution of this study is that it examines only one sector and provides an in-depth analysis of the comparison of voluntary IC disclosures between two countries. A number of previous studies examined few largest companies from specific countries covering a number of sectors (e.g. Abeysekera and Guthrie, 2005; Abeysekera, 2007; Bontis, 2003; Brennan, 2001; Goh and Lim, 2004; Guthrie and Petty, 2000; Oliveras *et al.*, 2008; Olsson, 2001; Xiao, 2008). Most of the previous studies on IC have used items of disclosures for the presentation and analysis of the level of disclosures. However, this study has tried to make statistical comparisons to provide a unique and innovative angle to the analysis and interpretation of comparative IC information. This study is aims to explain two main research questions which are formed after in-depth study of IC literature on disclosure of IC and comparative studies on various countries:

RQ1. What is the nature and extent of IC disclosures made by Australian and Indian information technology and software companies?

RQ2. What are the differences in the level of IC disclosures by Australian and Indian companies?

The first research question examines the two dimensions of IC disclosures. The nature of IC disclosures and the extent of IC disclosures made by companies in both countries. The disclosures have been measured by using line count. The total number of companies making IC disclosures for each IC disclosing item have also been worked out. The second research question examines comparative difference in the level of IC disclosures by companies in both countries. Statistical tests have also been used in order to find responses to both questions.

4. Method

This study compares and analyses the differences between IC disclosures made by the top companies in the information technology and software sector operating in India and Australia. This study employs a method of content analysis of published annual reports. This is a popularly used method for studying IC disclosures by companies (Abeysekera and Guthrie, 2005; Abeysekera, 2007, 2008; Bontis, 2003; Bozzolan *et al.*,

2003; Brennan, 2001; Guthrie and Petty, 2000; Guthrie *et al.*, 1999, 2004; Joshi *et al.*, 2010, 2011; Oliveras *et al.*, 2008; Olsson, 2001; Striukova *et al.*, 2008; Sujan and Abeysekera, 2007). Content analysis can be a great source of information for individual firms or groups of firms. It involves “coding words, phrases and sentences against particular scheme of interest” (Bowman, 1984, p. 61). Guthrie *et al.* (2006) state that, “Content analysis involves codifying both qualitative and quantitative information into pre-defined categories in order to track patterns in the presentation and reporting of information” (p. 257).

“Content analysis is widely used in accounting research to reveal useful insights into accounting practice” (Steenkamp and Northcott, 2007, p. 12). According to Guthrie *et al.* (2004), “of the various methods available to researchers seeking to understand intellectual capital reporting (ICR), content analysis is the most popular” (p. 282). Content analysis includes use of written documents whether available in the public domain or restricted domain. Written documents can be a book, newspaper, magazine, notice, letter (Robson, 2002) or even published annual reports. “It is an unobtrusive measure which is not-reactive, in that the document is not affected by the fact that you are using it” (p. 349). Documents used in this method are usually not prepared for the purpose of research. This method is capable of replicable and valid references from data to their context. It originated and gained prominence in the social sciences in the USA. A recording unit can be a word, paragraph or whole item and even a sentence (Robson, 2002).

In most of the studies companies were taken as the top largest companies listed on stock exchanges. Such studies also employed content analysis of published annual reports. Another common feature is that companies were selected on the basis of their market capitalisation. This study also selected the largest companies which have been selected on the basis of their market capitalisation. Use of published annual reports can be justified as “annual reports are an instrument through which firms communicate their issues and messages in a comprehensive and compact manner” (Abeysekera, 2007, p. 332).

5. Analysis and discussion

The Table VI highlights that out of the index of 39 items, Indian IT companies disclose 21 items whereas in comparison Australian IT companies report only 14 items. Indian companies missed 18 items of the index whereas Australian companies missed 25 items of the index. There are 16 common items which were not disclosed by the companies from both the countries. In case of Indian companies, the term “intellectual property” has been disclosed by 14 companies followed by the disclosure of the term “information system” by nine companies. The line count for the same comes to be 166 and 82, respectively. However, in case of Australian companies, the term intellectual property has been disclosed by 16 companies with a line count of 108 lines and it was the maximum disclosure of any item by the companies under study. In case of Australia, the second best disclosure is of the item company reputation, which was disclosed by nine companies with line count of 46. The theme term of the paper “IC” was disclosed by mere three and two companies, respectively, in India and Australia with line count of 10 and six.

Table VII highlights that the top five most ICD disclosure companies in Australia and India. Among Australian companies, DWS Advance Business Solutions is the best disclosing company but has disclosed only six items out of 39 items in the ICD index. It is marginally followed by Technology One, ASG Group, ITX Group Limited and

Table VI.
Disclosure of intellectual
capital items

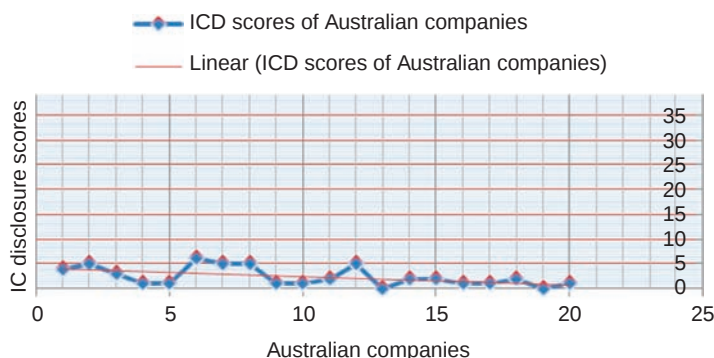
Sl. no.	Items of intellectual capital	No. of disclosing companies in India	No. of disclosing companies in Australia	No. of lines disclosed by Indian companies	No. of lines disclosed by Australian companies
1.	Business knowledge	6	2	28	8
2.	Company reputation	6	9	87	46
3.	Competitive intelligence	0	3	0	12
4.	Corporate learning	5	2	21	6
5.	Cultural diversity	4	0	23	0
6.	Customer knowledge	1	1	14	4
7.	Economic value added	1	0	2	0
8.	Employee expertise	3	0	10	0
9.	Employee knowledge	2	1	5	2
10.	Employee productivity	2	0	5	0
11.	Employee skill	4	0	15	0
12.	Employee value	2	1	7	1
13.	Knowledge assets	1	0	18	0
14.	Knowledge sharing	4	1	20	2
15.	Management quality	2	0	6	0
16.	Information systems	9	3	82	11
17.	Intellectual capital	3	2	10	6
18.	Intellectual property	14	16	166	108
19.	Knowledge management	6	1	62	1
20.	Human assets	0	1	0	3
21.	Human capital	5	0	22	0
22.	Human value	2	0	15	0
23.	Organizational culture	5	7	19	43

Table VII.
Comparison of top five
companies in IC
disclosures – Australia
and India

Sl. no.	Top five companies in IC disclosures – Australia and India			
	Indian companies	ICD score	Australian companies	ICD score
1.	Infosys Technologies Ltd	14	DWS Adv. Business Solutions	6
2.	Rolta India Limited	10	Technology One	5
3.	Siemens Information System Ltd	7	ASG Group	5
4.	Firstsource	7	ITX Group Limited	5
5.	Patni Computer System Ltd	6	Melbourne IT	5

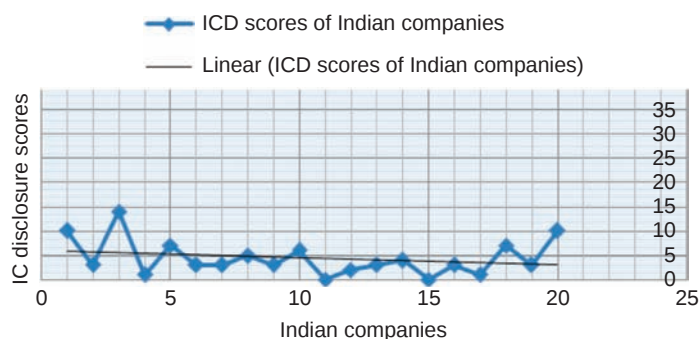
Melbourne IT each with ICD score of five. In India, Infosys Technologies Ltd has top ICD score of 14 followed by Rolta India Limited with ICD score 10. Siemens Information System Ltd. and Firstsource are next at third and fourth place with ICD score of 7 each. It is interesting to note that Patni Computer System Ltd (fifth in list of top IC disclosing companies), has total ICD score 6, equal to top most IC disclosing company in Australia. Figure 1 and Figure 2 clearly demonstrate the differences in disclosure of ICD among Australian and Indian companies (Table VIII).

Taking a sample of 20 companies, the difference between the means of the number of companies disclosing an item of IC has been calculated for both the countries. On an average, an item of IC is disclosed by four companies (3.78 companies rounded off) in India and by two companies (2.17 rounded off) in Australia. Standard deviation and



Note: Against maximum ICD score of 39 (39 items in IC index)

Figure 1.
IC disclosures by 20
Australian companies



Note: Against maximum ICD score of 39 (39 items in IC index)

Figure 2.
IC disclosures by 20
Indian companies

Country	Average	SD	CV(%)	Standard skewness	Standard kurtosis	<i>t</i> -test	Mann-Whitney (Wilcoxon) <i>W</i> -test	Kolmogorov- Smirnov test
India	3.78	3.16	83.58	3.221	3.84	$t = 1.5671$	$W = -124.5$	$K-S = 1.916$
Australia	2.17	3.77	173.59	5.390	7.99	$p\text{-value} = 0.124$	$p\text{-value} = 0.0057^{**}$	$p\text{-value} = 0.0013^{**}$

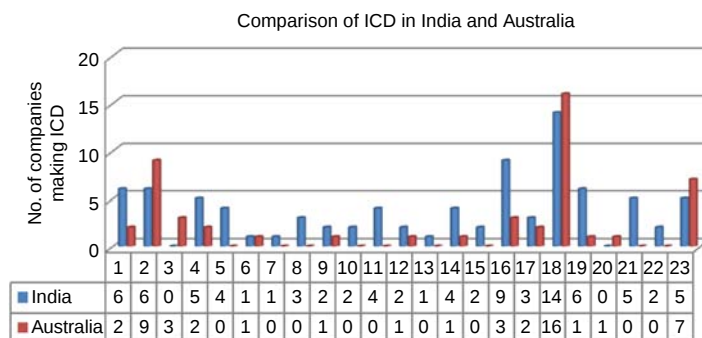
Notes: $n = 23$. ** Significant at 0.01level

Table VIII.
Statistical comparison of
average items disclosed

coefficient of variation show that in Australia, the variation in IC disclosure is high relative to IC disclosure by Indian companies. Before proceeding to analytical/interpretive side of the data, both the assumptions of normality of data and homogeneity of data has been checked (Figure 3).

Two statistics, the standardised skewness and standardised kurtosis, lying outside the range of -2 to $+2$ indicated significant departures from normality, which would tend to invalidate the tests which compare the standard deviations. Therefore, in

Figure 3.
Comparison of ICD in
India and Australia



addition to a *t*-test to compare the means of the two samples, it is considered desirable to run Mann-Whitney (Wilcoxon) *W*-test to compare medians and Kolmogorov-Smirnov test to compare the distributions of the two samples. As both the distributions had equal variances (*F*-test to compare standard deviations $F = 0.702$, p -value = 0.41302): *t*-test shows that there is no significant difference in mean number of companies disclosing an item of IC, $t = 1.5671$, p -value = 0.124. But the same time with ($W = -124.5$, p -value = 0.0057), the p -value is < 0.05; there is a statistically significant difference between the medians at the 95.0 per cent confidence level. It is interpreted that there is significant difference in mean number of companies disclosing an IC item. This result is further confirmed by *K-S* statistic in Kolmogorov-Smirnov test, indicating that there is a statistically significant difference between the two distributions at the 95.0 per cent confidence level.

Table IX demonstrates that the average sentences disclosed on any of the items in the IC index in India are higher at 28 sentences as compared to just 11 sentences by Australian companies. The ICD in terms of the number of sentences are less consistent in Australia, as 138 per cent coefficient of variation is found in India and 223 per cent in Australia. The maximum number of sentences disclosed on any IC item is 166 in India followed by 108 in Australia. Standardised skewness and kurtosis values are lying outside the range of -2 to $+2$ indicating significant departures from normality, which tends to invalidate the tests which compare the standard deviations. So, in addition to a *t*-test to compare the means of the two samples, it is considered advantageous to run Mann-Whitney test to compare medians and Kolmogorov-Smirnov test to compare the distributions of the two samples. The *t*-statistics = 1.76, $p > 0.5$ indicates that there is no significant between number of average number of sentences disclosed by Indian companies and Australian companies at 5 per cent level of significance.

Table IX.
Statistical comparison of
average sentences
disclosed

Country	Average	SD	CV (%)	Maximum	Standard skewness	Standard kurtosis	<i>t</i> -test	Mann- Whitney <i>W</i> -test	Kolmogorov- Smirnov test
India	27.69	38.35	138.48	166	5.067	7.190	$t = 1.76$	$W = -144.5$	$K-S = 1.767$
Australia	11	24.57	223.37	108	6.385	11.257	p -value = 0.86	p -value = 0.0014**	p -value = 0.003**

But in Mann-Whitney test with $W = 144.5$ and $p < 0.01$, the statistically significant differences can be noticed in the medians of two distribution. These results are further strengthened by Kolmogorov-Smirnov test statistics 1.767, with p value < 0.01 . So, overall, it can be concluded that on any item of IC, the Australian companies are making lesser disclosures than Indian companies.

6. Conclusion, limitations and suggestions for future research

India and Australia have various contrasting differences that exist at the GDP growth level, working population age and wage levels, etc. The Australian software market size and its share in the Asia-Pacific market are higher than that of India. India still needs to expand the use of IT in its home base along with massive exports to other developed nations. Despite these differences IC disclosures by companies in both countries remain relatively low. This reaffirms the findings of earlier studies that generally IC disclosures are found to be low in all countries in a range of industries. An overriding principle is that such disclosures are voluntary which also adds to an *ad hoc* practice of reporting adopted by various companies.

Indian IT companies have performed better than Australian IT companies and report on more index items. The line count for Indian companies is also higher than that of Australian companies. The top five Indian IC disclosing companies also performed better than the Australian companies. The top Indian company had more than double index items than the top Australian company. Further there was also a difference between the means of number of companies disclosing an item of IC. Indian companies performed better in the average sentences disclosure of items in the IC index and the disclosure value was more than double than that of Australian companies. The findings of this study have profound implications for policy makers and standards setters for rethinking over the issue of incorporating IC disclosures in the financial statements as compulsory items. This will not only add to the quality of information but stakeholders will be able to make an assessment of the true value of a firm.

This comparative study of two countries is not free from research limitations of using content analysis as a research tool, coupled with the varied nature of work cultures, corporate philosophies and regulatory framework in both the nations. The study is limited to a selected few firms from only one sector of the knowledge economy companies and only for one specific year 2008. This can, however, be extended to study the comparative picture across other industries representing the knowledge sector such as banking, insurance, pharmaceutical and other knowledge intensive industries. The study may have limited external validity due to the sample size being confined to 20 listed firms only, and the findings may not be representative of firms in India and Australia.

The authors have some suggestions for future research in this field of knowledge. First, an expanded sample size and extending the time period of the study for comparative IC disclosure studies can provide more insights about IC disclosure practices. Second, an effort can be made on comparing IC disclosures made by different industrial sectors. Third, comparative IC disclosures may be studies with reference to financial and non-financial determinants of voluntary disclosures by the corporations operating in different environments. These determinants may include the size of the business, financial performance variables, age of the firm, corporate governance variables and the country-specific legislative disclosure requirements. Increased emphasis on IC information could be useful for the corporate growth as such emphasis

might increase the shareholder and market values of companies (Tayles *et al.*, 2007) and may help the financial reporting regulators to devise reporting guidelines for IC for public-listed companies in an era of global efforts on harmonisation of reporting practices.

References

- Abeyssekera, I. (2007), "Intellectual capital reporting between a developing and developed nation", *Journal of Intellectual Capital*, Vol. 8 No. 2, pp. 329-45.
- Abeyssekera, I. (2008), "Intellectual capital disclosure trends: Singapore and Sri Lanka", *Journal of Intellectual Capital*, Vol. 9 No. 4, pp. 723-37.
- Abeyssekera, I. and Guthrie, J. (2005), "An empirical investigation of annual reporting trends of intellectual capital in Sri Lanka", *Critical Perspectives on Accounting*, Vol. 16 No. 3, pp. 151-63.
- Bontis, N. (2003), "Intellectual capital disclosure in Canadian corporations", *Journal of Human Resource Costing & Accounting*, Vol. 7 No. 1, pp. 9-20.
- Bowman, E.H. (1984), "Content analysis of annual reports for corporate strategy and risk interfaces", *Strategic Management*, Vol. 14 No. 1, pp. 61-71.
- Bozzolan, S., Favotto, F. and Ricceri, F. (2003), "Italian annual intellectual capital disclosure", *Journal of Intellectual Capital*, Vol. 4 No. 4, pp. 543-58.
- Brennan, N. (2001), "Reporting intellectual capital in annual reports: evidence from Ireland", *Accounting, Auditing & Accountability Journal*, Vol. 14 No. 4, pp. 423-36.
- Bruggen, A., Vergauwen, P. and Dao, M. (2009), "Determinants of intellectual capital disclosure: evidence from Australia", *Management Decision*, Vol. 47 No. 2, pp. 233-45.
- Datamonitor Plc (2010a), *Software Industry Profile: Australia*, Datamonitor Plc, London.
- Datamonitor Plc (2010b), *Software Industry Profile: India*, Datamonitor Plc, London.
- Datamonitor Plc (2010d), *India: Country Analysis Report – In-depth PESTLE Insights*, Datamonitor Plc, London.
- Datamonitor Plc (2010e), *Software in the United States: Industry Profile, PESTLE Insights*, Datamonitor Plc, London.
- Deegan, C. (2007), *Australian Financial Accounting*, McGraw-Hill Higher Education, Sydney.
- Goh, P.C. and Lim, K.P. (2004), "Disclosing intellectual capital in company annual reports", *Journal of Intellectual Capital*, Vol. 5 No. 3, pp. 500-10.
- Guthrie, J. and Petty, R. (2000), "Intellectual capital: Australian annual reporting practices", *Journal of Intellectual Capital*, Vol. 1 No. 3, pp. 241-51.
- Guthrie, J., Petty, R. and Ricceri, F. (2006), "The voluntary reporting of intellectual capital comparing evidence from Hong Kong and Australia", *Journal of Intellectual Capital*, Vol. 7 No. 2, pp. 254-71.
- Guthrie, J., Petty, R., Ferrier, F. and Wells, R. (1999), "There is no accounting for intellectual capital in Australia: a review of annual reporting practices and the internal measurement of intangibles", paper presented to International Symposium for Measuring and Reporting Intellectual Capital: Experience, Issues, and Prospects, Amsterdam, 9-10 June.
- Guthrie, J., Petty, R., Yongvanich, K. and Ricceri, F. (2004), "Using content analysis as a research method to inquire into intellectual capital reporting", *Journal of Intellectual Capital*, Vol. 5 No. 2, pp. 282-93.
- Hossain, M., Perera, M.H.B. and Rahman, A.R. (1995), "Voluntary disclosure in the annual reports of New Zealand companies", *Journal of International Financial Management and Accounting*, Vol. 6 No. 1, pp. 69-87.

- Joshi, M. and Ubha, D.S. (2009), "Intellectual capital disclosures: the search for a new paradigm in financial reporting by the knowledge sector of Indian economy", *Electronic Journal of Knowledge Management*, Vol. 9 No. 5, pp 575-82.
- Joshi, M., Ubha, D.S. and Sidhu, J. (2010), "Reporting intellectual capital in annual reports: evidence from Australian information technology sector", *Journal of Knowledge Management Practice*, Vol. 11 No. 3.
- Joshi, M., Ubha, D.S. and Sidhu, J. (2011), "Intellectual capital disclosures in India: a case study of information technology sector", *Global Business Review*, Vol. 12 No. 1, pp. 37-49.
- Kamath, B. (2006), "Strategic management of intellectual capital", *Journal of IPM*, Meerut, Vol. 6 No. 1.
- Kamath, B. (2007), "IC statements: what they measure and report", *ICFAI Journal of Accounting Research*, Vol. 6 No. 4, pp. 52-64.
- Kamath, B. (2008), "Intellectual capital disclosure in India: content analysis of 'Teck' firms", *Journal of Human Resource Costing and Accounting*, Vol. 12 No. 3, pp. 213-24.
- Khan, M. and Ali, M. (2010), "An empirical investigation and users' perceptions on intellectual capital reporting in banks evidence from Bangladesh", *Journal of Human Resource Costing & Accounting*, Vol. 14 No. 1, pp. 48-69.
- Nurunnabi, M., Hossain, N. and Hossain, M. (2011), "Intellectual capital reporting in a South Asian country: evidence from Bangladesh", *Journal of Human Resource Costing & Accounting*, Vol. 15 No. 3, pp. 196-233.
- Oliveras, E., Gowthorpe, C., Kasperskaya, Y. and Perramon, J. (2008), "Reporting intellectual capital in Spain", *Corporate Communications: An International Journal*, Vol. 13 No. 2, pp. 168-81.
- Olsson, B. (2001), "Annual reporting practices: information about human resources in corporate annual reports in major Swedish companies", *Journal of Human Resource Costing and Accounting*, Vol. 6 No. 1, pp. 39-52.
- Pablos, P.O. (2003a), "Intellectual capital reports in India: lessons from a case study", *Journal of Intellectual Capital*, Vol. 6 No. 1, pp. 141-9.
- Pablos, P.O. (2003b), "Intellectual capital reporting in Spain: a comparative view", *Journal of Intellectual Capital*, Vol. 4 No. 1, pp. 61-81.
- Rimmel, G., Nielsen, C. and Yosano, T. (2009), "Intellectual capital disclosures in Japanese IPO prospectuses", *Journal of Human Resource Costing & Accounting*, Vol. 13 No. 4, pp. 316-37.
- Robson, C. (2002), *Real World Research: A Resource for Social Scientists and Practitioner Researchers*, Blackwell, Oxford.
- Schneider, A. and Samkin, G. (2008), "Intellectual capital reporting by the New Zealand local government sector", *Journal of Intellectual Capital*, Vol. 9 No. 3, pp. 456-86.
- Singh, S. and Kansal, M. (2011), "Voluntary disclosures of intellectual capital: an empirical analysis", *Journal of Intellectual Capital*, Vol. 12 No. 2, pp. 301-18.
- Sonnier, B.M. (2008), "Intellectual capital disclosure: high-tech versus traditional sector companies", *Journal of Intellectual Capital*, Vol. 9 No. 4, pp. 705-22.
- Steenkamp, N. and Northcott, D. (2007), "Content analysis in accounting research: the practical challenges", *Australian Accounting Review*, Vol. 17 No. 3, pp. 12-25.
- Striukova, L., Unerman, J. and Guthrie, J. (2008), "Corporate reporting of intellectual capital: evidence from UK companies", *The British Accounting Review*, Vol. 40 No. 4, pp. 297-313.
- Sujan, A. and Abeysekera, I. (2007), "Intellectual capital reporting practices of the top Australian firms", *Australian Accounting Review*, Vol. 17 No. 2, pp. 71-83.

- Tayles, M., Pike, R.H. and Sofian, S. (2007), "Intellectual capital, management accounting practices and corporate performance", *Accounting, Auditing & Accountability Journal*, Vol. 20 No. 4, pp. 522-48.
- White, G., Lee, A., Yuningsih, Y., Nielsen, C. and Bukh, P.N. (2010), "The nature and extent of voluntary intellectual capital disclosures by Australian and UK biotechnology companies", *Journal of Intellectual Capital*, Vol. 11 No. 4, pp. 519-36.
- Whiting, R.H. and Woodcock, J. (2011), "Firm characteristics and intellectual capital disclosure by Australian companies", *Journal of Human Resource Costing & Accounting*, Vol. 15 No. 2, pp. 102-26.
- Xiao, H. (2008), "Corporate reporting of intellectual capital: evidence from China", *The Business Review*, Vol. 11 No. 1, pp. 124-9.

Further reading

- Datamonitor Plc (2010c), *Australia: Country Analysis Report – In-depth PESTLE Insights*, Datamonitor Plc, London.
- Gunnar, R., Christian, N. and Tadanori, Y. (2009), "Intellectual capital disclosures in Japanese IPO prospectuses", *Journal of Human Resource Costing & Accounting*, Vol. 13 No. 4, pp. 316-37.

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