Reporting Intangible Assets: Voluntary Disclosure Practices of Top Emerging Market Companies

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Abstract

This study examines factors associated with the voluntary disclosure practices of the top 200 emerging market companies in respect of information about Intangible Assets (IA). Using a disclosure index based on the Value Chain Scoreboard™ (Lev, 2001), narrative sections of annual reports are analysed. The findings support the applicability of Lev's framework. Further, the extent of IA disclosure is associated with leverage, adoption of IFRS/US GAAP, industry type, and price-to-book ratio. Contrary to prior research, firm size and ownership concentration are not found to be significant. Country-specific factors such as economic policy and legal system are also found to be significantly associated with IA voluntary disclosure levels.

Keywords: Voluntary disclosures; Intangible assets; Emerging market companies

1. Introduction

An intangible asset is a claim to future benefits that does not have a physical (e.g. building or equipment) or financial (e.g. stock or bond) embodiment (Lev, 2001)[1]. For example, patents, brand names, and unique organisational infrastructures that generate cost savings for companies can be defined as Intangible Assets (IA). In recent years, the growth of the service sector and of information technology related businesses, along with the dramatic increase in the number and size of international mergers and acquisitions, has made accounting for IA very significant (Lev, 2001; Saudagaran, 2001).

Currently, there are few comprehensive guidelines for corporations in International Financial Reporting Standards (IFRS) or in US GAAP on how to report IA, other than for purchased goodwill and some development costs, as part of their balance sheets[2]. That is, while the importance and the necessity of such assets in creating and maintaining corporate value have been widely accepted, traditional financial reporting frameworks unfortunately do not capture many of these value drivers (Jenkins and Upton, Jr. 2001; Upton, Jr. 2001; Lev and Zarowin 1999) due to the "non-physical" nature of IA and the subsequent uncertainties associated with their "future benefits".

It may be naïve to assert that total transparency regarding IA would automatically enhance the quality of corporate information being distributed to external stakeholders. Given the increasing importance of IA in driving corporate value, however, it can be argued that corporations should nonetheless communicate relevant and useful information on IA to their stakeholders. One of the most popular alternative ways of communicating is the use of narrative reporting where IA

information is voluntarily disclosed in narrative sections of the annual reports, outside the financial statements and their notes, but as part of broader business reporting practices (Brennan 2001).

Corporations most likely to benefit from such voluntary disclosure practices are those from emerging economies wishing to raise their operating, investing and financing opportunities in various global markets. Emerging market companies competing in global markets may enhance their profile and reputation by engaging in voluntary disclosure practices in order to inform potential global stakeholders of their IA. While the concept of IA management and reporting practices in developed economies have been examined in the previous literature, less discussed are the status of the IA voluntary disclosure practices, and corporate and country specific factors behind such practices, in the emerging economies.

In this study, we aim to examine the voluntary disclosure practices of the top 200 emerging market companies in respect of information about IA. Specifically, we develop a disclosure index based on the Value Chain Scoreboard™ (Lev, 2001) to investigate the extent of IA voluntary disclosure practices, and consider some of the likely factors that may influence the level of IA disclosure.

The remainder of the paper is structured as follows. The next section reviews the existing literature on IA and reporting practices in emerging markets. We then develop an IA disclosure index based on the Value Chain Scoreboard™. This is followed by the methodology section. We then examine and discuss our findings

from the study, and finally, conclusions and suggestions for future research are presented.

2. Reporting IA in Emerging Markets

Reporting IA has become one of the most debated issues both in academia and in practice due, in part, to the growing gap between the book value and market value of companies (Beattie, 2005; Brennan, 2001; Sveiby, 1997), and the difficulties associated with recognising IA in financial statements. According to Beattie (2005), there subsequently has been an increasing research interest in ways of reporting on IA outside the audited financial statements and several academic journals have carried special issues on this topic in the last few years[3]. Many of the US studies have examined the value relevance of disclosures relating to specific items of intangibles, while the non-US literature primarily has focused on reporting intangibles as a whole using case studies.

While most developed countries have conducted studies on IA voluntary disclosure practices in their domestic markets in recent years, there have been few, if any, comprehensive studies on corporate reporting practices in emerging markets. The status of voluntary disclosure in emerging markets is important for two reasons. First, with increasing globalisation, the capital markets of developing countries are now available to investors all over the world, who increasingly demand more reliable and relevant information on companies' financial performance, as well as more transparent information on corporate value, including their IA. Second, given the current harmonisation initiatives in developed markets, as well as in emerging economies, it is essential to understand the current reporting practices of emerging

market companies, and identify possible factors, such as the existence of accounting regulations, industry type, and stock market listings, which may cause different business reporting practices regarding corporate IA.

Historically, there has always been a divergence of global reporting practices used to account for IA. The divergence mattered less in the past because these items were relatively small in value. In today's markets, however, standard setters, preparers, and users of financial information are beginning to recognise the need to come up with comparable accounting methods for IA as they become more significant components worldwide (García-Meca and Martinez, 2007; Saudagaran, 2001; Saudagaran and Diga, 1997). The important issue is that IA exist regardless of whether or not accounting standards consider them to be suitable for recognition as assets. In short, although most accounting standard setting bodies in the world are now placing a great importance on the measurement and the disclosure of information on IA, the heterogeneity in their approaches results in financial statements that are neither comparable nor able to present enough relevant information on the intangible determinants of the value of companies (Cañibano, *et al*., 2000). That is, IA are not likely to be included on financial balance sheets any time in the near future in any significant way, and subsequently, external reporting of IA would likely be made on a voluntary disclosure basis.

Further, companies most likely to benefit from voluntary disclosures are those which operate in markets that are not developed enough to impose high-quality accounting standards and enforce them in cases of their violations. The developing economies have in recent years produced a set of high-risk, high-return companies vying for

foreign investors. These emerging market companies compete in global markets based on their IA more so than companies in any other markets, since most of these companies are part of the "new economy", have heavily invested in intangible competencies and capabilities, and have formed joint ventures and other business networks. Subsequently, these companies are very likely to engage in voluntary disclosure practices to legitimise their investments on value creating activities based on IA.

Emerging market companies wishing to raise foreign capital are now under intense pressure from international markets to improve the transparency of corporate information. For a group of countries whose political and economic importance has grown considerably over the past two decades, however, relatively little has been written about corporate reporting practices in these emerging economies (Saudagaran and Diga, 1997). This is especially the case regarding corporate social, environmental, and other non-financial value drivers such as IA (Belal, 2001). In summary, there exists a pressure on emerging market companies to voluntarily produce more information in order to attract foreign investment, and subsequently, more empirical research should be conducted on the current status and factors that may influence voluntary disclosure practices in emerging markets.

3. Reporting IA: Is Value Chain Scoreboard™ the Answer?

According to Lev (2001), increased reliance on IA to create value has called for a new framework to report corporate performance. Current proposals for improving the information available on intangible-intensive corporations are either silent about the objectives of the proposed information or set general and vague targets (Lev, 2003).

Lev's proposal for a new information and reporting system starts with a discovery of new products and services or processes (*the Discovery and Learning Phase*), proceeds through the development phase of these discoveries and the establishment of technological feasibility (*the Implementation Phase*), and culminates in the commercialisation of the new products or services (*the Commercialisation Phase*). Lev's Value Chain Scoreboard™ is "aimed at informing both managers and investors…about the company's innovation activities, with special emphasis on investment in intangibles and their transformation to tangible results" (Lev, 2001; 119). It is a matrix of non-financial indicators arranged in three categories according to the cycle of development.

The focus of the framework is on innovation, and information on IA obviously plays a prominent role in this information system. Lev (2003) states that the key to achieving substantial improvement in the disclosure of information about IA, both within businesses and to capital markets, is the construction of a comprehensive and coherent information structure that focuses on the essentials – the value creation process of the enterprise – and places IA in their proper role within this structure. The scoreboard does not necessarily expect managers to disclose the value of IA (that is, the market value of a patent or the worth of key employees) – these should be left to outsiders such as financial analysts. It does, however, advocate an idea that companies should report about their innovation processes according to the following three phases because this is where economic value is created in today's knowledge based businesses located in nearly all industries.

The *Discovery and Learning* phase involves the discovery of new ideas for products, services or processes. Such ideas can originate from the firm's internal R&D operation or from workforce development and training (internal renewal). In recent times, knowledge and ideas are increasingly obtained from the outside as well – for example, acquisition of information technology (acquired capabilities) and know-how gained through alliances/joint ventures with other business partners (networking). These are the core IA of the company which will then be implemented in order to create value. This phase therefore initiates the corporate value chain and it should be the most intangible-intensive value creation phase for companies. Subsequently, it is expected that corporations would voluntarily disclose much of this kind of information in their annual reports.

The second phase, *Implementation*, involves achieving technological feasibility of the products, services or processes under development. During this phase, there is a transformation of ideas and discoveries into working products through the workforce, infrastructure assets, and networking with customers and suppliers. It is a particularly important phase of the value chain since it is concerned with the process of how to implement discoveries and ideas identified in the previous phase and how to reap the benefits of intangible resources. It is possible, however, that companies may consider information regarding the implementation of discoveries and ideas to be too sensitive to be disclosed to the general public for the sake of competitive advantage.

The final phase, *Commercialisation*, signifies the successful realisation of the innovation process. Ideas, transformed to workable products and services, are

brought to the market to generate sales and earnings. Some of the components that signify the success of the *Commercialisation* phase include:

Customers – brand value is an important value indicator from the customers' perspective. Further, marketing innovations are important indicators of potential sales growth, and customer churn and value, such as customer satisfaction, can gauge the success of the company's commercialisation of its values.

Performance – the quantitative indicator of how successful the commercialisation of intangible resources has been can be seen as market shares, innovation revenue, and patent royalties.

Growth Prospects – new product pipelines and expected efficiencies and savings, planned initiatives and expected breakeven and cash burn rates. These are the essential forward-looking information.

IA Information from the *Commercialisation* phase is particularly valuable to stakeholders since it shows the end results of the IA-related investments made by corporations. That is, corporations are expected to disclose as much information about the benefits reaped from the IA investment to stakeholders as they can in the narrative sections of corporate annual reports.

In summary, the Value Chain Scoreboard™ is aimed at providing a comprehensive and in-depth portrayal of the corporation's capabilities and success in creating economic value. For the purpose of this study, a disclosure index based mainly on the Vane Chain Scoreboard™ is developed in order to examine the extent of IA disclosure and the factors associated with the level of IA disclosures by the top 200 emerging market companies.

4. Hypothesis Development

We expect that, in general, emerging market companies would voluntarily disclose mainly qualitative IA information in their annual reports in response to firm and country level factors. We consider 12 corporate and country-specific variables which can be grouped into the following 4 categories: variables relating to (1) overall voluntary disclosure practices (Hypotheses 1 to 3); (2) emerging markets (Hypotheses 4 and 5); (3) IA (Hypotheses 6 to 9); and, (4) country-specific factors (Hypotheses 10 to 12).

4.1 H1: Firm size

Firm size is perhaps the most consistent corporate-specific characteristic which has been found to be associated with the level of voluntary disclosure. The relationship between firm size and voluntary disclosure has been supported in previous studies using various proxies for firm size, including sales revenue and market capitalisation (Hope, 2003)[4]. Further, different measures of voluntary disclosure including social responsibilities, environment, employees, ethical issues, corporate governance, and intellectual capital have been examined and found to be positively associated with firm size (García-Meca, *et al.*, 2005; Kent and Chan, 2004; Cormier and Gordon, 2001; Adams *et al.*, 1998).

It is, however, important to note that there is no suggestion that the size of the corporation *causes* differing levels of voluntary disclosure per se – rather, a large corporation is more likely to have underlying reasons for increased disclosure (Cooke, 1989). Subsequently, for the purpose of the current study, it is hypothesised that:

H1: There is a positive association between firm size and the level of IA voluntary disclosure.

4.2 H2: Ownership concentration

Agency Theory suggests that where there is a separation of ownership and control of a firm, the potential for agency costs arises because of conflicts of interest between the two contracting parties (Fama and Jensen, 1983). Subsequently, the potential for conflicts between principal and agent is greater for companies whose share ownership is widely-held than in more closely-held companies. Stakeholder Theory also supports the notion that low concentration of ownership indicates the existence of a more diverse group of stakeholders of the company, and subsequently, the company has more incentives to disclose information to respond to different perspectives of different stakeholders (Cormier *et al*, 2005).

It is therefore proposed that the emerging market companies with high ownership concentration would have less incentive to voluntarily disclose IA information, and thus, the following hypothesis is considered in the current study:

H2: There is a negative association between ownership concentration and the level of IA voluntary disclosure.

4.3 H3: Leverage

According to Agency Theory, a corporation with high leverage has an incentive to disclose more information. Since creditors can price protect themselves via restrictive debt covenants, managers have incentives to increase disclosures to reduce agency costs, which would suggest a positive relationship between the level of voluntary

disclosure and leverage. That is, corporations with high debt are generally under greater scrutiny by creditors to ensure that they are not violating debt covenants, and consequently, this scrutiny would result in corporations disclosing more comprehensive information on different corporate items especially those relating to debt covenants (Jaggi and Low, 2000)[5].

In this study, we however propose an alternative hypothesis that there is a negative relationship between leverage and IA voluntary disclosure by emerging market companies based on the following two premises. First, IA and their subsequent voluntary disclosure may not be as relevant to existing creditors as they are to shareholders and potential future investors[6]. That is, it may not be the level of debt that is significantly related to the level of IA disclosure; rather, it is the amount of equity in the capital structure that is positively associated with the voluntary disclosure. In other words, it is possible that there is a negative association between leverage and IA voluntary disclosure.

Second, it is proposed that the association between leverage and IA disclosure may be influenced by the underlying conceptual status of the debt market in emerging economies. There is no doubt that the debt markets in these countries at best can be considered under-developed, with very little protection being offered to private debtholders. Subsequently, any debt being provided to these companies would heavily be biased towards public lenders, both domestic and foreign, such as banks and state-held institutions. The institutional lenders would not necessarily need to rely on public information such as annual reports, and they may not consider IA information to be the most pressing corporate information required to make any

decision. Again, this would result in leverage being negatively associated with the level of IA disclosure. The following hypothesis is thus developed:

H3: There is a negative association between leverage and the level of IA voluntary disclosure.

4.4 H4: Adoption of IFRS/US GAAP

Emerging market companies must consider whether the preparation of financial information in annual reports should be based on the national disclosure requirements or on the requirements of IFRS or US GAAP[7]. It has previously been found that companies are more likely to prepare their financial statements using IFRS or US GAAP when, by doing so, they can provide more standardised financial information relative to the information generated via their domestic reporting requirements (Ashbaugh, 2001).

There is, however, a possibility that emerging market companies are adopting IFRS or US GAAP without the willingness to fulfil all of the requirements and obligations. That is, an emerging market company may adopt IFRS or US GAAP only for the perceived benefits of adopting "superior" accounting standards and not necessarily to provide more transparent and reliable information – users of financial statements may consider the adoption of IFRS or US GAAP to be an indicator that the company's information is transparent and of high quality since IFRS adoption is considered to be associated with an improvement in accounting quality (Barth, *et al,* 2005). As a result, these companies may not engage in any extra disclosure practices in order to enhance their reputation and negate any perceived transparency and relevance problems as adoption of IFRS or US GAAP will have done so already.

There is also a corresponding proposition that emerging market companies not adopting IFRS or US GAAP may feel that they have the need to voluntarily disclose more information on IA in order to negate the potential perception that they are not providing transparent and reliable information in their annual reports. That is, they may feel the need to justify their "non-adoption" of IFRS or US GAAP[8]. Based on these arguments, it is subsequently hypothesised that emerging market companies which have adopted IFRS or US GAAP would choose not to voluntarily disclose IA information in their annual reports. The following hypothesis is thus developed:

H4: The level of IA voluntary disclosure is lower for emerging market companies adopting IFRS or US GAAP.

4.5 H5: Listing status

The disclosure requirements imposed on emerging market companies in their domestic capital markets differ greatly, both in their adequacy and quality, and companies may choose to voluntarily disclose corporate information that would assist the perception of transparent and reliable reporting practices in global markets. Foreign market listed companies would respond to the pressures of various interest groups and voluntarily disclose more information in order to realise the potential benefits of a foreign listing, such as obtaining capital at a lower cost (Hope, 2003).

That is, emerging market companies listed on the foreign stock exchange may consider engaging in a higher level of voluntary disclosure of IA information than those emerging companies not listed on the foreign exchange. The following hypothesis is thus developed:

H5: The level of IA voluntary disclosure is higher for emerging market companies listed on foreign stock exchanges.

4.6 H6: Industry type

For the purpose of this study, industry type is considered from the IA perspective. IA relating to technology and brand names are arguably the most important, or at least the best known, specific assets which are intangible (Barth, *et al*, 2001). For example, previous literature has found that companies operating in high-tech industry sector (information technology/telecommunications services) recognise more technology-related expenses and R&D. On the other hand, in the consumer product industry sector, brands are regarded as a key competitive factor which influences consumer preferences for a product and therefore the sales of the company (Stolowy, *et al*, 1999) and subsequently are disclosed more often by companies in the consumer product sector.

It is therefore proposed that emerging market companies from the IT industry and consumer services and products industries (IA-intensive hereafter) are likely to disclose more IA information in their annual reports. This categorisation is similar to the one used in the social responsibility literature where authors divided companies into two industry sectors: socially "sensitive" and "less sensitive" (Adams, *et al*, 1998; Cowen, *et al*, 1987). Hypothesis 6 is thus:

H6: The level of IA voluntary disclosure is higher for emerging market companies in either IT-related or consumer services and product industries.

4.7 H7: Price-to-Book ratio

Price-to-book ratio represents the discrepancy between the market capitalisation and accounting book value of each company. That is, a high ratio may indicate that a company is being "overvalued" compared to its book value in the market, possibly due to its "hidden" IA that have not been recognised as part of its accounting book value (Brennan, 2001; Lev, 2001; Leadbeater, 2000; Brennan and Connell, 2000).

Based on that premise, previous studies have argued that increased disclosure of IA could reduce the gap between market and book value of the corporation (Brennan 2001; Sveiby 1997)[9]. That is, a company with such a gap may have an incentive to consider disclosing IA information voluntarily in other parts of the annual report in order to justify to stakeholders why there is such a discrepancy.

Another notion behind the positive relationship between price-to-book ratio and the IA disclosure level is that companies with high price-to-book ratios must have performed quite well or have future potential to perform well which are being recognised by the market. These companies would want to inform their stakeholders of such potential by voluntarily disclosing IA information in their annual reports. The following hypothesis is hence developed:

H7: There is a positive association between price-to-book ratio and the level of IA voluntary disclosure.

4.8 H8: The level of IA recognition

Hypothesis 8 is complementary to Hypothesis 7, and is concerned with whether the recognition of specific IA in the corporate financial statements is associated with the

IA voluntary disclosure in narrative sections of annual reports[10]. The association between IA recognition and IA voluntary disclosure can be considered from two opposing viewpoints. On the one hand, companies not recognising their IA in financial statements would feel the need to justify and specify their IA by voluntarily disclosing information in narrative sections of the annual reports. That is, these companies have an incentive to notify the market and stakeholders that they do possess various types of IA; they are not recognised in the balance sheet simply due to recognition criteria. Companies believe, however, that their IA should be taken into account in the market valuation process and in investment decisions, and subsequently, they would engage in a higher level of IA voluntary disclosure practices. That is, there may be a negative association between the level of IA recognition and the level of IA voluntary disclosure.

On the other hand, companies recognising IA in their balance sheets would also feel the need to justify their capitalisation given the contentious issues regarding such capitalisation. Indeed, if companies acquire IA by purchase, the value of such an acquisition may be questioned by various stakeholders, and subsequently, companies would need to disclose further information in annual reports regarding such an acquisition. Another example would be the recognition of development costs; while the capitalisation of such costs is allowed under the rigorous criteria of IFRS, companies may feel the need to elaborate processes and activities associated with research and development undertaken. That is, there may be a positive association between IA recognition and the level of IA voluntary disclosure.

Based on these two opposing propositions, the following hypothesis is subsequently developed:

H8: There is an association between the level of IA recognition and the level of IA voluntary disclosure.

4.9 H9: Age of firm

Hypothesis 9 is concerned with the age of the company from its inception[11]. It is proposed that "older" and therefore more established companies are more likely to have a chain of value creating IA as part of their operating activities since these companies have had more time to establish their customer and supplier networks, contribute towards communities, and set up opportunities such as alliances with research centres and universities to benefit from these ventures. As such, they would engage in voluntary disclosure practices to inform various stakeholders of their IA.

Another argument which supports a positive relationship between age of the company and the level of IA voluntary disclosure is based on the premise that established companies are more likely to consider expanding their operations or to provide investment opportunities in the global market. That is, these companies perhaps would consider global markets as a way of raising capital, and therefore engage in higher level of voluntary disclosure practices. The following hypothesis is thus developed:

H9: There is a positive association between the age of the company and the level of IA voluntary disclosure.

4.10 H10: Economic risks

It is proposed that companies from a country where there is a high risk associated with economic policies may disclose less IA information due to the inherent lack of transparency. On the other hand, these companies may engage in voluntary disclosure practices in order to negate the perceived problems stemming from the deleterious economic problems associated with the country of origin. The first hypothesis regarding the country specific variables is thus:

H10: There is an association between the economic risks faced by the company in its country of origin and the level of IA voluntary disclosure.

4.11 H11: Legal system risks

Hypothesis 11 is concerned with the legal origin of each emerging economy. There exists a large literature on the relationship between legal system and financial reporting practices (Jaggi and Low, 2000). Legal systems risks comprise a country's overall legal environment and a gauge of how effectively its legal system resolves business disputes and what protections it grants to businesses, investors and other sources of capital. Factors such as whether bankruptcy procedures allow the continued operation of a business, whether shareholders have pre-emptive rights that can only be waived by a shareholders' vote, the country's degree of judicial independence, its strength of property rights and even the level of religious tensions are evaluated and compiled to construct an overall score for each country.

It has been argued that generally, common law countries have a greater dispersion of corporate ownership and they also offer better legal protection and therefore have lower risks associated with legal systems. There is, however, an opposing view –

companies originating from those countries with higher degree of risks may try to negate the perceived problems by engaging in voluntary disclosure practices. Thus, Hypothesis 11 is:

H11: There is an association between the legal system risks faced by the company in its country of origin and the level of IA voluntary disclosure.

4.12 H12: Regulatory risks

The last hypothesis to be examined in the current study is concerned with the degree to which each emerging economy is willing to regulate its markets and society. Relating to the capital markets is a measure of how safe it is to provide capital to various countries and it is based on the two broad questions – can investors in a given country get a full understanding of the companies in which they invest? And are there mechanisms for settling disputes that arise out of the investment process?

Regulatory risks are also highly correlated with the perceived level of corruption in each country, as well as with the regulatory framework and government effectiveness in controlling such framework[12]. That is, in emerging markets where such risks are prevalent and accepted as part of the perceived social norm, companies may not engage in voluntary disclosure practices since they would not need to legitimise their activities as much. On the other hand, emerging market companies originating from countries with such stigma may engage in voluntary disclosure practices to counter such negative association. The final hypothesis is hence:

H12: There is an association between the regulatory risks faced by the company in its country of origin and the level of IA voluntary disclosure.

5. Research Methodology

5.1 Sample selection

A list of the top 200 emerging market companies was obtained from *BusinessWeek,* 14th July 2003 issue, which is based on the performance during the 2002 financial year. There exists an increasing awareness of investment opportunities in emerging market "champions", and subsequently, there is a growing demand for more information on these selected companies.

There are several reasons for choosing the top 200 emerging market companies. First, as mentioned above, these are the companies most likely to engage in voluntary disclosure practices to enhance their chance of attracting global investments. Information on IA, one of the most important value drivers in today's corporations, would provide important guidelines to various stakeholders, including potential foreign investors and creditors, in determining corporate performance and future prospects. Further, the top 200 emerging market companies are likely to provide both the local language and English annual reports, and as the analysis in the current study is to be carried out in English, the availability of English annual reports is an important issue[13]. The selection of the top 200 emerging market companies also ensures that they would all have sufficient financial resources to engage in voluntary disclosure practices.

Based on the list, each company's website was searched through the Google™ search engine (www.google.com) and the Mergent Online™ database in order to obtain a copy of its annual report for the financial year ending 2002[14]. Companies with

appropriate contact details under the *Investor Relations* section on their websites were requested via email to send a hard copy of the 2002 annual report. For each company, a PDF version of the annual report was downloaded, and in case of companies who did not have contact details or send hard copies, their PDF annual reports were printed out for the purpose of content analysis. Out of the 200 initial sample companies, 19 were eliminated due to unavailability of English annual reports, and subsequently, the final sample comprised 181 emerging market companies.

For the purpose of our study, we consider only the narrative sections within the annual report. According to Beattie, McInnes and Fearnley (2002), narrative disclosures are those "largely voluntary disclosures" contained in the unaudited sections of the company annual reports. Narratives, once the supporting act to the financial statements, are now viewed by many influential organisations and groups as worthy of sharing the leading role in business reporting.

The narratives to be analysed in our paper are based on Beattie et al. (2002) and comprise highlights, chairman's statement, CEO's review, management discussion and analysis (or equivalent), people, community and other social responsibilities sections, captions from pictorial materials, and sustainability reports if part of the annual report package. Subsequently, we exclude financial statements, the auditor's report, the directors' declaration and remuneration reports, background information of directors and executives, corporate governance statements, table of contents, information for shareholders, historical summary tables, and list of principle operating companies[15].

5.2 IA Disclosure Index

For the purpose of the current study, the Value Chain Scoreboard™ (Lev, 2001) was modified and used as the IA disclosure index, which comprises 28 items under three phases of the value chain. The index scores can be considered to be valid if they mean what the researchers intended (Marston and Shrives, 1991). The meanings of each disclosure item were considered carefully by both authors and the definitions and details were discussed with academics currently teaching IA management[16]. Figure 1 represents a summary of the final 28 index items included in the disclosure index used in the current study.

[FIGURE 1 ABOUT HERE]

In order to ensure independence of the coding, as well as the reliability of the disclosure index, 20 annual reports from the previous year (not part of the final sample) were coded independently by the author and a research assistant to examine applicability of the disclosure index[17]. Subsequently, 181 annual reports were coded using the final version of the disclosure index. A few months later, the same author re-coded 30 randomly selected sample annual reports to examine stability of coding. Another research assistant independently coded the same annual reports to test reproducibility. No significant differences were found in either the stability or reproducibility examinations of the contents.

5.3 Dependent variable – the level of IA disclosure

The dependent variable, the extent of IA voluntary disclosure, was measured using the disclosure index based on the Value Chain Scoreboard™. The measure for the extent

of IA disclosure was the "percentage of IA disclosure as the portion of total narrative disclosures". Based on each item of the disclosure index, the number of words used to disclose IA item in annual reports, as well as the total number of words used in the narrative section of the annual report were counted for each of the 181 sample companies. Subsequently, the percentage of total narrative disclosure in the annual report devoted to IA for each company was calculated overall and for each phase of the value chain.

5.4 Independent variables

For the purpose of the current study, we consider 12 corporate and country specific independent variables. Most of the data collected for corporate variables are from the individual company's annual report. Where possible, the company's website was also examined for information not available in the annual report. Table 1 lists the independent variables and proxies, as well as the data source.

[TABLE 1 ABOUT HERE]

Information on several of the independent variables was surprisingly difficult to collect. For example, data for ownership concentration was not easy to find. While previous literature used the percentage of shareholding by the top 20 shareholders as the proxy for ownership concentration, most of the 181 sample companies did not disclose this information either in their annual reports or on corporate websites. Further, not many companies disclosed information on the distribution of shares by number of holdings, making the collection of information regarding "other than the top 20 shareholders" impossible. The number of shareholders was also difficult to

ascertain from the information disclosed in the annual report. The best information available regarding ownership concentration was the shareholding percentage of each company by the top shareholder. Subsequently, ownership concentration was defined as the percentage of ordinary shares held by others than the top shareholder, and it was calculated from the available information on top shareholdings.

6. Results

6.1 The extent of IA disclosure

In summary, the number of emerging market companies disclosing IA information in their annual reports was quite high and, surprisingly, most companies disclosed quantitative IA information[18]. It can be seen from Table 2 that only three out of 181 sample companies were found not to have disclosed IA information in their annual reports. Most companies disclosed information on IA stemming from the *Discovery and Learning* and *Commercialisation* phases of the Value Chain – 95.03% and 93.92% of the sample companies respectively, while only 67.40% of the 181 sample companies voluntarily disclosed information on IA stemming from the *Implementation* phase.

[TABLE 2 ABOUT HERE]

The current study uses a percentage of total narrative disclosure allotted to each IA item to be the measure of the extent of IA disclosure. Table 3 summarise the extent of IA disclosure in annual reports of the sample companies. On average, 31.70% of the total narrative disclosure in annual reports was regarding IA and the extent of disclosure was the greatest for the *Discovery and Learning* phase (63.40% of IA

disclosure). Within the *Discovery and Learning* Phase, Internal Renewal items such as R&D and Employee Training, as well as Networking items, such as customer relationship and business collaborations, were the most disclosed items in the company's annual report. The second most disclosed phase of the value chain was *Commercialisation,* which constituted 31.20% of the total disclosure. Most of the disclosure in the phase was due to disclosure about how the corporation increased customers' awareness of the company via brand name and innovative marketing strategies.

[TABLE 3 ABOUT HERE]

The reluctance of corporations in disclosing how they went about implementing their IA is quite evident – only 5.70% of IA disclosures were based on the *Implementation* phase of the value chain. This particular phase comprises feasibility studies, intellectual properties, licences and government approvals – processes required by the corporation to turn their intangible resources into benefits. Indeed, while corporations were willing to disclose information on what they have in intangible resources and what they have received in return by commercialising these intangible resources, they were less forthcoming in disclosing information on how they implemented or what was involved in implementing their IA. This is perhaps not surprising given the sensitive nature of the items in the *Implementation* phase. For example, corporations would be unwilling to disclose too much information which may reveal their competitive advantage.

6.2 Regression Model

A series of multiple linear regression analysis was conducted to test the 12 hypotheses developed. While all due care was taken regarding the data collection process, it was not possible to collect data for all 181 sample companies for all 12 independent variables. Subsequently, the final valid sample size for the multiple regression analysis was 144.

The analysis of IA voluntary disclosure practices of the emerging market companies is based on the following multiple regression model:

$$\text{IAVD} = \beta_0 + \beta_1\text{SIZE} + \beta_2\text{OWNERSHIP} + \beta_3\text{LEV} + \beta_4\text{GAAP} + \beta_5\text{LISTING} + \beta_6\text{IND} + \beta_7\text{PBRATIO} + \beta_8\text{IAREC} + \beta_9\text{AGE} + \beta_{10}\text{ENF} + \beta_{11}\text{LEG} + \beta_{12}\text{REG} + \varepsilon$$

where:

IAVD	= the level of IA voluntary disclosure
SIZE	= log of market capitalisation
OWNERSHIP	= % of ordinary shares held by others than the top shareholder
LEV	= total assets/equity
GAAP	= whether the company follows IFRS (or US GAAP) (1 or 0)
LISTING	= whether the company is listed on US or UK exchange (1 or 0)
IND	= whether the company is in the IA intensive industry (1 or 0)
PBRATIO	= price-to-book ratio of each company
IAREC	= IA recognised in the balance sheet as a % of total assets
AGE	= age of the company as of 2002 since its incorporation
ENF	= economic policy risk index
LEG	= legal system risk index
REG	= regulation risk index

As previously discussed, the dependent variable IAVD was measured using four different proxies of IA voluntary disclosure level, and subsequently, four mutually exclusive multiple linear regression models were carried out. The four measures of the dependent variable examined were:

- Model 1: Extent of overall IA disclosure (IAVD EO)

- Model 2: Extent of disclosure from the *Discovery and Learning* phase (IAVD ED)
- Model 3: Extent of disclosure from the *Implementation* phase (IAVD EI)
- Model 4: Extent of disclosure from the *Commercialisation* phase (IAVD EC)

The assumptions underlying the regression model were tested for multicollinearity based on the correlation matrix as well as the Variance Inflation Factor (VIF). The correlation matrix for the dependent and independent variables indicated that multicollinearity is not a problem[19]. In addition, an analysis of residuals, plots of the studentised residuals against predicted values, as well as the Q-Q plot, were conducted to test for heteroscedasticity and linearity[20].

Results from the multiple regression analysis, including the adjusted R^2, F-statistics and significance for the four regression models, as well as the coefficients and significance of the independent variables are shown in Table 4.

[TABLE 4 ABOUT HERE]

It can be seen from Table 4 that the multiple regression model with the overall extent measure of IA disclosure (IAVD EO) as the dependent variable (Model 1) reports the highest F-statistics (F=4.464, *p=0.000*) and has the most significant explanatory power (adjusted R^2 = 22.5%). While the remaining models are all significant, their explanatory powers as shown by the adjusted R^2 scores are not as high.

6.3 Factors associated with the IA disclosure levels

The results of the testing of the 12 hypotheses developed in order to examine the relationship between the level of IA voluntary disclosure and selected corporate and country specific factors are discussed as follows:

6.3.1 H1: Firm size

Firm size, as measured by the log of market capitalisation, was not found to be significantly associated with any of the IA disclosure level measures. While this is contrary to most of the previous empirical studies examining voluntary disclosure practices, it may be explained by the following two reasons. First, the selection of the top 200 emerging market companies may be biased towards the sample companies engaging in voluntary disclosure practices and having the financial resources to do so. That is, these top emerging market companies would have various underlying reasons to voluntarily disclose extra corporate information in order to enhance their image and profile in the global markets; if there are any corporations in emerging markets that would consider voluntarily disclosing IA information, they would be these top performing companies.

Second, regardless of size, corporations are expected to go through the three phases of the value chain; they would discover, implement and commercialise their IA in order to create value, and since the sample companies are likely to have sufficient financial resources to engage in voluntary disclosure practices, they would do so in their annual reports[21]. That is, unlike other types of corporate information voluntarily disclosed by corporations, the level of IA information being disclosed in annual reports may not necessarily be influenced by the size of the corporation. Therefore, as firm size was

not statistically related to the level of IA voluntary disclosure, Hypothesis 1 was not supported.

6.3.2 H2: Ownership concentration

Ownership concentration was not found to be significantly associated with IA disclosure levels. This is contrary to the theoretical argument, as well as to the previous empirical findings where the level of voluntary disclosure is considered to be negatively associated with the ownership concentration. Such a contrary finding raises an interesting question regarding the applicability of ownership structure as a predictor of the IA disclosure practices by emerging market companies.

6.3.3 H3: Leverage

As shown in Table 6, there was a significant negative association between leverage and the overall IA disclosure level (Model 1), as well as with the IA disclosure stemming from the *Discovery and Learning* phase (Model 2). That is, emerging market companies with lower debt financing disclosed more IA information in the narrative section of their annual reports. In other words, as expected, the level of IA voluntary disclosure increased in proportion to the amount of assets being financed by equity rather than debt. Accordingly, Hypothesis 3 was supported for the multiple regression Models 1 and 2.

6.3.4 H4: Adoption of IFRS/US GAAP

Table 6 shows that the adoption of IFRS/US GAAP as the basis for the preparation of financial statements was statistically significant in its association with the overall extent of IA voluntary disclosure, and for two of the phases in the value chain;

Discovery and Learning, and *Commercialisation*. There was a significant negative association between the adoption of IFRS/US GAAP and the extent of IA voluntary disclosure; companies adopting IFRS/US GAAP were found to voluntarily disclose significantly less IA information in their annual reports. Hypothesis 4 was therefore accepted not only for Model 1, but also for two of the value chain phases; *Discovery and Learning* (Model 2) and *Commercialisation* (Model 4).

6.3.5 H5: Listing status

From Table 6, it can be seen that listing status was not significantly associated with the extent measures of IA disclosure (Models 1 to 4). Hypothesis 5 was not supported for the extent of IA voluntary disclosure.

6.3.6 H6: Industry type

As hypothesised, the extent of IA disclosure was found to be significantly associated with the industry type (Models 1 to 3). Table 6 demonstrates that emerging market companies from the IT/telecommunication and consumer goods/services industries (IA-intensive) disclosed more extensive overall IA information (IAVD EO) than those companies from energy, industrials, and financial industries. This result reflects the proposition that companies operating in industries heavily influenced by intangible resources would naturally have more IA, and hence, would voluntarily disclose more information on IA as a result. Further, these companies may not have been able to recognise most of these IA in their financial statements due to the lack of accounting standards permitting them to do so – naturally, they would want to voluntarily disclose IA information in annual reports. Considering the fact that they may also be

valued by the markets based on their IA, these companies indeed would voluntarily be involved in IA disclosure practices[22].

Further, IA-intensive companies also disclosed more extensive IA information stemming from both the *Discovery and Learning* and *Implementation* Phases (Models 2 and 3). Hypothesis 6 was therefore accepted for Model 1; the overall extent of IA disclosure measure, as well as for Models 2 and 3; *Discovery and Learning*, and *Implementation* phases.

6.3.7 H7: Price-to-book ratio

As expected, price-to-book ratio was found to be positively associated with the overall extent of IA disclosure (Model 1). That is, while the potential relationship between price-to-book ratio and the existence of IA not recognised in the books is contentious, it is possible that companies with high price-to-book ratios may feel the need to justify why there is such a gap. Further, it was found that there is a high correlation between price-to-book ratio and profitability of companies[23] – that is, highly profitable companies would be "rewarded" by the market, and in return, these companies would voluntarily engage in IA disclosure in order to inform various stakeholders of their IA activities, and to assure stakeholders that the market has not over-valued the company.

Further, there was also a significant positive relationship between price-to-book ratio and the extent of IA information from *Discovery and Learning* phase (Model 2). Based on the multiple linear regression analysis, Hypothesis 7 was supported for

Model 1, the overall extent measure of IA disclosure, and for the *Discovery and Learning* phase (Model 2).

6.3.8 H8: Level of IA recognition

Descriptive statistics in Table 4 show that there were very little IA being recognised on balance sheets by emerging market companies. That is, on average, only 1.90% of total assets in balance sheets were attributable to IA[24]. The majority of IA recognised on the balance sheets comprised patents, licences, copyrights, and intellectual properties, all of which stem from the *Implementation* phase of the value chain.

According to multiple regression analysis, Hypothesis 8 was not supported for the overall extent measure of IA disclosure (Model 1). There was, however, a significant positive association between IA recognition and IA voluntary disclosure regarding the *Implementation* phase of the value chain (Model 3). This positive relationship is not surprising given that the majority of IA recognised stems from the *Implementation* phase of the value chain as discussed above. Hypothesis 8 was thus supported only for Model 3, the extent measure of IA disclosure from the *Implementation* phase.

6.3.9 H9: Age of firm

Age of the company, as measured by the number of years from the inception of the company, was not significantly associated with the extent of IA disclosure measures. Hypothesis 9 was therefore not supported for the extent of IA disclosure measures.

6.3.10 H10: Economic risks

According to multiple regression analysis, a negative relationship existed between the level of economic risks and the overall extent of IA voluntary disclosure (Model 1). That is, companies originating from countries with higher economic risks disclosed less extensive IA information than those with lower economic risks. The findings support the proposition that risks associated with economic policies lead to transparency problems due to lack of relevant and adequate in-depth corporate disclosures. Hypothesis 10 was therefore supported for the overall extent of IA voluntary disclosure (Model 1).

6.3.11 H11: Legal systems risks

According to Table 6, emerging market companies originating from countries with higher perceived legal systems risks voluntarily disclosed more extensive IA information overall (Model 1), as well as for the *Discovery and Learning* phase (Model 2). Such a positive relationship is perhaps due to emerging market companies engaging in voluntary disclosure practices in order to negate the perceived problems associated with their country of origin. That is, companies may consider voluntarily disclosing more extensive IA information in order to assure foreign stakeholders that the underlying risks associated with legal systems have been acknowledged and that they are engaging in voluntary disclosure practices to overcome this.

Surprisingly, however, the significant association between the extent of IA disclosure stemming from the *Implementation* phase and the risks associated with legal systems was in the opposite direction. That is, companies originating from the emerging economies with higher legal systems risks engaged in less voluntary disclosure

practices of IA information stemming from the *Implementation* phase. The opposing result may be due to the fact that high risks associated with contractual agreements and property rights, which are part of the *Implementation* phase, may prevent companies from voluntarily disclosing more information about these items in annual reports given the potential problems.

Hypothesis 11 was therefore supported for the overall extent measure of IA information (Model 1), and the *Discovery and Learning* phase (Model 2). It was also supported for the *Implementation* phase (Model 3) but in opposite direction.

6.3.12 H12: Regulatory risks

There was no such association, either positive or negative, between regulatory risks and the extent of IA disclosure. Hypothesis 12 was therefore rejected.

7. Conclusions

Our research makes two main contributions. First, it empirically examines the applicability of the Value Chain Scoreboard™ as an alternative IA disclosure framework. While much of the prior research is based on the use of Sveiby's (1997) Intangible Asset Monitor (IAM) as the basic IA reporting model[25], no empirical study to date has examined the applicability of the Value Chain Scoreboard™ as an alternative reporting model. Unlike the IAM, the Scoreboard considers the entire spectrum of the company's activities starting with the *Discovery and Learning* phase then to the *Implementation* phase, and finally to the *Commercialisation* phase. Further, it was actually designed with external reporting being its main objective and

therefore has the most potential to be an external reporting model which can be included as an element of corporate annual reports.

The second contribution of this study is the focus on the top emerging market companies as the sample companies and a consideration of their disclosure practices. Due to the shift in the way investors and other stakeholders consider emerging economies and their companies, most of the international attention is now on a select group of high-flying and top-performing emerging market companies (Smith, *et al*, 2003).

The findings from our study indicate that emerging market companies do actively engage in voluntary disclosure practices to disseminate mainly quantitative IA information to their global stakeholders. Corporate-specific factors such as leverage, the adoption of IFRS/US GAAP, industry type, and price-to-book ratio are significantly associated with the level of IA voluntary disclosure. In addition, country-specific factors including risks associated with economic policies and legal systems are also found to be significantly associated with the level of IA disclosure.

These findings must be considered, however, with reference to the following limitations. The final sample size was reduced to 144 companies due to the difficulties associated with the general lack of available data and the collection of such data about companies originating from emerging markets where English is not the local language of choice. For the purpose of this study, it was therefore necessary to consider the voluntary disclosures in annual reports prepared in English. Further,

data regarding the independent variables (i.e. corporate profile information) were collected only from the sources written in English.

Future research should consider a larger number of emerging market companies and their disclosure practices. While our study was concerned with the disclosure practices of the top 200 emerging market companies, other studies may aim to consider whether further national differences may influence the extent of IA. A second avenue of future research may involve examining the user perspective of financial reporting. That is, we should consider whether stakeholders would place some value relevance on voluntary disclosures of information about IA in making decisions. Finally, given the exceedingly complex nature of voluntary disclosure, other mediums of disclosure may be considered including, for example, corporate websites, special reports and press releases.

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Figure 1: Intangible Assets Disclosure Index based on the Value Chain Scoreboard™

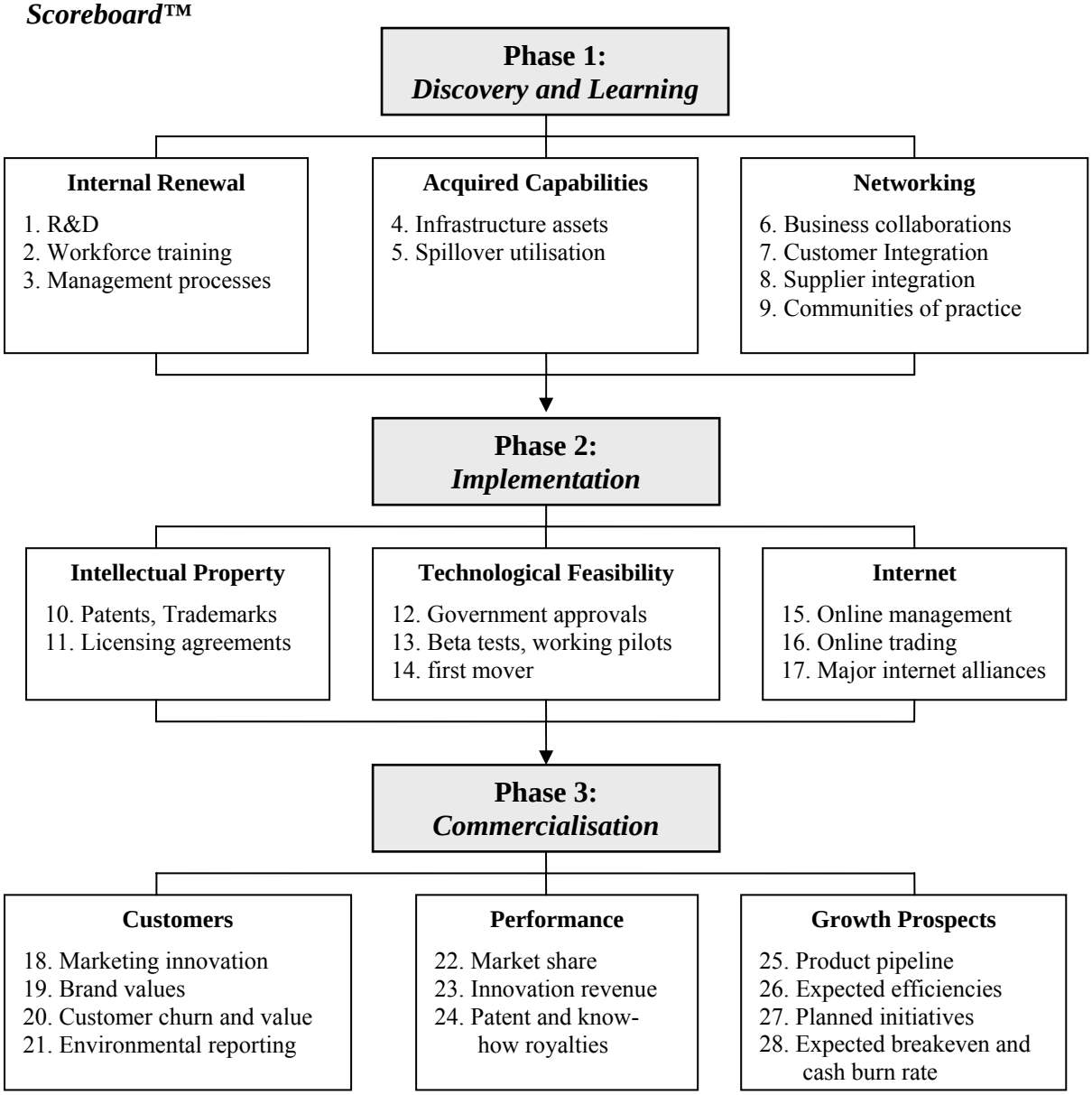

Table 1: Constructs of the independent variables and the data collection process

	Independent variable	Measurement	Data source
H1	Firm size	Log of market capitalisation	*BusinessWeek*, 14th July, 2003 (verified in Annual Reports where possible)
H2	Ownership concentration	% of ordinary shares held by others than the top shareholder	Annual Report
H3	Leverage	Total Assets/Total Equity	Annual Report
H4	Adoption of IFRS or US GAAP	0 for using national standards in FS, 1 for US GAAP/IFRS used in FS	Annual Report
H5	Listing status	0 for no listing, 1 for listing on US/UK stock markets	Annual Report, NYSE, LSE
H6	Industry type	0 for non IA intensive (other industries), 1 for IA intensive (consumer goods and services, IT/telecommunication)	Annual Report
H7	Price-to-Book Ratio	Price-to-book ratio	BusinessWeek
H8	IA recognition	% of IA to TA recognised on the balance sheet	Annual Report
H9	Age of company	Age of the corporation as of the financial year 2002 (2002 – its inception date)	Annual Report
H10	Economic risks	Opacity Index measure	Kurtzman, *et al* (2004)
H11	Legal systems risks		
H12	Regulatory risks		

Table 2: Sample companies and IA disclosure

Sample companies	
Initial sample size	200
Companies without annual reports	13
No English annual report available	6
Total available annual reports	181
IA disclosure in annual reports	**Number of companies**
Companies disclosing IA (overall)	178 (98.34%)
Types of intangible assets disclosed	
Discovery and Learning	172 (95.03%)
Implementation	122 (67.40%)
Commercialisation	170 (93.92%)

Table 3: Extent of IA voluntary disclosure

IA Item	Mean	Min	Max	SD
Total Disclosure	0.317 **(100%)**	0.00	0.76	0.158
Discovery and Learning	0.201 **(63.4%)**	0.00	0.64	0.123
Implementation	0.018 **(5.7%)**	0.00	0.13	0.025
Commercialisation	0.099 **(31.2%)**	0.00	0.44	0.078

Table 4: Multiple Regression Analysis – Main results

			Model 1	Model 2	Model 3	Model 4
			Dependent variable			
			IAVD EO	IAVD ED	IAVD EI	IAVD EC
		Predicted Sign	Coefficients (t-stats)			
Intercept			– (0.325)	– (0.238)	– (1.119)	– (-0.117)
Independent variables						
H1	Firm size	+	0.106 (1.331)	0.076 (0.915)	0.025 (0.298)	0.086 (1.002)
H2	Ownership concentration	–	-0.006 (-0.072)	-0.095 (-1.100)	0.041 (0.488)	0.124 (1.393)
H3	Leverage	–	**-0.224 (-2.766) ****	**-0.196 (-2.302) ***	-0.017 (-0.207)	-0.130 (-1.482)
H4	GAAP	–	**-0.232 (-2.694) ****	**-0.176 (-1.948) ***	0.079 (0.881)	**-0.208 (-2.221) ***
H5	Listing status	+	0.083 (1.008)	0.119 (1.376)	0.141 (1.649)	-0.060 (-0.667)
H6	Industry type	+	**0.200 (2.314) ***	**0.151 (1.655) #**	**0.225 (2.520) ****	0.090 (0.963)
H7	Price-to-Book ratio	+	**0.202 (2.558) ****	**0.151 (1.827) #**	0.107 (1.315)	0.132 (1.538)
H8	IA recognition	+(–)	0.044 (0.554)	-0.024 (-0.280)	**0.192 (2.312) ***	0.069 (0.797)
H9	Age of company	+	0.074 (0.912)	0.048 (0.567)	-0.046 (-0.544)	0.083 (0.945)
H10	Economic risks	+ (–)	**-0.251 (-2.577) ***	-0.186 (-1.816)	-0.014 (-0.140)	-0.197 (-1.860)
H11	Legal systems risks	+ (–)	**0.211 (2.359) ***	**0.282 (2.999) ****	**-0.181 (-1.957) ***	0.033 (0.337)
H12	Regulatory risks	+ (–)	0.021 (0.236)	-0.041 (-0.450)	-0.072 (-0.793)	0.121 (1.277)
Regression Model						
Adjusted R^2			0.225	0.145	0.170	0.088
F-Statistics			4.464	3.026	3.442	2.144
Significance			0.000	0.001	0.000	0.018

** Significant at p <0.010, two-tailed
* Significant at p < 0.050, two-tailed
# Significant at p < 0.100, two-tailed

Dependent variable: the level of IA voluntary disclosure as measured by:

IAVD EO: Extent of the overall IA disclosure
IAVD ED: Extent of disclosure from the *Discovery and Learning* phase
IAVD EI: Extent of disclosure from the *Implementation* phase
IAVD EC: Extent of disclosure from the *Commercialisation* phase

Footnotes

[1] It has been argued that "the terms *intangibles, knowledge assets*, and *intellectual capital* can be used interchangeably and they all refer essentially to the same thing" (Lev, 2001; 5). Mouritsen (2003; 18) claims that intellectual capital "is presented as the intangible stuff, out of which value in a knowledge society and therefore knowledge organisations are created". Sveiby (1997) views intangible assets as a combination of "knowledge-based assets". For the purpose of the current study, we adopt Lev's views.

[2] For definition and recognition criteria, see AASB 138 [AASB, 2004], SFAS 142 [FASB, 2001], and IAS 38 [IASC, 2004]. Most IA would fail the recognition criteria set out in these standards.

[3] For example, see the special issues of the *European Accounting Review* (2003; Vol. 12, No. 4) "Intangibles and intellectual capital", *Accounting, Auditing and Accountability Journal* (2001; Vol. 14, No. 4) "Managing, measuring and reporting intellectual capital for the new millennium", and (2003; Vol. 16, No. 1) "Intellectual capital and the capital markets".

[4] Other studies have also utilised Total Assets (Trotman and Bradley, 1981; Cooke, 1991; 1989), Logarithm of Turnover and/or sales (Hackston and Milne, 1996; Patten, 1991; Cooke, 1991, 1989) as proxies of firm size.

[5] This is also supported by legitimacy and stakeholder perspectives: high debt indicates companies may voluntarily disclose more information in order to meet rising expectations of creditors, and management needs to legitimise its actions to creditors, as well as to shareholders (Haniffa and Cooke, 2005; Purushothaman, *et al.*, 2000).

[6] For example, most IA disclosure indices comprise IA items which predominately are based on different stakeholder groups, other than creditors, such as shareholders, customers, employees, suppliers, and future investors. Creditors are more likely to consider financial statement information and other financials for decision making than IA items in the narrative sections of the annual reports.

[7] IFRS and US GAAP generally are considered to be superior to the requirements put forward by most of the standard setters, if any, in emerging countries. While the validity of such a statement is debatable, it is not within the scope of this study to consider the debate; the current study is only concerned with the perception of the said superiority.

[8] There may be several reasons for companies to not adopt IFRS or US GAAP. For example, some emerging economies including Brazil, South Korea and Taiwan prohibit the use of IFRS for domestic reporting, and thus, companies from these emerging economies may choose not to prepare a second set of financial statements unless required by foreign stock markets. Instead, these companies may engage in voluntary disclosure practices to include extra information in other sections of the annual report.

[9] Some argue, however, that this is a simplistic explanation of the way the market values companies (for example, see Holland, 2003 and Johanson, 2003). For the purpose of the current study, the valuation process of the market is not under investigation and it is beyond the scope of the current study, nor is the cause-and-effect relationship between price-to-book ratio and the level of IA disclosure.

[10] IFRS allows recognition of specific IA such as purchased patents, licences, and some development component of R&D. There exists no domestic accounting standard that prohibits recognition of such IA – that is, any emerging market company, adopting either IFRS or its national standards, wanting to recognise these IA could have done so.

[11] For the purpose of the current study, age of company as of the financial year ending 2002 was measured by subtracting the company's establishment year from the year 2002.

[12] For example, regulatory risk scores are highly correlated to the corruption perception index as published by Transparency International. The risks are also highly correlated with the measures for effectiveness of the government and regulatory framework as published by the World Bank (Kurtzman, *et al*, 2004).

[13] While the contents of annual reports produced in different languages may vary, and the examination of such differences would provide interesting comparisons, it is beyond the scope of the current study.

[14] There were three different financial year-ends: while 31st December was the most popular balance date, other companies used 30th June and 31st March as their year-ends. These differences were not considered to influence the level of IA disclosure, and hence, balance dates were not considered as a variable in the content analysis.

[15] Excluded materials were analysed as part of the pilot study in order to confirm that these materials did not include IA information. The analysis found no significant, if any, IA disclosures in sections excluded from the main analysis.

[16] The disclosure index and its detailed descriptions were also sent to Professor Lev for further clarification and approval as to whether they correspond with what he envisioned to be part of the Value Chain Scoreboard™. He generously provided his opinion and feedback on each index item and its description which were incorporated into the final version of the disclosure index.

[17] Another reason for choosing 20 annual reports from the sample companies a year before the sample period was to negate the possibility that the study's eventual findings regarding the extent of disclosure are confined to the sample-year only. There was a high correlation between the disclosure levels of the companies in the pilot study and the main study.

[18] 61.05% of the sample companies disclosed quantitative IA information for the *Discovery and Learning* phase, 63.93% disclosed quantitative information for the *Implementation* phase, and 70.59% of the companies disclosed quantitative IA information stemming from the *Commercialisation* phase.

[19] The general rule for checking multicollinearity is when the correlation is >0.8000 and when the VIF exceeds 10 (Field, 2005). Neither correlation nor VIF indicate that there is a multicollinearity problem for the current data.

[20] Residuals represent what are left over after the model is fit – they are the difference between the observed value of the dependent variable and the value predicted by the regression line (Field, 2005).

[21] For instance, a corporation, regardless of its size, would consider its customers and employees to be valuable resources, and provided that the corporation has legitimate reasons and enough financial resources, it would engage in voluntary disclosure practices. This is especially so given the lack of relevant accounting standard allowing companies to recognise such assets in their financial statements.

[22] Correlation matrix confirms that there is a positive association between Industry and Price-to-Book ratio. Discussions on the relationship between price-to-book ratio and IA disclosure are in the next section.

[23] There was a significant positive relationship between price-to-book ratio and profitability as measured by Return on Equity (Pearson's Correlation = 0.714, $p = 0.000$).

[24] Further, 52% (92 out of 177 companies) of the sample, whose IA recognition data were obtained, did not recognise any IA.

[25] For example, see Vergauwen and Alem (2005), Abeysekera and Guthrie (2004), Goh and Lim (2004), Bontis (2003), and Brennan (2001).