Intellectual Capital Reporting in Malaysian Technology Industry

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ABSTRACT

In recent decades, Malaysia has witnessed tremendous economic and social changes. As a result, the business environment is also becoming more complex and demanding. One of the areas that captured the attention of the accounting profession was intellectual capital reporting. Previous studies revealed that intellectual capital reporting has a major impact on investor's confidence. Due to the importance of intellectual capital, its disclosure is significant. The purpose of this paper is to investigate the intellectual capital reporting practices of Malaysian listed companies in the technology industry. This study also assesses the association of firm's characteristics and intellectual capital disclosure. Using the content analysis method, it reviews the annual reports of all the technology companies listed on the Main Market and Ace Market of Bursa Malaysia in year 2009. The study reveals that the technology industry discloses most on external capital compared to human capital and internal capital. There is not much difference in terms of intellectual capital disclosure between the Main Market and the Ace Market. However, for the technology industry the firm's characteristics does not have any association with the extent of intellectual capital reporting. Since the study focuses on one industry, the results of this study may assist the companies to be more aware of other aspects of corporate reporting particularly concerning intellectual capital disclosure. In addition, it may benefit the regulators and standard setting bodies for future regulatory impact especially in establishing an intellectual capital reporting framework for Malaysian companies.

Keywords: Intellectual capital; reporting; annual reports; technology industry

INTRODUCTION

In recent years, a worldwide debate has emerged on the future of business reporting. There is growing agreement that traditional financial reporting is inadequate in meeting the information needs of the stakeholders, particularly in the knowledge economy where there is emerging emphasis on intellectual capital (Bozzolan et al. 2003).

Intellectual capital reporting has become one of the major concerns of the stakeholders. Today, in every region of the world, knowledge is fuelling economic growth and social development and intellectual capital is at the heart of knowledge-based growth. Due to its importance, it is an advantage if companies disclose that information in their annual reports.

Based on the literature, there are several reasons for firms to disclose information on intellectual capital. First, the inadequacy of traditional financial accounting leaves average investors at a disadvantage compared with knowledge insiders, leading the company to be at the risk of insider trading (Vergauwen & van Alem 2005). William (2001) in his study stated that intellectual capital reporting has a major impact on investor's confidence. This statement has been supported by previous studies where the researcher found that there is lacked of consistent approach for disclosure of intellectual capital (Abeysekara & Guthrie 2005).

In fact, there is no universally accepted form or indeed regulation of intellectual capital reporting. By disclosing intellectual capital information, companies can publicly provide evidence about their true values and their wealth creation capabilities, which in turn may enhance the company's reputation. Due to the importance of intellectual capital, the disclosure of it is very significant.

In Malaysia there are no accounting standards for disclosing intellectual capital. In the absence of such standards, the disclosure of intellectual capital is entirely voluntary in nature. Thus, companies have full discretion on its disclosure in the annual reports . The purpose of this study is to document evidence of the current practice of intellectual capital reporting in Malaysia particularly for companies listed under the technology industry on the Main Market and the Ace Market of Bursa Malaysia. In addition, the study empirically examines the relationship between the extent of intellectual capital disclosure and firm specific characteristics, i.e. firm size and type of auditor.

This paper differs from other Malaysian studies since it uses a sample of a specific industry i.e. the technology industry. Therefore, it contributes in the selection of sample size. Furthermore, the study provides additional information by reproducing extracts from the annual reports illustrating the nature of intellectual capital disclosure.

The remainder of this article is structured in the following manner. The next section reviews the empirical background of the issue addressed in this study, followed by data and methodology. This is followed by the results of the study. The final section presents the conclusion and implications of the study.

DEFINITION OF INTELLECTUAL CAPITAL

There are various models and classifications of intellectual capital in the literature. Most commonly cited was the classification proposed by Sveiby (1997). Sveiby proposed a measurement scheme termed the Intellectual Assets Monitor, which includes three categories: internal structure, external structure and employee competence.

According to Sveiby, the internal capital consists of a wide range of patents, concepts, models, computer and administrative systems. The external structure consists of relationships with customers and suppliers, brand names, trademarks and reputation, whereas the employee competence includes skill, education, experience, values and social skills.

Guthrie and Petty (2000) defined intellectual capital disclosure as the information that relates to items such as human capital, internal category and external category. The definition is also adapted from Sveiby (1997) who further classifies the three categories into 24 attributes.

Bozzolan et al. (2003) defined the categories of intellectual capital as internal structure, external structure and human capital. According to these researchers, internal structures include intellectual property and infrastructure assets. Intellectual property consists of intellectual capital assets protected by law such as patents, copyrights and trademarks. For the external structure category, it refers to the relations the company holds with external stakeholders. It includes brands, customers, and customer loyalty and distribution channels. The human capital category relates to employee competence assets. The human capital includes employee know-how, education, work-related knowledge and work-related competence.

In conducting this study, the intellectual capital framework that was developed by Sveiby (1997) was chosen. This is because several empirical studies of intellectual capital disclosure practices have used the categories derived from Sveiby's classifications. In order to assist general comparative analysis of the results of this study with other studies, this study has chosen to follow this method. Specifically, intellectual capital attributes in this study are shown in Appendix 1.

INTELLECTUAL CAPITAL REPORTING

Action by the government to promote greater corporate intellectual capital disclosure has been identified as one critical initiative that would allow firms to monitor performance and better address such information (Bontis 2000). By disclosing this information, it portrays the commitment of business to contribute to sustainable economic development to the users of financial information (Hackston & Milne 1996).

Studies on intellectual capital disclosure have been conducted in several countries. For example in Australia (Guthrie & Petty 2000), Ireland (Brennan 2001), UK (Williams 2001; Ludmila et al. 2008), Canada (Bontis 2003), Italy (Bozzolan et al. 2003), Malaysia (Goh & Lim 2004; Foong et al. 2009), Sri Lanka (Abeysekera & Guthrie 2005), Denmark (Bukh et al. 2005) and Hong Kong (Guthrie et al. 2006).

Using an adjusted version of the Sveiby (1997) model as a framework, Guthrie and Petty (2000) studied the intellectual capital reporting practices of the top 20 (by market capitalisation) Australian companies in year 1998. In this pioneer study on intellectual capital disclosure, they found that the key components of intellectual capital are not reported within a consistent framework. The authors also observed that the main attributes of intellectual capital reporting focus on human resources, technology and intellectual property rights, and organisational and workplace structure. They concluded that there is no established and mutually agreed framework for reporting intellectual capital. In fact, only a few companies have taken a proactive role in reporting on the intellectual capital.

Brennan (2001) did a content analysis on the annual reports of 11 knowledge-intensive companies listed in Ireland. The author concluded that intellectual capital information was rarely referred in the annual reports. In contrast, William (2001) found that there was a significant increase in the amount of intellectual capital disclosure in the annual report of UK public listed companies between 1996 and 2000.

Using the framework of Guthrie and Petty (2000), Bozzolan et al. (2003) examined voluntary intellectual capital disclosure in Italian annual reports for 2001. They reported that Italian companies mainly disclosed on the external structure. They also found that industry and size were relevant factors in explaining the differences in reporting behaviour amongst Italian companies.

Another study on intellectual capital disclosure was conducted by Abeysekara and Guthrie (2005) in which they investigate the annual reports in Sri Lanka by using the annual reports of the top 30 firms listed on the Colombo Stock Exchange. The study indicates that the most reported intellectual capital category was external capital followed by human capital. Brand building was the most reported attribute in the external capital category. As for the human capital category, the employee relations information was the most reported. Lastly, in the internal capital category, processes were the most reported, followed by systems.

Ludmila et al. (2008) studied the intellectual capital reporting practices of UK companies in four distinct sectors, namely, ICT/software, Pharmacy/biotech, Retail and Real estate/utilities. The study found major differences between the elements of intellectual capital reported in each sector studied. They concluded that the intellectual capital issues were considered important both with company size and from sector to sector.

In Malaysia, one of the earliest studies on intellectual capital was conducted by Goh and Lim (2004), who examined the disclosure practices of the top 20 profit making public listed companies. The study found that the voluntary disclosure of intellectual capital in the company annual report is highly qualitative and not quantitative.

Another study was conducted by Huang et al. (2008) who focussed on one category of intellectual capital disclosure, that is, human capital. The study examined the extent of the disclosure of human capital in the annual reports of Malaysian top companies based on the concept of Human Resource Costing and Accounting (HRCA) and other relevant human capital elements or measures. They concluded that the concept of HRCA is still distant to human resource managers in Malaysia. As for the human capital attributes, the most commonly disclosed are information on training, human resource development, employee skill, knowledge and competence.

In a recent study in Malaysia conducted by Foong et al. (2009) they reviewed the top 30 and the bottom 30 companies by market capitalization at the end of 2003. This study found that the voluntary disclosure of intellectual capital information is generally not extensive among the public listed companies in Malaysia and that most of the information disclosed was in narrative description format.

There are also studies that investigate one of the elements of intellectual capital, for example, Hamezah et al. (2010). In this study, they examine the relationship between the corporate governance and R&D reporting among firms listed on the Malaysian MESDAQ market. The study revealed that there is an increase in government ownership influence in quantitative and financial R&D disclosure. Furthermore, the study found that audit quality, which is represented by the Big 4 audit firms, plays an important role in R&D disclosure.

A literature review on intellectual capital disclosure performed in Malaysia shows that the majority of intellectual capital studies in Malaysia focuses on top companies based on market capitalization. However, this study focuses on industry specific, that is, the technology industry in both the Main Market and the Ace Market of Bursa Malaysia. Thus, it may benefit the government and accounting professional bodies for future regulatory impact, especially in drawing up future guidelines and policies in accounting and in developing an appropriate accounting framework for intellectual capital disclosure.

HYPOTHESIS DEVELOPMENT OF FIRM'S CHARACTERISTICS AND IC DISCLOSURE

This section provides some empirical evidence on the factors that might explain the extent of intellectual capital reporting in the Malaysian technology industry. Based on the intellectual capital literature, there are many factors, which explain the difference in the intellectual capital disclosure. For example, Vergauwen and Alem (2005) found that the difference in the intellectual capital disclosure can be explained by the country specific regulation and auditor conservatism.

Further, Guthrie et al. (2004) revealed that firms with high levels of intellectual capital or intellectual capital intensive firms are more likely to engage in voluntary intellectual capital disclosure. This finding has been supported by several studies (e.g. Bozzolan et al. 2003; Bozzolan et al. 2006; Oliveira et al. 2006) that determined that "high-tech." or knowledge intensive industries are more likely to provide information about their knowledge assets in the annual reports.

Additionally, Oliveira et al. (2006) divided the firms characteristics into three groups structural variables, including firm size and type of auditor; performance variables, including profitability; and market variables, including industry.

Based on the above discussion, it is obvious that the factors of intellectual capital disclosure are not evidently known, yet. As a result, this study will focus on two types of structural variable; size and type of auditor (Wallace et al. 1994; Oliveira et al. 2006). These variables were selected due to mixed results in explaining intellectual capital reporting.

Size Within the intellectual capital disclosure literature, prior studies have primarily detected a significant positive relationship between size and intellectual capital disclosure (Bozzalan et al. 2003; Guthrie et al. 2006; Oliveira et al. 2006) with the exception of William (2001) and Bukh et al. (2005) who observed an insignificant relationship. Based on these researches, large firms are likely to be more complex and subject to greater demand for information. The larger the firms the more information should be produced for the internal and external reporting. Therefore, it is interesting to determine the relationship, especially from the technology industry point of view. Therefore, the first hypothesis of this paper is as follows:

H_1: The larger the firm, the higher the extent of intellectual capital reporting.

Type of Auditor An auditor plays an important role in the presentation of information in the annual reports. According to Wallace et al. (1994), auditor size may influence the content of the annual reports prepared by firms. This is because large and well-known auditing firms can encourage companies to disclose more information. An auditor may want to preserve their reputation, develop their expertise and ensure that they retain their clients (Oliveira et al. 2006).

They concluded that companies with a Big Four auditor disclose more intellectual capital information compared to companies with non-Big Four auditors. This is consistent with a study by Giner (1997), in which he supports the relationship between the type of auditor and the extent of information disclosed. However, Wallace et al. (1994) and Depoers (1997) rejected the hypotheses. This leads to the second hypothesis:

H_2: There is a positive association between the extent of intellectual capital reporting and type of auditor.

DATA AND METHODOLOGY

SAMPLE SELECTION AND DATA COLLECTION

The sample of this study includes all companies listed under the technology industry on the Main Market and the Ace Market of Bursa Malaysia. The technology industry was selected because these companies rely on intellectual capital in the operation of their business as compared to other traditional sector companies.

The data collection started with collecting the annual reports for the financial year 2009. This was to obtain the latest information regarding the intellectual capital practices from the recent annual reports. All the annual reports were downloaded from the Bursa Malaysia website. Based on the Bursa Malaysia web site, there are a total of 93 companies listed under Technology industry. The details are shown in Table 1. Bontis (2003) mentioned that annual reports are considered as an important source of company information by external users such as stakeholders.

TABLE 1. Descriptive Analysis of the Sample

	Frequency	Percentage
Main Market	22	23.7
Ace Market	71	76.3
Total	93	100.0

CONTENT ANALYSIS DESIGN

This study uses the content analysis method. Content analysis is a research technique for making replicable and valid inferences from texts to the contexts of their use (Krippendorff 2004). This technique has been conducted on annual reports by a number of intellectual capital researchers, as they are a good instrument to measure the intellectual capital reporting practices of firms. (Bozzolan et al. 2003; Abeysekara & Guthrie 2005; Bontis 2003; Vandemaele et al. 2005; Goh & Lim 2004).

This method was adopted, as the aim of this study is to investigate the intellectual capital reporting practices by the Malaysian technology industry by type and extent of intellectual capital reporting in annual reports. The content analysis involves two independent coders. This is to maintain the coding reliability. The coding process is based on a coding scheme including all the 24 attributes of intellectual capital from three different categories. If there is any inconsistency in the coding process, it will be resolved by reviewing the indicated attributes stated in the coding sheet. Once it is agreed, the data will be used for the analysis.

INTELLECTUAL CAPITAL FRAMEWORK

According to Guthrie and Petty (2000), the content analysis involved the reading of annual reports of each company and coding the information content with selected intellectual capital attributes. In order to identify and classify the intellectual capital attributes, the framework proposed by Sveiby(1997), replicated and extended by Guthrie and Petty (2000) was adopted. This framework has also been applied by other researchers (Abeysekera & Guthrie 2005; Bozzolan et al. 2003; Brennan 2001; Goh & Lim 2004; Vandamaele et al. 2005). The coding methods use 24 intellectual capital attributes across three categories: internal capital, external capital and human capital. The three categories can be further divided into a number of attributes, as stated in Appendix 1.

INTELLECTUAL CAPITAL DISCLOSURE MEASUREMENT

In order to determine the intellectual capital reporting practice of the technology industry in Malaysia, all the 93 annual reports were reviewed. This study uses the dichotomous procedure. If the attribute stated was disclosed in the annual reports, then it was given a score 1 and 0 if the information was not disclosed.

Firms' characteristics were divided into three groups structural variables, including firm size and type of auditor; performance variables, including profitability; and market variables , including industry (Oliveira et al. 2006). As for this study, it will only concentrate on structural variables ; firm size and type of auditor.

Based on the literature, there are alternative proxies to measure firm size. The proxies include total assets (Bozzolan et al. 2003), log of total assets (William 2001), turnover (Bozzolan et al. 2003), market capitalisation (Garcia-Meca et al. 2005) and number of employees (Bukh et al. 2005).

This study measured size by company's turnover or revenue. According to Bozzolan et al. (2006), turnover was chosen because it is less affected by variation in accounting principles. For type of auditor, it will assign a value of 1 if the auditor is from the Big Four auditing firms (KPMG, Pricewaterhouse Coopers, Ernst & Young and Deloitte Kassim Chan) and 0 for other than the Big Four auditing firms.

Two control variables were used in this study to control for their effect on the intellectual capital disclosure. The variables are leverage and profitability. Leverage is measured as the ratio of total liabilities to total equity (Oliveira et al. 2006; White et al. 2007) while profitability is measured as the ratio of net income before tax to total assets (Garcia-Meca et al. 2005; Oliveira et al. 2006).

FINDINGS AND DISCUSSION

DESCRIPTIVE STUDIES

Table 2 shows the descriptive statistics for the dependent variable of the study. The mean level of intellectual capital disclosure (ICD) is 16.59. ICD is the sum of internal capital, external capital (EC) and human capital (HC).The mean levels for intellectual capital, EC, and HC are 6.24, 7.34 and 2.99, respectively.

TABLE 2. Mean and Std Deviation for Intellectual
Capital Disclosure

	Mean	Std. Deviation
Internal capital	6.24	1.942
External capital	7.34	1.908
Human capital	2.99	.787
Intellectual capital disclosure	16.59	3.570

From Table 2, it can be concluded that out of 9 attributes, on average, 6.24 attributes were disclosed under the intellectual capital category. For EC, 7.34 attributes were disclosed out of 9 attributes. The mean level for both categories is above the average. However, under the HC category, the mean level is only 2.99. Out of 6 attributes only 2.99 attributes were disclosed.

In general, the intellectual capital reporting in the technology industry in Malaysia is high. Based on the 24 attributes, 69% items were disclosed in the annual reports. This may be due to the awareness and the nature of business conducted which relies heavily on technology elements.

Based on the intellectual capital categories, overall, the technology industry disclosed most on the external capital, which represents 44%, followed by internal capital (38%) and human capital (18%). There is not much difference in the disclosure of intellectual capital categories between the Main Market and the Ace Market. Both markets disclosed most on external capital and disclosed least on human capital. The statistical details for each market are tabulated in Table 3.

EXAMPLES QUOTED FROM THE ANNUAL REPORTS

Based on the review of 93 annual reports, only one company Heitech Padu Bhd – provides a specific section in the annual report on the intellectual capital management. The section contains details of all activities conducted by the company pertaining to the intellectual capital reporting attributes. For example, it includes the management of trademarks, patents and the details concerning the registration and application of their trademarks.

Upon reviewing the annual reports, some information that relates to the 24 attributes was quoted. This is to provide some examples concerning the information disclosed by the companies. Under the internal capital category, most of the companies disclosed the related information. However, some companies did not provide information on intellectual property and networking or communication system. Examples of companies that disclosed such information are as follows:

Intellectual Property Certain intellectual property (IP) has been assigned to a financial institution in relation to the project financing term loan as disclosed in Note 18 to the financial statements. The carrying values of the development expenditure related to the above mentioned IP amounted to RM1, 636,106.

(BCT Technology Bhd 2009 Annual report, p 51)

Networking/Communication System In essence, we are moving into the next engine of growth for wireless services as depicted by the wireless players worldwide. Our initial development would be an integrated Telematics Service Platform (TSP) based on an open and standardized framework architecture that can be modularly upgraded to support differing technologies, including GPS, GSM, WIFI, 3G and WIMAX and that cater for next generation wireless technologies too.

(Amtel Holdings 2009 Annual report, p 17)

As for the external capital category, the frequency of disclosure for both market is above 40%. Some of the quotations that have been disclosed are as follow:

Customers Customers are our long-term business partner and only with customers' continual support, we could grow and profitable. Key Performance Indicators are used to measure our weekly and monthly delivery performance and customers' rejection of every subsidiary and collectively reviewed for improving our services to our customers.

(Kobay Technology Bhd 2009 Annual report, p 21)

Customer Loyalty The encouraging response indicated the level of confidence and trust shown by the customers for our products and together with the experience garnered, we have recently been entrusted by a major Telco company to jointly develop a Telematics platform and system for supply of related products and services in Malaysia.

(Amtel Holdings Bhd 2009 Annual report, p 17)

TABLE 3. Frequency Statistics for Intellectual Capital Disclosure

	Main Market		Ace Market		Total	
Intellectual capital categories	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Internal capital	147	38%	433	37%	580	38%
External capital	159	42%	524	45%	683	44%
Human capital	76	20%	202	17%	278	18%
Intellectual capital disclosure	382	100%	1159	100%	1541	100%

On Business Collaboration On the Technology front, we are focused in remaining at the forefront by collaborating with strategic Technology Partners and Alliances. Some of our collaboration worthy of mention focuses on open source, radio frequency identification technology and internet based solutions/products. Through these collaborative efforts, we will be able to reduce our capital investment and recurring expenditure.

(HeiTech Padu Bhd 2009 Annual Report, p. 22)

However, there are certain attributes that have not been disclosed under this category such as brand, licensing agreement and favourable contract. These are the examples of companies that disclose such information.

Brands At the same time, the Group would continue to tap into business opportunities abroad so as to expand our earnings base and reinforce our brand name in the global arena for the2 long term. We believe that these business strategies would surely be stepping stones towards improving the Group's financial performance correspondingly.

(GHL Systems Bhd 2009 Annual report, p. 11)

Licensing Agreement The Group is also partnering with Microsoft to develop web applications based on Microsoft's .net Technology for further enrichment of its Biometrics system solution. The Group also ventures into Face Recognition technology to develop a series of products based on the latest 2+3D face recognition algorithm.

(PUC Founder (MSC) Bhd 2009 Annual report, p 9)

Favourable Contract Green Packet formed a strategic partnership with Beceem Communications, the leading provider of 4G chips, to introduce a portfolio of Green Packet's high-performance WiMAX USB dongles to the global WiMAX market.

(Green Packet Bhd 2009 Annual report, p 13)

For human capital category, lack of disclosure was found in the know-how, education and vocational qualification. Most of the companies disclosed common statements related to in-house training and seminars to enhance the skills and knowledge of the employees. Those companies that disclosed detailed information were as follows:

Know-How Our people are being acknowledged as having superior technical skills, mainly because we actively encourage them to pursue or upgrade their professional certifications. They also undergo numerous soft skills training sessions in order to improve their understanding of customer requirements and how best to meet them.

(Mesiniaga Bhd 2009 Annual report, p. 16)

Another Quotation On Know-How is Provided By Fotronics Corporation Bhd Fotronics has accumulated a lot of know-how and expertise in micro-optics assembly over the past 7 years. It is part of our corporate strategies to move beyond lens assembly into lens design, mould making and lens moulding so that we could provide a one-stop and vertically integrated service to our customers.

(Fotronics Corporation Bhd 2009 Annual report, p. 7)

This is an example of common information for the employees stated in the annual reports. "Training is provided to the employees. The training comprises both technical, soft skills and includes grooming future leaders."

(AIC Corporation Bhd 2009 Annual report, p. 17)

RELATIONSHIP BETWEEN FIRMS' CHARACTERISTICS AND INTELLECTUAL CAPITAL DISCLOSURE

The secondary data was checked for normality and the data was not normally distributed. Therefore, the non-parametric tests Spearman's rank-order correlation was used. The relationship between firms' characteristics, namely, size, type of auditor and intellectual capital disclosure was determined by using the Spearman's correlation coefficient analysis. It was found that, there is no significant relationship between the intellectual capital disclosure and firms' characteristics.

The result is consistent with previous literature where they provided mixed evidence on the relationship between company size and IC disclosure. For example, Bukh et al. (2005) established that size was not a determinant for intellectual capital disclosure in the Danish IPO prospectuses. However, on the other hand Garcia-Meca et al. (2005) found that size is a determinant for intellectual capital disclosure.

Oliveira et al. (2006) examined the relationship between the type of auditor and the extent of its intellectual capital disclosure. They concluded that companies with a Big Four auditor disclose more intellectual capital information compared to companies with non-Big Four auditors.

Contrary to the previous study, this study found that there is no relationship between the extent of intellectual capital reporting and type of auditor. Table 5 presents the results of the Spearman's correlations.

TABLE 5. Correlations (1-tailed)

	Size	Type of auditor
ICD level	.442	.361

** correlation is significant at the 0.01 level

Multiple Regression Analysis Results Table 6 presents the results of the multiple regression analysis based on the following research models:

$$ICD = \beta_0 + \beta_1 SIZE + \beta_2 AUD + \beta_3 LEV + \beta_4 PFT + \varepsilon i$$

Multiple regression analysis was employed to identify the variables that significantly contribute to the intellectual capital disclosure. Two control variables (leverage and profitability), which can have an effect on the level of intellectual capital disclosure, were included. First, the multicollinearity was checked among the variables. According to Julie (2007), collinearity exists if the variance inflation factor (VIF) values are above 10. Based on the results (Table 6 the correlation coefficients between the explanatory variables are not high. They range from 1.096 to 1.273, which is well below the cut off of 10. Thus, it can be assumed that there are no multicollinearity problems.

The regression produces an adjusted R^2 of 0.080, which indicates that the model is only able to explain 8 percent of the variance in the dependent variable for the whole sample. Only profitability has a significant association with the intellectual capital disclosure. It is significant at the 5% significance level. The negative correlation indicates that for profitable companies disclosure behaviour is more similar. This is consistent with Garcia-Meca et al. (2005). Finally, the other variables, such as size, type of auditor and leverage did not have any significant association with the intellectual capital disclosure. These results are consistent with the empirical findings where the study showed no association between size (Bukh et al. 2005), leverage (Garcia-Meca et al. 2005; Oliveira et al. 2006) and the extent of voluntary ICD.

However, the results are contrary to the findings from previous studies where the researchers found that size (Bozzolan et al. 2006 White et al. 2007); leverage (White et al. 2007) and profitability (Garcia-Meca et al., 2005) had a significant relationship with the level of voluntary intellectual capital disclosure. A possible explanation for the differences is due to the industry being analyzed which focussed on a high intensity industry - the technology industry. It may indicate that firms that are high in intellectual capital (e.g. technology industry) are more likely to engage in voluntary intellectual capital disclosure (e.g. Bozzolan et al. 2003; Bozzolan et al. 2006; Oliveira et al. 2006).

According to Woodcock and Whiting (2009) companies that operate in high intellectual capital intensive industries show higher levels of ICD. This is consistent with this study where the level of ICD is high, which is represented by 69%.

CONCLUSION AND IMPLICATIONS

The purpose of this study is to investigate the intellectual capital reporting practices of Malaysian listed companies in the technology industry. This study also assesses the association of firm's characteristics and intellectual capital disclosure. Using the content analysis method, it reviews the annual reports of all technology companies listed under the Main Market and the Ace Market of Bursa Malaysia in year 2009.

The study reveals that the technology industry discloses most on external capital, which represents 44% compared to human capital and internal capital, which were 18% and 38%, respectively. The disclosure level is not related to company size or type of auditor. This indicates that larger firms do not contribute to the extent of intellectual reporting in the Malaysian technology industry. In addition, large and well-known auditing firms do not have any influence on the intellectual capital reporting in the technology industry. Furthermore, after including two control variables in the multiple regression analysis, it shows that profitability has a significant association with intellectual capital disclosure. In contrast, leverage shows otherwise.

The study also highlighted certain information regarding the intellectual capital attributes that have been quoted from the respective annual reports. This is to provide some insight into the intellectual capital information that has been published by the technology industry companies.

TABLE 6. Multiple regression results for overall index

	Dependent variable			
	VIF	β	t	p-value
Overall index				
Independent variables				
Intercept				
Size (SIZE)	1.208	-0.150	-0.921	0.363
Type of auditor (AUD)	1.273	0.186	1.112	0.273
Leverage (LEV)	1.096	0.049	0.314	0.755
Profitability (PFT)	1.099	-0.336	-2.167	0.037*
Model summary				
R^2	0.168			
Adjusted R^2	0.080			
F-statistic	1.912			
p-value of *F*-statistic	0.128			

*significant at the 0.05 level

The findings from this study are subject to certain limitations that provide initiatives for future research. The study was limited to a one-year sample. By having a one-year sample it is not possible to monitor the progress and development of intellectual capital reporting practices. Therefore, the avenues for further research will include more data from more sample companies covering longer periods of time. In addition, it could be useful to further investigate the relationship of IC disclosure and other firms' characteristics such as profitability, return on investment and others.

In spite of certain existing limitations, this study contributes to the intellectual capital disclosure literature in several ways. First, IC disclosures are industry specific. Second, this study provides the empirical understanding concerning the intellectual capital reporting for both Malaysian markets - Main Market and Ace Market. Furthermore, the study discusses in detail the intellectual capital information that has been published in Malaysian annual reports.

The results of this study may assist companies to be more aware of other aspects of corporate reporting particularly concerning the intellectual capital disclosure. In addition, it may benefit the regulators and standard setting bodies for future regulatory impact, especially in establishing a framework for Malaysian companies.

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APPENDIX

Appendix 1: Intellectual Capital Attributes

Internal capital category	External capital category	Human capital category
Intellectual property	Brands	Know-how
Patents	Customers	Education
Copyrights	Customer loyalty	Vocational qualification
Trademarks	Companies name	Work-related knowledge
Infrastructure asset	Distribution channel	Work-related competencies
Management philosophy	Business collaboration	Entrepreneurial spirit
Corporate culture	Licensing agreement	
Management processes	Favourable contract	
Information systems	Franchising agreement	
Networking (communication systems)		
Financial relations		