INTELLECTUAL CAPITAL INFORMATION GAPS

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Abstract

This paper explores the internal intellectual capital (IC) information gaps by examining the extent to which IC information is made available by the internal accounting system as well as how important IC information is to mangers in carrying out their jobs. A postal survey with the aid of a questionnaire was conducted on Malaysian listed companies. Generally, the mean scores for the importance of IC information are greater than those of availability. It was found that IC information gaps do exist. Out of the 46 IC information items only two of them, namely 'employee recruitment costs' and 'employees' level of education/qualification' do not differ significantly between their availability and importance. There is a need to supply more information on the other 44 IC information items in Malaysian companies. It is concluded that the current financial accounting system does not produce sufficient IC information for managers.

Keywords: Intellectual capital, IC information, IC information gaps, Malaysia

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1 Introduction

In today's economy, management a company is becoming more about managing people or intangibles or Intellectual Capital (IC) rather than managing its physical or tangible and financial assets (Shih, *et al,* 2010). Managers need more IC-related information to assist them in managing and monitoring their IC. However, according to a report by Meritum (2002: 1), internal information on IC is still 'scarce'. In this light, Johnson, Martensson and Skoog (2001: 407) find that "one of the main problems in understanding the importance of intangibles appears to be that there is a general lack of information on intangibles".

Without adequate or sufficient information about IC, which is vital in the value creation of firms in the 'new economy', managers are unable to make efficient decisions. In other words, managers need IC information in the management of their firms. The job

of senior management is increasingly to 'orchestrate this dynamic combination of complementary skills and assets to generate and then realise innovative ideas and product improvements' (Leadbeater, 1999). Sanchez, Chaminade and Olea (2000) stressed the need for IC-related information for decision making of both managers and stakeholders by saying that there is a need for information on the intangible determinants of the value of companies that will help improve the decision making process of managers and stakeholders.

The internal accounting system is a main source of information on which managers rely to help them improve decision making, and to plan and control their company effectively and efficiently. Unlike external stakeholders, managers potentially have access to unlimited management and financial information about their companies. The form and content of accounting information produced by the management accountants should be appropriate and relevant to the needs of these managers, assisting them in performing their tasks. To function effectively in a knowledge-based economy, Malaysian managers are in need of more IC-related information. The internal accounting and management system should produce IC-related information to cater to the needs of the managers.

However, Malaysian companies may or may not have produced enough IC-related information. This could be because senior managers do not regard IC important which resulted in a lack of internal IC information. In order to explore these questions further, this paper intends to look at the availability of internal IC information in Malaysian listed companies and the desire of managers on IC information. This paper examines the extent to which such IC information is made available or produced by the internal accounting system. It also finds out how important and useful is IC information to the managers and

also the types of IC information deemed relevant to them in carrying out their jobs. The ultimate objective of this paper is to establish the internal IC information gaps from Malaysian perspective.

The paper is structured as follows. The next section reviews literature concerning IC information gaps and the need for internal IC information. This is followed by section three which describes the research method. Section four provides a discussion of the empirical results. The paper then ends with some implications of the study in the concluding remarks.

2 Literature Review

2.1 IC information gaps

Generally, past studies have examined information gaps on shareholder use of corporate annual reports and information provided in the annual reports. Powell and Schipper (1999) and Lev (2001) have found that the usefulness of financial reports of publicly listed companies had declined, creating an information gap between the issuer and user of information. Various studies of investors and analysts' request for more information indicate that there is a substantial difference between the information found in companies' annual reports and the type of information demanded by the market (Eccles, Herz, Keegan and Phillips, 2001; Eccles and Mavrinac, 1995).

According to Bukh and Johanson (2003), this information gap is partly due to an increased request for more non-financial information regarding intangibles and it can also be due to a lack of a generally accepted reporting framework for structuring the non-financial information. The research conducted by Matolcsy, Stokes and Wells (2002) on 100 Australian companies found that, despite a growth in the level of disclosure on intangibles, the recognition of intangibles for internal reporting purposes is not

significantly different from that adopted for external reporting purposes. They state that intangibles are typically not recognised in management reports and also not included in performance measurement or evaluation.

Specifically on IC, Guthrie, Petty and Ricceri (2006: 262) found that there continues to be 'a gap between the rhetoric and the reality' with regard to measuring, valuing and reporting IC in Australia and Hong Kong. Bukh (2002) states that in order to reduce information gap, more sophisticated and varied non financial information is to be published to meet the increasing demand on IC information in the last decade. Bukh and Johanson (2003) have suggested that an understanding gap between management and investors and analysts be identified to determine how company management on the one side and the capital market participants on the other side perceive the company's business model and communication on strategy and value creation.

2.2 The need for internal IC information

Unlike external reporting, internal accounting information produced is not just historic but also future-oriented. It is often non-routine, strategic and customised to the needs of the companies. Relevance is also one of the important criteria in the internal reporting of accounting information. If information is not relevant, it has no value. It is relevant if it is useful and facilitates decision making. As IC has become the key determinant of the value of companies in the knowledge-based economy, there is a need for managers to consider IC in their decision making process and also in the planning and controlling of their companies. It seems that current accounting systems do not deliver information for future-oriented, strategic management decisions on knowledge-based resources and intangibles (Mottonen, *et al,* 2009). Incorporating IC information into the management

information system will provide managers with correct signage of the conditions ahead before a decision is arrived at.

People make decisions based on available information and stakeholders are demanding better and different kinds of information in the knowledge-based economy. According to Simister, Roest and Sheldon (1998), some companies are making attempts to value a wide range of intangible assets and the need for this is on the increase. Different types of information are produced and used internally to manage businesses in the knowledge-based economy. New non-financial performance measures have been designed to focus on the value creation process. For instance, the balanced scorecard approach of Kaplan and Norton (1992, 1996) has been adopted by many companies for internal reporting purposes. Twenty one measures (financial and non financial) were developed by Kaplan and Norton (1996) to capture the four key perspectives: financial, customer, internal business process, and learning and growth, to improve the information used to manage businesses.

In a large scale survey of UK manufacturers, Abdel-Maksoud, Dugdale and Luther (2005) found evidence of widespread measurement and reporting of non-financial measures of performance, particularly measures relating to customer relationships and employee productivity. In addition, Perrin (2000) found that IC leaders (those who expect IC's contribution to grow) are more active in measuring the performance of their IC and are, therefore, supplying themselves with appropriate management information. However, the current information systems are inefficient for management purposes as they do not capture a wide range of intangibles (Meritum, 2002). Without relevant data, decisions concerning the exploitation of IC become a matter of guesswork.

Seetharaman, Zaini Sooria and Saravanan (2002) also state that the internal users such as management should be encouraged to measure and report on their IC progress as they have access to internal IC development and records. In a qualitative study conducted on the management control of intangibles in three Swedish companies, Johanson, Martensson and Skoog (2001) found that indicators are consistently reported internally. According to Wall, Kirk and Martin (2002) a lot of IC measures seem to be provided in companies independently, not part of an overall IC management strategy of the companies. In line with the above, Garcia-Ayuso (2003: 598) states that "a large number of firms all over the world are currently feeling the need to redesign their information and reporting systems to explicitly consider intangibles in their management decision making processes and to be able to provide their stakeholders with useful financial information".

3 Research Method

3.1 Samples

The data was collected with the aid of a questionnaire via postal survey to 520 companies listed on the main board of *Bursa Malaysia*. A stratified sample was taken from the infrastructure, technology, consumer products, trading and services, construction, industrial products and properties sectors. The mining, hotel, banking and plantation sectors were excluded from the survey due to their specialised nature and the additional disclosure compliance requirements on the banking sector.

3.2 Respondents and their job titles

A total of 104 (20%) responded to the questionnaires after reminders. Eight respondents did not state their job titles within their companies; the remaining 96 respondents gave their positions. Fifty three respondents specialised in finance and accounting; while 10 specialised in human resource. See Table 1 for detail.

Table 1: Job Titles of Respondents

Position	Number	%
Accountants	16	15
Financial Controllers	16	15
Finance Managers	15	14
General Managers/Managers	14	13
Human Resource Managers	10	10
Chief Financial Officer	6	6
Executive Directors/Directors	6	6
Executives	5	5
Others	8	8
Undisclosed	8	8
	104	**100**

3.3 Questionnaire

The questionnaire was developed in two main stages, construction from the extant literature followed by pilot testing. The questionnaire was piloted for clarity; relevance and completeness to arrive at the final list of 46 IC line-items from human capital (15 items), customer capital (15 items) and structural capital (16 items). The items or elements of human capital, customer capital (relational or external capital) and structural capital (internal capital) were initially founded on those established by Guthrie, Petty, Ferrier and Walls (1999, p.27), Guthrie, Petty and Ricceri (2004, p.15) and Oliveras, Gowthorpe, Perramon and Kasperskaya (2004, pp.10, 11). See Huang, Luther and Tayles (2007) for details. Before incorporating into the questionnaire, these items went through several iterations to eliminate ambiguous, irrelevant and/or overlapping items were conducted.

Respondents were asked to indicate the availability and importance of these 46 IC items on a 7-point scale in the same questionnaire. As for availability, the respondent was asked to indicate the extent of availability of IC information in their companies from "1" to "7" where "1" represents "none" and "7" represents "comprehensive". The respondent

also was to indicate in the same questionnaire the extent of importance of IC information from "1" representing no importance to "7" representing crucial importance.

3.4 Non-response bias and reliability tests

The number of complete and usable questionnaires for this study is 88, giving a response rate of 17%. The non-response bias test was conducted on the data. Results of the Mann Whitney U Test (see Appendix 1 for detail) show that there is no significant difference between early and late replies in their responses on the availability of internal IC information.

Cronbach's Alpha coefficient of internal consistency is computed to check the reliability of the scale. A scale is internally consistent if the items correlate highly with each other – in which case they are also more likely to measure the same homogenous variable and items are more likely to satisfy these requirements if they are reliable (Oppenheim, 1966). The outcome of the Cronbach's Alpha tests in Table 2 shows that all the different categories of IC information are consistent. Their Cronbach's Alphas are well above 0.8. As the values of Cronbach's Alpha were high, no item was eliminated.

Table 2: Reliability Test on the Availability and Importance of Human Capital, Customer Capital and Structural Capital Information

	Cronbach's Alpha	No. of Items
Availability:		
Human Capital	0.899	15
Customer Capital	0.914	15
Structural Capital	0.931	16
Importance:		
Human Capital	0.901	15
Customer Capital	0.876	15
Structural Capital	0.894	16

4 Empirical Results and Discussion

4.1 Internal IC information gaps

The importance and availability of 46 IC line-items were first analysed based on aggregate IC, and then on human capital, customer capital and structural capital by taking an average on their mean scores. Table 3 reveals that customer capital information is ranked the highest on both the availability and importance. In other words, customer capital information is found to be the most available (with highest mean) in Malaysian companies and managers also regard customer capital information as the most important (with highest mean) relative to the other two components of IC. The least available IC information is structural capital information and this category is also regarded as the least important by managers.

Table 3: Means and Wilcoxon Test on the Importance and Availability of the Categories of IC Information

	Importance Mean	**Availability Mean**	**Wilcoxon**	
			Z	**Sig.** (2-tailed)
Customer capital	5.61	4.84	-7.244	4.3 E-13
Human capital	5.52	4.83	-6.669	2.6 E-11
Structural capital	5.40	4.49	-7.377	1.6 E-13
Aggregate (IC)	**5.51**	**4.72**	**-7.561**	**5.0 E-14**

Wilcoxon tests were then conducted to find out whether there are gaps between the importance and availability of aggregate IC and each of these three categories of IC information. The result in Table 3 shows that at the 99% confidence level, there are significant differences between the availability and importance of customer capital, human capital and structural capital information. It can be concluded that there are gaps between the importance and availability of aggregate IC and the three categories of IC information

in Malaysian firms. From the perspective of managers, information about IC is underprovided.

Structural capital is the support or infrastructure that firms provide to their human capital (Sullivan 1998). It enables the organisation to function and it also provides a context for the employees of the organisation to work and communicate with each other. Malaysian managers have perceived that there is a need to increase the amount of information related to structural capital as their z score is -7.377 and the gap (biggest amongst the three categories of IC) between importance and availability is significant at the 99% confidence level.

Though internal IC information is regarded as important by Malaysian managers, there is still a lack of such information internally. IC is not specifically managed in Malaysian firms. There is no specialist such as an IC manager who manages IC as a whole, but rather IC is partially managed in companies by different managers. For instance, customer capital is the concern of the marketing department, while human capital is managed by the human resource manager. The information on IC is not kept in one place and it is difficult for managers to know exactly how much information they have on IC. This could be a reason why there is a gap between the availability and importance of C information.

4.2 Customer capital information gaps

Gordon (2003) states that customer relationship measurement is more important than measuring customer satisfaction as satisfied customers often defect, but customers who have strong relationships rarely do so. In a study conducted by Gray, Rastas and Roos (2004), it was found that Finish managers regard customers as the most important relational resource. Customers were seen to add value in the area of innovation by contributing ideas

of how to further develop existing products too. Building a strong relationship with customers will help firms to source such ideas. Arvindsson (2003) too agrees that information related to relationships with suppliers, customers and partners is highly relevant when the management teams design their disclosures on intangibles.

In this study, the first 14 customer capital items in Table 4 have significant differences between their availability and importance as their p values are all less than 0.01. At the 95% confidence level, one item 'dependence on key customers', has a significant difference between its importance and availability. As the responses on the 'importance' of all the 15 customer capital line-items are higher than those on their 'availability', there is still a need to provide more information on these items.

'Customer satisfaction' is ranked top in Table 4 indicating that there is a big difference between its importance and availability. This makes sense as companies generally place great emphasis on managing their customer capital to ensure that they are satisfied with their products or services. Customer satisfaction usually results in repeat sales (a measure for loyalty). Malaysian managers had regarded information regarding customer satisfaction and loyalty as important, but companies do not produce enough information on these two items (Tan, *et al*, 2009). Customer related information is highly valued as it gives a competitive advantage to companies (Lingle and Schiemann, 1996). More of such information should be made available in companies to better manage customers.

Table 4: Means and Wilcoxon Tests on the Importance and Availability of Customer Capital Information Items

Customer Capital Items	Importance Mean	Availability Mean	Wilcoxon	
			z	Sig. (2-tailed)
Customers' satisfaction (e.g. via survey) with company/product	5.99	4.85	-6.598	4.2 E-11
Market demands for products/services	6.09	5.07	-6.093	1.1 E-09
Customers' loyalty to your company/product e.g. repeat sales	6.06	5.06	-5.877	4.2 E-09
Customer acquisitions (new customers)	5.84	4.94	-5.852	4.9 E-09
Market share	5.92	5.00	-5.840	5.2 E-09
Customer complaints and responses to complaints	6.11	5.28	-5.794	6.9 E-09
Customer profitability	5.43	4.50	-5.626	1.8 E-08
Growth in business or service volume	6.04	5.28	-5.454	4.9 E-08
Timeliness of product/service delivery	6.20	5.36	-5.435	5.5 E-08
Opportunities for business alliances/partnerships/ collaborations	5.84	4.66	-5.334	1.0 E-07
Favourable contracts obtained due to company's unique position	4.92	4.32	-4.627	3.7 E-06
Company's distribution channels allowing customers access to products/services	5.63	4.95	-4.429	9.5 E-06
Opportunities for licensing/franchising agreements	3.92	3.33	-4.300	1.7 E-05
Updated customer list/profile	5.55	5.09	-3.698	2.2 E-04
Dependence on key customers	4.99	4.70	-2.347	0.019*

**This item is significant at 95% confidence level.*

Though Gordon (2003) regards customer profitability as a key to successful customer relationship, the managers in this survey regard information on customer profitability as the most important (ranked 7th in this study (see Table 4)). Information about market share is also lacking in Malaysia (ranked 5th) though frequently tracked by companies as reported by Brinker (1998). A good distribution channel, according to Brooking (1996), ensures that the entire market of potential customers can be serviced and that revenues from products and services are maximised. However, this study has found that more information regarding distribution channels, favourable contracts, and opportunities for licensing/franchising agreements is to be supplied.

4.3 Human capital information gaps

Human capital is very often regarded by companies as its most important asset. Fitz-enz (2000) states that 'people, not cash, buildings or equipment are the critical differentiators of a business enterprise'. Lev (2001) too states that in the twenty first century corporation is more dependent on its employees. It is not just expensive to hire, train and sustain humans, they also have right to leave their employment (Brooking, 1996). Hence, there should be sufficient human capital information so that 'value' created by employees can be identified and retained in the companies. Even if the employees have to leave companies, the 'value' created will stay in the company.

However, Table 5 reveals that 12 human capital items have significant gaps (ranked from biggest to smallest) between their importance and availability at the 99% confidence level as their p values are less than 0.01. One item that is 'employees' previous job experience' is significantly different at 90% (p value < 0.10).

Table 5: Means and Wilcoxon Tests on the Importance and Availability of Human Capital Information Items

Human Capital Items	Importance Mean	Availability Mean	Wilcoxon	
			z	Sig. (2-tailed)
Employee motivation	5.74	4.48	-6.689	2.0 E-11
Employee job satisfaction	5.62	4.36	-6.515	1.0 E-10
Leadership quality of managers	5.98	4.98	-6.203	6.0 E-10
Employee know-how/expertise	5.87	4.92	-6.356	9.0 E-10
Employee creativity/innovativeness	5.43	4.33	-5.888	3.9 E-09
Employee work-related Knowledge	5.87	5.02	-5.438	5.4 E-08
Employee loyalty	5.62	4.63	-5.083	3.7 E-07
Employee work-related competence	5.88	5.17	-5.028	4.95 E-07
Employee profitability e.g. revenue per employee	5.10	4.39	-3.900	0.0001
Employee training	5.57	5.19	-3.111	0.0019
Incentive/reward/compensation scheme	5.42	4.94	-3.070	0.0021
Key employee turnover	5.62	5.09	-2.726	0.006
Employee previous job experience	4.93	4.66	-1.930	0.054*
Employee recruitment costs	4.72	4.53	**-1.092**	**0.275**
Employees' level of education/vocational qualification	5.43	5.47	**-0.349**	**0.727**

Bold figures are those with no significant differences at 95% confidence level.

** This item is significant at 90% confidence level.*

The means on the importance of the first thirteen items in Table 5 were ranked higher than their means on availability. The top two human capital items having the biggest differences between importance and availability are 'employee motivation' and 'employee job satisfaction'. The lack of such information could be because of the behavioural nature of the information, which is difficult to measure. However, there is a need for companies to supply such information to their managers for more efficient planning and controlling.

Information about 'leadership quality' has the third biggest information gap. According to Edmondson (1996), leadership is an important antecedent for human capital development and organisations must be characterised at all levels by a 'leading

attentiveness' to changing conditions. Bontis and Fitz-enz (2002) too state that management leadership, business performance and retention of key people are the three most common areas of concern with regard to human capital management.

The results of Table 5 also show that there is insufficient information on employee knowledge and expertise. There is a need for companies to produce information on the knowledge and expertise as it is too costly for them to hire and retrain new recruits. According to Roslender and Dyson (1992: 321), provision of accounting information on the 'stock of employees' knowledge and skills' will be critical to the effective management of human resources for without such information effective human resource decision making is likely to be the exception and not the rule.

Two human capital items, 'employee recruitment costs' and 'employees' level of education/vocational qualification' in Table 5 are not significantly different between their availability and importance at the 95% confidence level. In other words, there are 'no gaps' between the availability and importance of these two human capital items. The item 'employee education' has no information gap which indicates that managers regard such information to be important and there is also sufficient information provided within companies. It also implies that no additional information is needed. Much of the information regarding employees' level of education or vocational qualification is available in companies; as such information is factual and kept by firms when employees are employed. The other item which has no significant difference between importance and availability at the 95% confidence level is 'recruitment cost'. It is regarded as less important by the managers compared to 'employee education'. Though information about recruitment cost is ranked 11th on its availability, it is deemed sufficient. The respondents regard this item as less important in carrying out their jobs.

Human capital may have received much attention in many firms (April, Bosma and Deglon, 2003; Roslender and Fincham, 2004), however, in this study, the needs of managers on human capital information are yet to be met. More information on human capital is to be supplied.

4.4 Structural capital information gaps

The results in Table 6 show that at the 99% confidence level, all 16 structural capital items have significant gaps between the importance and availability of information (p values < 0.01). The mean scores of the importance of all of the structural capital items are higher than those of their availability. This implies that more structural capital information is needed. The structural capital items in Table 6 are ranked from the biggest to the smallest gaps based on the Wilcoxon results.

Table 6: Means and Wilcoxon Tests on the Importance and Availability of Structural Capital Information Items

Structural Capital Items	Importance Mean	Availability Mean	Wilcoxon	
			z	Sig. (2-tailed)
Execution of company strategies	6.00	4.67	-6.743	2.0 E-11
Development of new ideas/products/services	5.40	4.20	-6.628	3.0 E-11
Effectiveness of expenditure on R&D	4.72	3.55	-6.555	6.0 E-11
Society's image of the company	5.79	4.69	-6.502	8.0 E-11
Implementations of new ideas/products/services	5.31	4.15	-6.421	1.3 E-10
Quality of product/service supplied	6.04	4.98	-6.282	3.3 E-10
Documentation of knowledge in manuals, databases, etc.	5.69	4.65	-5.934	3.0 E-09
Management (including financial) control system	6.18	5.41	-5.852	4.8 E-09
Length of time for product design/product development	4.83	3.80	-5.846	5.0 E-09
Data systems providing access to relevant information	5.76	4.85	-5.722	1.0 E-08
Networking systems with customers, suppliers, databases, etc.	5.31	4.44	-5.461	5.0 E-08
Internal communication system	5.88	5.16	-5.218	2.0 E-07
Exploitation & management of patents, copyrights & trademarks	4.36	3.73	-4.642	3.0 E-06
Life-cycles of products	4.70	3.94	-4.514	6.0 E-06
Organisational culture in written form	4.90	4.16	-4.348	1.0 E-05
IT Systems & their usage in your company	5.74	5.26	-3..879	1.0 E-04

According to Brooking (1996), companies which do not regularly question the value and effectiveness of their infrastructure assets or structural capital lose the edge which makes them win in the market place. Structural capital enables companies to capitalise on customer capital and deliver value where there is greatest profitability (Brinker, 1998). In addition, structural capital is the infrastructure that provides support to human capital (Edvinsson and Sullivan, 1996). Hence, it is important to maintain sufficient structural capital information to monitor this form of capital. However, there is the need to increase the provision of structural capital information within Malaysian companies.

The item on 'execution of company strategies' is ranked first indicating that it has the biggest information gap. More information about the execution of strategies should be made available within companies. Financial analysts need more detailed information on company strategies, particularly on the execution plans to help them in their projections. If companies do not have such information available within their companies, it is difficult for them to disclose it to the external users in the annual reports or at private meetings. This is also supported by Galbraith and Merrill (2001) and Eccles and Mavrinac (1995) who regard company strategy and its execution affects company's market value.

Innovation has become a matter of corporate survival (Lev, 2001; Hsu, *et al,* 2008). Drury (2004) too states that to be successful companies must develop a steady stream of innovative new products and services and have the capability to adapt to changing customer requirements. Innovation today is based on combinations of information, intangibles and tangibles rather than physical assets alone (Holland, 2006). In this study, information related to the innovation process is needed in companies even though such information is not perceived by the respondents as important as items such as 'development of new ideas/products/services', 'implementations of new ideas/products/services' and 'length of

time for product design/product development' are ranked rather lowly in terms of their importance. However, there are information gaps on these items (ranked second, fifth and ninth in Table 6). More of such information will better inform markets of the value of long-term innovation strategies.

In view of the importance of innovation, companies should spend more on research and development (R&D). Arvidsson (2003) has found that disclosure on R&D is the primary focus of management teams in knowledge-intensive companies. Such expenditure should be evaluated against its effectiveness in terms of revenues generated from new products. However, in this study, information provided on 'effectiveness of R&D expenditure' is still lacking.

As a company grows and becomes more complex, it is important that the knowledge and know-how of employees are codified. According to Sullivan (1998), as the size of the human capital pool increases, information is less widely shared and becomes more compartmentalised. Hence, the firms' relevant knowledge should be available and accessible at all times. This makes structural capital items such as documentation of data important. More information is needed to monitor knowledge and to ensure that knowledge embedded in the companies is not lost when employees leave the companies. But, this study shows that there is a gap on 'documentation of knowledge in manuals, databases, etc.' (ranked seventh in Table 6).

There is also a need to increase information on intellectual property or 'exploitation and management of patents, copyrights and trademarks' in Malaysian companies. Intellectual property assets include know-how, copyrights, patent and various design rights. It represents the legal mechanism for protecting many corporate assets. Patents are valuable as they give the owner a monopoly on the patented invention for a period of time

which varies from country to country. Patents are of particular value when they are embedded in products as it protects them from others who may want to copy the invention. Malaysian managers should exploit and manage this asset more seriously.

5 Conclusion

This study has found that there are internal IC information gaps in Malaysian companies. It is significant to point out that for all IC categories, the means of importance exceed those of availability. This justifies the topic as being an important area of study, as it is seen to be an issue managers regard as in need of further attention to meet their requirements which are not yet met by the availability of IC information. It also reinforces the relative novelty of the research, being an indicator of information need that is still to be met by emerging provision of data. Control of information, not physical assets, is the key to success (Shih, *et al,* 2009). Success requires disseminating information that is to the firm's advantage and protecting information that is the core of the firm's business (Sullivan, 1998).

One possible reason for the internal IC information gap is that there is an inadequate internal information system dealing specifically with IC (Lev, 2001). As the internal accounting system is a main source of information on which managers rely to help them improve decision making and plan and control effectively and efficiently it is vital to incorporate IC into the system. The IC information deemed important to managers is not typically captured by current internal information systems. Incorporating IC information into the management information system will provide managers with correct signage of the conditions ahead before a decision is arrived at. However, such systems are virtually non-existent in most organisations, leaving a critical gap in the information managers need when making key business decisions (Stivers et al., 1997). In order to meet the demands of

the knowledge economy the content of accounting information produced should be relevant to the needs of present day managers, assisting them in performing their tasks.

The current financial reporting system was not specially designed for IC reporting but this should not stop managers from reporting IC internally. There is, at present, some IC information available in Malaysian companies, but at a lower level than would be expected given the importance that is attached to it. Given the lack of human capital information available internally in Malaysian companies as seen in this study, it is difficult for human capital to be measured either quantitatively or qualitatively. O'Regan et al. (2001) recorded an urgent need to develop new tools to better assist in the management of and investment in people, as people are assets who employed to generate revenue by converting knowledge into marketable forms.

Though this study does not specifically explore the IC information system, a lack of IC information in Malaysian firms does imply that the current system does not provide sufficient IC information. There is a need to redesign or modify the information system with IC to supply sufficient information for decision making purposes.

This study suggests that there is still a lack of expertise in measuring and reporting IC within companies. IC is not monitored in totality as it is not managed by a single department or by a designated IC manager. Unless, and until, IC is managed and coordinated as a whole, it is difficult for it to be monitored and measured effectively. With their existing duties, Malaysian managers may view managing IC as just one more additional burden.

Lastly, although this study shows that there is a need to increase IC information inside companies, it has not looked at the quality of such information currently available in Malaysian companies. There may be the need to improve the quality of such information

rather than the quantity. Managers usually make decisions based on the information available to them and it is therefore important that they get the relevant IC information to assist them in carrying out their tasks in the knowledge-based economy.

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Appendices

Appendix 1: Mann Whitney Statistical Test Results on the Availability of IC Information

Group	Human capital		Customer capital		Structural capital	
	z	P (2-tailed)	z	P (2-tailed)	z	P (2-tailed)
1	-1.185	0.236	-0.931	0.352	-0.745	0.456
2	-0.968	0.333	-0.776	0.438	-0.179	0.858
3	-1.016	0.309	-0.085	0.933	-0.045	0.964