

Intellectual Capital Management in Malaysian Public Listed Companies

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In the new economy, knowledge is the key economic resource and perhaps the only source of competitive advantage. Increasingly intellectual capital has been playing an important role in the creation of firm's competitive advantages. In meeting the challenge of the new economy, Malaysia has embarked on developing several strategies to accelerate its transformation to a knowledge-based economy. At present, not much is known about the practice of intellectual capital management in Malaysia. This study is an attempt to provide some insight on the extent to which Malaysian firms have adopted intellectual capital management. Specifically, this study examines the differences in the degree to which firms of different industries, types and sizes acknowledge and adopt intellectual capital management in their business models.

Field of Research: Management

1. Introduction

In the last three decades, Malaysia has transformed itself from a country that long depended on agricultural commodities and mining, to an industrializing economy. In 2005, manufacturing and services accounted for 32 percent and 57 percent of Malaysia's GDP respectively (Department of Statistics, 2005). In meeting the challenge of the new economy, Malaysia has embarked on a mission to develop a knowledge-based society as highlighted in its Third Outline Perspective Plan, 2001-2010 (Economic Planning Unit, 2001). Subsequently, a Knowledge-Based Economy Master Plan was launched in 2002. The Master Plan outlines the various strategies to accelerate the transformation of Malaysia to a knowledge-based economy (ISIS, 2002). The underlying premise of the Master Plan is that in order to achieve sustainable economic growth, Malaysia can no longer rely on investment in capital or physical assets; rather growth must be driven by productivity and innovation supported by effective management of both tangible and intangible resources.

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Drucker (1995) contends that in the new economy, knowledge is the key economic resource and the dominant – and perhaps even the only - source of competitive advantage. In contrast to the traditional input-driven economy where firms focus on managing tangible assets, the key to organizational success in the emerging knowledge-economy is to effectively manage the “invisible balance sheet”, which comprises the intangible knowledge and assets of the organization. In the knowledge-based economy, firm’s core assets are their intellectual capitals made up of the combined knowledge of human, structural and relational resources. Thus, increasingly intellectual capital has taken the centre stage in firm’s efforts to create competitive advantages (Kaplan and Norton, 2004), and has been proposed as an essential factor contributing to organizational survival, and the maintenance of competitive strength, and in enhancing firm performance (Leana and Van Buren, 1999). One of the strong evidences of this intellectual capital phenomenon is the gap between book and market values, which has been widening over time. The growing discrepancy between market value and book value of a corporation is said to be largely attributed to intellectual capital - the intangibles of the business that underpin its future growth (Lowell, 1997).

In Malaysia, it is acknowledged that the number of knowledge workers and new knowledge-based opportunities are expected to increase in the near future and this new phenomenon will force firms to further develop and manage their intellectual capital effectively (Naquiyuddin and Heong, 1992). However, presently not much is known as to the extent to which firms in Malaysia have adopted intellectual capital management. Thus, this exploratory study seeks to examine some of the issues relating to intellectual capital management in Malaysia.

2. Intellectual Capital

The interest in Intellectual capital as a business management tool is seemingly in its embryonic stage of development (Juma and Paine, 2004; Bontis, 2001). For business practitioners, the first acknowledgement of intellectual capital came with Skandia’s release of the world’s first intellectual capital annual report in 1995 (Edvinsson and Malone, 1997). Among academics, intellectual capital has been researched for a slightly longer period, and traceable to ideas and studies on social and human capital (Leana and Van Buren, 1999).

Since the beginning of intellectual capital research in the early 1980s, several definitions of intellectual capital have emerged (Itami 1987, Brooking 1996, and Stewart 1999). Itami defines intellectual capital to include particular technology, customer information, brand name, reputation and corporate culture, which is invaluable to firm’s competitive power. Stewart views intellectual capital as knowledge, information, intellectual property and experience that can be used to create wealth. Brooking defines intellectual capital as the combined intangible assets which enable the company to function and sees an enterprise as the sum of its tangible assets and intangible assets as expressed in the following formula:

Enterprise = Tangible Assets + Intellectual Capital

Taking it further, Edvinsson (1997) equates intellectual capital with the sum of human capital, structural capital and customer capital, i.e.

Intellectual Capital = Human Capital + Structural Capital + Customer Capital

From a resource-based perspective, firms gain competitive advantage and superior performance through the acquisition, holding and subsequent use of strategic assets (Wernerfelt, 1984). A firm is expected to be able to strike an optimal balance between the employments of its tangible resources i.e. physical and financial resources; and intangible resources like people, technology and relationships.

The increasing gap between firms' market and book value over the years has drawn further attention to exploring the invisible value omitted from financial statements. Lev (2001) discovered that over the period of 1977 and 2001, the market-to-book value ratios of US Standard and Poors (S&P) 500 corporations increased from slightly over 1 to over 5, implying that about 80 percent of corporate market value has not been reflected in financial reporting. He concluded that the limitation of financial statements in explaining firm's value underlines the fact that the source of economic value is no longer the production of material goods, but the creation of intellectual capital.

3. Dimensions of Intellectual Capital

As deliberated above, intellectual capital researchers have proposed numerous definitions of intellectual capital. While Stewart (1997) defines intellectual capital in the general term as intellectual material i.e. knowledge information, intellectual property and experience that can be used to create wealth, Lynn (1998) defines intellectual capital as the wealth of ideas and the ability to innovate, both being factors that determine the future of the organization. From business practitioner's perspective, Edvinsson (1997) explains intellectual capital as applied experience, organizational technology, customer relationships and professional skills that provide a firm with a competitive advantage.

There are several indicators specified by various researchers in their attempt to measure intellectual capital. For example, Edvinsson and Malone (1997) used the 'Navigator' model that focus on financial, customer, process, renewal and development, and human capital to measure intellectual capital. According to this model, the hidden factors of human and structural capital when added together comprise intellectual capital. For his part, Bontis (1998) conducted an exploratory study that developed measures and models of intellectual capital through survey questionnaires. He used 53 items to measure intellectual capital in which 20 items measure human capital, 16 items measure structural capital and 17 items measure customer capital.

Definitions and conceptualizations of intellectual capital are not significantly different among the researchers. Many intellectual capital models have similar constructs and measures that are merely labelled differently. For instance, human capital (Edvinsson and Malone, 1997) is termed human-centred assets by Brooking (1996) and competence of personnel by Sveiby (1997). Based on the concepts and

variables developed by various researchers, this study conceptualizes intellectual capital into 3 essential components as depicted in Figure 1.

Intellectual Capital	Human Capital	Structural capital	Customer Capital
Essence	Human Intellect	Organizational Routines	Market Relationships
Scope	Internal within employee node	Internal organizational links	External organizational links

(Adapted from Bontis, 1998)

Figure 1: Conceptualization of Intellectual Capital

3.1 Human Capital

According to Roos and Roos (1997), employees generate intellectual capital through their competence, attitude and their intellectual agility. He elaborates that competence includes skills and education, while attitude covers the behavioural component of the employees work. In addition, intellectual agility enables an employee to change practices and to think of innovative solutions to problems. For Hudson (1993), human capital is a combination of genetic inheritance, education, experience and attitudes about life and business. Lynn (1998) measures human capital as the raw intelligence, skills and expertise of the human actors in the organizations, while Bontis (1998) defines human capital as the organization's members' individual tacit knowledge. Tacit knowledge refers to skills that exist inside the employees but cannot be articulated, that are necessary for them to perform their functions. From the resource-based perspective, Wright (1994), as cited by Bontis (1998), argues that human capital helps sustain competitive advantage when employees "add value, being unique and rare, imperfectly imitable and not substitutable with another resource by competing firms".

3.2 Structural Capital

Bollen, Vergauwen and Schnieders (2005) identify structural capital as mechanisms and structures, which help to support employees. It comprises all non-human storehouses of knowledge in organizations including the databases, organizational charts, process manuals, strategies, routines and anything whose value to the company is higher than its material value. Roos and Roos (1997) describe structural capital as what remains in the company when employees go home for the night. In contrast to human capital, structural capital can be owned by the organization and therefore can be traded. Bontis (1998) contends that the structural capital deals with the mechanisms and structures of the organization that can help support employees in their quest for optimum intellectual performance and therefore overall business performance. According to him, an individual can have a high level of intellect, but if the organization has poor systems and procedures by which to track his or her actions, the overall intellectual capital will not reach its fullest potential. An organization with strong structural capital will have a supportive culture that allows

individual to try things, to fail, to learn and to try again. If the culture unduly penalizes failure, its success will be minimal.

3.3 Customer Capital

Customer capital is defined as the knowledge embedded in the marketing channels and customer relationships that an organization develops through the course of conducting business (Bontis, 1998). In a more recent study, Bontis (2001) have broadened the category to include relational capital which in effect encompasses the knowledge embedded in all the relationships an organization develops whether it involves the customers, competitors, suppliers, trade associations or the government. Yet another researcher, Belkaoui (2003) refers to customer capital as the firms' value of its franchise, its ongoing relationships with the people or organizations to which it sells like market share, customer retention and defection rates; and per customer profitability.

4. Research Methods

The study is premised on the practice of intellectual capital management as conceptualized and described in Fig.1 and several pertinent characteristics of business firms. The data for this study is obtained through survey questionnaire. Cross-sectional data of respondents from Malaysian services and manufacturing industries is subjected to quantitative analysis to describe the practice of intellectual capital management. The sampling frame for this study was drawn from 449 organizations listed on the main board of Bursa Malaysia (Malaysian Bourse) under Consumer Products, Industrial Products, Trading/Services, Finance and Technology counters. Sample organizations were selected based on available information of contact persons and e-mail/mail addresses (of organizations' top management team) obtained from the companies' annual reports in Bursa Malaysia. Subsequently, 200 survey questionnaires were mailed/e-mailed to respondents whose positions ranged from General Managers to Managing Directors.

This study formulates several tentative Hypothesis that purport to describe the differences in the degree to which Malaysian firms in different industries, types and sizes acknowledge and adopt intellectual capital in their business models. Theoretically, intellectual capital is described as the difference between market value and book value of a firm (Edvinsson and Malone, 1997). Thus, it may be expected that the higher the gap between market and book value the higher the degree of adoption of intellectual capital management. Marr (2005) states that intellectual capital will increasingly become a major component of the total capital of firms as firms move from manufacturing and industrial activities toward service and more knowledge-based activities. A study done by Juma and Paine (2004) found that organizational size plays a large role in influencing the level of intellectual capital in an organization.

Specific characteristics of Malaysian firms merit a closer look at possible relationships. The proliferation of foreign firms of different national origins in Malaysia justifies an assessment as to the possible differences in the practice of intellectual

capital management between local and foreign-affiliated firms, and between foreign firms of different national origins. In the Malaysian context too, there is an acute interest to discover potential differences between local firms of different types of ownership. Specifically, the answer may be sought as to the differences between government-led companies and the private firms, as well as between Bumiputra-owned (generally Malay-owned) and non-Bumiputra companies.

Several hypotheses can thus be formulated:

Hypothesis 1: The degree of adoption of intellectual capital management is higher among firms in services industry than firms in manufacturing industry

Hypothesis 2: The degree of adoption of intellectual capital management is higher among foreign-affiliated firms than local firms

Hypothesis 3: Among local firms, there are significant differences in the degree of adoption of intellectual capital management between firms of different types of ownership

Hypothesis 4: Among foreign-affiliated firms, there are significant differences in the degree of adoption of intellectual capital management between firms of different national origins

Hypothesis 5: There are significant differences in the degree of adoption of intellectual capital management between firms of different sizes

Hypothesis 6: The higher the gap between book value and market value, the higher the degree of adoption of intellectual capital management

This study adopts the instrument developed by Bontis (1998). The multi-item instrument uses 5-point Likert scale and comprises statements that measure the 3 dimensions of intellectual capital: Human Capital (HC), Structural Capital (SC) and Customer Capital (CC). Altogether, there are 52 statements (19 to measure HC, 16 to measure SC and 17 to measure CC). These measures have been proven to be valid and reliable. Nevertheless, some of the statements have been modified to suit the Malaysian business environment and culture.

5. Results

5.1 Sample Characteristics and Measure of Scale Reliabilities

From a total of 200 questionnaires sent to sample organizations, data from 62 respondents were usable. The respondents of the survey were those whose positions range from Manager to Executive Director with 3 to 31 years of working experience in the responding organizations. The profiles of the responding organizations are shown in Table 1. Table 2 summarizes scale items and measure of scale reliabilities.

Table 1: Profiles of Responding Organizations

	Frequency	Percent
Industry		
Services	39	62.9
Manufacturing	23	37.1
Total	62	100.0
Organization Type		
Local-based company:		
Bumiputra-controlled	17	27.4
Non-bumiputra controlled	20	32.2
Government-linked company	15	24.2
Others	0	0.0
Sub-Total	52	83.8
Foreign-affiliated company:		
Japanese	4	6.5
European	4	6.5
USA	0	0.0
Others	2	3.2
Sub-Total	10	16.2
Total	62	100.0
Size: Book Value		
RM60 million - RM250 million	21	33.9
RM251 million – RM500 million	10	16.1
RM501 million – RM1,000 million	24	38.7
> RM1,000 million	7	11.3
Total	62	100.0
Market Value minus Book Value		
Positive Gap	56	90.3
Negative Gap	6	9.7
Total	62	100.0

Table 2: Summary of Items and Measure of Reliabilities

Variables	No. of Items	Cronbach's Alpha
Human Capital	19	0.9113
Structural Capital	16	0.8693
Customer Capital	17	0.9118

5.2 Organizational Profiles and Intellectual Capital

Table 3 shows the mean scores and the standard deviations for human capital, structural capital, and customer capital.

Table 3: Mean Score and Standard Deviation of Variables

Variables	Mean	Standard Deviation
Human Capital	3.71	0.40
Structural Capital	3.62	0.40
Customer Capital	3.83	0.39
Intellectual Capital	3.72	0.40

One-way ANOVA tests performed to analyze differences in the degree to which firms in different categories acknowledge and adopt intellectual capital management in their business models, give the results as summarised in Table 4.

5.2.1 Industry and Intellectual Capital

The test result shows that there are no significant differences in the mean scores for each category of independent variables (human capital, structural capital and customer capital) between the 2 types of industries; services and manufacturing industries.

5.2.2. Organization Type and Intellectual Capital

There are no significant differences in the mean scores for each category of independent variables (human capital, structural capital and customer capital) between local-based companies and foreign-affiliated companies.

However, comparison among different categories of local-based companies indicates significant differences in the mean scores of the 3 components of

intellectual capital. It shows a statistical difference in the distribution of intellectual capital adoption in the organizations business models across Bumiputra-controlled, non-Bumiputra controlled and government-linked companies. Intellectual capital is perceived to be highest in the non-Bumiputra controlled companies. They have the highest mean score in the human capital (3.987), structural capital (3.863) and customer capital (3.959) compared to Bumiputra-controlled companies and government-linked companies.

Among different categories of foreign-affiliated companies, there is statistical difference between Japanese-affiliated, European-affiliated and other foreign-affiliated companies. Human capital was highest in the European-affiliated companies (3.763) compared to Japanese-affiliated (3.079) and others (3.637). However, structural and customer capital were highest in other foreign affiliated-companies (in this case were Singapore-affiliated companies (3.875 and 4.059 respectively).

5.2.3 Organization Size and Intellectual Capital

The one-way ANOVA result shows that there are no significant differences in the mean scores of human capital, structural capital and customer capital variables among organizations of different sizes as measured by book-value.

5.2.4 Market - Book Value Gap and Intellectual Capital

The test result shows that there are significant differences in the mean scores of the 3 variables (human capital, structural capital and customer capital) between the companies with positive gap (of market value and book value) and companies with negative gap. Based on the mean scores, intellectual capital was higher in companies with positive gap of market value and book value.

Table 4: Adoption of Intellectual Capital by Organization Profiles

Variables	(1) Industry Type						F-value	p-value
	Services		Manufacturing					
	Mean	Std Dev	Mean	Std Dev				
Human Capital	3.780	.296	3.588	.517			3.474	.067
Structural Capital	3.660	.379	3.541	.421			1.325	.254
Customer Capital	3.815	.332	3.862	.479			.212	.647
Variables	(2) Organization Type						F-value	p-value
	Local-based		Foreign-affiliated					
	Mean	Std Dev	Mean	Std Dev				
Human Capital	3.752	.391	3.484	.384			3.950	.054
Structural Capital	3.635	.414	3.519	.280			.715	.401
Customer Capital	3.822	.422	3.882	.130			.196	.659
Variables	(2a) Categories within Local-based Companies						F-value	p-value
	Bumiputra		Non-Bumiputra		Government-linked			
	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev		
Human Capital	3.789	.200	3.987	.278	3.414	.484	10.947**	.000
Structural Capital	3.728	.436	3.863	.381	3.358	.308	5.571**	.007
Customer Capital	3.827	.405	3.959	.411	3.522	.307	6.566**	.003
	** Significant at p<0.05							

Variables	(2b) Categories within Foreign-affiliated Companies								F-value	p-value		
	Japanese		European		Others							
	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev						
Human Capital	3.079	.273	3.763	.053	3.637	.000			16.483**	.002		
Structural Capital	3.219	.036	3.641	.094	3.875	.000			77.835**	.000		
Customer Capital	3.794	.034	3.882	.136	4.059	.000			5.559**	.036		
Variables	(3) Size: Book Value								F-value	p-value		
	RM60m - RM250m		RM251m - RM500m		RM501m - RM1,000m		>RM1,000m					
	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev				
Human Capital	3.554	.434	3.790	.532	3.782	.429	3.832	.255	2.018	.104		
Structural Capital	3.477	.367	3.766	.366	3.682	.252	3.742	.473	1.757	.150		
Customer Capital	3.717	.370	4.147	.442	3.770	.225	3.886	.426	2.165	.084		
Variables	(4) Market Value minus Book Value								F-value	p-value		
	Positive Gap				Negative Gap							
	Mean		Std Dev		Mean		Std Dev					
Human Capital	3.741		.419		3.542		.227		7.114**	.004		
Structural Capital	3.679		.386		3.288		.270		9.325**	.003		
Customer Capital	3.899		.374		3.482		.269		11.227**	.001		
** Significant at p<0.05												

6. Discussion of Results

This study provides one of the initial empirical tests in Malaysia involving public listed companies in services and manufacturing on certain key issues relating to intellectual capital. This study shows that on average Malaysian firms employ elements of intellectual capital in their business model. Contrary to some evidences, there are no significant differences in the degree to which firms of different industries (manufacturing and service industries), types (local-based companies and foreign-affiliated companies) and sizes (based on book value) acknowledge and adopt intellectual capital management in their business model. However, there are significant differences among sub-categories of local-based companies. Non-

Bumiputra controlled companies are found to have highest adoption of intellectual capital followed by Bumiputra-controlled and government-linked companies. For foreign-affiliated companies, European-affiliated companies tend to adopt higher human capital and Singapore-affiliated companies tend to adopt higher structural and customer capital than their Japanese counterparts. The results also show that companies with positive gap, as opposed to those with negative gap, tend to be higher in the degree of adoption of intellectual capital. Generally, the findings of this study suggest that business firms in Malaysia do practice intellectual capital management. This is particularly encouraging in the light of Malaysian government's effort to build intellectual capital in Malaysia.

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