

# Working Paper Series

## **Intellectual Capital: An Evolutionary Change in Management Accounting Practices**

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**INTELLECTUAL CAPITAL: AN EVOLUTIONARY  
CHANGE IN MANAGEMENT ACCOUNTING  
PRACTICES**

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**ABSTRACT**

It is widely recognised that intellectual capital (IC) - whether in the form of knowledge, experience, professional skill, good relationships, or technological capacity - is a major source of corporate competitive advantage. Whilst the literature places considerable growing attention on the valuation, measurement and reporting of IC for external reporting purposes, far less attention has been given to the implications for managerial accounting.

This paper examines whether the degree and form of IC possessed within firms influences management accounting practice. We explore whether firms investing heavily in IC are more likely to emphasize non-financial measures and adopt a non-accounting style, focusing more on the strategic, and less on the financial, issues. We also examine whether such firms are better able to respond to unanticipated economic and market changes and achieve higher performance levels.

The paper reports the preliminary results of a study conducted through survey and interviews with both accounting and non-accounting executives in over 100 large companies covering both high and low levels of IC. The study explored both the role of management accounting information and that of the management accountant.

Preliminary results suggest some evolution in management accounting practices for firms investing heavily in IC. This is observed in performance measurement and use of financial and non-financial measures, emphasis on planning and control, budgetary style, strategic appraisal of investments, risk management, and performance expectation. These findings are discussed and further explored through findings from interviews with finance managers in some of the firms analysed.

**Keywords:** Intellectual Capital; Knowledge; Management Accounting; Financial and Non-financial Performance Measurement; Budgeting; Strategic Capital Investment Appraisal; Risk Management.

**I INTRODUCTION**

Knowledge and information are prime commodities in today's 'knowledge-economy' where economic enterprises are increasingly knowledge-based and technological driven. Knowledge firms have a large proportion of their investment in intangible assets and this poses a real challenge both for financial and managerial accounting that traditionally have not adequately reflected the investment and performance of intangibles in financial statements.

Increasingly, however, it is being recognised that intangible assets and intellectual capital are the keys to attaining competitive advantage for the knowledge firms (Segelod, 1998). Knowledge-based assets are the foundation for success in the 21st century. Wiig (1997) argues that knowledge and intellectual capital (IC) play a fundamental role within modern enterprises. Many leading organisations, such as Skandia Insurance and Ernst &Young, have successfully managed knowledge and intellectual capital.

Klein and Prusak (1994) define IC as "packaged useful knowledge". Sullivan (2000) suggests that IC basically constitutes knowledge, lore, ideas and innovations. Two major components of IC are human capital and intellectual assets. A clear distinction between these two forms relates to ownership - human capital cannot be owned by companies. However, firms can transform innovations produced through human capital into intellectual assets to which they have rights of ownership.

The IC literature in accounting mainly addresses external reporting (e.g. Bukh *et al.*, 2001; Guthrie, 2000; and Mouritsen *et al.*, 2001). Roslender and Fincham (2001) observe that there is very little academic literature on accounting for IC, while the practitioner oriented literature has become repetitive. This paper links IC with strategic management accounting (SMA). It explores whether, and if so, how firms with high levels of IC have developed their management accounting practices to address the issues that accounting for IC promotes. There are very few articles written on IC in relation to internal reporting and management accounting practices.

This paper examines whether the degree and form of IC possessed within firms influences management accounting practice. We offer preliminary findings on whether firms investing heavily in IC are more likely to emphasize non-financial measures and adopt a non-accounting style, focusing more on the strategic, and less on the financial, issues. We also examine whether such firms are better able to respond to unanticipated economic and market changes and achieve higher performance levels.

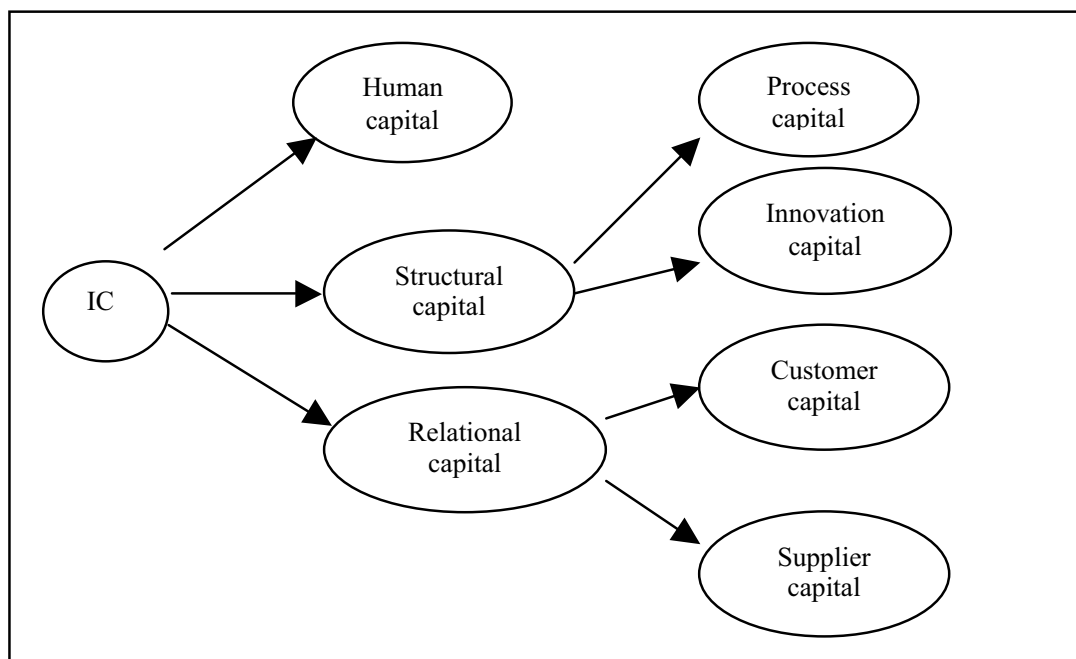
The next section of this paper examines the relevant literature. We then describe the research method and data before analysing and discussing results.

**II LITERATURE REVIEW**

**(A) Intellectual Capital (IC)**

While earlier writers may not agree on the precise definition and shape of IC, there is broad

**TABLE I –DIVISION OF IC**



consensus that it contains human capital, structural capital and relational capital (Bontis, 1998; Edvinsson and Malone, 1997; and Edvinsson and Sullivan, 1996; Lynn, 1998; Roos *et. al.*, 1997; and Stewart, 1991, 1997). Human capital captures the knowledge, professional skill and experience, and creativity of employees. Structural capital consists of innovation capital (intellectual assets such as patents) and process capital (organisational procedures and processes). Relational capital captures the knowledge of market channels, customer and supplier relationships, and governmental or industry networks. Figure I illustrates this.

These elements are summed up in the following definition: "IC is the possession of knowledge and experience, professional knowledge and skill, good relationships, and technological capacities, which when applied will give organisations competitive advantage" (CIMA, 2001)

According to Edvinsson and Sullivan (1996), knowledge firms derive their profits from innovation and knowledge-intensive services. Such firms we term high IC firms. In contrast, low IC firms do not create and deploy knowledge intensively and value creation does not rely heavily on superior knowledge, structures and relationships.

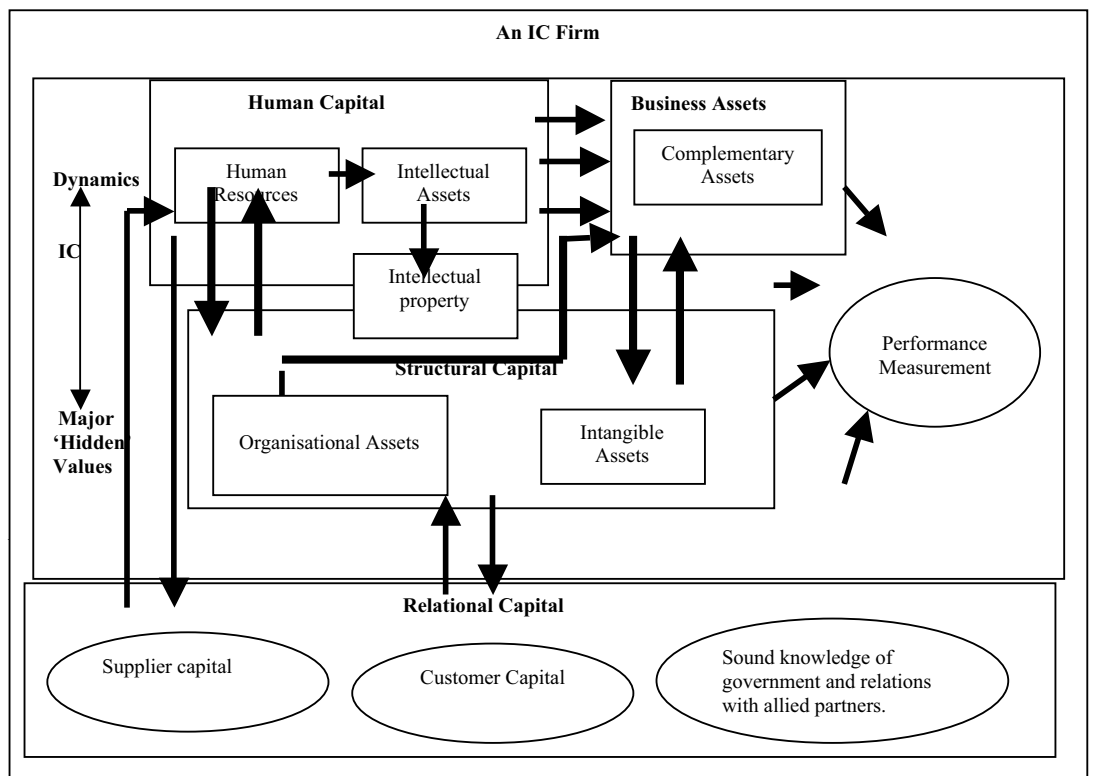
Intellectual capital management (ICM) is defined as the direction of the value-driven transformation

of human and relational capital into the structural capital of the organisation (Lynn, 1998). Corporate processes (e.g. recruitment, training and compensation) help foster creativity and innovation. Together with appropriate technology and structural capital they create and share organisational knowledge which, when exploited and applied to external knowledge and relational capital produces corporate competitive advantage.

The outputs of knowledge management (KM) are innovations or intellectual assets. Intellectual assets such as patents and trademarks are normally legalised in order to obtain legal, propriety rights upon them, producing intellectual property. Together with structural capital (technology, procedures, processes, etc.), tangible assets and relational capital they are managed to create profitable new products and services. ICM therefore converts IC into intellectual assets, which, when commercialised increases corporate value (Roos *et al.*, 1997; Edvinsson and Malone, 1997; Edvinsson and Sullivan, 1996). Figure II illustrates a possible model of ICM.

It is unclear just what role management accounting plays in relation to ICM in high IC companies. It could be argued that accountants in such firms should adopt a strategic management accounting (SMA) approach and focus on the evaluation, appraisal, and measurement of IC to avoid neglecting the

TABLE II – MODEL OF ICM



organization's most valuable resources (Tayles et al., 2002). Relevant SMA techniques for IC firms are likely to be the Balance Scorecard (BSC), Economic Value Added (EVA), activity-based costing (ABC), and value-based management (VBM) (Otley, 2001).

As organizations adapt their management strategies and practices to reflect the growing knowledge-based economy, so management accounting practices should evolve, particularly in such areas as performance measurement, budgeting, and capital investment appraisal. In the rest of this section we examine the main management accounting practices and suggest how High IC firms are expected to develop such practices.

### **(B) Performance Measurement**

Simons (1990) observes that performance measurement is tracking the implementation of business strategy by comparing actual results against strategic goals and objectives. Neely (1998) suggests that performance measurement "is the process of quantifying past action". Strategy is a pattern of resource allocation that enables a firm to maintain or improve performance that creates 'fitness' among a company's activities. Performance must be measured in order to analyse strategies, as performance is a result of an activity (Porter and Millar, 1985). Atkinson *et al.* (1995) regard performance measurement as the most important, yet most misunderstood and most difficult task in management accounting.

Traditional performance measurement employs financial techniques (Usoff et al., 2002) such as Return on Assets and Return on Capital Employed. Such measures have been criticised for being backward looking (Bourne *et al.*, 2000), unable to measure intangible resources (Amir and Lev, 1996) and not suitable for assessing performance of investments in new technologies and markets which firms require to compete successfully in global markets (Eccles, 1991).

Recent years have seen a move towards accounting-based financial measures, such as Economic Value Added (EVA) which is more closely linked to shareholder value. O'Hanlon and Peasnell (1998) note that EVA is a variant of residual income developed to promote value-maximizing behaviour in corporate managers. It is an accounting-based performance measure, which yields the same discounted present values as free cash flow, thereby retaining the focus of accounting profit on the matching of costs and

revenues without losing value-relevance. Value relevance is achieved by the numerous (up to 120) adjustments to conventional financial reports to reflect such hidden assets such as intangibles and long-term investments. There is a high degree of uncertainty in intangibles and long-term investments, such as capitalisation and amortisation of R&D, market building, restructuring charges, and other strategic investments with deferred pay off patterns (Barsky and Bremser, 1999; Simons, 1990). EVA has been advocated as an appropriate IC performance measure (Bontis *et al.*, 1998).

In the early 1990s, balanced, multi-dimensional performance measurement models were developed, to overcome the weaknesses of financial measures (Bourne *et al.*, 2000). Such models place greater focus on intangible resources (Amir and Lev, 1996) such as key customers, internal processes and learning, (Simons, 1990). Commonly used models include Balanced Scorecard (Kaplan and Norton, 1996; Lipe and Salterio, 2000), Intangible Assets Monitor, and Skandia Navigator (Sveiby, 1997). For example, the Balanced Scorecard (BSC) considers relational capital (customer perspective), structural capital (innovation, learning, and internal perspectives) and the impact of IC on shareholder goals (financial perspective).

The above discussion on performance measurement leads us to suggest that firms with relatively high IC are more likely to employ:

1. Non-financial measures,
2. Scorecard-type approaches involving balanced, multi-dimensional measurement.
3. EVA-type approaches linked to shareholder value and requiring recognition of the intangibles within the asset base.

### **(C) Budgeting**

Most organisations employ budgets as integral components of their management control systems (Webb, 2002). Armstrong *et al.* (1996) found that almost 70 per cent of responding companies use budgetary control. Van der Stede (2000) notes that accounting-based budgetary controls are an integral part of the management control system in profit organisations.

Hopwood (1973) identified three management styles for evaluating performance:

- A Budget Constrained Style. Evaluation of performance is based on the ability of the

manager to continually meet the budget on short-term basis.

- A Profit Conscious Style. Evaluation of performance is based on the ability of the manager to increase the general unit effectiveness in terms of the long-term objectives of the organisation.
- A Non-accounting Style. Evaluation of performance is based largely on non-accounting information; budgeting plays a relatively unimportant part in a superior's evaluation of performance.

Fanning (2000) suggests that the Non-accounting Style is more appropriate for high IC firms because budgeting tends to focus on short-term financial inputs and outputs.

There is growing recognition of the limitations of budgeting (e.g. Bunce et al. (1995), Fanning (2000), Hope and Fraser (2001), Jensen (2001), Stewart (1990), and Wallander (1999). Suggestions for improvement include approaches such as zero-based budgeting, priority-based budgeting, activity-based budgeting and regular forecasting (Fanning, 2000). However, they can be bureaucratic, internally focused and time consuming. Budgeting has been described as 'out of sync' with the information age (Hope and Fraser, 1997) and Knowledge firms may need to reduce/eliminate the emphasis on conventional budgeting (Hope and Fraser, 1997 and 1999; Stewart, 1990; Wallander, 1999). Some high IC firms (such as Svenska Handelsbanka, the largest commercial bank in Sweden) claim to have benefited from this reduced emphasis.

The 'Beyond Budgeting' model, based on enterprise, innovation, and empowerment, is offered as more relevant to the 'information age' (Fanning, 2000). This model involves separating target setting from financial planning and more frequent financial forecasting.

High IC firms are therefore more likely to:

1. Adopt a non-accounting evaluation style, and
2. Place less reliance on budgeting in both its traditional and 'zero-base' forms, preferring more frequent forecasting, and separate target setting.

#### **(D) Capital Investment Appraisal**

While the capital budgeting literature over the past twenty years has focused on sophisticated financial appraisal approaches, corporate reality suggests increasing importance for managers in considering the strategic benefits of long-term

assets. NPV techniques are complemented by a broader strategic cost management accounting approach such as value chain analyses, cost driver analysis, and competitive advantage analysis (Carr and Tomkins, 1996).

Carr and Tomkins (1996) found that companies pay less attention to traditional capital budgeting techniques, while others suggest that traditional appraisal techniques are no longer appropriate for intangible investments given their non-financial benefits and cost complexity. (Irani *et al.*, 1998). Mouck (2000) argues that "The traditional capital budgeting model is virtually useless for the high-tech, knowledge-based, increasing returns sectors of the economy.....". Increasingly, firms invest less in tangible assets, and more in R&D, training, marketing, software, and other intangibles. These are hard to justify using conventional capital budgeting tools (Irani *et al.*, 1998).

The growing literature on real options; (Neil and Hickey, 2001; Seth and Sung, 2001) consider the value of option-like features within capital investment decisions. Of particular relevance to this study is the strategic or follow-on option. High IC firms that have invested heavily in innovation will be in a better position to exploit future opportunities, as yet unidentified. These strategic options would include such areas as entering new markets, development of follow-on products, and development of brand extension. Real options valuation improves the traditional capital budgeting approach by providing a better evaluation of strategic investments.

From our review of capital budgeting, we propose that companies with relatively high IC are more likely to:

1. Rely more heavily on strategic approaches to capital budgeting,
2. Accept projects with negative net present values because intangible investment benefits are hard to quantify, and
3. Use a real options approach in investment analysis.

#### **(E) Risk Management and Performance**

Risk management is the process of analysing exposure to risk and determining how best to handle such exposure. Risks can be minimised or avoided through appropriate risk management practices. We argue that firms with high levels of IC - particularly in the form of creativity, intellectual assets, and relational capital - are better positioned to be able to withstand, and

even exploit, the effects of unanticipated changes in markets and economies.

IC can have a significant impact on value creation and the value of the firm. But what happens when economic conditions deteriorate and stock markets fall? Can IC help management cope with profitability and market uncertainties? We argue that firms with high levels of human, structural, and relational capital have the protection (e.g. patents, brands, and customer relationships), flexibility, and inventiveness that should enable them to better withstand unanticipated economic downturn.

We also argue that the converse applies: High IC firms that adopt appropriate management control systems are more likely to perform highly in terms of industry leadership, competitiveness, and new product development. Superior performance on these dimensions should in the longer term be reflected in financial accounting and stock market performance measures.

From the above we propose that companies with relatively high IC:

1. Are better able to response to unanticipated economic and market change, and
2. Outperform low IC firms.

**III RESEARCH METHODOLOGY**

The research design for this paper is shown in Figure III. We seek to examine how management accounting practices found in large Malaysian

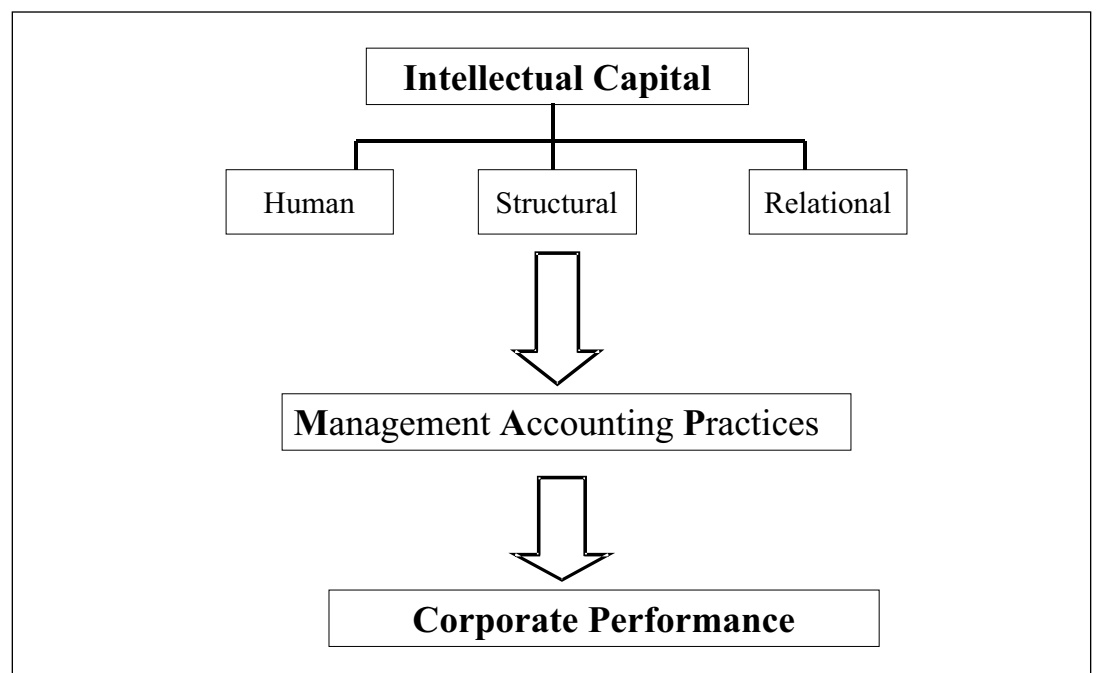
firms vary with the level of IC and its mix, in terms of human, structural, and relational capital. We then ask whether this has any impact on corporate performance.

The nature of the study is both exploratory and descriptive. Most prior research on IC, has applied questionnaire surveys only for data collection (e.g. Bontis, 1998; Dooley, 2000; Lovero, 2000; Reeds 2000; Usoff *et al.*, 2002), this study uses both semi-structured interviews and a questionnaire.

The research was conducted in Malaysia. The companies were randomly selected from Kuala Lumpur Stock Exchange (KLSE) lists, drawn from four broad sectors, where IC is expected to be beneficial- technology, consumer products, trading and services, and finance sectors.

Data was collected, from March to August 2003, through survey and interviews with both accounting and non-accounting executives. Six companies in Kuala Lumpur , Malaysia agreed to have their senior managers interviewed. They were a software and telecommunication company, two banks - one conventional and the other Islamic, a manufacturing company, a broadcasting company, and an Islamic insurance company. Eighteen interviews (i.e. three persons from each of the six companies) were conducted. Interviews were conducted with accountants, human resource managers, and marketing managers. These interviews provided valuable insights that could not be achieved through postal survey plus validation of the questions in the postal survey.

**FIGURE 3 – RESEARCH DESIGN**



Survey questionnaires were mailed to accountants or financial managers in selected companies. follow-ups were made through a second mailing and telephone calls. In total, 119 responses were received, a response of 35%.

Drawing on Bontis (1998), Reeds (2000) and Usoff *et al.* (2002), the questionnaire asked respondents to indicate their agreement (on a 1-7 scale) to a range of questions relating to their company's emphasis on IC. Of these, some 25 questions were used to construct variables for human (HIC), structural (SIC), and relational (RIC) capital. The questionnaire then asked respondents to indicate the degree of importance in their organisation (1-7 scale) of a range of management accounting practices in the areas of performance measurement, accounting style, budgetary control, and capital budgeting, drawing on prior work by Eusoff *et al.* (2002), Hopwood (1973), Fanning (2002), Segelod (2000), Irani *et al.* (1998). Finally, the questionnaire raised questions on performance measurement (Bontis, 2000). Comparison with interview finding, tests for reliability, and response bias and analysis of descriptive statistics indicate that the responses used in this study meet the levels of reliability and validity required for meaningful further analysis.

Findings from the survey questionnaires were analysed using Statistical Package for the Social Sciences (SPSS Version 10). Principal Component Analysis was conducted on management accounting and performance

questions to reduce the number of variables tested in the questionnaire to a more manageable and parsimonious set. Factor loading for each item and its corresponding construct was determined. Varimax rotation was used to rotate the factors in order to simplify the columns of the factor matrix.<sup>1</sup> 22 factors were obtained from 76 management accounting practices and business performance items. Spearman-Rho's Rank Correlation was employed to identify associations between variables.

#### IV FINDINGS AND DISCUSSION

Preliminary results from the survey are summarised in this section. Table I reports the descriptive statistics for selected questions relating to IC. From this we observe that while the level and awareness of IC is generally high, although there is a wide dispersion with 'low' and 'high' levels being well represented. The reporting of IC information, both internally and externally, and the measurement of IC within performance measures are less commonly employed and the variation in responses is greater.

Tables 2-5 report associations between the level of IC and management accounting practices. Four IC variables are employed. The first captures respondents' level of agreement to: 'Our organisation possesses a high degree of intellectual capital.' The other constructs are composite variables based on questions relating to human (HIC), structural (SIC), and relational (RIC) capital within the firm.

TABLE I – DESCRIPTIVE IC STATISTICS

	Number	Range	Mean	Standard Deviation
High degree of IC	113	2, 7	5.10	1.356
IC is very important	113	2, 7	5.78	1.067
Human capital (HIC)	119	3.33, 7	5.51	0.818
Structural capital (SIC)	118	2.22, 7	5.01	1.051
Relational capital (RIC)	119	2.43, 7	5.45	0.900
Knowledge is used rather than IC	111	1, 7	5.23	1.584
IC is referred to in strategic decision making	100	1, 7	5.20	1.491
Information of IC is reported internally	101	1, 7	4.58	1.739
Information on IC is published in or with the annual report	93	1, 7	3.43	1.753
Our performance measures capture the IC contribution	102	1, 7	4.48	1.609

<sup>1</sup> Unless the factors obtained were already considered good and relevant (Hair *et al.*, 1998). Alpha values over .6 were deemed to be acceptable for this exploratory study (Hair *et al.*, 1998). Inter-item correlation was also used for reliability testing. A correlation between .2 and .4 was deemed reliable (Palant, 2001). Inter-item correlation was considered whenever the alpha of a factor is lower than .6. Where a proposed scale item cross-loaded on more than one factor, the factor of the highest factor loading was chosen. If an item loaded on the wrong factor, it was dropped. Only items that load on their corresponding factors of 0.512 or greater were retained.



**(A) Financial Performance and other Performance Measures**

Table II considers the main financial performance measures employed by firms. High IC firms are seen to rely more heavily on Profitability as a performance measure than low IC firms. Moreover, Shareholder Value Analysis (SVA) is strongly associated with high levels of human, structural and relational capital, while Economic Value Added is associated with structural capital. Both of these value-based approaches require appropriate recognition of the value of IC to operate effectively. We also observe that Target Profit is associated with a higher emphasis on IC. We conclude from these initial observations that firms investing heavily in IC tend to place greater emphasis on profitability, value-based, and target profit performance measures than firms with little IC investment. The appropriateness of such measures as reliable indicators of performance rests largely on the extent to which they incorporate the costs and benefits of IC.

Table III examines whether firms with higher IC are more likely to reflect this in their management reporting practices. We observe that IC level is strongly associated with having:

- a) financial and non-financial performance measures,
- b) performance measures which capture the IC contribution,
- c) focus more on past performance rather than future success,
- d) financial measures that properly account for corporate value, and
- e) financial measures that provide an incentives for shareholder value .

Interviews with accountants in the six companies found that superiors gave importance to both

financial and non-financial matters in evaluating their performances. Looking at the specific scorecard measurement systems used by the sample firms, we observe that their relevance is strongly associated with the degree of Structural IC in firms. Only the Balanced Scorecard (BSC) approach is associated with all forms of IC. Of the interviews conducted in six companies in Kuala Lumpur, five have started to use BSC.

**(B) Budgeting and Capital Budgeting**

Table IV considers how budget style and approach vary according to the IC emphasis. We find that firms with high IC levels typically place strong emphasis on meeting budget targets, concern for cost, and appraisals linked to budget performance. As expected, concern for quality and improved effectiveness are associated with all three forms of IC. They are also strongly associated with use of regular forecasting, and with Activity-Based Budgeting, particularly where structural IC is high. Interviews in six companies revealed a strong budget emphasis, regardless of level of IC investment.

Table V examines whether the level of IC within firms influences capital budgeting approaches. Where structural IC is important there is some evidence that standard investment appraisal methods (such as accounting rate of return, payback, net present value, and internal rate of return) are more commonly employed. Firms with high human, structural, and relational IC are also more likely to adopt a strategic analysis in assessing projects. Of particular interest is the finding that where structural IC is greater we find that firms are more likely to incorporate the approach to defining and reviewing intangible investments within the capital budgeting procedures. Interviews found that all companies invested in both tangible and intangible assets and their methods of capital investment appraisal were mainly financial.

**TABLE II – CORRELATION OF IC AND IMPORTANCE OF FINANCIAL PERFORMANCE MEASURE**

PERFORMANCE MEASUREMENT	Degree of			
	IC	HIC	SIC	RIC
Importance of:				
Sales	.033	.146	.139	.168*
Profitability	.179*	.266**	.358**	.244**
EVA	.040	.144	.302**	.161
Target profit	.201*	.381**	.341**	.443**
Shareholder value	.120	.357**	.328**	.335**
Other	.044	.148	-.113	-.129

TABLE III – CORRELATION OF IC WITH IMPORTANCE OF MEASURING IC IMPACT

	Degree of IC	HIC	SIC	RIC
Performance measures includes both financial and non-financial measures	.307**	.435**	.485**	.544**
Performance measures capture IC contribution	.355**	.512**	.608**	.502**
Performance measures focus on future success	.110	.096	.276**	.138
Performance measures focus on past performance	.240**	.370**	.409**	.395**
Performance measures focus mainly on financial aspects	-.084	.102	.161*	.082
Financial measures properly account for all ways in which corporate value could be added or lost	.097	.135	.258**	.346**
Financial measures provide management with an explicit incentive structure that creates value for shareholders	.090	.316**	.356**	.439**
<b>Types of non-financial measure:</b>				
Balanced Scorecard	.237*	.325**	.534**	.353**
Intangible asset monitor	.017	.099	.237	.033
Tableau de Bord	.045	.113	.464**	.086
Skandia Navigator	.093	.248	.455**	.147
Performance Prism	.049	.149	.402**	.161
Other	-.354	.069	.383*	.330

TABLE IV – CORRELATION OF IC WITH IMPORTANCE OF BUDGETING STYLE AND APPROACH

	Degree of IC	HIC	SIC	RIC
<b>BUDGET CONTROL STYLE</b>				
Emphasised in organisation	.220*	.315**	.297**	.220*
Importance on ability to meet budget	.277**	.377**	.323**	.303**
Importance on concern with cost	.217*	.323**	.199*	.332**
Importance on ability to increase general effectiveness	.236*	.448**	.431**	.454**
Importance on concern with quality	.223*	.533**	.478**	.501**
Importance on ability to handle subordinate	.146	.417**	.347**	.416**
Importance on effort put into job	.183*	.358**	.392**	.446**
Tendency to manipulate around plans	-.127	-.114	-.052	-.151
Goals and appraisal not linked to budget	-.343**	-.282**	-.337**	-.403**
<b>BUDGET APPROACH</b>				
Zero-based budgeting	-.021	.226*	.225*	.120
Priority-based budgeting	.084	.174	.371**	.296**
Regular forecasting	.146	.427**	.412**	.494**
Activity-based budgeting	.215*	.259**	.382**	.231*
Separates target setting from financial planning	.074	.242**	.158	.24**
Uses rolling forecasts	.013	.276**	.250**	.305**

TABLE V – CORRELATION OF IC WITH IMPORTANCE OF CAPITAL BUDGETING MEASURES

	Degree of IC	HIC	SIC	RIC
<b>Types of financial methods of capital appraisals used:</b>				
ROCE/ARR	.199*	.299**	.249**	.298**
NPV	.226*	.388**	.357**	.211*
IRR	.155	.303**	.310**	.298**
Payback Period	.110	.202*	.283**	.349**
Profitability Index	.021	.112	.194*	.162
Real Option Value	.149	.178	.268*	.023
<b>Control Style:</b>				
Majority of investments are tangible	.152	.103	.202*	.036
Majority of investments are intangible	.470**	.312**	.466**	.212*
Ability of non-financial methods to capture intangible costs and benefits	.103	.090	.209*	.099
Availability of system for defining, requesting, and reviewing intangible investments	.176	.194	.276**	.149
Acceptance of negative NPV	.124	.121	.191*	.142
Usage of strategic analysis	.125	.300**	.370**	.303**

**(C) Corporate Performance**

Where firms have invested heavily in IC such as creative people, powerful brands, strong customer relations, patents, or knowledge bases they should be in a good position to be able to manage unanticipated economic events. We asked respondents to assess the extent to which their organization was affected by economic or stock markets downturns. Table VI shows that firms with high IC levels were better able to cope with such events. Strong association was found between the level of IC and the belief that IC acts a hedge against unanticipated economic change. Equally strong was the association between IC and the belief that staff creativity/innovation ensured long-term survival. This suggests that an important IC benefit enables firms to better manage the economic environment. If this were the case, we would expect to find that high IC firms enjoy lower risk premiums. Macdonald (2000) notes that an innovative breakthrough creates knowledge that will result in totally new solutions to market needs. One advantage of KM is that it gives support to creative management practices that result in new competencies and political and social support because knowledge drives economic growth (Drew 1999).

Our findings suggest that firms that manage their IC are better able to respond to unanticipated economic and market change. Managers interviewed support this argument:

“The business is risky as it depends highly on airtime sale. When there is an economic downturn, airtime sale also falls. The company is a little fortunate as IC hedges against economic uncertainties and ensures its long-term survival. This is because besides airtime it also has movies and documentaries that can be sold in the form of CDs and T.V. programmes to some foreign countries”(broadcasting company).

“Our strong brands also act as a hedge against market economic uncertainties” (manufacturing company)

“In term of risk, the position of the bank is not risky as its brands and quality of service fulfil customers’ needs”

“The bank’s IC (such as its public reputation) will be a hedge against economic change and market uncertainties as well as ensure its long-term survival”.

TABLE VI – ASSOCIATIONS BETWEEN ECONOMIC EXPOSURE AND IC

	Degree of IC possessed	HIC	SIC	RIC
Less affected by fall in stock market	.111	.035	.078	.135
Badly hit by fall in stock market	-.067	.069	-.043	-.191*
Will not over-react to fall in stock market	.114	.123	.104	.237**
IC acts as hedge against unanticipated economic change	.380**	.297**	.544**	.436**
Managers and staff's creativity and innovation ensure long-term survival	.259**	.433**	.424**	.474**

Our final area of examination concerns whether there is evidence suggesting that firms with higher IC tend to achieve higher performance levels. Table VII suggests that this is the case. We find positive association for at least one of the IC variables with industry leadership, future outlook, profit, profit growth, response to competition, successful new products, and overall business performance. It is clear that respondents in high IC firms gave a higher performance rating than respondents in low IC firms. However, at this stage, we have not examined actual performance data (e.g. using secondary data sources). The results are in line with Nonaka and Takeuchi (1995) and other authors, for example, Bontis (1998) and Teese (2000).

#### (D) Association with underlying factors

The foregoing exploratory analysis examined specific management accounting practices. We then reduced the variables to their underlying dimensions through Principle Component Analysis to construct a reduced number of variables for each of the main areas, viz. performance measurement, budget control style, capital budgeting approach, economic exposure management, business performance, and organisation context.

Table VIII summarises the reference to IC in management accounting practices. We observe that high IC firms report IC internally, refer to IC in their strategic decisions, capture IC contribution in their performance measures, and invest mainly in

TABLE VII – ASSOCIATIONS BETWEEN BUSINESS PERFORMANCE AND IC

	Degree of IC possessed	HIC	SIC	RIC
<b>Business Performance:</b>				
Industry leadership	.317**	.237**	.285**	.350**
Future outlook	.319**	.377**	.416**	.442**
Profit	.115	.290**	.224*	.368**
Profit growth	.226*	.263**	.359**	.362**
Sales growth	.154	.212*	.245**	.296**
After-tax return on assets	.091	.143	.186*	.252**
Share prices	.080	.117	.196*	.202*
After-tax return on sales	.127	.129	.199*	.244**
Overall response to competition	.314**	.388**	.414**	.506**
Success rate in new product launches	.232*	.438**	.441**	.486**
Overall business performance and success	.292**	.361**	.445**	.478**

TABLE VIII – CORRELATION OF IC VARIABLES AND MANAGEMENT ACCOUNTING PRACTICES

Importance of:	HIC	SIC	RIC
<i>REFERENCE TO IC IN MANAGEMENT ACCOUNTING PRACTICES</i>			
Internal IC reporting	.360**	.382**	.513**
Reference to IC information in strategic decisions	.364**	.407**	.524**
Performance measures capture IC contribution	.512**	.608**	.502**
Majority of investments are intangible	.312**	.466**	.212*
Inability of financial methods to capture intangible costs and benefits	-.090	-.209*	-.099
Lack of system for defining, requesting, and reviewing intangible investments	-.194	-.276**	-.149

TABLE IX – CORRELATION OF IC VARIABLES AND MANAGEMENT ACCOUNTING PRACTICES

Importance of:	HIC	SIC	RIC	Variables Loaded on Factors
<i>PERFORMANCE MEASUREMENT</i>				
Importance of:				
Value-based financial performance measures	.274**	.387**	.388**	Shareholder value, EVA, Incentive structure base on value creation, provide incentive, accounts for corporate value
Profit and loss accounts-based financial performance measures	.185*	.169*	.159*	Sales, Profitability
Scorecard performance measures	.056	.179*	.041	BSC, Intangible Assets Monitor, Tableau de Bord, Skandia Navigator, Performance Prism
Financial and non-financial measures	.356**	.488**	.402**	Future focus, performance measures include both financial and non-financial aspects
<i>CONTROL STYLE</i>				
Business emphasis	.510**	.453**	.479**	Concern with: cost, general effectiveness, quality, handling subordinates, job effort
Budget emphasis	.069	.053	-.022	Budget emphasis, Ability to meet budget
Forecasting	.313**	.256**	.315**	Separates target setting from financial planning, Rolling forecasts, Regular forecasting
Non-conventional budget	.260**	.329**	.228**	Zero-based budgeting Priority-based budgeting
<i>CAPITAL BUDGETING MEASURES</i>				
Financial measures	.314**	.321**	.257**	NPV, IRR
Acceptance of negative NPVs and use of real options	.085	.160*	-.107	Acceptance of negative NPV in capital investment appraisals, Real options approach

Significance levels: \* = .05, \*\* = .01, \*\*\* = .001

intangible assets. Firms investing more heavily in structural capital are better able to capture the benefits of intangible investments within their evaluation processes, and have systems that define, request, and review intangible investments.

Table IX summarises the association between such variables and the three main forms of IC, indicating the main questions that loaded on to each factor. The findings are broadly consistent with earlier reported results. We see that high IC firms are strongly associated with value-based performance measure and adopt both financial and non-financial measures. However, this does not mean that Profit-based measures are necessarily de-emphasised (particularly among high Human IC firms). Support for scorecard-type measurement models is weak and restricted to high Structural IC firms.

We are able to distinguish between firms with an accounting evaluation style that either emphasised the budget or business, the latter focusing on concerns for effectiveness, quality, cost, handling staff, and job effort. High IC firms are strongly associated with a business focus but not with a budget emphasis. This supports earlier arguments that the typical short-term budgeting focus is not consistent with high IC firms. However, such firms are more likely to use forecasting (Beyond-Budgeting) approaches and non-conventional approaches.

For high SIC firms there is weak support that they more likely to (1) have capital investment systems that capture the costs and benefits of intangibles, (2) use a real options approach, and (3) accept projects where the financial appraisal does not support such action. This again reflects the more

**TABLE X – ASSOCIATION BETWEEN IC AND BUSINESS PERFORMANCE AND CONTEXTUAL VARIABLES**

Importance of:	HIC	SIC	RIC	Variables loading
<i>ECONOMIC EXPOSURE</i>				
Ability to respond to economic uncertainties	.445**	.560**	.490**	Managers' and staff's creativity and innovation ensure firm's long-term survival, IC acts as hedge against unanticipated economic change
Stock market influence	-.049	.030	.180*	Will not be hit badly by fall in the stock market, Will not over-react to fall in stock market
<i>B U S I N E S S</i>				
<i>PERFORMANCE</i>				
Financial performance indicators	.053	.130	.164*	After-tax return on assets, After-tax return on sales, Profit growth, Sales growth, Profit, Share prices
Non-financial performance indicators	.424**	.445**	.494**	Industry leadership, Future outlook, Success rate in new product launches,
Overall business performance and practice	.361**	.445**	.478**	
<b>ORGANISATIONAL CONTEXT</b>				
Centralised	-.170*	-.332**	-.161*	Dominated by rules and paperwork, upper-level management determines everything, front-level managers just implementers
Culture of trust	.599**	.463**	.594**	Culture and atmosphere are supportive, front-line managers have decision-making freedom, High degree of trust is culture

Significance levels: \* = .05, \*\* = .01, \*\*\* = .001

strategic approach adopted by such firms and the fact that many of the benefits are longer-term and hard to quantify.

Table X suggests that high IC firms are better equipped to withstand unanticipated economic change, but only high relational IC firms feel that this is reflected in recent stock market performance.

There is a strongly held perception by respondents that the level of IC is associated with higher levels of overall business performance and non-financial performance measures. However, the relationship is far weaker with regard to perceived recent short-term performance. Finally, high IC is associated with decentralised organisation structures and a culture of trust. These findings warrant further analysis and consideration.

## **V CONCLUSION**

Relatively few surveys have been reported on management accounting for intellectual capital. In this paper, we have examined the question of whether the level and form of intellectual capital within firms influences management accounting practices, ability to respond to future events, and overall business performance. We have offered preliminary findings based on a sample of large Malaysian firms. Preliminary findings suggest that the level of investment in IC is associated with management accounting practices, business performance, and the ability to respond to future events. Further studies should explore the 'fit' between level of IC, appropriate management style, management accounting practices, and organisation context to ascertain whether firms with stronger fit enjoy higher corporate performance levels.

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