Abstrak

Pengaplikasian Modal intelek dalam Amalan Perakaunan Pengurusan

Kata kunci:
Modal intelek, Amalan Perakaunan Pengurusan, Pengukuran prestasi, Belanjawan, Keputusan pelaburan modal, Pengurusan pendedahan ekonomi, Prestasi, Ciri-ciri korporat.

Kajian literatur modal intelek banyak memberikan perhatian kepada penilaian, pengukuran dan pelaporan, tetapi kurang pula perhatian ditumpukan terhadap implikasi modal intelek terhadap perakaunan pengurusan.

Kajian ini memberikan penekanan kepada impak modal intelek terhadap amalan perakaunan pengurusan dan prestasi korporat. Ia termasuklah mengkaji sama ada dan bagaimana darjah dan bentuk modal intelek mempengaruhi amalan perakaunan pengurusan, terutamanya pengukuran prestasi, belanjawan, belanjawan modal dan pengurusan pendedahan ekonomi. Disamping itu, kajian juga meneroka kecenderungan firma yang mempunyai modal intelek yang tinggi dalam mengutamakan pengukur bukan kewangan dan mengadaptasikan gaya strategik yang bukan berunsurkan perakaunan menggantikan isu-isu kewangan. Selain itu, kajian juga meninjau sama ada firma-firma ini boleh memberi maklum balas kepada ekonomi yang tidak dijangka dan perubahan pasaran atau adakah firma-firma ini mempunyai budaya amanah yang tinggi.

Data dikutip melalui tinjauan secara pos ke atas syarikat-syarikat dan enam kajian kes di Malaysia terhadap eksekutif perakaunan dan bukan perakaunan. Analisis data kuantitatif yang menggunakan komponen prinsipal, korelasi dan analisis regresi berganda. Data kajian kes dianalisis berdasarkan kepada cadangan-cadangan yang dibentuk dalam kajian.

Bukti empirikal yang baru ditemui menunjukkan bahawa wujud hubungan antara modal intelek dengan amalan perakaunan pengurusan, budaya amanah yang tinggi dan pengurusan pendedahan ekonomi. Disamping itu, wujud juga hubungan antara modal intelek dengan amalan perakaunan pengurusan dan prestasi firma yang tinggi. Beberapa cadangan turut diajukan untuk kajian seterusnya.

Abstract

Application of Intellectual Capital in Management Accounting Practices

Keywords:
Intellectual Capital, Management Accounting Practice (MAP), Performance Measurement, Budgeting, Capital investment decisions, Economic Exposure Management, Performance, Corporate Characteristics.

Intellectual capital literature devotes considerable growing attention to its valuation, measurement and reporting, but far less attention to its implications for managerial accounting.

This study concerns the impact of IC on management accounting practices (MAP) and corporate performance. It examines whether, and how, the degree and form of IC influences MAP, specifically performance measurement, budgeting, capital budgeting, and economic exposure management. It explores the greater likelihood of firms investing heavily in IC emphasising non-financial measures and adopting a non-accounting style, focusing more on strategic, and less on financial issues. Furthermore, whether they are better able to respond to unanticipated economic and market changes, and whether they have high culture of trust.

Data were collected through a postal survey of companies and six case studies in Malaysia. These included both accounting and non-accounting executives. Quantitative data analysis used principal component, correlation, and multiple regression analyses. Case studies data were analysed based on propositions developed for the study.

New empirical evidence indicates relationships between (1) IC and (a) MAP (b) high culture of trust (c) economic exposure management, (2) IC, MAP, and high firms' performance. Suggestions are also provided for future research.

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CHAPTER 1

OVERVIEW OF RESEARCH

1.1 Introduction

The world now operates in the 'knowledge-economy' where, the prime commodities are knowledge, and information (Roos *et al.,* 1997). Firms are responding by forming knowledge-based and technological driven companies (knowledge firms). Knowledge firms have their assets largely in the form of intangibles and this poses a real challenge for conventional financial accounting methods and investment appraisal approaches. These intangible assets and 'intellectual capital' are the keys to attaining competitive advantage for the knowledge firms (Segelod, 1998).

According to (Wiig, 1997), knowledge and intellectual capital (IC) play a fundamental role within modern enterprises. Many managers agree that knowledge is their firm's most important asset and knowledge-based assets are the foundation of success in the 21st century. Many leading organisations such as Skandia Insurance and Ernst and Young have successfully managed knowledge and intellectual capital. Many conferences on IC management (ICM) and knowledge management (KM) have been held in the Europe and the US since 1996. Nowadays, major consulting firms are providing ICM and KM services.

The IC literature in accounting mainly addresses external reporting (e.g. Guthrie, 2000; Bukh *et al*., 2001; 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 research links IC with management accounting practices (MAPs) and strategic management accounting (SMA). It explores whether, and if so, how firms with high levels of IC have developed their MAPs to address the issues that accounting for IC promotes.

1.2 Problem Statement

The research began with an interest in both management accounting and IC, and thus the link between the two was searched. The study of the literature was a challenging task, as there was no previous research that directly linked the two topics. The accounting literature mostly linked IC and financial reporting. Therefore, literature on other disciplines that covered aspects of management accounting, i.e. internal reporting and strategic decisions, performance measurement, budgeting, and capital investment decisions linked to IC or intangible assets was also examined. There were several very interesting issues revealed which deserved investigation:

1. IC reporting and reference in strategic decisions (Roos *et al*., 1997; Roos, 1998; Petty and Guthrie, 1999; Roslender and Fincham, 2001).
2. Performance measurement (Simon, 1990; Amir and Lev, 1996; Kaplan and Norton, 1996; Sveiby, 1997; Bontis, 1998; Barksy and Bremser, 1999; Bourne *et al*., 2000; Lipe and Salterio, 2000; Usoff *et al*., 2002;
3. Budgeting (Hopwood, 1973; Stewart, 1990; Bunce *et al*., 1995; Wallander, 1999; Fanning, 2000; Hope and Fraser, 2001; Jensen, 2001).
4. Capital investment decisions (Carr and Tomkins, 1996; Irani *et al*., 1998; Mouck, 2000; Neil and Hickey, 2001; Seth and Sung, 2001)
5. Economic exposure management (Saigol, 2002; Wall *et al.,* 2004)
6. Corporate characteristics (Barney, 1986; Hope and Fraser, 1997, 1999; Bontis, 1998; Fanning, 2000)

1.2.1 Issue 1: IC Reporting and Reference in Strategic Decisions

Gordon *et al.* (1978) note that the literature on accounting systems has the tradition of emphasising the inputs and outputs of decision-making, and this shows the importance of the internal reporting system. According to Atkins *et al.* (1995) and Drury (2000), one of the management accountants' roles as 'staff' is to provide information for top management to make strategic decisions. The information provided in the form of internal reporting (the inputs) is a very critical factor contributing to the quality of the strategic decisions to be made (outputs). Traditionally, the internal reports are to help management in planning and control, and the reports contain feedback and control on operating performance. The type of

information is more subjective and judgemental, valid, and relevant, when compared to those of financial accounting.

It is important that firms' internal reports reflect IC investments and performance, as it should aid planning and managerial strategic decisions. According to Edvinsson and Sullivan (1996), knowledge firms derive their profits from innovation and knowledge-intensive services. Such firms are termed 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. According to authors such as Barth (1998), Adriessen and Tissen (2000), Barsky and Marchant (2000), Leadbeater (2000), Litman (2000), and Ratnatunga (2002), as cited by Ratnatunga *et al.* (2004), many global business surveys suggest that managers believe that it is the intangibles, i.e. brands, intellectual property, know-how, and copyrights, that have high influence on their companies' value.

Therefore, the issues raised from the above are: Do high IC firms report their IC value internally and refer to it in strategic decisions?

1.2.2 Issue 2: 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 in 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-maximising 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 hidden assets such as intangibles and long-term investments. There is a high degree of uncertainty in them, such as capitalisation and amortisation of R&D, market building, restructuring charges, and other strategic investments with deferred pay off-patterns (Simons, 1990; Barsky and Bremser, 1999). 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 issue here is: What are the types of performance measurements appropriate for high IC firms?

1.2.3 Issue 3: 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:

1. Budget-constrained style. Evaluation of performance is based on the ability of the manager to continually meet the budget on a short-term basis.
2. 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.
3. 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. Stewart, 1990; Bunce et al., 1995; Wallander, 1999; Fanning, 2000; Hope and Fraser, 2001; Jensen, 2001). Suggestions for improvement include approaches such as zero-based, priority-based, and activity-based budgeting, and regular re-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 (Stewart, 1990; Hope and Fraser, 1997 and 1999; 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.

Therefore the issues put forward here are: What style of evaluation should be adopted by high IC firms, and should these firms employ more frequent forecasting and place less reliance on budgeting in both its traditional and 'zero-based' forms?

1.2.4 Issue 4: Capital Investment Decisions

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. Net present value (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 the review of capital budgeting, the issues found are: Are firms with relatively high IC are more likely to rely more heavily on strategic approaches to capital budgeting, and accept projects with NPV values because intangible investment benefits are hard to quantify? Do the firms also employ a real options approach in investment analysis?

1.2.5 Issue 5: Economic Exposure Management

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. It is argued 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? (Saigol, 2002; Walls *et al*., 2004) It is also argued that firms with high levels of human, structural, and relational IC have the protection (e.g. patents, brands, and customer relationships), flexibility, and inventiveness that should enable them to better withstand unanticipated economic downturns.

It is further argued 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.

The foregoing raises the question: Are companies with high IC value better able to respond to unanticipated economic and market change, and outperform low IC firms?

1.2.6 Issue 6: Corporate Characteristics

Barney (1986), as cited by Bontis (1998), suggests that organisations should have a culture that supports and encourages cooperative innovation, because this would give them competitive advantage. According to Bontis, Barney's discussion on the potential for organisational culture to serve as a source of sustained competitive advantage concludes that firms that have the required culture are able to engage in activities that will modify their culture and generate sustained superior performance. Hope and Fraser (1997, 1999) support this. The authors suggest that firms with high levels of IC should give more freedom to front-line managers to set policies and make

strategic decisions. Thus, the issues raised here are: Should a firm with high levels of IC have a high culture of trust to allow human intellectual capital to flourish? If so, will firms with the appropriate IC, i.e. trust and culture mix achieve superior performance?

Firm size is expected to influence levels of IC. Larger firms are able to invest more heavily in IC, particularly structural IC. Usoff *et al*. (2002) note that large firms have greater IC management because they can afford it. This leads to the question: Does firm size influence levels of IC, and thus, influence firm performance?

1.3 Research Aim

The aim of the research is to explore whether accounting practices vary with levels of IC, and to investigate whether appropriate accounting management accounting practice is associated with different levels of IC, and to investigate whether accounting practice enhances overall firm performance.

1.4 Research Questions

There are four questions addressed by the research:

1. Do firms operate their management accounting practices that are appropriate to their levels of IC?
2. Are firms with high levels of IC better able to withstand economic uncertainties and stock market downturn?
3. Do firms with high levels of IC have appropriate corporate characteristics?
4. Do firms with high levels of IC outperform firms with lower levels of IC?

1.5 Significance of Study

IC is a relatively new field for research. Where research findings can make as significant contribution to new knowledge (Petty and Guthrie, 1999). Since research in IC is still at an early stage, there are still very few previous studies on this topic. Very few of them directly focuses on the impact of IC on management accounting (Bontis 1998, 1999; Dooley, 2000; Reeds, 2000; Lovero, 2001; Mouritsen *et al*.,

2001; Usoff *et al*., 2002; Tayles *et al*., 2002). Therefore, the main contribution of this study lies in its being among the early studies in IC in relation to management accounting practices. In conjunction with that, this study is intended to help enrich the literature in management accounting in particular, and accounting in general.

The study will also contribute some guidelines for practitioners and firms in choosing appropriate management accounting practice and techniques appropriate to the level of IC in a particular firm, in order to gain maximum benefits from their IC. They may also find guidance on what kind of corporate characteristics (size, culture of trust, structure linked to performance measurement) enhance IC's influence on corporate performance.

This study also intends to contribute guidelines for academics, not only in the accounting discipline, but also those in finance and strategic management, in planning syllabus and curriculum for their courses. Besides topics on EVA and the BSC that are already commonly taught, topics, such as Real Options and re-forecasting, and most importantly, IC, should be emphasised.

As suggested by Petty and Guthrie (1999), the early stage of research into IC offers the potential for researchers to make meaningful contributions that are theoretical, methodological, or empirical. In relation to that, this study hopes to contribute empirically and academically. It is also hoped that it will become a source of motivation for more academic and non-academic research in IC.

1.6 Scope and Constraints of Study

This is an exploratory research and encompasses IC, management accounting, and firms' performance. It was carried out in Klang Valley, Malaysia i.e. Kuala Lumpur, and places around it. The scope of the research included impact of IC on management accounting practices, corporate characteristics, and economic exposure management. Under management accounting, the practices examined were performance measurement, budgeting, and capital investment decisions. This is to find out whether firms' practices in theses aspects are appropriate to their levels of IC. A questionnaire survey was the main instrument used to collect the data. Finance

managers were asked to answer the questionnaires on behalf of their companies. Case studies in six companies were also conducted, where upper level managers, each from human resource, marketing, and finance of each company were interviewed. Secondary data from documents, such as internal circulation of employee bulletins and annual reports were also examined to support the interviews.

There are some limitations and constraints to the study. Some of the constraints are (1) the small scope of the research - a broader scope will make a good generalisation, (2) employment of questionnaire survey - heavy reliance on respondents' perceptions and opinions, (3) IC value of companies was determined based on respondents' evaluation – the large number of firms surveyed made it too time consuming to calculate the value by using certain available methods (4) only upper level managers were interviewed in the case studies - interviewing lower level managers and staff might have provided more information as a triangulation, and (5) lack of time and resources - this is the factor for most of the constraints, such as the scope, the use of postal survey, the reason for not using calculated methods for firms' IC value. The above and other constraints are discussed in detail in Chapter 7.

CHAPTER 2

INTELLECTUAL CAPITAL

2.1 Introduction

Intellectual capital (IC) has become very important in this new world of advanced technology in information and communication. IC is particularly significant in knowledge-firms. Petty and Guthrie (2000) note that the importance of IC is emphasised in:

1. The revolution in information technology and the information society,
2. The rising importance of knowledge and the knowledge-based economy,
3. The changing patterns of interpersonal activities and the network society,
4. The emergence of innovation as one of the principal determinant of competitiveness.

This chapter is a review of the meaning of IC, its close relationship with knowledge, valuation, creation, management, and relationship with management accounting.

2.2 Intellectual Capital (IC)

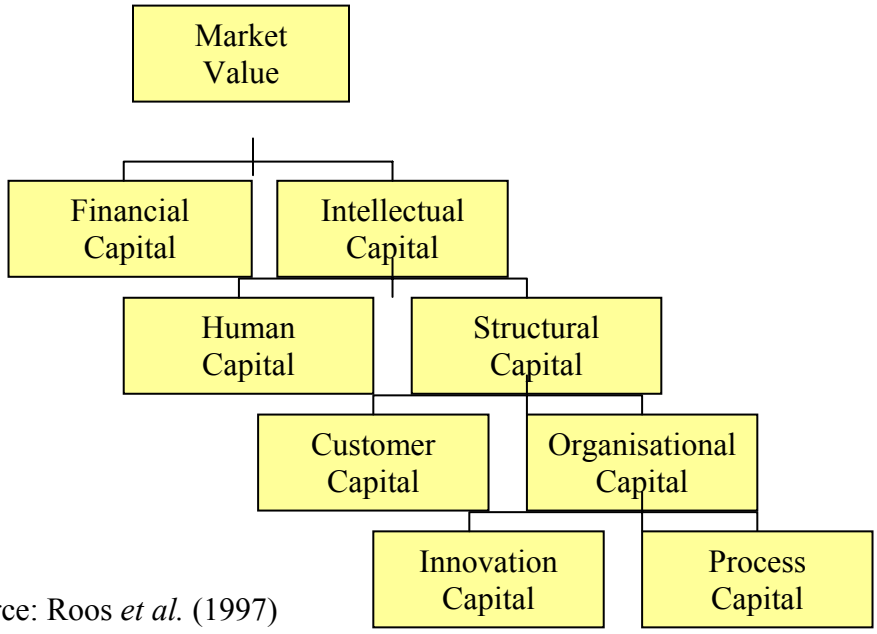
Authors on IC generally subdivide IC into human capital (base round employees who leaves the firm after working hours), organisational capital (procedures, manuals and administrative systems), and customer capital (customer loyalty, product brands, and corporate image). The definition encompasses inventions, ideas, general knowledge, designs, computer programs, data processes, and publications, which are not limited to technological innovations, or to those forms of intellectual property identified by the law (patents, trademarks, trade secrets).

Edvinsson and Sullivan (1996) and Edvinsson and Malone (1997) define IC as knowledge applied to work to create value, in which the authors emphasise the value-creating capacity of IC.

Some human resources create value directly, such as lawyers in legal firms and advise clients on legal issues. On the other hand, other human resources create value rather indirectly, such as programmers in software companies. The programmes become intellectual assets, which are reproduced and sold to customers. The authors define intellectual assets, which is part of structural assets, as "the codified, tangible, or physical descriptions of specific knowledge of which the company can assert ownership rights and that they can readily trade in disembodied form". Intellectual assets are further grouped into three focus areas, which are commercialisable assets (products, processes and services), customer-related assets (relationships, agreements and history), and structure-related assets (plans, procedures and processes) (Edvinnson and Sullivan, 1996).

Furthermore, Edvinsson and Malone (1997), Edvinsson has developed his ideas, and divides IC into human capital and structural capital. Structural capital is further divided into customer capital and organisational capital. Organisational capital consists of innovation capital and process capital. This definition and structure were adopted from a model produced by Skandia, a Scandinavian company that pioneered IC reporting, where Edvinsson was the director of IC (see Figure 2.1).

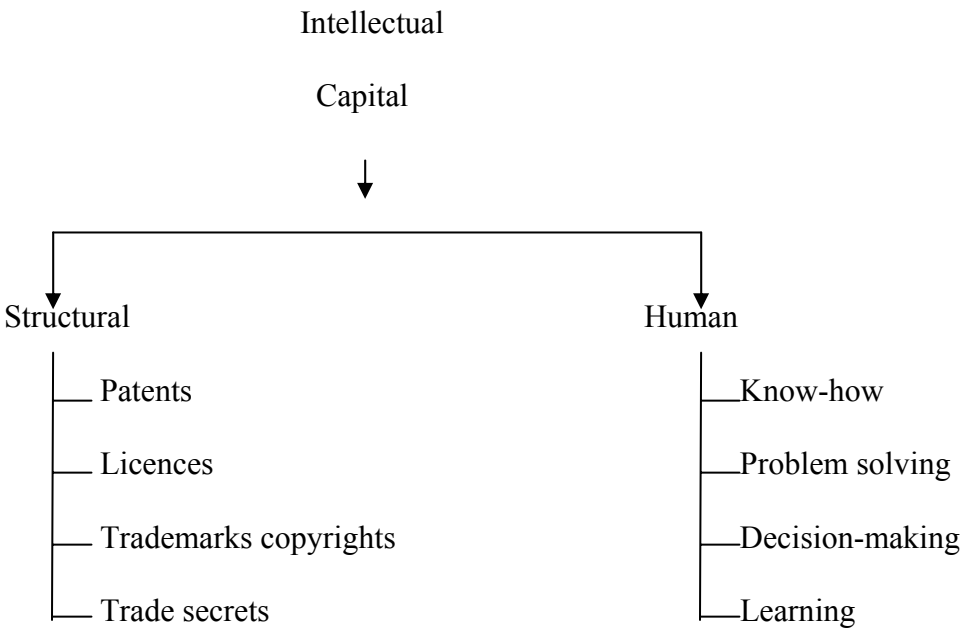
Figure 2.1: Skandia Value Scheme



Source: Roos *et al.* (1997)

Robinson and Kleiner (1996) suggest that some examples of human capital are know-how, problem solving skills, decision-making abilities, and learning. They note that firms that have more of these or have a higher version of these, and use them to create value, will be more highly valued in the marketplace. They also suggest that some examples of structural capital are patents, licences, trademark copyrights, and trade secrets, and these structural capital originate from human capital. Figure 2.2 illustrates the schematic breakdown of IC.

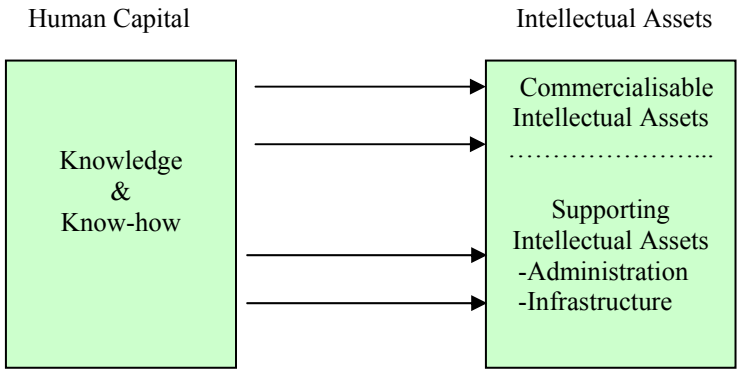
Figure 2.2: Schematic breakdown of IC



Source: Robinson and Kleiner (1996)

Robinson and Kleiner (1996) above view is supported by Sullivan (2000: p. 227), who equates IC to knowledge. He suggests that IC basically consists of knowledge, lore, ideas and innovations. Sullivan subdivides IC into human capital and intellectual assets. Human capital is people, and their knowledge and know-how are not directly commercialisable. Intellectual assets (new ideas and innovations), can be transformed into commercialisable assets, in which the companies have rights of ownership (see Figure 2.3 below). Hence, according to Sullivan, it is to the advantage of the companies to transform the new knowledge and know-how of their human capital into commercialisable assets (physical goods or services) and supporting intellectual assets, such as administration and infrastructure.

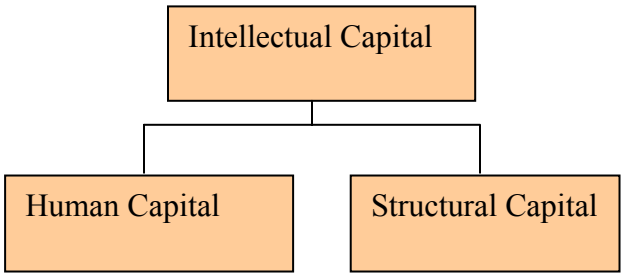
Figure 2.3: Major components of IC



Source: Sullivan (2000)

Roos *et al.* (1997) also support Robinson and Kleiner (1996) view that IC are divided into two human capital and structural capital (see Figure 2.4). The authors support Sulivan (2000) view, as well. According to the authors, human capital rests in the people or the organisation. Structural capital is latent within the company, so is related to the company's presence in the market (commercialisable or supports the company's business).

Figure 2.4: IC Breakdown

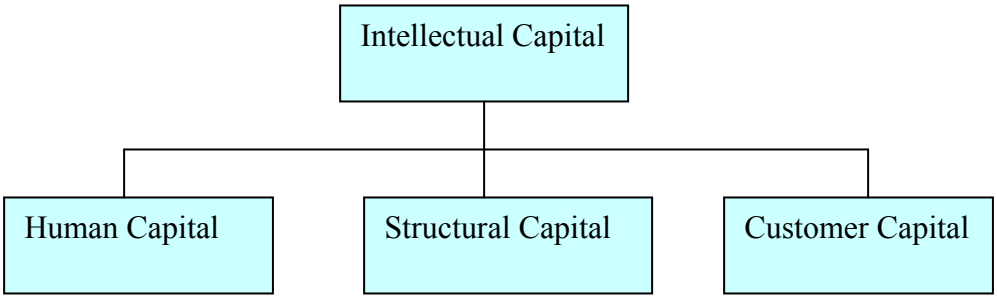


Source: Roos *et al*. (1997)

Mouritsen (1998: p. 462) argues that IC is a matter of "broad organisational knowledge, unique to a firm, which allows it constantly to adapt to changing conditions". He also shares the view of IC with Hamel and Prahalad (1994), i.e. IC as firm's competencies. IC is at first internally focused; it is highly related to the competencies (knowledge, experience and expertise) of the individuals in the firm. Their competencies create value when new knowledge is produced from the result of exchanged knowledge. Tayles *et al*. (2001) suggest that IC could be considered as the total stock of human capital or knowledge-based equity that a company possesses. An organisation needs to be able to classify these assets, identify how they support the strategic goals, quantify their contribution to the value of the organisation, and consider how the assets compare to those of their competitors. This suggestion is significantly different, because even though the others do note the external focus of IC, they are normally limited to the relation with customers (Meer-Kooistra and Zijlstra, 2001)

Edvinsson and Malone (1997) and Sveiby (1997) have proposed an expansion to the categorisation of IC into human, customer, and structural capital (see Figure 2.5).

Figure 2.5: Categorisation of IC



Source: Sveiby (1997)

Roos *et al*. (1997) suggest that knowledge is part of IC; however, IC is more than knowledge. IC is not information-based; it is knowledge-based. Knowledge is personal, a subjective process emerging from previous experiences and current events, while

information is objective data about the environment. They also suggest that managers should give both IC and financial capital equal attention. IC should be managed accordingly, and it should be the managers' goals to visualise IC, leverage it, and create new value for their firms. It is not easy to do it. They must first understand the IC concept, as well as the concept behind it.

Brooking (1997, 1998) defines IC as the difference between the book value of the company and the amount of money someone is prepared to pay for it. It represents intangible assets, which frequently do not appear on the balance sheet. There are 4 categories of IC:

1. Market Assets: give the company power in the marketplace, such as trademarks, customer loyalty, repeat business, and so on.
2. Intellectual Property Assets: represent property of the mind, such as patents, trademarks, copyright, and so on.
3. Infrastructure Assets: give the organisation internal strength, such as corporate culture, management and business processes, strength derived from IT systems, and so on.
4. Human-Centred Assets: derived from the people who work in the organisation, such as their knowledge, competencies, work-related know-how, networking capability, and so on.

Brooking (1997) further explains that market assets are comprised of market positioning, brands, and company name, for example, while infrastructure assets are comprised of management philosophy, corporate culture, management and business processes, financial relations, IT systems, and methodologies. Since infrastructure assets bring order, safety, correctness and quality to organisations, they are considered to be important elements. Some examples of human-centred assets are collective expertise, creative and problem-solving capability, leadership, and entrepreneurial and managerial skills embodied by the employees or the organisation. Human-centred assets are important, because they are the qualities that make up people and cannot be owned by the organisation.

Klein and Prusak (1994) define IC as: "intellectual material that has been formalised". Meer-Kooistra and Ziljstra (2001) do not agree with this definition. They argue that it limits IC to formalised and captured intangibles only, i.e. IC is only intangibles that are already being documented and made explicit, such as processes, patents, brands, and copyrights, whereas IC should also include things that are not formalised and captured, such as individuals' tacit knowledge and experience.

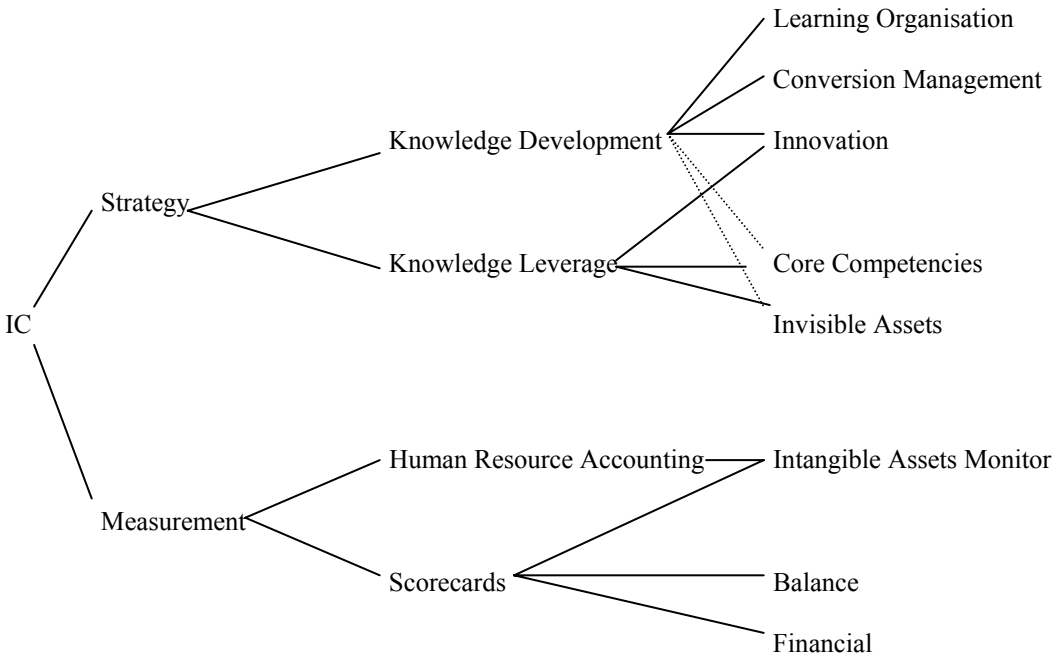
Kennedy (2001) suggests some examples of tacit knowledge are knowledge of experienced chefs, automotive engineers, and gemnologists in their expertise. According to Kennedy, the chefs know that a certain cooked food is good by just looking at its texture or colour. The engineer knows something is wrong with a car's engine just from the sound of it. The gemnologist knows the value of a gemstone, such as ruby or emerald, just from its colour. However, notes Kennedy, some tacit knowledge is not readily transformable into explicit knowledge. It takes a long time to learn, and the above are some examples of such knowledge; they require a lot of experiments and practice. Kennedy also notes that even though tacit knowledge is embodied in individuals in companies, this type of knowledge is still considered to be the assets of the companies, as the individuals are their employees. These employees are therefore considered to be 'assets' of the companies. Brooking (1998) defines employees as human-centred assets, while other authors, i.e. Robinson and Kleiner (1996), Edvinsson and Malone (1997), Roos *et al*. (1997), Sveiby (1997), and Sullivan (2000), define them as human capital.

Early work applied to antecedents of IC accounts were Human Resource Accounting, Human Resource Cost Accounting and Utility Accounting have never been accepted within firms because of the vagueness about what constitutes an asset and a resource, respectively (Johansson *et al*., 2001). The accounting profession does not recognise employees as tangible assets of the company. Salaries paid to them are just considered expenses and written-off periodically. However, from a managerial perspective, employees are recognised as valuable resources. The accounting profession has to

recognise them as intangible assets. Financial accounting has a very limited number of intangible items included in the balance sheet. Human resources are not included, the economic reason for this being that human resource is difficult to trade and price (Leadbeater, 2000).

Petty and Guthrie (2000) modified a model suggested by Roos *et al*. (1997) to represent how IC can be located, as in Figure 2.6.

Figure 2.6: IC- Strategy and Management



Source: Petty and Guthrie (2000)

Petty and Guthrie (2000) concluded that amid the literature on understanding and measuring IC, there is still no generally accepted theoretical model for understanding it. Nevertheless, there are some similarities that could be determined from the various models (Meer-Kooistra and Zijtstra, 2001). All the models have at least the following: knowledge and experience embodied in individuals, either in tacit or explicit forms, organisational systems and processes such as internal processes, procedures and

administrative systems, innovation and technology, business relationships with customers, suppliers, and strategic partners.

Bontis *et al*. (2000) made a comparison of IC conceptualisations among authors, based on studies by Stewart (1991), Brooking (1996), Roos *et al*. (1997), and Bontis (1998). However, they left out a study by Edvinsson and Malone (1997). The summary of the comparison is shown in Table 2.1, with the addition of the latter study.

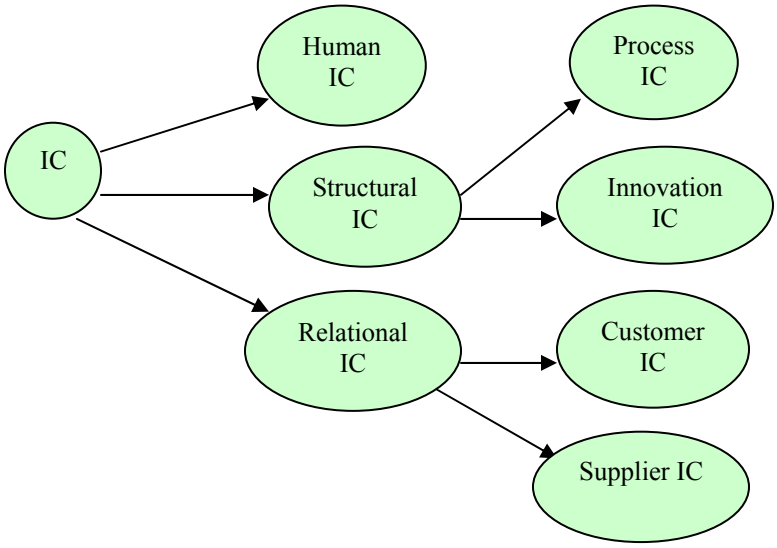
Table 2.1: Comparison of IC conceptualisations among authors

Stewart (1991) (USA)	**Brooking (1996) (UK)**	**Roos (1997) (UK)**	**Bontis (1998) (Canada)**	**Edvinsson and Malone (1997) (Sweden)**
Human capital Employees are organisation's most important asset	*Human-centred assets* Skills, abilities and expertise, problem-solving abilities and leadership	*Human capital* Competence, attitude, and intellectual agility	*Human capital* Individual level of knowledge that each employee possesses	*Human capital* Individuals' capabilities, skill, and experience of employees and managers
Structural capital Knowledge embedded in information technology	*Infrastructure assets* All the technologies, processes and methodologies that enable company to function	*Organisational capital* All organisational, innovation, processes, intellectual property, and cultural assets	*Structural capital* Non-human assets or organisational capabilities used to meet market requirements	*Structural capital* The embodiment, empowerment, supportive infrastructure
Structural capital All patents, plans, and trademarks	*Intellectual property* Know-how, trademarks and patents	*Renewal and development capital* New patents and training efforts	*Intellectual property* Unlike IC, IP is a protected asset and has legal definition	*Structural capital* Patents, trademarks and copyrights
Customer capital Market information used to capture and retain customers	*Market assets* Brands, customers, customer loyalty and distribution channels	*Relational capital* Relationships which include internal and external stakeholders	*Relational capital* Customer capital is only one feature of knowledge embedded in organisational relationships	*Customer capital* Customer relationship and customer loyalty

Source: Bontis *et al.* (2000), Edvinsson and Malone (1997)

In summarising the works of all the above authors, Figure 2.7 illustrates the division of IC.

Figure 2.7: Division of IC



Source: Researcher

2.2.1 IC Creation

IC can be created internally or externally. Examples of internally-created IC are work procedures and processes, which are generated by office/factory procedures and administrative systems, employees' innovation, and organisations' its own technology. Some examples of externally-generated IC are the value added through business relationships with customers, suppliers and strategic partners, such as reputation and image, customer loyalty, and coordination procedures with suppliers (Meer-Kooistra and Zijlstra, 2001).

2.2.2 IC Measurements

A firm might want to implement a mechanism to measure its IC. As discussed before, as IC are valuable assets and determine the firm' future. Therefore, it is important to measure IC so that the information from the measurement can be used in strategic decisions. According to Roos (1998), IC is very complex to measure. There are three

reasons for these complexities: (1) Time delays, an example is employee training (2) IC is not zero-sum, i.e. small investments might result in high profits, and large investments might result in zero income (3) Assets are measured in non-financial terms such as hours, numbers and ratios, instead of in financial terms only.

Roos (1998), also notes that when measuring IC, a company must "go beyond financial indicators, have a clearly defined business orientation, and a distinct operational commitment to moving ahead."

1. Johannson *et al.* (2001a) suggest that there are many concepts and measurement models that have been suggested to measure intangibles, such as Human Resource Accounting for human resource in the 1960s, and Balanced Scorecard (Kaplan and Norton, 1992), IC, and Intellectual Asset Monitor in the 1990s (Sveiby, 1997). Questions raised by Johannson *et al.* (2001a) are (1) What are the kinds of intangibles measured?, (2) How are they measured?, and (3) How are the measurements utilised? After researching three companies, the authors conclude that a formal measurement routine (MR) is a way to making 'tacit' knowledge about norms (search rules) and activities (routines) explicit, and thereby more easily communicated to thousands of employees, customers and analysts. Many of the MRs have been practised but not formalised. MR is a form of management control and is a device used to analyse performance, i.e. enabling intangibles, and thereby increasing the value of the stock of knowledge.

Sveiby (1997: 74) suggests, "If we measure the new with the tools of the old, we won't see the new". There are 21 known methods of IC measurement (Sveiby, 1997; Bontis, 1999; Sullivan, 2000).

2.2.3 IC Reporting

Mouritsen *et al.* (2001) note that IC statements (ICS) report on the activities that management initiates and supports in the name of knowledge management (KM). The Danish Agency for the Development of Trade and Industry, the Copenhagen Business

School of the University of Aarhuss, a consultant firm, and 17 (originally 23) firms collaborated in a project to explore how the 17 firms would go about developing ICS. The main components of ICS are illustrated as they materialised in action. The project started in February 1998, and all the firms agreed to develop and publish ICS for the years 1998 and 1999. The firms met about eight times a year to discuss their progress, while researchers provided feedback on their activities by suggesting interpretations of what they were doing and of how they made sense of IC.

Mouritsen *et al.* (2001) conclude that the result of the Danish Project illustrates that there is no set model for ICS, nor do they provide a bottom-line indicator of the value of IC. They contend that ICS are situational, and they are mobilised by firms to help to implement strategies rather than to describe historical results. They are concerned not only with metrics, but also with the change activities that are made visible and legitimated by sketches and stories as well. Measurement and process cannot be separated, because together they continue the language and practices of IC. The ICS do not disclose the value of the firm's intellectual resources, rather, they disclose aspects of the firm's KM activities. The metrics, stories and sketches on the one side, and the KM activities on the other, are integral parts of the ICS. The firms agree that they have not found their preferred model of ICS.

Meer-Kooistra and Zijlstra (2001) note the underlying assumptions behind IC reporting to be managerial perspective required, information on value creation capacity must be revealed, and model should allow incorporating flow and effect information.

Based on the authors' participation in the PriceWaterhouseCoopers project team, which dealt with the Dutch Economic Affairs project in 1998/1999 to identify and value the intangible assets of three knowledge-intensive companies, they recommended that IC internal reporting should contain knowledge and experience embodied in people (explicit and tacit knowledge), organisational system and processing supporting IC creation, innovation and technology, and business relationship (business network and customer network).

The authors also suggest that features of external reporting are comparable information in a standard form, reliability and objectivity, and impossible to include in financial statements because financial accounting is looking backward, while IC is looking forward,

All the models on IC reporting (Brooking, 1996; Edvinsson and Malone, 1997; Sveiby, 1997) are developed in terms of a managerial perspective. The models relate IC- creating activities and processes to the companies' strategies, and provide information about IC creation compared with companies' goals. The models are also developed in accordance with the Kaplan and Norton (1996) Balanced Scorecard. None of the models incorporates IC information in the traditional financial accounting framework.

Accountants are arguably responsible to provide information on the value of the firms. The accounting profession has developed a technical framework to measure, record, and report transactions of business entities. As a result of these tasks, accurate and reliable estimates of the value of the entities in the form of financial statements are produced periodically. Nowadays, according to Roslender and Fincham (2001), the market determines a second estimated value of the business entities. Since the mid-1990s, there have been significant cases where the differences between the two estimates were enormous. This is due to the prevailing limitation within the accounting framework that does not allow reporting on goodwill developed internally over time. According to authors, such as Edvinsson and Malone, (1997), Stewart (1997), and Sullivan (2000), one widely quoted case for the large market value : book value ratio is that of Microsoft, with a 11.2 ratio in 1996 This is also noted by Lev (2000), and it has been interpreted that this is caused by a new value-creating source, i.e. the intellectual capital or the 'new' goodwill. Dzinkowski (2000) summarises the situation as follows:

> "*Standard accounting models were designed for informing company management and stakeholders on stocks and flows of (financial) value. Most of these are quantifiable and subject to generally accepted accounting principles and*

> *practices (GAAP). In contrast, intellectual capital is a relatively new and enigmatic concept, relating primarily to the intangible, highly mutable assets of the firm. As such, the current accounting model does not adequately capture their value nor represent them in a concise, meaningful format*" (Dzinkowski, 2000: 32 - 33).

Dzinskowski (2000) further observes that unless accountants invent new financial and management accounting concepts and practices to accommodate the accounting for IC, their profession is at risk.

Roslender and Fincham (2001) point out that it is not easy to incorporate IC into the traditional accounting framework because the principle of objectivity will be violated. IC is intangible, and due to this nature, it is very subjective to measure, for example, how does a firm value know-how, employee qualifications, customer data, and distribution channel? Attempts to incorporate human asset into the accounting framework have been made since the 1960s. They are termed human asset accounting, human resource accounting, and human worth accounting (Sackman, 1989; Flamholtz and Main, 1999). However, they have not been well accepted (Johannson *et al.*, 2001). Perhaps this is the reason why some companies, such as Skandia AFS and Celemi of Sweden, just produce IC statements which only contain stories and narratives of their IC.

2.2.4 Intellectual Capital Management (ICM)

IC should be managed in order to fully utilise human and structural capital. Edvinsson and Malone (1997) suggest that ICM is leveraging human capital and structural capital together. According to Wiig (1997), ICM focuses on renewing and maximising the value of the enterprise's intellectual asset, and it is more than knowledge management (KM). He argues that,

"Progressive managers consider ICM and KM to be vital for sustained viability. Recent practices support this notion and have provided important approaches and tools. ICM focuses on renewing and maximising the enterprise-wide value of intellectual assets. KM supports ICM by focusing on detailed systematic, explicit processes overlap, and synergy between ICM and KM. Advanced enterprises pursued deliberate strategies to coordinate and exploit them. From ICM perspectives, they create balanced intellectual capital portfolios that they implement with KM approaches and tools" (Wiig, 1997: 399).

2.3 Knowledge Economy and Knowledge Organisation

Davenport and Prusak (1998) notes that technological advances in data processing, communication, and transportation, as well as customer demand and strategists' planning, have made the world economy change very fast. It has been the biggest wave of changes since the Industrial Revolution. The economy is dubbed 'knowledge-economy', as the prime commodities are knowledge and information. Knowledge creates and leverages the intangible value of companies that is IC.

2.3.1 Data, Information and Knowledge

'Data' is defined as 'a set of discrete, objective facts about events', and that in an organisation they may be described as 'structured records of transactions' (Davenport, 2000). According to Davenport and Prusak (2000), data become information when you have contextualised and/or categorised and/or calculated and/or corrected and/or condensed them. They have a sender and also a receiver who determines whether the message conveys enough meaning to justify it as information.

Davenport and Prusak (1998) define knowledge as:

> "*Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organisations, it often becomes embedded not only in documents or repositories but also in organisational routines, processes, practices, and norms."*

According to Nonaka and Takeauchi (1995), knowledge is justified true belief. Knowledge without context is just information, such as '1234 ABC Street'. The information has no meaning. Knowledge with context has meaning; an example is 'My friend David lives at 1234 ABC Street, which is next to the library'.

They also noted that knowledge is humanistic, because it is essentially related to human action.

Information	>	Interpreted, given a context, anchored in beliefs and commitment	>	Knowledge

Nonaka and Takaeuchi (1995) continue to explain that knowledge is not primarily about 'facts' and 'content'. Rather it is more about 'context'. The authors further suggest that knowledge is better to be reviewed as a dynamic flow rather than fixed 'object'. Knowledge is time-dependent. Its value declines as it becomes out of date, or a competitor acts on it.

Stewart (1998) has summed up the difference between data, information and knowledge:

> *"There's data: the temperature is 77 degrees. There's information, a context into which the data can be put: That's hot for this time of year. There's knowledge, a conclusion drawn from the data and information: We should postpone the ski trip, or global warming is a bigger problem than we thought."*

Nonaka and Takaeuchi (1995) also suggest that knowledge can be divided into explicit and tacit. Explicit knowledge is formal, systematic and shared, such as data, scientific formulae, transmitted and stored, while tacit knowledge is personal and is hard to formalise, such as subjective insights, intuitions and hunches. Tacit knowledge is deeply rooted in actions, procedures, routines, commitments, ideals, values and emotions. It dwells in human minds and bodies, thus, it is difficult to communicate. Tacit (T) and Explicit (E) knowledge are complementary. Both are essential in knowledge creation. Explicit without tacit insights quickly loses its meanings (interaction of T and E) (see Table 2.2).

Table 2.2: Two Types of Knowledge

Tacit Knowledge (Subjective)	Explicit Knowledge (Objective)
Knowledge of experience (body)	Knowledge of rationality (mind)
Simultaneous knowledge (here and now)	Sequential knowledge (there and then)
Analog knowledge (practice)	Digital knowledge (theory)

Source: Nonaka and Takaeuchi (1995)

Brooking (1998) defines explicit knowledge as "knowledge that is able to be made available to a person", which means it can be explained verbally or in written form. An example of this type of knowledge is a business process or management procedure such

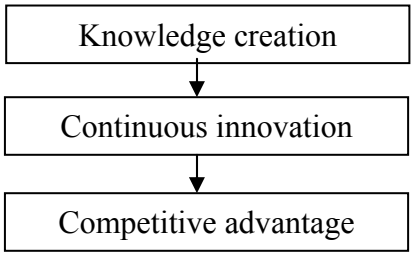
as infrastructure assets. The author further defines tacit knowledge as "knowledge that has not been made explicit". It may be because it is simply not possible to be made so, or the person is not capable of doing it. An example of tacit knowledge is the knowledge of a logo designer. The designer uses his/her sense in designing a logo and cannot explain how he/she does it. It just looks right to him/her through his/her artistic talent. Brooking also notes that explicit knowledge can be shared, but tacit knowledge is difficult to share and belongs more to individuals.

2.3.2 Importance of Knowledge

Krogh and Roos (1996) recognise that the challenge for management is to use the vast knowledge potential of the company to create value. Managers have to design tasks that let people use more of their knowledge (and skills) for value creation.

2.3.2.1 Knowledge Creation

Nonaka and Takaeuchi (1995) suggest that knowledge is a competitive resource and represent this business strategy as:



The authors focus on the importance of the tacit knowledge created and held by individuals. They seek to develop a general theory of knowledge creation through the interaction of tacit (personal, instinctive, undefined) and explicit (defined and documented) forms of knowledge, with four modes of knowledge creation at the individual, group and organisational levels – tacit to tacit (socialisation), tacit to explicit (externalisation), explicit to explicit (combination), and explicit to tacit (internalisation). These four modes of knowledge conversion are known as the knowledge 'spiral' (see Figures 2.8(a) and 2.8(b)).

Figure 2.8(a): Four modes of knowledge conversion

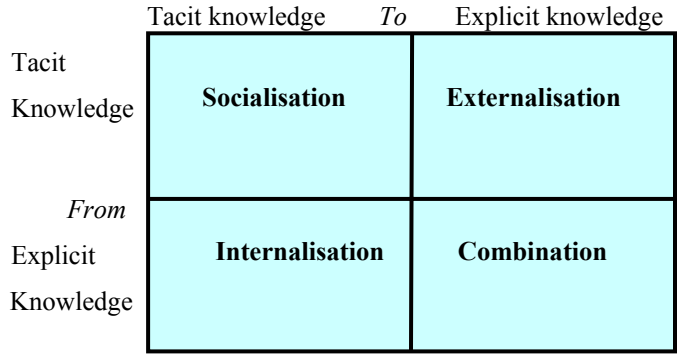
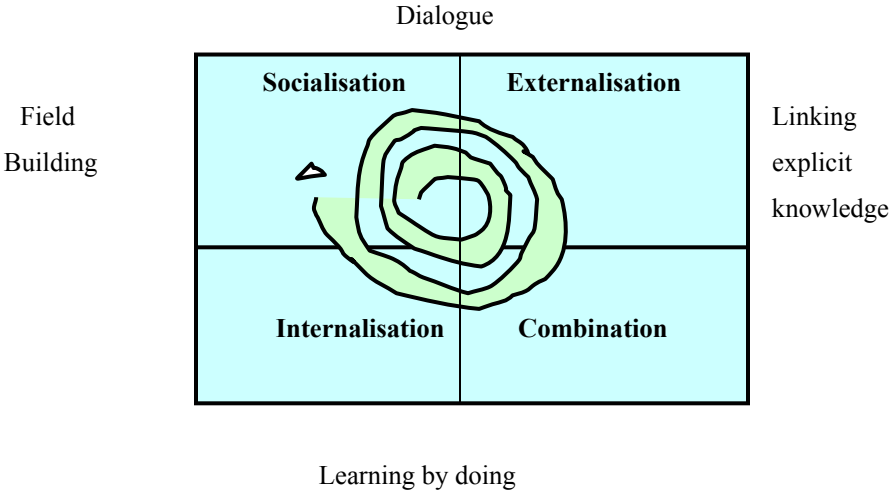


Figure 2.8(b): Knowledge spiral



Source: Nonaka and Takeauchi (1995)

Nonaka and Takeauchi (1995) also note that socialisation is connected with the theories of group processes and organisational culture; combination has its roots in information processing; internalisation is closely related to organisational learning; and externalisation is a process of articulating tacit knowledge into explicit concept. Nonaka and Takeauchi use the model to identify strengths and weaknesses of organisations in these terms, and produce their own factor, which enables organisational knowledge creation – in effect, the Learning Organisation. They have sufficient confidence in their theoretical base to recommend a new organisational structure – the Hypertext

Organisation, consisting of three interconnected layers: a Business Systems layer, a Project Team layer, and a Knowledge Base layer.

Nonaka and Takaeuchi (1995) further describe five enabling conditions for organisational knowledge creation:

1. Intention – the organisation's aspirations and goals.
2. Autonomy – freedom of expression/experimentation for individuals.
3. Fluctuation and creative chaos – deliberate stimulation of the organisation to generate change.
5. Redundancy – parallel and overlapping teamwork.
6. Requisite Variety – freedom of access to the widest variety of information.

2.3.3 Knowledge Management (KM)

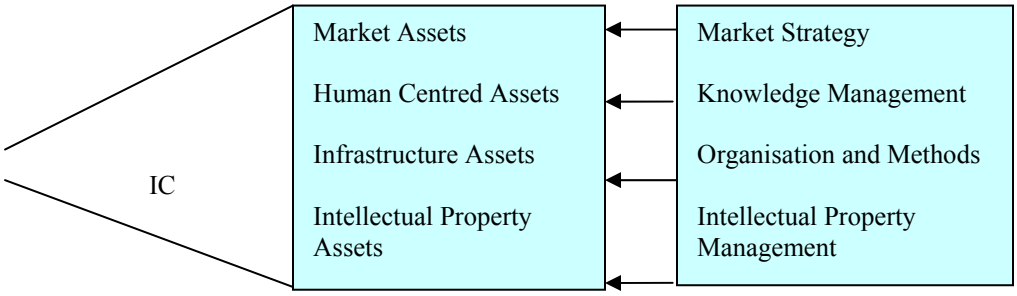
According to Sveiby (1997), in order to improve performance and secure sustained viability and success, organisations have got to manage knowledge. Sveiby points out that one of the purposes of KM is to leverage the human potential in order to create new unprecedented levels. The human potential to create knowledge is unlimited, but constrained by Tayloristic mindsets in our organisations today. He further points out that KM is based on 2 streams of thought, i.e. knowledge-focused, in which the value of knowledge comes out when its many forms are leveraged and information-focused, in which the value of knowledge comes out when it is made explicit in the form of information.

Macdonald (2000) emphasises that KM is a way of achieving competitive advantage through better product performance, i.e. KM highlights weaknesses of past performance, faster reaction to changes, i.e. KM provides information on customers' perception and promotes interdepartmental collaboration through communication, substantial reduction in wasted effort and resources, i.e. KM eliminates problems of roadblocks that hamper smooth production and delivery through open and shared communication, innovative breakthroughs, i.e. continuous combination of tacit and explicit knowledge will create a

spiral of knowledge that will result in totally new solutions to market needs, and dedicated workforce, i.e. KM enhances employees' sense of worth and involvement.

KM is part of ICM and not the same as IC. KM (management) is a process, while IC is an entity (Figure 2.9). KM's function is to guard and grow the individual's knowledge, and transfer the asset into a form where other employees in the company can more readily share it (Brooking, 1999).

Figure 2.9: KM as Part of ICM



Source: Brooking (1999)

Coates (2001) argues that KM does not imply downsizing, restructuring, getting rid of people, reorganising, or doing all of those traumatic things that have characterised so much of corporate behaviour in the last quarter century. Rather, KM reflects a point made by Lew Platt, former CEO of Hewlett-Packard: "If HP knew what HP knows, we would be three times as profitable."

Coates (2001) also claims that knowledge provides the competitive edge. When information is generalised, it becomes knowledge, but beyond knowledge, there is nothing going on in the corporation to create wisdom. KM, in relation to research and innovation, lies primarily, centrally and almost completely, with the research director. It does not lie with a big system of equipment or elaborate networks. It is entirely the

research director's responsibility. If he/she cannot figure out how to open communication, then dismissal or retirement is the first step to progress.

Wiig (1997) suggests that there are two reasons for KM:

1. Policy and strategy analysts have worn intellectual blinkers, so that what has been obvious to some, namely that knowledge and its applications are at the very roots of modern economic growth and prosperity, has not been transparent at all.
2. Structural changes that have occurred in the economies of advanced countries have modified the nature of what is strategic, and have served to highlight the importance of knowledge and its management.

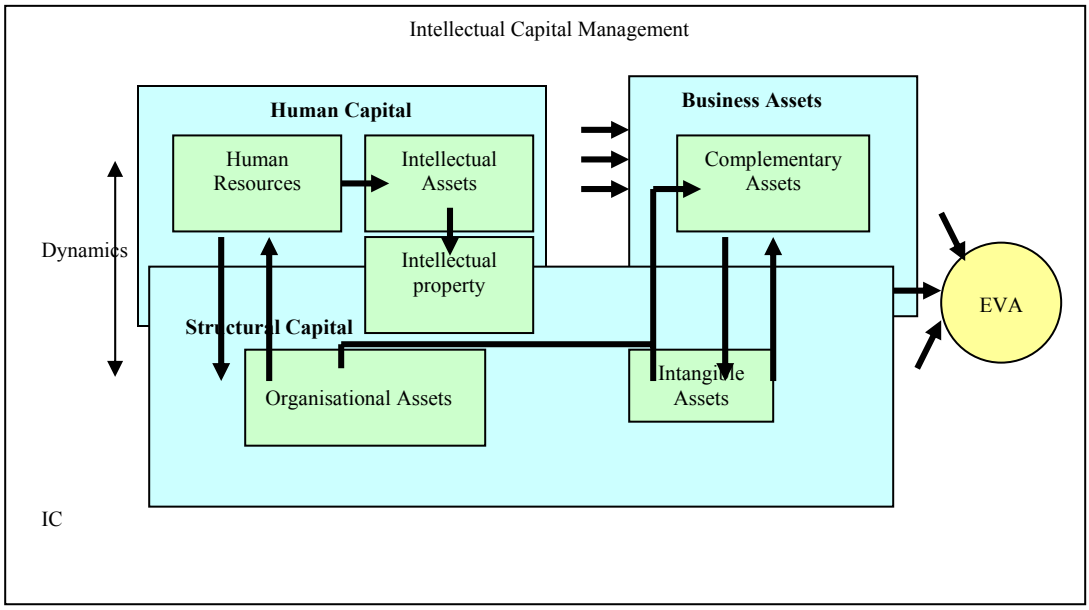
Demarest (1997) suggests that KM has to consider the construction of knowledge, the transformation of tacit knowledge into knowledge, practices and machinery (embodiment), and the dissemination of embodied knowledge throughout the value chain. While Drew (1999) suggests some advantages of KM as (1) Holism and humanism (the priority is to make better use of human potential rather than to downsize it), (2) A concern with growth and new possibilities by developing new knowledge (3) Support to creative management practices which result in new competencies (4) making good use of important technological developments, such as networks, political and social support, because knowledge drives economic growth.

2.3.4 Knowledge Firms

Companies that use their knowledge as a source of competitive advantage are called knowledge companies. Knowledge companies derive their profits from the commercialisation of the knowledge created by the human resource – their employees. In the product field, they include computer companies and other high-technology firms, software companies, and manufacturers of new or differentiated products. Knowledge companies in the services industry include law firms, consulting firms, financial services firms and media companies (newspapers, periodicals, television, and radio) (Edvinsson and Malone, 1997).

Edvinsson and Sullivan (1996) develop a model of the knowledge firm, as shown in Figure 2.10. They suggest that there are four major elements of the IC of a firm: human capital, structural capital, complementary business assets, and intellectual property. They also note that the structural capital is composed of both tangible and intangible assets, and human capital is actually the intangible part of structural capital. Structural capital is considered as part of the firms' tangible assets that complement the innovations produced by IC.

Figure 2.10: Model of Knowledge Firm

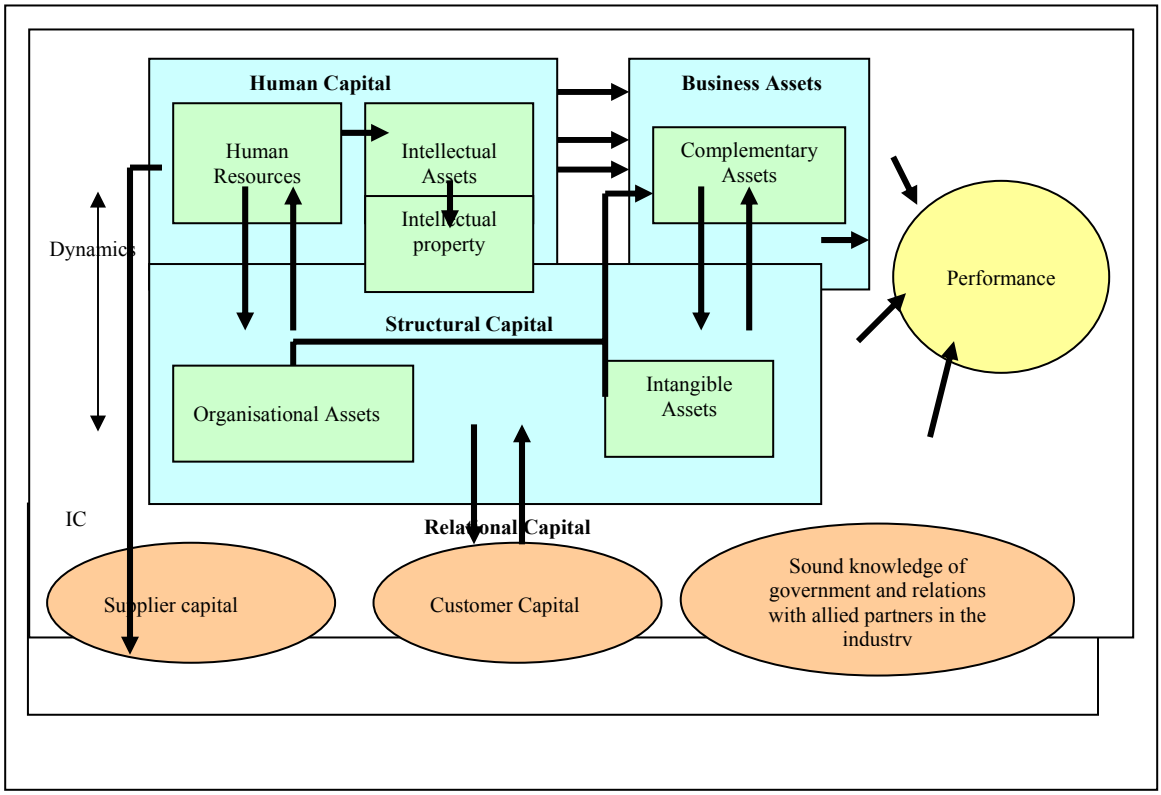


Source: Edvinsson and Sullivan (1996)

In summarising the work of Stewart (1991) Edvinsson and Sullivan (1996), Edvinsson and Malone (1997), Roos *et al.* (1997), Stewart (1997), Bontis (1998), and Lynn (1998), IC can be divided into human capital, structural capital and relational capital. Human capital is people or human resources, which are important because of their knowledge, experience, professional skill, and experience, as well as their innovation and creativity. Structural capital consists of innovation capital (intellectual assets) and process capital (organisational procedures and processes). Examples of intellectual assets are patents, trademarks and trade secrets. Relational capital is the knowledge of market channels,

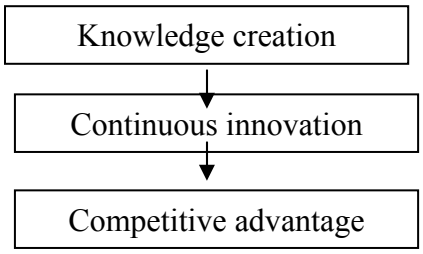
customer and supplier relationships, as well as a sound understanding of governmental and strategic industry alliance. Thus, Edvinsson and Sullivan's (1996) diagram is extended, as shown in Figure 2.11.

Figure 2.11: ICM



2.3.6 Competitive Advantage and Knowledge

Firms have got to have competitive advantage in order to survive strategically. Nonaka and Takaeuchi (1995) observe that in a world where markets, products, technology, competitors, regulations, and even societies change rapidly, continuous innovation and knowledge which enable such innovation have become important sources of sustainable competitive advantage. Hence, management scholars today consider knowledge and the ability to create and utilise knowledge to be the most important source of a firm's sustainable competitive advantage. Innovation comes from knowledge, and continuous innovation leads to competitive advantage, illustrated as follows:



It has long been recognised that economic prosperity rests upon knowledge and its useful application. The increase in the stock of useful knowledge and the extension of its application are the essence of modern economic growth (Teese, 2000). Japanese companies have advanced their position in international competition, not because they are very, very efficient, entrepreneurial, or liberated, but through their skills and expertise in 'organisational knowledge creation' (Nonaka and Takaeuchi, 1995). Wiig (1997) notes that progressive leaders tried to remain competitive by applying TQM, BPR and downsizing. Contrastingly, a survey of chief executives of large US companies showed that knowledge and intellectual capital have a fundamental role within modern enterprises.

Knowledge has become an important asset, and efforts to manage knowledge and intellectual assets are pursued with considerable success by many leading organisations. With the growth of the knowledge-based economy, the intangible assets of the firm and its IC are the keys to achieving sustainable competitive advantage (Teece, 2000).

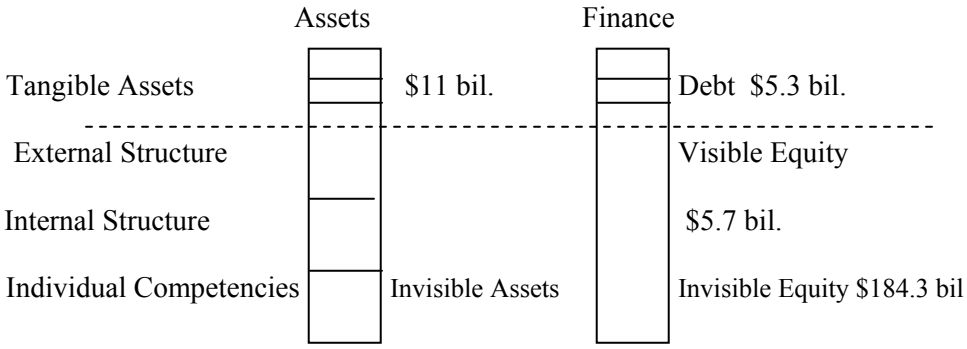
2.4 Intangible Assets

The interest in intangibles has grown rapidly in numerous fields, including economics, accounting, and strategic management. It is hard for managers to understand intangibles because there is a general lack of information on them, and there is still a heavy reliance on financial information (Johannson *et al.*, 2001b). In accounting, intangible assets are assets that do not have physical form, such as goodwill, copyrights, brands and trademarks. These assets have non-physical benefits that contribute to future cash flows. Leadbeater (2000) defines intangible assets as assets that are hard to value and context-

dependent. Some examples of such assets are know-how, especially the tacit knowledge, skills, creativity and talents. Know-how of a company may only become valuable when combined with know-how of partners and suppliers, manufacturers and distributors. He also notes that know-how is an important source of competitive advantage, because it is so difficult to pin down, break up, parcel out, and be imitated by competitors. It is difficult to value know-how. Inability to report intangibles shows the weakness of traditional accounting. This is because intangibles are difficult to trade and price. According to Roslender and Fincham (2001), there is no real theory in economic models for intangibles.

Figure 2.12 is an illustration of how invisible assets (intangible assets) value boosts the market value of a company, as explained by Sveiby (2002). It is an illustration of the book value of Nokia, the telecommunication company, on 2 August 2000, as compared to its market value on the same day. The market value per share on that day was $40.90, making the whole market value $190 billion. There was an enormous difference (discrepancy) between the book value and the market value, which was $184.3 billion ($190 billion - $5.7 billion). This figure, however, is not reported in the traditional financial accounting because it is beyond its scope. One reason for not accounting for its invisible value is that the share price of a company is a perception of the future, and it will fluctuate with the general economy. Were another company, say Intel, to acquire Nokia, it would have to pay $190 billion. In the traditional financial accounting, the $183 billion would be called 'goodwill' and be reported. Thus, the invisible value would be made visible (see Figure 2.12).

Figure 2.12: Invisible Balance Sheet



Source: Sveiby (2002)

Due to the change in economy, goods and services today, which are highly immaterial have become technically sophisticated and knowledge-intensive. For technical and competitive reasons, knowledge has become the distinctive factor of production in the new economy. The 'market-to-book ratio' of some companies is large, especially for high technology firms such as IT (Microsoft), and high-tech pharmaceutical firms (Pfizer and Merk). The reason for this is that book valuations have been slow to adapt to the changing asset base of modern businesses (Leadbeater, 2000).

Companies are beginning to recognise that technology-based competitive advantages are transient. They are also aware that their intangible resources are their only truly sustainable competitive advantages. Information on intangibles in financial reports is lacking (Roslender and Fincham, 2001). Academics in the policy and accounting areas have traditionally been very keen on knowing how intangible assets reflect on the performance of the firms (Bontis *et al.*, 2000).

In his testimony on "The Reform of Corporate Reporting and Auditing" on 2 February 2002 before the House of Representatives Committee on Energy and Commerce, Lev (2002) said that:

> *"The current industrial era-based accounting system regards most intangibles as expenses as if they were devoid of future benefits, thereby introducing serious biases to corporate balance sheets and income statements. It has been*

empirically shown that these reporting deficiencies cause serious social harms, such as excessive cost of capital, large insider gains and manipulation of financial reports."

As a solution, Lev suggests that current financial reports should be expanded to comprehensive disclosures, portraying in addition to the consequences of past transactions (the current system), a fair representation of the net assets, which should include both tangible and the intangible assets.

2.4.1 Accounting for Intangibles (IC)

Stock market values for firms may vary considerably from net asset values. This is partly because the financial statements fail to show the value of all the intangible assets. Efforts have to be made towards incorporating the value of intangibles into a formalised reporting framework, or many firms will find that the financial statement is increasingly irrelevant as a tool supporting meaningful decision-making (Petty and Guthrie, 1999).

Grojer (2001) sees the organisational world as becoming more immaterial than material, where resources in different immaterial forms act as the key production factor. The author considers this development is a challenge in financial accounting classification. Such development, in an accounting context, is reflected in concepts such as immaterial assets, intangibles, and IC. He further suggests that there is a need for a reclassification to facilitate and, hence, to promote understanding of the world through simplification. He compares IAS 38, Balanced Scorecard (BSC) and IC (three of the guides to classifying intangibles) based on clarity of concept, attribute, exhaustiveness and exclusiveness, and simplicity (see summary in Table 2.3). IAS 38 is important because it regulates what are presumed to be intangibles. BSC is beneficial because it is widely used and makes a connection between today's intangibles and tangibles within a cause-effect chain. IC is relevant because it is an example of a division of tangible concept into intangibles. According to Johannson *et al.* (2000b), investors and analysts stubbornly decline to rely on intangible information because they are afraid that the external reporting is not based on internal measurement routines.

Table 2.3: Summary of Comparison Between IAS 38, BSC and IC

Types of Classification	Clarity of Concept	Attribute	Exhaustiveness and Exclusiveness	Simplicity
IAS 38	Vague: Anything without physical substance can be intangible, except for a few mentioned items and anything that is similar to those items.	(1) Recognition: Can intangibles be recognised? : Conservatism accounting exponent (2) Origin (essentialist): Where do intangibles originate? – Internally or externally acquired?	Exhaustive because of general definition of objectives of states of events in the universe of discourse.	Objectively and subjectively unclear.
BSC	Vague: Difference between intangibles and non-intangibles is of no importance. Emphasises difference between performance drivers and their outcome.	Specific time: past, present or future.	Borderlines between especially internal business process and innovation or improvement are unclear. Perhaps such ambiguity is necessary in modern organisations.	Lacks objective-notional simplicity because of its multi-dimensional concept that can be given several meanings.
IC	Rhetoric: Difference between market value and book value. Amount changes as soon as share prices change or when accounting practice changes.	Attribution of IC into sub-classes is also based on some hidden properties of 'overall similarities' related to a 'value to the business'.	Cannot be fully exhaustive. When using a subtracting technique, something must be left over if the order of subtraction should matter.	Relation is direct opposition. Objective-notional simplicity high because it tries to establish linked concepts, but link goes through 'capital' concept.

Source: Grojer (2001)

2.5 IC and Management Accounting

Birket (1995) notes that management accounting is historically grounded in manufacturing accounting, budgeting, and cost accounting. Starting from the mid-1960s, techniques from management science, information science and organisational science were applied in this branch of accounting, and this enhances it. The function of management accounting is to provide information to the internal management of organisations in order to aid them in planning, controlling and decision-making. Having staff roles, management accountants just provided financial information or advice but were never involved directly (Birkett, 1995). With the advance of IT, in the mid-1980s the role of the management accountants was being challenged. Information was being made available immediately by capturing it in operations and by empowering the workforce. Decision-making and controlling were recreated in a new organisational dynamic. Besides the advancement in IT, competitive pressures and corporate restructuring due to reengineering have resulted in automation and centralisation of many transactional aspects of accounting. A lot of the management accounting undertakings are done by the business managers instead of the accountants themselves (Birkett, 1995; Siegel and Kulesza 1996). Management accounting lost relevance (Kaplan and Johnson, 1987).

After the publication of *The Relevance Lost* (Kaplan and Johnson, 1987), new management accounting techniques have been developed by academics, practitioners and accountants to meet the information requirements of business managers in today's global, technology-driven world; advanced in a way likely unimagined by Johnson and Kaplan when their book was written. CIMA's December 2001 *Management Accounting Research* has a special issue on management accounting change. Admitting to reality, the editors suggest management accounting should change with the change in the economy. The *'New Economy'* is characterised by innovations, a fast pace of operations, and informal practices, as well as by an entrepreneurial risky investment in novel ventures. Management accounting has got to fit into this culture. The management accountant's role is changing from being the controller to staff-expert role in order to

provide direct support in ongoing business operations (Hrisak, 1996; Siegel and Kulesza, 1996).

In a case study in a company, LI-UK, Vaivio (1999) observes *systematisation* of non-financial measurement (customer service measures) into a regular and 'public' reporting format. The measurements are integrated into the company's management process and turned into organisationally constitutive artefacts. This observation, according to Vaivio, could add a new dimension to institutionalise the framework of management accounting change.

Kaplan (1983) lists some challenges for management accounting research. He notes that Japanese and German companies were well ahead of US ones in terms of productivity and quality. Japanese and Taiwanese companies were taking over US companies. Japanese companies were more advanced because they were applying new ideas, such as zero-defects for quality control and JIT for reducing inventory levels. He suggests a new role of management accounting, that is, managers must be actively involved in the production process to improve quality, reduce set-up times, increase manufacturing flexibility, and overcome restrictive workforce rules, poor quality and erratic machine performance. He concludes that the challenge is to devise a new internal accounting system that will be supportive of the firm's new manufacturing strategy.

In 1987 Kaplan and Johnson argued that management accounting has become obsolete and has lost its relevance because of the rapid change in technology, especially in information and production, reflecting that management accounting is in crisis. They express their concern on the management accountants' applying old theories and techniques, some as old as a hundred and fifty years, and suggest that innovations and change have to be undertaken in order to keep the profession in existence. Bromwich and Bhimani (1989) summarise the problems posed by Kaplan and Johnson as follows:

1. Alleged subservience of management accounting to external financial accounting requirements
2. Lack of strategic considerations in management accounting and project appraisal.

3. Reliance of management accounting on redundant assumptions concerning manufacturing processes.
4. Maintenance of traditional assumptions in performance evaluation and the continued short-term orientation of this process, i.e. what was being taught in management accounting courses was not applicable in managing contemporary operations or in guiding strategy.

In the attempt to meet the challenge of reforming management accounting, CIMA, UK commissioned several research studies to delineate the multitude of possibilities open for management accounting change and recommended a desirable course of action. Some of the findings of the research include (Bromwich and Bhimani, 1989):

(1) Non-financial accounting information (qualitative and non-financial quantitative) has been found to become increasingly important in many different manufacturing companies, as technology varies substantially in various industrialised countries.
(2) Strategic management accounting seems to be becoming increasingly important as a means of processing relevant management accounting information, and needs to become more important.

Bromwich and Bhimani (1989) conclude that there are areas in management accounting, such as the use of accounting techniques, which do need to be changed. The needs for change do not just pose challenges but also opportunities for the profession to develop.

Among the models produced through management accounting innovations are (Burns and Vaivio, 2001) are activity-based costing (ABC), activity-based management (ABM), balanced scorecard (BSC), target costing (TC), and strategic management accounting (SMA).

Otley (2001) observes that management accounting has changed radically over the past fifteen years. For example, at first a direct competition between BSC and EVA, proponents of each saying theirs is better than the other. And then there was also a great influence from the 'Value-Base' movement. However, a compromise between BSC and

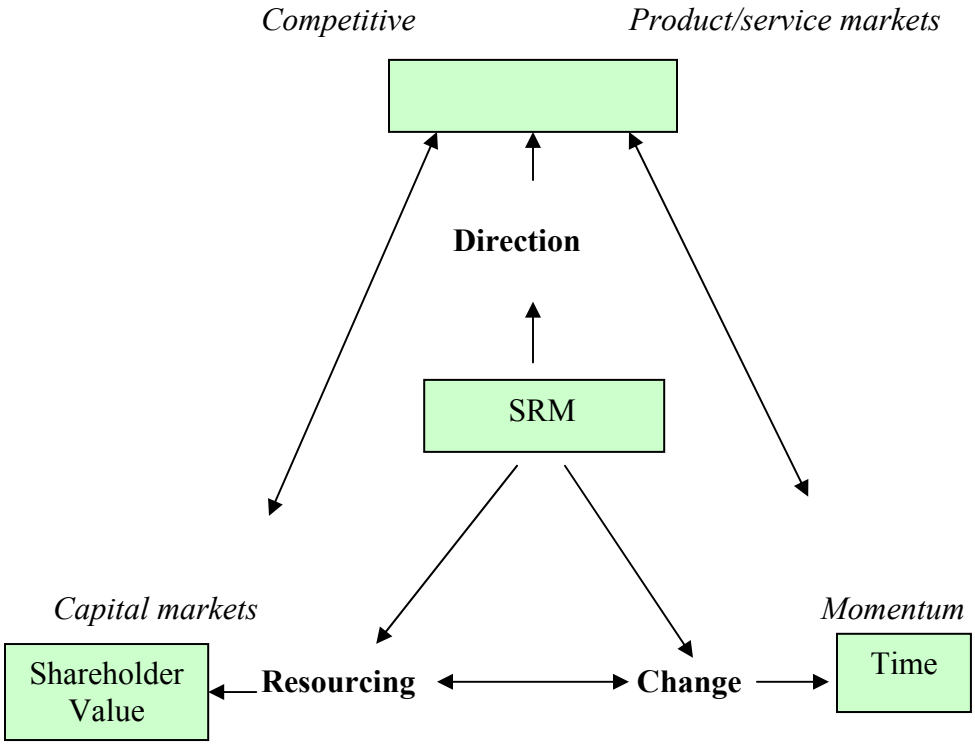
EVA was later made when Stern Stewart, the founder of EVA, recognised BSC as relevant at a lower level of management, where profit centres cannot be established, and in return, EVA is included in the financial perspective of BSC.

In the UK, CIMA takes the change as a means of enhancing career prospects of its members, 'releasing the management accountant from the factory floor'. The change is in the emphasis of use and application of management accounting information, rather than in many specific new techniques. Management accounting change also emphasises (Otley, 2001):

1. From historic to forward-looking
2. From control to planning
3. From internal to external (customers, competitors, etc.)
4. From cost to value
5. From production to marketing

Birkett (1995) notes that today is the era where organisations are emphasising relationships among strategy formation, change management and resource management, which can be referred to as strategic resource management (SRM) (see Figure 2.13).

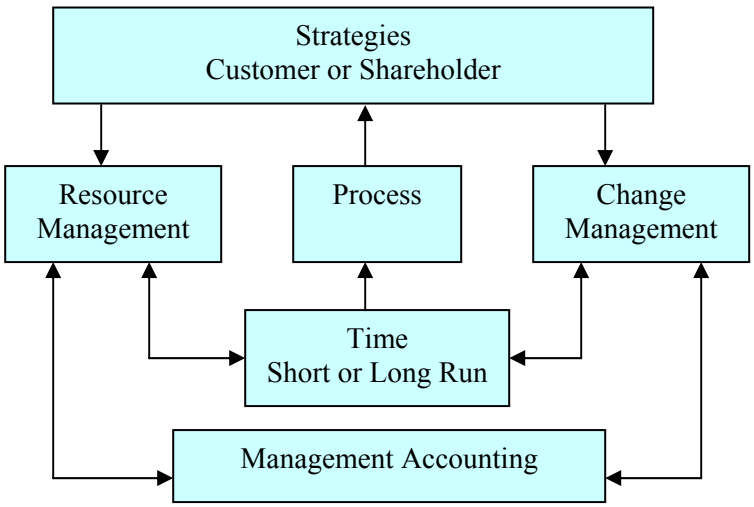
Figure 2.13: Strategic Resource Management (SRM)



Source: Birkett (1995)

Birkett (1995) also suggests that SRM leads to creation of new management accounting, as illustrated in Figure 2.14 below.

Figure 2.14: New Management Accounting



Source: Birkett (1995)

2.5.1 Strategic Management Accounting (SMA)

Otley (2001) notes that after Johnson and Kaplan (1987) published their highly influential *Relevance Lost*, the authors responded differently to their own critique. Johnson (1992), according to Otley, gave up accounting altogether, and in his book *Relevance Regained* (1992) emphasises the softer side, such as TQM, and employee training and empowerment. Kaplan, in contrast, has become a leader in reinvention of management accounting practices such as ABC, ABCM and ABM. Otley recognises Kaplan's work as part of a more general movement to Strategic Management Accounting (SMA).

SMA is defined as "the provision and analysis of management accounting data about a business and its competitors for use in developing and monitoring the business strategy" (Simmonds, 1981). The phrase was coined for accounting information that would assist strategic decision-makers. Simmonds himself, according to Otley (2001), was the first to note that SMA was not taken seriously until the late-1980s. Even by 1996 (Lord, 1996), little attention had been given to SMA. Nevertheless, it has made a major impact on the thinking and practice of the management accountant.

Lord (1996) draws some elements expected in SMA from her examination of the SMA literature. The elements are information about competitors, accounting for strategic position, gaining competitive advantage (value chain analysis and cost driver analysis), and planning strategy.

From her literature review of SMA, Lord (1996) summarises (1) Collection of competitor information, (2) Exploitation of cost reduction opportunities, and (3) Matching of accounting emphases with strategic position, as important characteristics of SMA. Lord's conclusion on her case study on a small manufacturing firm in New Zealand is rather an anti-climax. She questions whether SMA is just a prerequisite for survival in a global economy: another job to pad out the diminishing role of the accountant or just the emperor's new clothes. Her study indicates that the characteristics of SMA are already operating in many firms without the involvement of management accountants and without quantifying accounting figures. She suggests that SMA is just a figment of

academic imagination. She concluded by asking, "Are tomorrow's management accountants going to find themselves naked, without yesterday's old clothes, and with no substance to their new clothes?"

2.5.2 IC and SMA

According to Tayles *et al* (2002), it is within the internal management figures that measure to define and quantify the role and impact of intellectual capital will become of real strategic value. In modern companies, it becomes of even greater significance to embrace an effective and relevant treatment of intellectual capital within the management accounting function. The emphasis has shifted from 'what we own' to 'what we know', and the attempt to quantify this intangible asset is both a strategic challenge and a value-adding activity. There is a real danger that the value of intellectual assets may become a 'hidden' value. The failure of accountants to adopt a SMA approach, and focus on its evaluation, appraisal and measurement, will also result in the neglect of what may prove to be the service organisation's most valuable resource (Tayles *et al.*, 2002).

2.6 Summary

This chapter presented an insight into the literature on IC, on its concept, creation, leverage, and commercialisation. The chapter then discussed how IC is regarded as a very important organisational resource, which should be managed in order to sustain or achieve competitive advantage. It also discussed how IC relates to knowledge management. IC is not new to management accounting, as it is known as intangible assets. This chapter also discussed how management accounting could adopt IC as a SMA technique.

CHAPTER 3

APPLICATION OF IC IN MANAGEMENT ACCOUNTING

3.1 Introduction

This chapter is on the application of the intellectual capital (IC) concept in management accounting and finance. It examines how strategic management accounting (SMA) techniques are or may be used in making IC decisions, as well as in planning, control and decision making for the organisation as a whole. It also examines how IC can be used as a hedge against market and profitability uncertainties. Since IC creates value, it is considered to be an intangible asset, and in order to manage intangible assets strategically, they need to be measured, planned, controlled, and reported. Thus, a review of literature on financial and non-financial measurements, budgeting, capital investment appraisals, and risk management is necessary in order to generate hypotheses for the study.

3.2 Performance Measurement

It is important that firms measure the performance of all critical success factors. The normal practice of measuring performance is by comparing the difference between the results of the planned strategy with the actual results of the implemented strategy. Simons (2000) notes that performance measurement is tracking the implementation of business strategy by comparing actual results against strategic goals and objectives. This is supported by Neely (1998) who states 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 a 'fit' among a company's activities. Performance must be measured in order to analyse strategies, as performance is a result of an activity (Porter, 1980). Atkinson *et al.* (1995) regard performance measurement as the most important, most misunderstood, and most difficult task in management accounting

Sinclair and Zairi (1995) define performance measurement, performance measures and performance measurement systems as follows:

1. *Performance measurement* is the 'systematic assignment of numbers to entities'. The function of measurement is to 'develop a method for generation of a class of information that will be useful in a wide variety of problems and situations'.
2. *Performance measures* are the 'characteristics of outputs that are identified for purposes of evaluation. It is the vital signs of the organisation, which quantify how well the activities within a process or the outputs of a process achieve a specified goal'.
3. *Performance measurement systems* are defined as 'a tool for balancing multiple measures (cost, quality and time) across multiple levels (organisation, processes and people)'. Its aim is 'to integrate organisational activities across various managerial levels and functions', and it also directs attention on continuous improvement. An effective performance measurement system 'should provide timely, accurate feedback on the efficiency and effectiveness of operations'.

Otley (2001) suggests performance should be measured in terms of effectiveness (delivering desired outputs, and even outcomes), efficiency (using as few inputs as possible to obtain these outputs), and economy (buying inputs as cheaply as possible). This means that different aspects of performance consist of the production of outputs, the transformation of inputs, and the purchasing of inputs. Simons (2000) suggests that profit performance should be measured in terms of effectiveness and efficiency. Based on the work of Sink (1985), Rolstadas (1998) projects a model that shows a complex relationship between the following seven performance criteria:

1. Effectiveness. Involves doing the right things, at the right time, with the right quality, etc; defined as actual output/expected output.
2. Efficiency. This is an input and transformation process question, which is defined as resources expected to be consumed/resources actually consumed.
3. Quality. An extremely wide concept, which can be made tangible by relating it to customers, suppliers and providers, with respect to quality management.
4. Productivity. The traditional ratio of output/input.
5. Quality of work life. A necessary contribution to a well-performing system.
6. Innovation. A key element in sustaining and improving performance.
7. Profitability / budgetability. Represents the ultimate goal for any organisation.

The performance measure selected must be suitable to support performance goals. Simons (2000), notes that the measure must satisfy three criteria (1) It aligns with strategy. Good measures allow employees to infer and understand intended business strategy. (2) It measures effectively. The measures should be objective, complete and responsive. (3) Links to value. Output measures must give the highest confidence value. Input process measures are valid only if managers understand the relationships of cause-and-effect.

3.2.1 Purpose of performance measurement

Parker (2000) identifies some reasons for measuring performance as identifying success or failure, identifying whether customers are satisfied or not, helping understand processes, i.e. what is already known and what is to be known, identifying where problems are, acting as a source of information to base decisions on, and finding out whether actual results are obtained as planned.

Neely (1998) notes that there are four categories of reasons to focus on business performance, i.e. measurement check position, communicate position, confirm priorities, and compel progress. Amaratunga *et al.*, (2001) suggest that performance measurement is a means of monitoring and maintaining organisational control, which is the process of ensuring that an organisation pursues strategies that lead to the achievement of overall goals and objectives

3.2.2 Effective Performance Measures

An effective system of performance measurement contains critical performance indicators (performance measures) that considers each activity and the organisation itself from the customer's perspective; evaluates each activity using customer-validated measures of performance; considers all facets of activity performance that affect customers and, therefore, are comprehensive, and provides feedback to help organisation members identify problems and opportunities for improvement (Atkinson *et al.*, 1995).

3.2.3 Performance measures

There are two types of performance measures: financial and non-financial measures. The financial measures are basically quantitative measures and the non-financial ones are the qualitative measures.

3.2.3.1 Financial Measures

Financial performance measures indicate whether the financial plans and initiatives implemented are successful in increasing profits (Simons, 2000).

Three financial performance measure approaches normally used to measure organisational performance are accounting-based measures, stock market-based measures, and hybrid measures (Lovero, 2000). These are considered to be the traditional performance measures that are derived from costing and accounting systems (Usoff *et al.*, 2002). Some examples of the accounting-based measures are Return on Assets (ROA), Return on Equity (ROE), Return on Investment (ROI), Residual Income (RI), Discounted Cash Flow (DCF) and Economic Value Added (EVA).

Accounting-based measures:

1. *ROA*

The average pre-tax earnings of a company for a period of time divided by the average assets of the company results in company ROA (Sveiby, 2001). In formula form, it is as follows:

$$ROA = \frac{\text{Pre-tax earnings}}{\text{Total Average Assets}}$$

2. *ROI*

DuPont Corporation started the use of ROI as a method of performance measurement in the 1920s. Assets were measured at their gross book value rather than at net book value, in order to produce a higher ROI. It is believed that measuring assets at gross book value removes the incentive to avoid investing in new assets, which can occur, as financial accounting methods artificially produce lower ROI in the initial years that an asset is placed into service.

ROI is the ratio of operation income to investment (Atkinson *et al.*, 1995). The following equation illustrates the above:

$$ROI = \frac{\text{Operating income}}{\text{Investment}} = \frac{\text{Operating income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Investment}}$$

= Return on Sales x Asset turnover

= Efficiency x Productivity

According to Atkinson *et al.* (1995), the ratio of operation income to sales (also known as return on sales or sales margin) is a measure of efficiency, the ability to control costs at a given level of activity. The ratio of sales to investment (often called asset turnover) is a measure of productivity, the ability to generate sales for a given level of assets.

3. *RI*

Atkinson *et al.* (1995) note that RI equals actual income less the economic income of the investment used to generate that income. It can be illustrated as follows:

Residual income = Accounting income – Cost of capital

Like ROI, RI evaluates income relative to the level of investment required to earn that income. The larger the RI, the better is the performance of the investments.

4. *EVA*

EVA was introduced by Stern Stewart and Co., a New York-based consulting firm, in the late-1980s, as a tool to assist corporations to pursue their prime financial directive by aiding maximising the wealth of their shareholders (Stewart, 1991). EVA is a variant of residual income developed to promote value-maximising behaviour in corporate managers. It is marketed as an accounting-based performance measure, which yields the same discounted present values as free cash flow, thereby retaining the accounting profit on the matching of costs and revenues without losing value-relevance. This approach has acquired increased credibility, and is now playing a significant part in capital markets-based financial accounting research. EVA ties together capital budgeting, financial planning, goal setting, performance measurement, shareholder communication and incentive compensation. Its purpose is

to develop a performance measure that properly accounts for all ways in which corporate value could be added or lost (Bontis *et al.*, 1999; Simons, 2000).

Bontis *et al.* (1999) note that EVA stresses the importance of maximising incremental earnings above capital costs. If the organisation's rate of return on capital exceeds its required rate of return, EVA will be positive. EVA is the difference between net sales and the sum of operating expenses, taxes and capital charges. Capital charges are calculated as the weighted average cost of capital multiplied by the total capital invested. EVA increases if weighted average cost of capital is less than the return on net assets, and vice versa. This implies that effective intangible assets management will increase EVA. Barsky and Bremser (1999) suggest that EVA's measurement provides management with an explicit incentive structure that creates value for shareholders. Based on the work of O'Bryne (1996), Barsky and Bremser (1999) noted five-year changes in market value and found that the changes in EVA explain 55 per cent of the valuation in these changes. They also noted that ten-year changes in EVA were found to explain 74 per cent of the variation in market value change. This is considered superior to net operating profit after tax, which explained 24 per cent of the five-year changes, and 64 per cent of ten-year market value changes.

EVA provides a singular measure that is adjusted to resolve accrual accounting issues. There are 120 or more aspects of performance adjustments that could be used to address shortcomings in conventional accounting practice, and thus solve problems like the accounting of intangibles and long-term investments with a high degree of uncertainty, such as capitalisation and amortisation of R&D, market building, restructuring charges and other strategic investments with deferred pay off-patterns (Stewart, 1994; O'Hanlon and Peasnell, 1998; Barsky and Bremser, 1999; Simons, 2000).

3.2.3.2 Non-financial measures

This type of measure focuses on intangible resources: key customers, internal processes, and learning and growth (Simons, 2000). Eccles (1991) is concerned that traditional accounting systems generate numbers that do not support investments in new technologies and markets that are needed to compete successfully in global

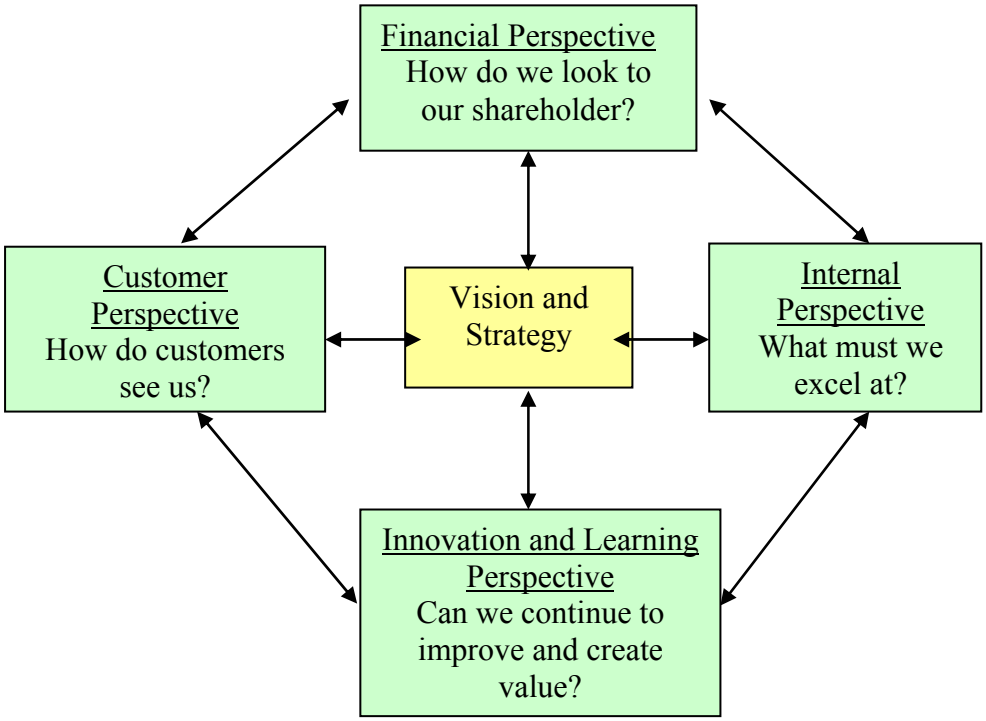
markets. He proposes that a performance measurement must be able to answer the following three questions:

1. Given the firm's strategy, what are the most important measures of performance?
2. How do these measures relate to one another?
3. What measures truly predict long-term financial success for the business?

1. Balanced Scorecard (BSC)

Kaplan and Norton developed the BSC in 1992 to supplement the traditional financial performance measurement (Kaplan and Norton, 1996). It is also considered as one of the answers to the calls for non-financial 'strategic control' measures to be included in management accounting so as to sustain its relevance (Vaivio, 1999). The BSC (Figure 3.1) is a tool which systematically expands the measurement areas traditionally involved in accounting. It thus aims to contribute to reducing the problems involved in using only financial measures for the purposes of control in a strategic framework. It is also changing the way of communication about strategies, since it is no longer restricted to financial measures (Norreklit, 2000). The BSC also enables companies to track financial results while simultaneously monitoring progress in building the capabilities and acquiring the intangible assets they would need for future growth. The scorecard is not a replacement for financial measures; it is their complement (Kaplan and Norton, 1996). BSC aids companies in change management, strategy implementation and outcomes measurement (Barsky and Bremser, 1999).

Figure 3.1: Four Perspectives of Balanced Scorecard



Source: Kaplan and Norton (1996)

It is a framework for designing a set of measures for key activities drivers. Kaplan and Norton identified four important perspectives of the business. These perspectives are also considered as four categories of performance measures, which are supposed to improve managerial decision-making (Lipe and Salterio, 2002). They are (1) financial, (2) external customer, (3) internal process, and (4) innovation and learning. BSC is just a framework and does not specify the measurements to be used (Bontis *et al.*, 1999; Bourne and Bourne, 2000; Amaratunga *et al.*, 2001).

The BSC promotes a comprehensive and balanced view, not missing any area of the business. It measures not only the financial aspects but the non-financial as well, measuring companies' intangible capabilities and innovativeness (Otley, 1994; Simons, 2000; Amaratunga *et al.*, 2001).

Figure 3.1 illustrates the four perspectives of the BSC. The four perspectives were designed to balance the financial and the non-financial, the internal and the external, and current performance with the future.

The BSC provides a multi-dimensional measurement system to guide managers with their decisions, including leading and lagging indicators (Eccles, 1991). The new idea brought by BSC is to encourage the systematic measurement of these quantities, and to link all these measures in a coherent system. The financial measures include traditional accounting measures. Kaplan and Norton suggest the adoption of different measures for different parts of the company, sacrificing comparability to fit with the strategic business unit's (SBU) strategy. The customer perspective group measures relate to the identification of target groups for the company's products, in addition to marketing-focused measures of customer satisfaction, retention, etc.. The internal business process draws heavily on the concept of the value chain; this includes all the processes relating to the realisation of products and services to satisfy customers' needs. Finally, the learning and growth perspective includes all measures relating to employees and systems the company has in place to facilitate learning and knowledge diffusion (Bontis *et al.*, 1999).

Bontis *et al.* (1999), Vaivio (1999), Norreklit (2000) and Simons (2000) summarise that the process of developing a BSC system starts with a reinterpretation of the vision. A BSC helps managers carry out four activities that separately, and in combination, contribute to linking long-term strategic objectives with short-term actions, a characteristic which is lacking in the traditional management system. The four activities are shown in Table 3.1.

Table 3.1: BSC as Strategic Control Framework

1. Communication and linking by achieving strategic alignment of objectives of whole organisation	Clarifying vision Gaining consensus
2. Business planning by managing targets, coordinating initiatives, and planning budget	Communicating and educating Setting goals and decomposing Linking rewards to performance measures
3. Feedback and learning by updating plans, strategies, and BSC	Setting targets Aligning strategic initiatives Allocating resources Establishing milestones
4. Translating vision by clarifying mission and long-term strategy to all constituencies inside organisation.	Articulating shared vision Supplying strategic feed-back Facilitating strategy review and learning

Source: Bontis *et al.* (1999) and Norreklit (2000)

Kaplan and Norton (1996) observe that companies have expanded their use of the BSC, employing it as the foundation of an integrated and iterative strategic management system. Companies are using the BSC to clarify and update strategy, communicate strategy throughout the company, align unit and individual goals with the strategy, link strategic objectives to long-term targets and annual budgets, identify and align strategic initiatives, and conduct periodic performance reviews to learn about and improve strategy.

The BSC enables a company to align its management processes, and focuses the entire organisation on implementing long-term strategy. Without a BSC, most organisations are unable to achieve a similar consistency of vision and action as they attempt to change direction and introduce new strategies and processes. The BSC provides a framework for managing the implementation of strategy itself to evolve in

response to changes in the company's competitive, market, and technological environments (Kaplan and Norton, 1996).

Bontis *et al.* (1999) critically review the BSC to be relatively rigid in many aspects: identification of Key Success Factors, the perspective themselves, and external environment consideration. The authors consider the lack of emphasis on *employees* to be the most serious setback of the BSC, as personnel is just lumped with the IT system into the learning and growth perspective; innovation is just taken for granted, as if it is independent from people and knowledge management.

3.2.4 IC and Performance Measurement

The traditional performance measures fail to measure and monitor multiple dimensions of performance; they concentrate almost only on financial aspects of the organisations. IC such gives rise to benefits that are hard to quantify, such as management, customer retention, R&D, and innovation. This suggests that traditionalfinancial measures are not adequate for the current information age, which encompasses new business environment and realities (Amaratunga *et al.*, 2001).

The above is evidenced by the fact that corporate market values exceed book value. Amir and Lev (1996) estimated that nearly 40 per cent of the market valuations of the average companies are not shown in their balance sheets, and this is 50 per cent for high-technology firms. This of course depends on the state of the stock market. Amaratunga *et al*. (2001) found that 70 per cent of investors base 30 per cent of their decisions on non-financial performance; and financial analysts concentrate more on the use of non-financial measures, as they get more accurate forecasts. Drucker (1992) stresses the dilemma:

> *"……a traditional measure is not adequate for business evaluation. A primary reason why traditional measures fail to meet new business is that most measures are lagging indicators. The emphasis of accounting measures has been on historical statement of financial performance. They are the result of financial management performance, not the cause of it."*

Global markets have shifted from capital-intensive industries to knowledge-based industries, which have much more intangible resources. Traditional financial measures fail to assess the performance of such companies with high intangible resources. The long-run value, which the companies such as Microsoft are based on, is their IC resources and their continuous innovativeness (Barsky and Bremser, 1999). The discrepancies between the market value and the book value that are shown by financial measures have led investors to seek primarily non-financial information (Amir and Lev, 1996).

Since the BSC is a comprehensive measure of performance, which measures both the financial and non-financial aspects of the business, it seems to be the most suitable for measuring IC performance. If the BSC is being used correctly, as being proposed by Kaplan and Norton (1996), such as metrics are clearly defined, and improvement goals arbitrarily negotiated rather than being based on stakeholder requirements, it will not fail to measure both IC and financial performances.

3.3 Budgets and Budgeting

Many organisations have budgets as integral components of their management control systems (Webb, 2002). Budgets are quantitative models, or a summary of expected consequences of an organisation's short-term operating activities, such as a prediction of cash inflows and outflows, and a production plan of production for a period of one year. Budgets serve as a means of planning and control. They are also a means for communication of short-term goals to members of the organisation. Unit and division managers will prepare their budgets congruent with the organisation's goals. Budgeting is the process of preparing budgets and requires several important skills, including forecasting, a knowledge of how activities affect costs, and the ability to see how the organisation's different activities fit together. A budget team, coordinated by the financial controller, normally does budgeting, and the team report to a budget committee that includes senior management (Atkinson *et al.*, 1995).

Managers are strongly motivated to find ways of improving the process of budgetary planning and control in order to improve competitiveness. One of the ways is by enhancing budget team dynamics or budget participation (Poon *et al.*, 2001).

Arwidi and Samuelson (1993), drawing on the work of Samuelson (1986), suggest another major role of budgeting besides planning and control, i.e. influencing the behaviour of budgeters. Meanwhile, based on the work of Walker and Johnson (1999), Webb (2002) notes that budgets are used to motivate employees, allocate resources, and evaluate performance.

3.3.1 Budgetary Control

One of the roles of budgetary control is to provide a means of reducing the uncertainty faced by employees (Arwidi and Samuelson, 1993). The Armstrong *et al.* (1996) survey shows that almost 70 per cent of the responding companies use budgetary control as performance measurement. Van der Stede (2001) notes that accounting-based budgetary controls are an integral part of the management control system in profit-organisations. Atkinson *et al.* (1995) stress that the role of budgets in control is, firstly, at the stage when performance is measured and assessed after the implementation of the budget decisions, and secondly, at the stage when objectives, goals, strategies, and plan are re-evaluated after performance measurement.

3.3.2 Budget Control Style

Hopwood (1973) lists three styles of organisations' use of budget in performance evaluation:

1. Budget constrained style. Evaluation of performance is based on the ability of the manager to continually meet the budget on a short-term basis.
2. Profit conscious style. Evaluation of performance is based on the ability of the manager to increase the general effectiveness of his units in terms of long-term objectives of the organisation.
3. Non-accounting style. Evaluation of performance is based on non-accounting (non-financial) information and very little accounting information.

3.3.3 Limitations of Traditional Budgeting

There are some limitations to budgeting (Bunce *et al.*, 1995; Hope and Fraser, 1997, 1999; Stewart, 1999; Fanning, 2000; Wallander, 2000; Hope and Fraser, 2001; Jensen, 2001). Table 3.2 lists some of them:

Table 3.2: Limitations of Traditional budgeting

Objective	Practice	Problem
Strategic coherence	Last year plus Across-the-board cuts	Not linked to strategy Wrong services cut
Resources Rationality	Functional organisation Cost element focus Investment benefits Understated	Sub-optimal performance Outputs not visible Surplus resources Inappropriate cycle times
Continuous Improvement	Incremental improvement Fixed and variable	Internally driven targets Inefficiencies masked
Congruent Behaviour	Command and control Finance emphasis	Lack of commitment Dysfunctional behaviour
Added Value	After-event reporting Bureaucratic	Variances not prevented Wasted opportunities

Source: Bunce *et al.* (1995)

3.3.4 Budget Improvement

Various suggestions have been put forward to improve budgeting. Some of the improvements are innovations in budget process such as zero-based budgeting, priority-based budgeting, activity-based budgeting, and regular forecasting (Fanning, 2000). Barsky and Bremser (1999) extend a model created by Shank and Govindarajan (1992) that describes and explains ten criteria for how budgeting systems varied with strategy. The extended model (Table 3.3) shows the differences between the traditional budgeting and improved budgeting.

Table 3.3: Difference Between Traditional Budgeting and Improved Budgeting

	Traditional Budgeting	Improved Budgeting
Role of Budget	Financial Control Document	Integrated measurement tool
Business Unit Influence	Varies with management operating philosophy and strategy	Higher participation and aligned with strategic initiatives
Review and Revision	Depends on point in product life cycle	Rolling budgets; Tied to changes in strategic initiatives
Reliance on Standard Costs	High reliance on variance analysis	Greater reliance on leading measures
Use of Flexible Budgets	Basis of performance measurement	More integrated, not just volume driven
Frequency of Contracts	Limited and scheduled reporting	Real time
Feedback from Superiors	Periodic	Ongoing and interactive
Importance in Performance Evaluation	High	Weighted with financial measures
Primary Control Objectives	Target profit orientation	Strategic goals and ongoing adaptation
Role of Finance Function	Centralised, oversight role	Reduced influence, greater team orientation

Source: Barsky and Bremser (1999)

There are still some problems with improved budgeting. For example, Zero-based budgeting is not suitable for an on-going budgeting system, as it is too bureaucratic,

internally-focused, and time-consuming. Budgeting, as Hope and Fraser (1997) put it, is just 'out of sync' with the information age.

3.3.5 Budgeting in Information Age

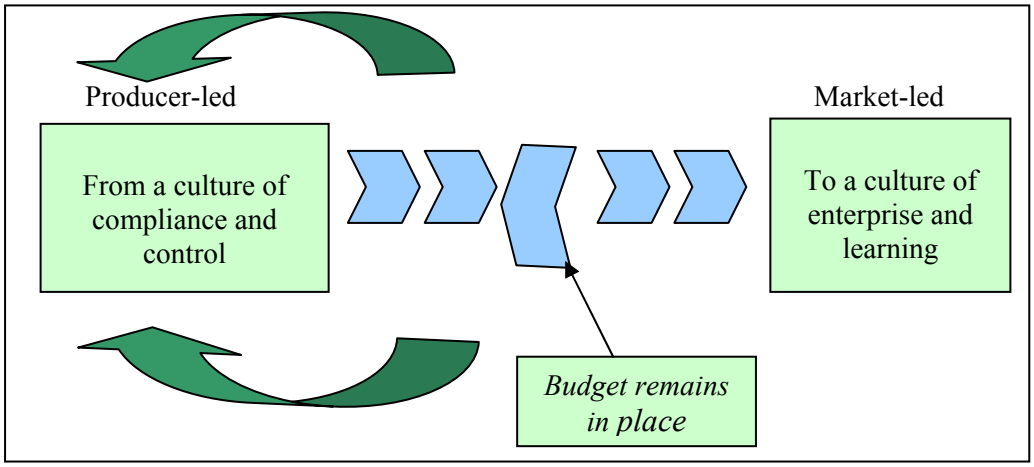
The traditional budgeting approaches are based on those developed in the 20th century. Even though there have been innovations in budgets, there are some authors who call for them to be discarded (Fanning, 2000). They suggest that budgets are just a waste of time because of their disadvantages. They believe that firms can do better without a budget. Even improved budgeting is not recommended (Stewart, 1990; Hope and Fraser, 1997, 1999; Wallander, 1999). In operating without a budget, according to Wallander (1999), organisations should first define their basic needs for information. The right information should quickly be sent to the right person, so that the person is able to act upon it at the right time. From the information, the person should also be able to assess whether his/her target is achieved or not. This has been practised and proven successful by the largest commercial bank in Sweden, Svenska Handelsbanka.

Beyond Budgeting Round Table (BBRT), a research body run by CAM-I, a US-based organisation, has studied new approaches to budgeting. BBRT has studied several organisations that have discarded the traditional budgeting, and used the findings to formulate a new model that is applicable in today's information age (Hope and Fraser, 1997, 1999). Hope and Fraser (1997, 1999) argue that firms in the information age should not use the accounting system created for those in a past industrial age because IC has replaced land, labour and capital as the key competitive constraints. A high IC value has greater impact on shareholder value than a high financial value.

Fanning (2000) notes that BBRT's major aim is to go from 'post-industrial', where the economic model is the 'control' model, to 'information age', where the suggested economic model is the 'enterprise' model. The new model is based on enterprise, innovation and empowerment. The author also points out that the beyond budgeting model consists of separating target setting from financial planning (using BSC in replacement), more frequent financial forecasting, and change in organisational culture.

Figure 3.2 shows that the 'traditional budgeting' tends to be the barrier to moving to the new model. Hope and Fraser point out that many organisations have adopted the new 'Enterprise' model, such as TQM, BPR, decentralisation, empowerment, economic value added, and BSC, but fail to achieve the objectives of the model due to the requirement of the budgeting system. As long as budget is still there, the organisation will return to its outdated culture.

Figure 3.2: Problems of Traditional Budgeting



Source: Fanning (2000); Hope and Fraser (1997)

3.4 Capital Investment Decisions

Capital investment decision-making is a collection of tools and ideas that planners use to evaluate whether it is economic or not to purchase a certain long-term asset. A capital investment decision uses tools and ideas borrowed from finance, statistics and engineering control theory; so, partly theory, partly art. The main appraisal issue is whether the future benefits of the long-term assets justify the initial cost (Atkinson *et al.*, 1995).

Some of the methods of appraisal are Net Present Value (NPV), Internal Rate of Return (IRR), Payback, and Accounting Return on Capital Employed (ARCE). It was previously reported that the most popular is the payback method; however, a research conducted by Drury and Tayles (1997) on capital budgeting in the UK shows that

most organisations use a combination of appraisal techniques. The authors' findings confirm some previous ill-supported claims that some UK organisations misapply DCF techniques, which put them in the position of under-investing (Drury and Tayles, 1997). Collier and Gregory (1995) reported that their field study analysis of the UK hotels sector indicated that the investment appraisal techniques applied varied from fairly complex DCF techniques to a simple payback criterion. The techniques used were also not always consistent with those defined by 'textbooks'.

Nowadays, it is of increasing importance for managers to consider the strategic benefits of the long-term assets. NPV techniques are complemented by a broader strategic cost management accounting approach incorporating three additional tools - value chain analysis, cost driver analysis, and competitive advantage analysis (Carr and Tomkins, 1996). According to Atkinson *et al.* (1995), examples of the benefits are being able to make goods or deliver a service, which competitors cannot, improving the quality of the product by reducing the potential to make mistakes, and shortening the cycle time to make the product.

Bunce *et al.* (1995) suggest that traditional budgeting is dysfunctional, since it is an old management approach, which is not relevant in the context of a business seeking customer-driven goals. Budgeting must become an integral part of an overall management system that links market goals with the resourceness of cross-functional activities. The results of a survey conducted by Carr and Tomkins (1996) agree with those of Bunce *et al.* (1995) above. They show that, in general, compared to unsuccessful companies, successful companies place five times more attention on the issue of competitive advantage, almost three times more on value chain considerations, and twice more on cost drivers. The survey also indicates that companies give less attention to traditional capital budgeting techniques.

3.4.1 Non-financial Budget Decisions

Irani *et al.* (1998) suggest that the use of traditional appraisal techniques is no longer appropriate for investments in IT/IS because of their non-financial and intangible benefits, as well as the complexity of their direct and indirect costs. This shows that the techniques are inadequate in aiding informed budget decisions on capital investments.

The results of a survey conducted by Carr and Tomkins (1996) indicate that companies give less attention to traditional capital budgeting techniques. According to Irani *et al.* (1998), it is difficult to measure the return from investments, such as in brand name and employee training. This shows that the traditional techniques are inadequate in aiding informed capital budgeting decisions on such investments. Mouck (2000) supports the above. He argues that "The traditional capital budgeting model is virtually useless for the high-tech, knowledge-based, increasing returns sectors of the economy….."

According to Segelod (2000), many professional service firms, which are knowledge-intensive in nature, mainly invest in intangible investments such as training and development of new competence, while manufacturing firms invest mainly in tangible assets such as machines and production equipment. Nowadays, many traditional manufacturing firms have become more knowledge-intensive. They have invested less in intangible assets, and more in R&D, training, marketing, software and computerised machinery. In consequence, all the firms now devote less attention to formal capital investment decisions.

3.4.2 Increasing investment in information technology/information support (IT/IS)

As normally practised, managers have to justify the costs and benefits of their capital investments. The traditional appraisal techniques such as NPV, IRR, payback, etc. only examine the investments' financial cost and benefits, and neglect the strategic aspects. Thus, most of the managers are unable to justify their IT/IS investments, as some of the costs and benefits are very difficult to be justified quantitatively (Irani *et al.*, 1998).

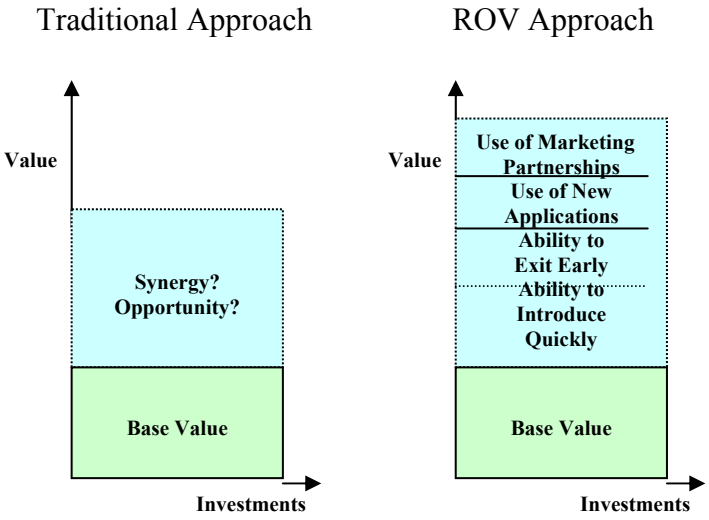
3.4.3 Strategic Options

There is a growing literature on real options (Neil and Hickey, 2001; Seth and Sung, 2001; Pike and Neale, 2002). These are option-like features found in 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. Such investments have

non-quantifiable benefits that, according to Pike and Neale (2002), "could open up the possibility of further wealth-creating opportunities". They term these *strategic options*, and the following are examples of opportunities included in them, i.e. entering new markets, development of follow-up products, improvement of existing practices, and development of brand extension.

Real Option Valuation (ROV) is a new standard set to evaluate, select and manage strategic investments (Standard and Poor, 2003). Standard and Poor (2003) point out that ROV improves the traditional techniques by providing a better evaluation of the strategic investments' value, and communication of the rationale behind the value in a better manner (see Figure 3.5) and a clear roadmap to attain the maximum value from a strategic investment.

Figure 3.3: Traditional approach vs. ROV approach



Source: Standard and Poor (2003)

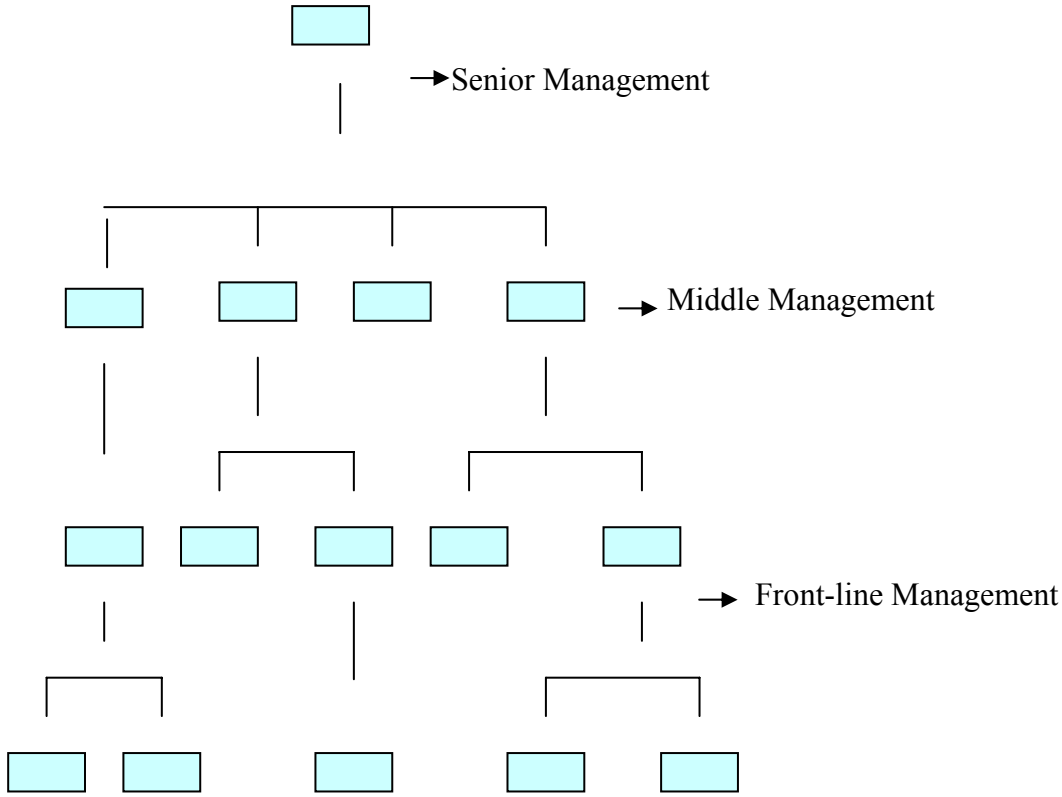
3.5 Corporate Characteristics

IC influences corporate characteristics, such as organisational structure, i.e. culture of trust an decentralisation. This organisational structure then influences firms' performance.

3.5.1 Culture of Trust and Decentralised Structure

A multidivisional or M-form model of management structure, as illustrated in Figure 3.3, was suitable and effective for the industrial age (1920s to 1970s), which focused on limiting factors of finance, land and labour (Hope and Fraser, 1997). In this outdated management approach, senior management are the main source of knowledge and experience. Their major role is to formulate strategy and allocate resources. Middle management maintains organisation control, and front-line managers are only supposed to be the implementers.

Figure 3.4: M-form Model of Management Structure

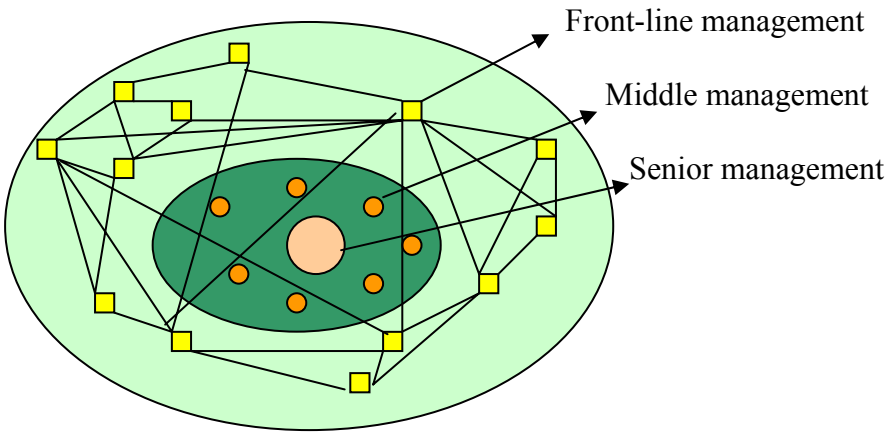


Source: Hope and Fraser (1997); Brown and Atkinson (2001)

The M-model is not 'in-tune' with today's fast-changing competitive age, where the key source is not financial any more, but IC, i.e. competent management, enthusiastic and skilled workers, strong brands, and loyal customers (Hope and Fraser, 1997).

The model, as argued by Hope and Fraser (1997: 21), is "too bureaucratic, rigid and unresponsive, and creates a culture that is risk-averse and gives a false sense of security." Thus, a new structure, the N-model of management structure, as illustrated in Figure 3.4, is recommended.

Figure 3.5: N-form Model of Management Structure



Source: Hope and Fraser (1997); Brown and Atkinson (2001)

The N-model is based on trust, between managers, workers, customers and partners. The front-line managers are considered the entrepreneurs. They set strategies, make decisions, and constantly create and respond to new opportunities for the business. The middle managers are the horizontal integrators. They develop internal and external competencies, while the top managers are supposed to be motivators, who also frequently check on the organisation's ongoing ideas and processes (Hope and Fraser, 1997; Brown and Atkinson, 2001).

The new model supports the view of Barney (1986), as cited by Bontis (1998), that organisations should have a culture that supports and encourages cooperative innovation because this would give them competitive advantage. According to Bontis, Barney's discussion on the potential for organisational culture to serve as a source of sustained competitive advantage concludes that firms that have the required culture are able to engage in activities that will modify their culture and generate sustained superior performance. Thus, it could be concluded that firms with high

level of IC should have a high culture of trust so that the environment will be conducive for creativity and innovations.

3.5.2 Firms' Size

Firm size is expected to influence levels of IC. Larger firms are able to invest more heavily in IC, particularly structural IC. However, unlike the other characteristics, it is suggested to be influencing levels of IC, not vice-versa (Usoff *et al*., 2002).

3.6 Risk management and Market Uncertainties

All firms have to take some risks and face uncertainties in order to succeed. There is always a possibility of failures and losses in every business venture or investment. Pike and Neale (1993) note, "Risk refers to the set of unique consequences for a given decision which can be assigned probabilities, while uncertainty implies that it is not possible to be assigned probabilities."

Risks can only be minimised, not avoided. Risk management practice helps firms to do so. According to InvestorWorld.com, "Risk management is the process of analysing exposure to risk and determining how to best handle such exposure" (InvestorWorld.com, 14 Nov. 2002).

3.6.1 Different Types of Risks

Pike and Neale (2002) categorise risks into four types: business, financial, corporate, and portfolio or market. They define them as follows:

1. Business risk - the variability in operating cash flows or operation earnings before interest and tax are deducted.
2. Financial risk - risk, over and above business risk, which results from the use of debt capital.
3. Corporate risk - the combination of business and financial risk.
4. Portfolio or market risk - the variability in shareholders' returns.

3.6.2 Corporate Risks

Dowd (1998) suggests that corporate risks are comprised of business, market, credit, liquidity, operational, and legal. .

3.6.3 Market Risks / Stock Portfolio Risks

Dowd defines market risks as risks of losses from movement of the market prices, such as equity prices or market rates (interest or exchange rates), while Ritchie and Marshall (1996) define it as the risk for products' demand. Pike and Neale (2002) define it as a kind of risk faced by shareholders. They also call it stock portfolio risk. "It is a risk of fluctuation in their earnings, and can be minimised by selectively choosing investment portfolios" (Pike and Neale, 2002). In simple words, market risks / stock portfolio risks are risks or losses from interest rates or market prices. Among the above market risks' definitions, the study chooses Pike and Neales (2002) definition as the working definition of market risks. One of the models to analyse companies' stock portfolios is the capital-asset pricing model (CAPM). *The Economist* (1991) notes that the assumption of CAPM that the stock markets are efficient, whereby a stock's price takes into account all information that is publicly available. Unfortunately, there are doubts on the assumption. Some of them, as quoted directly from *The Economist* (1991), are (1) Stock prices that tend to move about much more than changes in their dividend payments would suggest (2) Big movements in share prices, which often fail to happen when there are major public announcements, or big changes in information, and many smaller anomalies (3) Small stocks tend to do well in January; all stocks do well at the beginning of the month; most do badly on Monday mornings (4) Stock returns tend to be mean reverting, i.e. bad days, and even bad years, are more often than not followed by good ones.

3.6.4 Uncertainty

Uncertainty, as suggested by Ritchie and Marshall (1993), exists in decision situations where the decision-maker does not have enough knowledge, information or understanding concerning the proposed decision and its possible consequences. The authors note that there are two basic types of uncertainty. They are uncertainty originating from a situation of pure chance, such as the throw of a dice (this kind of uncertainty is known as aleatory uncertainty) and uncertainty originating from a problem situation where the resolution depends on the exercise of judgement (this second type of uncertainty is known as epistemic uncertainty).

3.6.5 Factors influencing degree of uncertainty

Ritchie and Marshall (1993) further note that the degree of uncertainty is influenced by inadequate information, lack of clarity in structuring the problem, inability to identify alternative solutions to the situation, futuristic nature of decision-making, availability of information, undefined objectives, level of confidence concerning the post-decision stage of implementation, and personal qualities of the decision-maker. The authors explain some of the factors as follows:

1. *Inadequate information*: "Quality or quantity of information will not be sufficient or help the decision-maker to recognise the existence of a problem or a situation requiring resolution."
2. *Lack of clarity in structuring the problem:* "Inability of decision-maker to decompose the problem situation into components that can be more easily understood."
3. *Inability to identify alternative solutions to the situation:* "This is due to some constraints such as the amount of time available, the amount and quality of information available, and the capacity of the individual to analyse or synthesise only a limited range of alternatives."
4. *Availability of information:* "Lack of appropriate information."

3.6.6 Uncertainty Reduction Strategies

In order to reduce uncertainty, Ritchie and Marshall (1993) recommend that each problem be solved as it arises by having timely feedback data on performance levels arising from the most recent decisions and a clearly defined set of goals as a constant framework or reference.

3.6.7 IC and Economic Exposure Management

Table 3.4: Market value and assets (in billions of US dollars)

Company	Market Value	Revenue	Profits	Net Assets	'Hidden Value'
General Electric	169	79	7.3	31	138 (82%)
Coca-Cola	148	19	3.5	6	142 (96%)
Exxon	125	119	7.5	43	82 (66%)
Microsoft	119	9	2.2	7	112 (94%)
Intel	113	21	5.2	17	96 (85%)

Source: Roos *et al.* (1997)

Table 3.4 shows the 'hidden' portion of corporate value that is unexplained and unaccounted for. A number of authors have suggested that it is IC (Roos *et al.*, 1997). There is a question whether all the 'hidden value' is really IC. The ratio is just an indirect measure of IC and it is not satisfactory. IC should not be influenced by accounting values (asset book value). IC has an impact on market value, and thus must be prior both to market value and book value (Mouritsen *et al.*, 2001). Nevertheless, the 'hidden value' does give some possible indication that IC contributes to making the value of the firms higher. When, however, stock markets plunge down since the year 2000 until the present, the question is raised in relation to the impact and significance of IC (Saigol, 2002). What has happened to IC value? Can IC help management cope with profitability and market uncertainties? (Saigol, 2002; Wall *et al.*, 2004). How should IC be managed in this situation? The argument is that firms with high levels of human, structural, and relational IC have the protection (e.g. patents, brands, and customer relationships), flexibility, and inventiveness that should enable them to better withstand unanticipated economic downturns.

3.7 Chapter Summary

This chapter has presented the literature review on IC and how it could change firms' management accounting practices, (i.e. performance measurement, budgeting, and capital investment decisions), culture of trust, and economic exposure management. As a branch of accounting, management accounting has been emphasising financial concept in its practices. The change in the economy from manufacturing-based (tangible assets emphasis) to knowledge-based (intangible assets emphasis) has made the practices inadequate. Knowledge-base economy has produced IC (intangible assets), which is not quantifiable and difficult to be incorporated into management accounting. Management accounting traditional practices are suggested to be changed to modern and forward-looking practices. Therefore, in order to have competitive advantage, firms with high IC have got to adopt appropriate and relevant management accounting practices, i.e. the practices that incorporate both financial and non-financial perspectives so IC contribution, performance, value, costs, and benefits, will be captured. If a practice, such as budget emphasis, is considered inadequate for

strategic planning and control, it could be replaced by a more strategic alternative, such as regular re-forecasting.

The literature suggests that firms with high IC value should be using non-financial measures and focusing less on financial measures as a means of performance evaluation, adopting the scorecards, such as the BSC due to their capability of measuring both financial and non-financial performance comprehensively, and emphasising values; corporate or shareholders', such as EVA in their the financial measures. For budgeting, firms with high IC value are supposed to be applying more non-accounting/non-financial budget control and applying improved budgeting or de-emphasising budgeting; while in capital investment decisions, firms with high IC are expected to apply non-financial approaches for capital investment appraisals for long-term assets such as IT/IS machines, accept projects with negative net present values, and take an option approach to investment analysis.

The change from industrial age practices to information age practices requires firm to also change their organisational culture from 'control model' to 'enterprise model'. Thus firms with high IC are suggested to operate within a culture of trust and decentralised structure.

High IC firms are exposed to economic risks. Firms with high IC are expected to be better able to respond to unanticipated economic and market change and less affected by short-term performance. They are advised to take a longer-term view. Lastly, firms with high IC value are expected to be large in size.

CHAPTER 4

RESEARCH METHODOLOGY

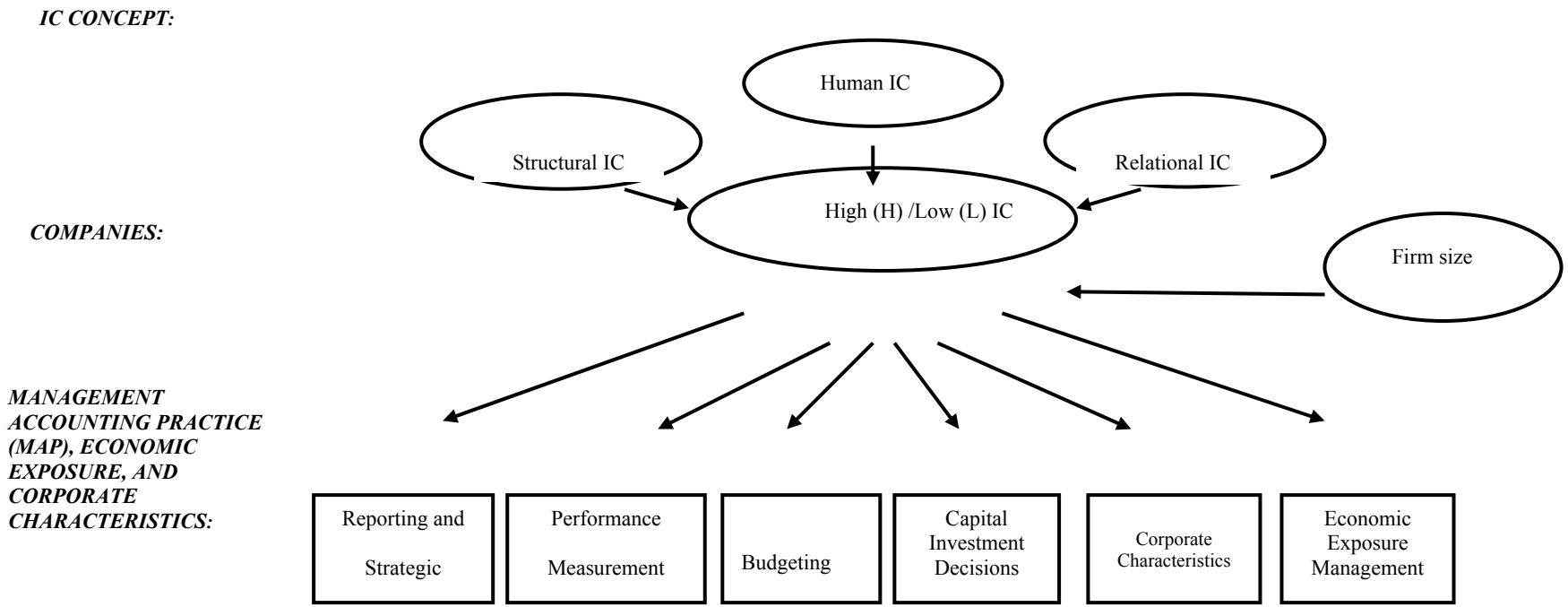
4.1 Introduction

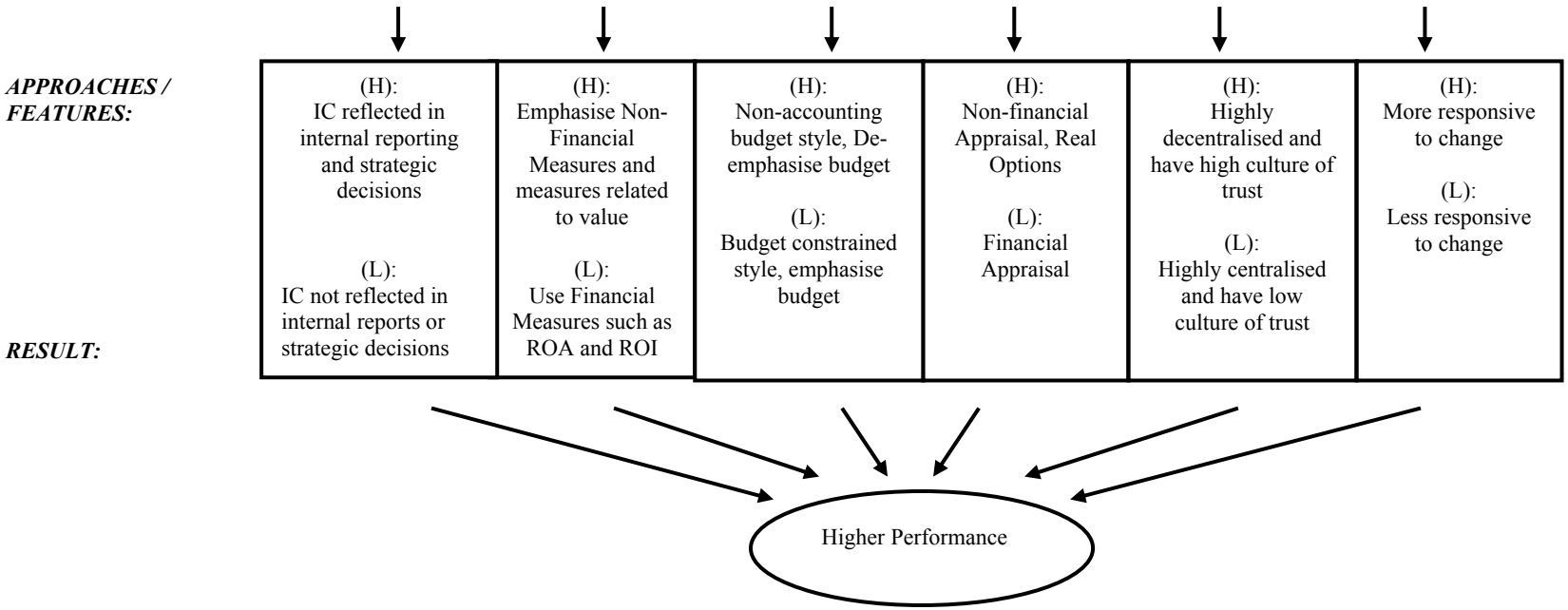
This chapter lays out the research propositions and methodology adopted to answer the major philosophical questions suggested by Remenyi *et al*. (1998): Why research?, What to research?, and How to research?, in order to show the value and relevance of the research. The aim of this chapter is to discuss the chosen study design, the data collection, and analysis methods used in conducting the research. The first part describes the research process, research methodology, sampling procedures, questionnaire survey, and case study. The instrumentation development is then elaborated further. The last part discusses the data analysis techniques.

4.2 Research Model

The research model (see Figure 4.1) consists of five elements, which are IC concept, companies with different levels of IC, management accounting practice (with organisational context and economic exposure as additional management aspects), approaches or features, and result. The model illustrates that IC in firms is of three types i.e. human IC (HIC), structural IC (SIC), and relational IC (RIC) (Bontis, 1998; Edvinsson and Malone, 1997; Edvinsson and Sullivan, 1996; Lynn, 1998; Stewart, 1991, 1997; Roos *et al*., 1997). There are three main propositions offered by the model. First, it suggests that management accounting practice (MAP) in firms should differ according to their level of IC, in order to achieve higher performance (Stewart, 1990; Amir and Lev, 1996; Hope and Fraser, 1997, 1999; Irani *et al.,* 1998; Wallander, 1999; Bourne *et al*., 2000; Segelod 2000; Fanning, 2002; Usoff *et al*., 2002).This is because the traditional MAP is still suitable for low IC firms, but no longer for those of high level of IC. Secondly, it also suggests that organisational context, such as management structure, should also change to the context that is

Figure 4.1: Research Model I: Level of IC is Associated with Management Accounting Practices and Corporate Characteristics




APPROACHES / FEATURES:
RESULT:
(H): IC reflected in internal reporting and strategic decisions
(L): IC not reflected in internal reports or strategic decisions
(H): Emphasise Non-Financial Measures and measures related to value
(L): Use Financial Measures such as ROA and ROI
(H): Non-accounting budget style, De-emphasise budget
(L): Budget constrained style, emphasise budget
(H): Non-financial Appraisal, Real Options
(L): Financial Appraisal
(H): Highly decentralised and have high culture of trust
(L): Highly centralised and have low culture of trust
(H): More responsive to change
(L): Less responsive to change
Higher Performance

appropriate for enhancing IC performance in order to achieve higher performance (Hope and Fraser, 1997). Third, it suggests that firms that have high level of IC are more responsive to change, i.e. to economic uncertainties and stock market downturns.

4.2.1 Research propositions

This section discusses the research propositions developed on the basis of research questions 1 and 2.

Research Question 1: **Do firms operate their management accounting practices appropriate to their level of IC?**

The research focuses on four aspects of the management accounting practices, i.e. internal reporting of strategic decisions, performance measurement, budgeting, and capital investment decisions. The propositions development is discussed according to the type of management practice they are linked to.

In the 1990s, the difference between some large firms' market value and book value was huge. This difference has been said to be 'hidden value', as it was unexplained and unaccounted for (Edvinsson and Malone, 1997; Roos *et al.,* 1997; Stewart, 1997; Lev, 2000; Mouritsen, 2001). Authors, such as Edvinnson and Malone (1997), Roos *et al*, (1997), Stewart (1997), Bontis (1998), and Lynn (1998), and Dzinskowski (2001) suggest that the hidden value represents IC, and as it is intangible, financial accounting cannot incorporate it into its model. There have been some initiatives undertaken by firms and accounting organisations to develop IC reporting models.

These models (Brooking, 1996; Edvinsson and Malone, 1997; Sveiby, 1997) do not incorporate IC in the traditional accounting model, but in a scorecard measurement system.

Since it is difficult to report IC objectively (financially), companies like Skandia AFS and Celemi of Sweden have started IC reporting in the form of stories and narratives (Mouritsen, 2001; Sveiby, 2002). It is important that IC value is included in financial reports so that the users get correct information for them to make decisions. Therefore, the following propositions are advanced:

P1.1: High IC firms are more likely to publish IC information in or with their annual reports.

P1.2: High IC firms are more likely to report IC information internally.

P1.3: High IC firms are more likely to refer to IC in their strategic decisions.

Traditional performance measurement employs financial techniques such as Return on Assets and Return on Capital Employed (Usoff *et al*., 2002). 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. 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 are the scorecards (Kaplan and Norton, 1996; Lipe and Salterio, 2000). Therefore, this research proposes the following four propositions:

P2.1: High IC firms tend to emphasise value-based financial measures.

***P2.2*:** High IC firms tend to de-emphasise profit and loss accounts-based financial performance measures.

P2.3: High IC firms tend to employ scorecard performance measures such as BSC.

***P2.4*:** High IC firms tend to employ both financial and non-financial performance measures.

Hopwood (1973) identified three management styles for evaluating performance, i.e. Budget Constrained style, Profit Conscious Style, and Non-accounting Style. 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. Stewart (1990), Wallander (1999); Bunce et al. (1995), Fanning (2000), Hope and Fraser (2001), and Jensen (2001). 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 (Stewart, 1990; Hope and Fraser, 1997, 1999; 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. In the light of the above, the following propositions are put forward:

P3.1: High IC firms tend to employ non-accounting budget control style.

P3.2: High IC firms tend to de-emphasise budget or at least de-emphasise accounting-based budget control style (budget-constrained or profit conscious style).

P4.1: High IC firms tend to employ forecasting and separate target setting

P4.2: High IC firms tend to employ a non-traditional budget approach such as priority-based budgeting.

According to Carr and Tomkins (1996), corporate practice suggests increasing importance for managers in considering 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. The authors 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). Increasingly, firms, especially those high-tech and

knowledge-based, invest less in tangible assets, and more in R&D, training, marketing, software, and other intangibles (Irani *et al*., 1998; Mouck, 2000).

The growing literature on Real Options (Neil and Hickey, 2001; Seth and Sung, 2001) considers the value of option-like features within capital investment decisions. Of particular relevance to this research 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. Real Options valuation improves the traditional capital budgeting approach by providing a better evaluation of strategic investments. From the above review of capital budgeting, the following propositions are advanced:

P5.1: High IC firms would not likely be employing financial methods of capital budgeting methods.

P5.2: High IC firms would likely be accepting negative net present value because intangible investment benefits are hard to quantify and use Real Options.

Research Question 2: **Are firms with high levels of IC better able to respond to economic uncertainties and withstand stock market downturn?**

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. The argument is 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 uncertainties 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? (Saigol, 2001; Wall *et al*., 2004) The argument is that firms with high levels of human, structural, and relational IC have the protection (e.g. patents, brands, and customer relationships), flexibility, and inventiveness that should enable them to better withstand unanticipated economic downturns. Based on the above, the following propositions are proposed:

P6.1: High IC firms are likely to have higher ability to withstand economic uncertainties.

P6.2: High IC firms are more likely to be able to better respond to stock market changes.

Research Question 3: **Do firms with high levels of IC outperform firms with lower levels of IC?**

Today, every enterprise is accountable for its performance to a vast number of audiences, from the board of directors to employees and shareholders to market regulators. Therefore, firms have to ensure that their performance is up to the expectation of the audiences. Performance is not only indicated by financial measures, but by non-financial measures as well. According to Edvinsson and Sullivan (1997), IC influences corporate performance and, thus, IC must be managed. This leads to the following propositions.

P7.1: High IC firms tend to achieve higher non-financial performance levels.

P7.2: High IC firms tend to achieve higher financial performance levels.

P7.3: High IC firms tend to achieve higher overall business performance levels.

Research Question 4: **What are the corporate characteristics of firms with high levels of IC?**

Barney (1986), as cited by Bontis (1998), suggests that organisations should have a culture that supports and encourages cooperative innovation because this would give them competitive advantage. According to Bontis, Barney's discussion on the potential for organisational culture to serve as a source of sustained competitive advantage concludes that firms that have the required culture are able to engage in activities that will modify their culture and generate sustained superior performance. Thus, it could be concluded that firms with high level of IC should have a high culture of trust so that the environment will be conducive for creativity and innovations.

Firm size is expected to influence levels of IC. Larger firms are able to invest more heavily in IC, particularly structural IC. However, unlike the other characteristics, it is suggested to be influencing levels of IC, not vice-versa (Usoff *et al*., 2002). The importance of corporate characteristics prompts the following propositions:

P8.1: High IC firms would likely be decentralised.

P8.2: High IC firms would likely have high culture of trust.

P8.3: High IC firms would likely be larger in size.

4.3 Methodology

Philips and Pugh (1987) note that exploratory research involves tackling a new problem, issue, and little-known topic. Because of this, the research idea is normally not well formulated. Researchers should be clear about the objective of their research before choosing any method of data collection (Easterby-Smith *et al.,* 2002). The authors also note that research objective(s) determine(s) the method, while Bryman (1998) notes that the research issues should determine the method used. There are many types of research methods that can be employed to collect and analyse data. Qualitative or quantitative approach or both can be used to collect data, while the methods of analysis depend on the data collection approach. If the data have been collected qualitatively, such as through interviews or observations, the logical analysis method is qualitative. According to Saunders *et al*. (1997, p. 339), "Qualitative data are associated with highly ambiguous and elastic concepts. Thus, they are not easy to quantify in a meaningful way". This is supported by Bryman (1988), Saunders *et al*. (1997), and Easterby-Smith *et al*., (2002), as they all agree that qualitative data are normally 'rich', 'deep', full, highly complex and context-bound. Therefore, it is not easy to analyse such data. They have to be analysed qualitatively. On the other hand, if the data have been collected quantitatively, such as through questionnaire survey, logically, the analysis method is quantitative (Rummel and Ballaine, 1963; Bryman, 1988; Saunders *et al.,* 1997; Remenyi *et al.,* 1998; Sekaran, 2000; Ticehurst and Veal, 2000; Cooper and Schindler, 2001; Easterby-Smith *et al.,* 2002).

4.3.1 Qualitative and Quantitative approach

Qualitative data from interviews is extended and detailed. The method generates an informed and well-illustrated account of the subject matter, giving valid and reliable

data (Rummel and Ballaine, 1963; Bryman, 1988; Kvale, 1997; Saunders *et al.,* 1997; Ticehurst and Veal, 2000; Cooper and Schindler, 2001; Easterby-Smith *et al.,* 2002). However, this method has disadvantages, such as being more complicated, slower, more expensive, more intuitive, and limited in answers. It is also difficult to compare and measure. In contrast, quantitative research strategies involve the collection of evidence that is standardised, measurable, and comparable (Smith, 1998). With quantitative research, the researcher is independent of what is being researched, and the emphasis is on accuracy and precision. With this type of method, the researcher should aim to gather data from many investigation units, thus ensuring that results are statistically viable. Other obvious advantages of this method are claimed to be that it is cheap, straightforward, relatively quick, and results are easy to generalise. Quantitative method goes for breadth rather than depth of data. However, there are several disadvantages of this method, including the need for a higher level of interpretation skill, greater probability of bias, no details on explanation, and dependence on statistical accuracy data (Rummel and Ballaine, 1963; Bryman, 1988; Saunders *et al.,* 1997; Ticehurst and Veal, 2000; Cooper and Schindler, 2001; Easterby-Smith *et al.,* 2002). There are several authors who recommend combining both qualitative and quantitative methods. This approach that uses multiple sources of data is called 'triangulation' and according to Nachmias and Nachmias (1996, p:206), it "minimises the degree of specificity of certain methods to a particular body of language".

Triangulation reduces bias because it uses multiple sources of data to provide multiple measures of the same phenomenon, hence reduce to problems of construct validity and reliability (Bird, 1992; Brannen, 1992; Bryman 1992; Remenyi *et al*., 1998). Otley (1983) recommends this method, as he considers it appropriate for a research in accounting, as it gives the benefits of both approaches. Otley (1983) calls for more exploratory research using qualitative and interpretive methods, especially case studies in management accounting research. Due to the above advantages and recommendations, this research adopts both the elements of quantitative and qualitative (triangulation). This is in contrast to most of the past researchers on IC, who have applied questionnaire surveys (quantitative methods) only (Bontis, 1998; Dooley, 2000; Lovero, 2000;Reeds 2000; Usoff *et al.*, 2002) for data collection, this study uses both qualitative (semi-structured interviews) and quantitative (questionnaire survey) methods.

4.3.2 Questionnaire Survey

Using questions as measures is an essential part of a survey process (Fowler, 2002). Sekaran (2000) notes that a questionnaire is a "pre-formulated written set of questions to which respondents record their answers, usually within rather closely defined alternatives". According to Easterby-Smith *et al*. (2002), the questionnaire is an important method of data collection and is becoming the most popular technique. Therefore, to examine the impact of impact of IC on management accounting practice, corporate characteristics, and economic exposure, questionnaires were mailed to accountants and financial managers of companies. As cited by Ahmad (2004), this is in parallel with Aaker and Day (1995) who claimed that the respondents were more confident in providing truthful answers through a questionnaire. The purpose of the questionnaire survey was to get a sincere feedback from the accountants or financial manager who were supposed to act representatives of their companies on the status of IC in their companies, management accounting practices in the companies, the extent of culture of trust in their companies, the ability of their companies to withstand economic uncertainties and stock market downturn, and the financial and non-financial performance of their companies relative to their competitors'. This is because it is argued that IC influence could be measured by looking at the overall organisation performance, which is in line with (1) Usoff *et al*. (2002) who show the influence of IC on performance measurement, and (2) Bontis (1998) who shows the influence of IC on culture of trust and business performance.

4.3.2.1 Questionnaire Design

Operationalising concepts and claims can be done in various ways (Olsen, 1997), but researchers should choose the most pertinent in order to get the most valid and reliable data as suggested by positivists' philosophy of research design (Easterby-SmiIn order to operationalise the theory on the concepts, the theory was quantified, and the measurements of the quantitative analysis and the approach to collect data were decided.

The questionnaires contain 101 items from which the conceptual framework is linked management accounting practices in the areas of performance measurement, accounting style, budgetary control, and capital budgeting, are qualitative, while some of the

variables for performance measures are qualitative and quantitative by nature. In order to do the analysis quantitatively, all the variables were quantified in the form of 7-point Likert scale (1=strongly disagree, 7= strongly agree) (see Appendix A).

4.3.3 Sampling Frame and Sample Size

The sampling frame is the list of elements from which the sample may be drawn (Hair *et al*., 2003). When a sample is taken, data need not be collected from the whole population being studied (Remenyi *et al*., 1998). This means that it is important to determine the population elements in the research before choosing a sample, in order to ensure accurate sampling units. Authors such as Remenyi *et al*. (1998), Jankowicz (2000), Sekaran (2000), Hair *et al*. (2003), and Smith (2003) identify two types of sampling techniques, namely probability and non-probability sampling. According to Jankowicz (2000), stratified random sampling is the most powerful means of generalising findings based on samples to populations. Wallace (1991) notes that the size of the sample determines the accuracy of the results.

It was decided that management accountants who work in companies would be appropriate to answer the questionnaire. There was an opportunity to survey through the Chartered Institute of Management Accountants (CIMA) Malaysia division. 647 questionnaires were mailed to its members with 'fellow' status (FCMA) and 'associate' status (ACMA), excluding students, who resided in Klang Valley, i.e. Kuala Lumpur and places around it. The target group was those in the age range between 30 and 60, in order to ensure that they were senior accountants. The questionnaire cover letter (Appendix B) was enclosed.

The response was very poor: 28 questionnaires were returned after the first mailing and 20 more after a second mailing, summing up to a total of 48, a response of about 7.6% only. The survey data were then regarded as pilot data.

It was then decided to start again with a more controlled sample. Usoff *et al.* (2002) suggest that the firms that can afford IC management (ICM) are normally large in size. One of the ways to determine size is by looking at the number of employees. The small and Medium Industries Development Corporation (SMIDEC) of Malaysia defines small and medium enterprises (SMEs) as manufacturing companies or companies providing

related services with annual sales turnover not exceeding RM25 million and full-time employees not more than 150. Even though this is on manufacturing, this is the closest definition found for SMEs in Malaysia. Since the research was conducted in Malaysia, to ensure that the firms surveyed were large in size, the companies selected were those listed under Kuala Lumpur Stock Exchange (KLSE), now known as Bursa Malaysia. The reasons for this is that most of the listed companies are located in the area, and it was convenient to contact them. Table 4.1 list the number of companies in each sector, as in the KLSE database in December 2002.

Table 4.1: Distribution of Companies of Each Sector in the Population

Type of Companies	Main Board	Second Board	Total
Technology	13	7	
Consumer Products	69	70	
Industrial Products	119	145	
Trading and Services	109	59	
Finance	66		
IPC	7		
Hotel	6		
Properties	87		
Plantation			
Construction			
Mining	6		
Trusts	4		
Close-end Funds	1		
Total number of companies	487	281	768

Source: KLSE website (2002)

Only those companies that were expected to have high IC were chosen, i.e. those from the technology, consumer products, trading and services, and finance sectors (Edvinnson and Malone, 1997). Furthermore, only companies under the main board and located in Klang Valley, i.e. as mentioned before, places around Kuala Lumpur and around it, were selected. The reason for this is because the majority of the companies were in this location. A total of 159 of companies under KLSE's main board were

found to be there (see Table 4.2). The list of companies and their addresses were obtained from the KLSE website which has a link to the companies' websites. This total is only for the companies that had their websites linked to KLSE's, and had their addresses available on the websites. It is important to note that the study was only focusing on the four sectors, i.e. technology, consumer products, trading and services, and finance, for the purpose of examining high IC firms. It was not the objective of the study to make any comparison between the performances of the sectors because the performance examined was the firms' performance within their own sectors.

Table 4.2: Distribution of Companies of Each Sector in High IC Population

Type of Companies (Main Board)	Population Size
Technology	8
Consumer Products	32
Trading & Services	79
Finance	40
Total	159

In order to draw from both high IC and the low IC sectors, 38 companies under properties, plantation, construction, and industrial products sectors were also surveyed (see Table 4.3). The sampling was random, and non-probability, but based on convenience. These companies also have their websites linked to KLSE's and had their addresses available on their websites. Together with CIMA's, this made about a 50/50 ratio of high IC to low IC companies, and they represented fairly typically KLSE companies.

Table 4.3: Sample of Companies of Each Sector Under Low IC Sectors

Type of Companies (Main Board)	Sample
Industrial Products	10
Properties	10
Construction	10
Plantation	8
Total	38

4.3.3.1 Questionnaire Administration

Survey questionnaires were mailed to accountants or financial managers of selected companies. Only one respondent from each company was considered adequate to represent the company. The mail questionnaire has been a popular instrument to gather evidence in empirical accounting research (Collier and Wallace, 1992). It is obvious why this method of survey was chosen instead of telephone and face-to-face methods. Even though the face-to-face method has the reputation of eliciting high response rate, the high cost that associates with this dampens it (Dillman, 1978; Fowler 2002). On the other hand, the mail method has the advantages of cost saving, ability to reach a large sample with wide coverage, and allowing the respondents flexible time to complete the questionnaire without the influence of the researcher (Collier and Wallace, 1992; Remenyi *et al*., 1998; Fowler, 2000). The authors note that telephone interview is the most used at present because it costs less than face-to-face interviews and higher than mailed questionnaires. Administration of telephone interviews is easier than face-to-face interviews and interview bias is avoided. Furthermore, Dillman (1978) notes that there is no clear-cut answer to the question which one is the best because it depends on the survey situation, i.e. the budget available, the duration allocated, and the reality of the respondents' situations. All of the methods have their own strengths and weaknesses. The mail method was chosen for this research for the obvious reasons mentioned above.

Questionnaires were first posted to financial controller/management accountants of selected companies. The addresses were obtained from their websites. A cover letter that had the letterhead of the University on Bradford was attached. The letter introduced the researcher, defined the purpose and the importance of the research, assured confidentiality of response, and requested that the questionnaire be answered and returned within fourteen days after its receipt (see Appendix A). A stamped, self-addressed envelope was also attached. After two weeks only 19 responses were received. A reminder was sent, but only 27 more were received after another two weeks. After this, companies were contacted by telephones to get the names and specific positions of the accountants or financial managers of each company to be surveyed, as well as confirming the address of the company. There were companies that could not be reached because their phone numbers had changed.

There were a few companies that directly refused to participate in the survey and so they were struck out of the sample. The reasons were "Too busy" and "Company policy". Another telephone call was made, a week after the questionnaire had been mailed, to the respondent or his or her secretary, to ask whether the questionnaire had been received or not. Another questionnaire would be mailed if the first one had not been received. Normally, it would be the respondent's secretary who would answer the telephone call. There were times that the respondents themselves would personally answer the calls, and sometimes they would suggest re-sending through electronic mail (e-mail) or facsimile. A record of the names of the respondents and the companies and the dates of the mailing-outs and returns of the questionnaires was kept to aid the administration. Another follow-up call would be made if the questionnaires were not received after the expected date. The potential respondents were appealed to in order to receive their response. If they could not be contacted, a reminder letter would be sent to him/her. Included with the letter was a form for them to fill up, giving the reasons why they were unable to answer the questionnaire (see Appendix C). 3 of them replied, giving the reasons of (1) "Time factor" (2) "Busy with new system installation". There were also potential respondents that could not be reached at all until the end of the survey. The distance between Bradford and Malaysia made the mailing process time-consuming. The survey was conducted from the beginning of March 2003 to the end of August of the same year. Finally, 85 responses were received, and 17 companies were struck out of the sample for the reasons given before.

4.3.3.2 Response Rate

Total questionnaire sent to the four sectors only (the sample)	159
Total number of companies struck out of the sample	17
Valid sample	142
Responses on first mailing	19
Responses on second strategy	66
Total	85

In order to increase the number of responses, 34 of the responses obtained through CIMA Malaysia division were added to KLSE companies' response, making the total 119. Out of the 48 original responses obtained through CIMA, 14 were not included

because the respondents either worked for organisations other than companies, or the companies were not in the large category. There were two similar characteristics of all the 119 companies, i.e. they were all large and located in Klang Valley. Among these respondents, there were also some of them who worked for KLSE companies, and there were a few were under the 4 sectors. Only 56 of 119 responses were identified to be under the high IC sectors, as some of the respondents did not reveal their companies' sectors (see Table 4.4). Therefore, the response rate from the high IC sectors = 56/142 =39%, and the low IC sectors = 16/38 = 42%. This is considered quite high because the typical response rate from company surveys is 20% (Dooley, 2000).

Table 4.4: Distribution of Responses

Types of Companies, KLSE)	High IC Sectors, KLSE, including CIMA's	Low IC Sectors, KLSE	Unknown, KLSE	CIMA's	Grand Total
Technology	7				
Consumer Products	15				
Trading & Services	17				
Finance	17				
Industrial Products		8			
Properties		4			
Plantation		2			
Construction		2			
Total	56	16	13	34	119

4.4 Case Studies

In order to support the survey data, and as a means of triangulation, case studies were conducted. According to Bryman (1989), a case study is a typical example of a qualitative approach, where one or a small number of cases is being studied. Gummesson (2000) notes that case studies can be of particular value in the applied social research where research often aims to provide practitioners with tools. Alloway (1977), as cited by Gummesson (2000, p:87), notes that case studies are particularly useful "when audience are managers who must implement findings".

According to Gummesson (2000), case studies vary in characteristics, and are conducted with the interest to generalise a conclusion from limited cases, or to arrive at a specific conclusion from a single case, as the single case has a particular interest. There are three types of case studies: exploratory, descriptive, and explanatory. Drawing from the author's explanation, this research falls under exploratory type, as it is a pilot study that can be used as a basis for formulating more precise questions or testable propositions.

In management accounting context, there is still lack of researchers in this discipline doing case studies, even though they are encouraged to do so. According to Otley and Berry (1994), there have been many calls for its increase, but there was only very small number of its application in practice. The authors reviewed four published case studies and concluded that, "the case study method can be useful in a wide variety of contexts, but that greater clarity is needed in that way such work is written-up so that maximum benefit is gained" (p:45).

A total of five case studies were originally planned to be conducted on companies from different sectors of business. A letter with the University of Bradford's Management School's letterhead was sent to twenty large companies in Kuala Lumpur, Malaysia, to request for a permission to interview their upper managers in the area of Human Resource, Marketing, and Finance/Accounting (see Appendix D). The companies were from various sectors, and the letter was addressed to the Chief Executive Officers (CEO). A sample of the interview questions and a form was attached for the CEOs to fill up whether they agreed or not to the request (Appendix E). Only two companies returned the questionnaires. One agreed and the other did not. Permission of two companies was obtained through two questionnaire survey respondents. Three more were obtained through contacts, providing up to a total of six case studies. 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. All the interviews were conducted in the Klang Valley, i.e. Kuala Lumpur and the area around it, the location of the companies.

Appointments were made through the interviewees' or their superiors' secretaries. Normally, the secretaries were contacted using telephone or e-mails, but most of the

time they were contacted through telephone calls, as they were quicker. It was not easy to set up the dates and time as the interviewees had very busy work schedules.

Eighteen semi-structured interviews based on the questionnaire survey were conducted, i.e. a total of three in each company. The head of the human resource department, the head of the marketing department, and the head of the finance department from each company were interviewed. There were separate sets of questions for each category of managers.

4.4.1 Interviews

According to Kahn and Cannell (1957), as cited by Saunders *et al.* (1997), interviews can help a researcher in collecting valid and reliable data in order to answer research questions or to achieve research objectives. Easterby-Smith *et al.* (1991) and Ghauri *et al.* (1995) note that an in-depth interview is highly suitable for exploratory and inductive types of study. An interview is a face-to-face conversation or interactions, between two people, the interviewer and the interviewee, for a particular purpose, in which the interviewer seeks to gain information from the interviewee (Rummel and Ballaine, 1963; Ghauri *et al*., 1995; Kvale 1996; Cooper and Schindler 2001).

4.4.1 Types of Interview

Smith (2003) lists three types of interviews; (1) Structured (2) Semi-structured (3) Unstructured. Easterby-Smith *et al.* (1991:74) suggest that (1) Interviews, semi-structured or unstructured, are appropriate methods when it is necessary to understand the constructs that the interviewee uses as a basis for his/her opinions and beliefs about a particular matter or situation; (2) Interviews are useful when the subject matter is highly confidential or commercially sensitive, and the interviewee may be reluctant to be truthful about this issue, other than confidentially in a one-to-one situation. This is supported by Saunders *et al*. (1997) who suggest that a semi-structured interview is non-standardised, where the researcher has a list of themes and questions to be covered, some questions are repeated, but some questions are omitted or varied according to their relevance in terms of corporate characteristics. Smith (2003) notes that additional questions may also be asked, as the interviewer sees fit, to examine associated issues that arise in the course of the semi-structured approach. Drawing from the authors' suggestions, this type of interview was conducted.

The interviews were recorded if permitted by the interviewees. The interviews were transcribed with the aid of a transcribing machine. Whenever the interviewees objected to a recording, the notes on the interviews were made as accurate as possible (Rummel and Ballaine, 1963). The interview took an average of an hour with the Human Resource and Marketing heads, and an average of one and a half hours with finance heads. This is because there were more questions on their area of work (see Appendix F). The interviews were conducted over a period of two months, from March to April 2003. The interviews findings were analysed by comparing the practice of the companies in the area of interest and with the survey findings. Interesting comments and remarks on the subject matter were highlighted.

4.4.2 Secondary data

Besides from the interviews, evidence was also obtained from secondary data, such as annual reports, employee bulletins, and company magazines. Most of the documents were also to be treated with high confidentiality. The secondary data was used to support the evidence from the interviews.

4.5 Data Analysis

Since the data were collected through quantitative (questionnaire survey) and qualitative methods (case studies), likewise, the analysis also used quantitative and qualitative methods.

4.5.1 Quantitative Data Analysis Using SPSS

The quantitative analysis was conducted to test the propositions on the research questions. This is a means of measuring of impact of IC on management accounting practice, corporate characteristics, and economic exposure. The use of these types of analysis was based on many research methods books, such as Nachmias and Nachmias (1996), Hair *et al*. (1998), and Sekaran 2000. Quantitative data were analysed using SPSS (version 11) software. The first part of the analysis consisted of descriptive statistics, in terms of frequency, percentage, and mean. The second part consisted of a factor analysis and correlation analysis. The third part consisted of multiple regression analysis.

4.5.1.1 Principal Component Analysis (PCA)

This is a generic name given to a class of multivariate statistical methods whose primary purpose is to define the underlying structure in a data matrix variable (Hair *et al*., 1998). There are two common purposes of PCA in research: (1) To define the underlying structure in a data matrix variable for both confirmatory and exploratory researches (Hair *et al.,* 1998). (2) To reduce variables to a parsimonious and more manageable set (Field, 1998), i.e. the purpose of employing it in this research.

An assessment of the suitability of the data for PCA was first done. The study used a 7-point Likert scale survey questionnaire, and this satisfied one of the requirements needed before factor analysis could be successfully employed, i.e. to measure the variables by using an interval scale. A Likert scale produces data that can be assumed to be intervally scaled because it communicates interval properties to the respondent (Madsen, 1989; Schertzer and Kerman, 1985) as cited by Eid (2003).

Factor analysis also requires the sample size to be more than 100 because generally, researchers cannot use factor analysis with fewer than 50 observations (Hair *et al*., 1998). Since this research had 115 cases, the second requirement has been fulfilled. The relationship between the variables must be strong. It is required that the Kaiser-Meyer-Oklin (measure of sample adequacy, as it indicates how relevant the factor analysis is for the variables being used) value should be at least 0.6 and Bartlett's Test of Sphericity should be significant ($p<0.05$).

Principal Component Analysis (PCA) was chosen as the method of factor extraction, i.e. determining the smallest number of factors that can be used to best represent the inter-relations among the set of variables. The other methods are principal factors, image factoring, etc.. In deciding the number of factors to retain, Kaiser's criterion (eigenvalue rule) technique was used. In this technique, only factors with an eigenvalue of 1.0 or more were retained for further investigation. The eigenvalue of a factor represents the amount of the total variance explained by that factor. The other technique, Scree test, involves plotting each of the eigenvalues of the factors and inspecting the plot to find a point at which the shape of the curve changes direction and becomes horizontal. Factors above the elbow, or break in the plot, should be retained.

These factors contribute the most to the explanation of the variance in the data set. The latter technique was not chosen because the former was found to be easier and more objective.

Even though a factor loading above 0.35 is considered statistically significant at an alpha level of 0.5 (Hair *et al*., 1998), a loading of 0.512 is recommended for a sample size of 100 to 199 (Field, 2000). Therefore, in this study, only loadings above 0.512 are displayed, because the sample size was 115.

Factor rotation helps to interpret the factors (Pallant, 2001). If un-rotated factors are expected to be meaningful, 'no rotation is necessary' may be specified. Rotation reduces the ambiguities that often accompany the un-rotated factor solutions (Hair *et al*., 1998). Two common methods of factor rotation are varimax orthogonal rotation and oblimin oblique rotation. For this study, varimax was used because it is the most popular orthogonal rotation scheme, and can be applied with consistency across all the scales explored (Hair *et al.,* 1998; Field, 2000).

Alpha values over 0.6 were deemed to be acceptable as a reliability test for this exploratory research (Hair *et al*., 1998). Inter-item correlation was also used for this purpose. A correlation above 0.3 is considered reliable (Hair *et al*., 1998) and according to Pallant (2001), a correlation between 0.2 and 0.4 is considered reliable. Inter-item correlation was considered whenever the alpha of a factor is lower than 0.6. 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.

4.5.1.2 Correlation Analysis

In this research, Correlation analysis was employed in testing the propositions that are related to IC, MAP, Moderator effect between IC and MAP, Corporate characteristics, and performance or economic exposure, as described previously in Chapter 4. This testing of propositions is to answer Research questions 1 - 5. One-tailed Spearman Rank correlation coefficients were considered appropriate because the variables were measured on an ordinal scale (Bryman and Cramer, 1998; Sekaran, 2000).

Correlation coefficient or "r" indicates the strength of the association between the dependent and the independent variables. The value ranges between –1 and +1. If the sign of the coefficient is positive, it means the variables have positive relationship, and if the sign is negative, it means the variables have reverse relationship. If r=0, it indicates that there is no relationship (Bryman and Cramer, 1998; Field, 2000, Pallant, 2001; Hair *et al*., 2003). Table 4.8 suggests the rules of thumb of correlation coefficient size. High correlation, such as 0.75 and above, might indicate invalidity of measurement because it indicates that the variables are not different and distinctive (Sekaran, 2000). A correlation that is significant at the 0.05 level is indicated by two asterisks (**) and a correlation that is significant at the 0.01 level is indicated by one asterisk (*).

Table 4.5: Rules of thumb on correlation coefficient size*

Coefficient Range	Strength of Association
+/- 0.91 - =/-1.00	Very strong
+/- 0.71 - =/-0.90	High
+/- 0.41 - =/-0.70	Moderate
+/- 0.21 - =/-0.40	Small but definite relationship
+/- 0.01 - =/-0.20	Slight, almost negligible

*Assumes correlation coefficient is statistically significant

Source: Hair et al. (2003)

4.6 Chapter Summary

This chapter discusses the propositions and the methodology of the research. The methodology is the ways in which the research is carried out. Based on the research propositions and models, the research instruments were developed, and it was decided that the type of research was both quantitative and qualitative, and so the data decided to be of quantitative or qualitative types, and this determined the data collection methods. A triangulation was decided for this research, the data collection was through both questionnaire survey and case study interviews. Therefore, steps taken to conduct the survey and interviews were described.

The design of the questionnaire was based on the work of authors, such as Hopwood (1973), Bontis (1998), Reeds (2000), and Usoff *et al*. (2002), it was a means to examine whether or not IC influence management accounting practice, corporate characteristics, economic exposure, and overall performance. It also investigated whether or not management accounting influences performance.

A mail survey was carried out of large companies in Malaysia from March to August 2003. The administration of the questionnaire was laid out in detail. Accountants and finance managers were asked to be respondents on behalf of their companies. Several steps were undertaken in order to reduce non-response, so as to ensure representativeness of the sample and to reduce non-response bias.

Six companies agreed to have their heads of Human Resource, Marketing, and Finance departments interviewed. A total of eighteen semi-structured interviews were conducted from the month of March till April 2003 to examine their level of IC, management accounting practices, economic exposure management, and culture of trust. The purpose of the case studies was to be more confirmatory of the findings of the survey. Secondary data from important documents, such as annual reports, internal bulletins, and advertising pamphlets were obtained and analysed to support the interview data.

The data collected from the survey were analysed statistically. Principal component analysis (PCA) was conducted in order to reduce the number of variables to a more manageable set, and then the variables were subjected to correlation analysis. This was to test the propositions and answer research questions.

CHAPTER 5

QUANTITATIVE ANALYSIS I: PRINCIPAL COMPONENT ANALYSIS AND PROPOSITION TESTING

5.1 Introduction

This chapter describes the analysis of the data by using principle component analysis (PCA) and how the factors are then used to test propositions P1 - P8 by using correlation analysis. As mentioned in Chapter 5, in this research, the main objective of PCA is to reduce the number of variables tested in the questionnaire to a more manageable and parsimonious set. Only variables on management accounting practices (MAP), (performance measurement, budgeting, and capital investment appraisals), corporate performance, and corporate characteristics were being analysed. IC variables were excluded since they were used as controlling variables in proposition testing.

The definitions and requirements of PCA and correlation analysis were described in Chapter 4.

5.2 HIC, SIC, and RIC

Composite variables based on 25 questions relating to human IC (HIC), structural IC (SIC), and relational IC (RIC) within the firm were employed as "dependent variables" or controlling factors in the correlation analysis. This did not constitute causal relationship (Field, 2000), but employed for convenience of description. The summary of the survey items on the variables is shown in Table 5.1.

Table 5.1: Survey Items on HIC, SIC, and RIC

	Human IC (HIC)		
H1	Employees are bright and creative	H4	Employees are experts in their respective areas
H2	Get the most out of employees	H5	Come up with new idea
H3	Employees are required to share knowledge	H6	Employees are able to focus on the quality of service provided
	Structural IC (SIC)		
S1	Systems allow easy info access	S6	Develop most ideas in industry
S2	Procedures support innovation.	S7	High annual information technology allocation
S3	Systems require knowledge sharing	S8	Documents knowledge in manuals, databases, etc.
S4	High investment in innovation.	S9	Protects vital knowledge and information
S5	Keeps track and makes full use of intellectual assets		
	Relational IC (RIC)		
R1	Customers are loyal	R6	Meet with customers
R2	Firm is market-oriented	R7	Care what customers want
R3	Firm is efficient	R8	Good relationships with its suppliers
R4	Understands targeted market	R9	Devote considerable time to select suppliers
R5	Feedback with customers	R10	Maintain long-standing relationships with suppliers

Source: Bontis (1998)

5.3 PCA and Proposition Testing Results

5.3.1 Importance of Reporting and Use of Report for Strategic Decisions

These three variables were not subjected to PCA because they were already considered three separate variables.

5.3.2 Testing Importance of Reporting and Use of Report for Strategic Decisions Propositions

The following propositions were tested:

P1.1: High IC firms are more likely to publish IC information in or with their annual reports.

P1.2: High IC firms are more likely to report IC information internally.

P1.3: High IC firms are more likely to refer to IC in their strategic decisions.

Results presented in Table 5.2 reveals that only SIC (r=0.211*) are significantly correlated with publishing IC information in or with annual reports. This reveals that firms that are high in structural IC are more likely to publish IC information in or with their annual reports. However, all the HIC (r=0.347**, r=0.370**), SIC (r=0.475**, r=0.489**), and RIC (r=0.366**, r=0.357**) variables are strongly correlated with the reporting and reference to IC variables. This indicates that firms that are high in human IC, high in structural IC, and high in relational IC are more likely to report IC information internally and refer to the report in their strategic decisions.

Table 5.2: Correlation of IC and Importance of Reporting and Use of Report for Strategic Decisions

	HIC	**SIC**	**RIC**
IC info published in or with the annual report	0.074	0.211(*)	0.116
IC reported internally	0.347(**)	0.475(**)	0.366(**)
IC referred to in strategic decisions	0.370(**)	0.489(**)	0.357(**)

5.3.3 Section Summary

The results of the correlation analysis suggest that proposition P1.1 is weakly supported, and both propositions P2.2 and P2.3 are fully supported (see Table 5.45).

5.4 Performance Measurement and Importance of IC Impact

5.4.1 PCA Results of Importance of Financial Measures

Six items of financial performance measures were subjected to PCA using SPSS. Results of the factor extraction using PCA are presented in Table 5.3. The KMO measurement of sample adequacy (MSA) showed 0.691, exceeding the minimum recommended of 0.5 (Kaiser, 1974) as cited by Hair *et al*. (1998) and Field (2000). The result for BTS (Bartlett, 1954) was 87.465, and the associated significance reached statistical significance (p=0.000). This showed that the data were appropriate for PCA. Two of the factors had eigenvalues over 1, accounting for 58.96% of the variance (see Table 5.3).

Table 5.3: Total Variance on Financial Measures Explained

Factor	Eigenvalues	Variance Explained (%)	Cumulative Variance (%)
1	2.319	38.656	38.656
2	1.218	20.300	58.956
3	0.832	13.864	72.820
4	0.654	10.907	83.727
5	0.562	9.371	93.098
6	0.414	6.902	100.000

All six variables scored communalities that ranged from 0.554 to 0.698 (Table 5.4). Therefore, it could be concluded that a degree of confidence in the factor solution had been achieved.

Table 5.4: Communalities of Financial Measures

	Initial	Extraction
Sales	1.000	0.649
Profitability	1.000	0.638
EVA	1.000	0.492
Shareholder value	1.000	0.554
Incentive structure base on value creation	1.000	0.627
Properly account for all ways	1.000	0.577

As the solution was considered satisfactory, Varimax rotation was performed to aid the interpretation and the results revealed a two-factor solution, as summarised in Table 5.5. Then the loading of all the items within the two factors was examined. The interpretation of the two components was consistent with the theory on performance measurement with value-based variables loaded on Factor 1 and profit and loss accounts-based measure variables loaded on Factor 2 (see Table 5.5).

Table 5.5: Rotated Component Matrix of Financial Measures

Variables	**Component**	
	Factor 1	Factor 2
Incentive structure based on value creation	0.791	
Properly account for all ways that provide value	0.759	
Shareholder value	0.719	
EVA	0.699	
Sales		0.805
Profitability		0.780

Factor 1 was named "Value-based performance measures" and factor 2 was named "Profit and loss accounts-based measures". Their reliability tests showed alphas of 0.7419 and 0.5357, respectively. As the alpha for Factor 2 was lower than 0.6, its inter-item correlation was computed and the correlation of 0.3686 was obtained. This is presented as Table 5.6.

Table 5.6: Factor loading and Cronbach's Alpha Analysis of Financial Measurement

	Factor loading	**Cronbach's Alpha**	**Inter-item Correlation**
Value-based performance measure		**0.7304**	
Incentive structure base on value creation	0.791		
Properly account for all ways	0.759		
Shareholder value	0.719		
EVA	0.699		
Profit and loss accounts –based measures		**0.4645**	**0.3047**
Sales	0.805		
Profitability	0.780		

5.4.1.1 Testing Importance of Financial Measurement

The following propositions were tested:

P2.1: High IC firms tend to emphasise value-based financial measures

***P2.2*:** High IC firms tend to de-emphasise profit and loss accounts-based financial performance measures

Results on Table 5.7 indicate that value-based financial measures are highly associated with SIC (r=0.408**) and RIC (r=0.410**), while less associated with HIC (r=0.294**). This means that firms that are high in structural and human IC tend to highly emphasise value-based financial performance measures while firms that invest highly in human IC tend to emphasise it lesser. The results also show that HIC (r=0.175*) is weakly associated with Profit and Loss Accounts-based financial performance measures (sales and profitability). This indicates that firms that are high in human IC tend to emphasise profit and loss accounts-based financial performance measures, while firms that are high in structural IC and relational IC tend to de-emphasise profit and loss accounts-based financial performance measures. The results are presented as Table 5.7.

Table 5.7: Correlation of IC and Importance of Financial Measures

	HIC	**SIC**	**RIC**
Value-based financial performance measures	0.294(**)	0.408(**)	0.410(**)
Profit and loss accounts-based financial performance measures	0.175(*)	0.151	0.115

5.4.1.2 Section Summary

Two factors were obtained out of the PCA on financial performance measures, i.e. value-based financial measures with four variables loaded on it and profit and loss accounts-based financial measures with two variables loaded on it (see Table 5.43). The two factors were correlated with human IC (HIC), structural IC (SIC), and

relational IC (RIC) for propositions testing. The results of the testing suggested that proposition P2.1 was fully supported, while proposition P2.2 was weakly supported (see Table 5.45).

5.4.2 PCA Results of Importance of Scorecard and Financial/Non-financial Measures

Seven items of scorecards and financial/non-financial of performance measures were subjected to principal component analysis (PCA) using SPSS. Results of the factor extraction using PCA are presented in Table 5.8. The KMO measurement of sample adequacy (MSA) showed 0.772, exceeding the minimum recommended of 0.5 (Kaiser, 1974) as cited by Hair *et al.* (1998) and Field (2000). The result for BTS (Bartlett, 1954) was 65.401, and the associated significance reached statistical significance (p=0.000). This showed that the data were appropriate for PCA. Two of the factors had eigenvalues over 1, accounting for 65.95% of the variance (see Table 5.8).

Table 5.8: Total Variance Explained on Scorecard and Financial/Non-financial Measures

Factor	Eigenvalues	Variance Explained (%)	Cumulative %
1	3.417	48.809	48.809
2	1.200	17.144	65.954
3	0.735	10.500	76.453
4	0.601	8.583	85.036
5	0.504	7.204	92.240
6	0.409	5.848	98.089
7	0.134	1.911	100.000

All seven variables scored communalities that ranged from 0.471 to 0.806 (Table 5.9). Therefore, it could be concluded that a degree of confidence in the factor solution had been achieved.

Table 5.9: Communalities on Scorecard and Financial/Non-financial Measures

Variables	Initial	Extraction
IC measured in both financial and non-financial terms	1.000	0.759
BSC	1.000	0.471
Intangible asset monitor	1.000	0.595
Tableu de Bord	1.000	0.806
Skandia Navigator	1.000	0.736
Performance Prism	1.000	0.564
IC contribution captured in performance measurement	1.000	0.687

As the initial solution was considered satisfactory, Varimax rotation was performed to aid the interpretation and the results revealed a two-factor solution, as summarised in Table 5.10. Then the loading of all the items within the two factors was examined. The interpretation of the two components was consistent with the theory on performance measurement with scorecard variables loaded on Factor 1 and financial/non-financial variables loaded on Factor 2 (see Table 5.10).

Table 5.10: Rotated Component Matrix of Scorecard and Financial/Non-Financial Measures

Variables	Component	
	Factor 1	**Factor 2**
Tableu de Bord	0.889	
Skandia Navigator	0.846	
Intangible asset monitor	0.768	
Performance Prism	0.732	
BSC	0.562	
IC measured in both financial and non-financial terms		0.871
IC contribution captured in performance measurement		0.786

Factor 1 was named "Scorecard performance measures" and Factor 2 was named "financial and non-financial measures". Their reliability tests showed alphas of 0.8895 and 0.6319, respectively (see Table 5.11).

Table 5.11: Factor Loading and Cronbach's Alpha Analysis of Scorecard and Financial/Non-financial Measures

	Factor loading	Cronbach's Alpha
Scorecard performance measures		**0.8895**
Tableu de Bord	0.889	
Skandia Navigator	0.846	
Intangible asset monitor	0.768	
Performance Prism	0.732	
BSC	0.562	
Financial and non-financial measures		**0.6319**
IC measured in both financial and non- financial terms	0.871	
IC contribution captured in performance measurement	0.786	

5.4.2.1 Testing Importance of Scorecard and Financial/Non-financial Performance Measures

The following propositions were tested:

P2.3: High IC firms tend to employ scorecard performance measures such as the BSC.

P2.4: High IC firms tend to employ both financial and non-financial performance measures.

Results on Table 5.12 show that none of the IC variables is correlated with scorecard measures. It means that IC firms that possess high IC value do not employ scorecard measures, such as the BSC in their performance measurement. On the other hand, both financial and non-financial measures are strongly associated with all the three types of IC, i.e. HIC (r=0.542**), SIC (r=0.599**), and RIC (r=0.579**). This means that all firms, whether they invest highly in human IC, structural IC, or relational IC, tend to employ both financial and non-financial measures.

Table 5.12: Correlation of IC and Scorecard and Financial/Non-financial Measures

	HIC	SIC	RIC
Scorecard performance measures	-0.032	0.089	-0.105
Financial and non-financial measures	0.542(**)	0.599(**)	0.579(**)

5.4.3 Section Summary

Two factors were obtained out of the PCA on measuring IC impact variables, i.e. scorecard performance measures with five variables loaded on it and financial and non-financial performance measures with two variables loaded on it (see Table 5.43). The two factors were correlated with human IC (HIC), structural IC (SIC), and relational IC (RIC) for propositions testing. The proposition testing results indicated that proposition P2.3 was unsupported, while P2.4 was fully supported (see Table 5.45).

5.5 Importance of control style

5.5.1 PCA Results of Budget Style

Seven items of budgeting were subjected to PCA using SPSS. Results of the factor extraction using PCA are presented in Table 5.12. The KMO measurement of sample adequacy (MSA) showed 0.735, exceeding the minimum recommended of 0.5 (Kaiser, 1974) as cited by Hair *et al*. (1998) and Field (2000). The result for BTS (Bartlett, 1954) was 302.355, and the associated significance reached statistical significance (p=0.000). This showed that the data were appropriate for PCA. Two of the factors had eigenvalues over 1, accounting for 68.71% of the variance (see Table 5.13).

Table 5.13: Total Variance Explained for Budget Control Style

Factor	Eigenvalues	Variance Explained (%)	Cumulative %
1	3.493	49.903	49.903
2	1.316	18.804	68.707
3	0.667	9.523	78.230
4	0.509	7.267	85.497
5	0.439	6.267	91.764
6	0.389	5.561	97.325
7	0.187	2.675	100.000

All seven variables scored communalities that ranged from 0.4935 to 0.767 (Table 5.13). Therefore, it could be concluded that a degree of confidence in the factor solution had been achieved.

Table 5.13: Communalities Budget Control Style

	Initial	Extraction
Budget emphasis	1.000	0.720
Concern with ability to meet budget	1.000	0.708
Concern with cost	1.000	0.495
Concern with general effectiveness	1.000	0.700
Concern with quality	1.000	0.697
Concern with ability to handle subordinate	1.000	0.767
Concern with job effort	1.000	0.722

As the initial solution was considered satisfactory, Varimax rotation was not necessary. The results revealed a two-factor solution, as summarised in Table 5.14. Then the loading of all the items within the two factors was examined. The interpretation of the two components was consistent with the theory on budget style. Even though the variable "Concern with ability to meet budget" loaded on both factors, the factor of the highest factor loading i.e. Factor 2 was chosen (Hair *et al*., 1998, Field, 2000). All other variables loaded on the expected factors, which they were designed to be (see Table 5.14).

Table 5.14: Component Matrix of Budget Control Style

Variables	Component	
	Factor 1	**Factor 2**
Concern with general effectiveness	0.834	
Concern with ability to handle subordinate	0.789	
Concern with job effort	0.787	
Concern with quality	0.771	
Concern with cost	0.652	
Budget emphasis		0.703
Concern with ability to meet budget	0.559	0.629

Factor 1 was named "Business emphasis" and Factor 2 was named "Budget emphasis". Their reliability tests showed high alphas of 0.8520 and 0.741 respectively (see Table 5.15).

Table 5.15: Factor Loading and Cronbach's Alpha Analysis of Budget Control style

	Factor loading	**Cronbach's Alpha**
Business emphasis		**0.8520**
Concern with general effectiveness	0.834	
Concern with ability to handle subordinate	0.789	
Concern with job effort	0.787	
Concern with quality	0.771	
Concern with cost	0.652	
Budget emphasis		**0.741**
Budget emphasis	0.703	
Concern with ability to meet budget	0.629	

5.5.1.1 Testing the Importance Budget Control Style Propositions

The following propositions were tested:

P3.1: High IC firms tend to de-emphasise budget.

P3.2: High IC firms have the tendency to emphasise business.

Results on Table 5.16 indicate that all HIC (r=0.523**), SIC (r=0.455**), and RIC (0.488**) are highly correlated with business emphasis. The results also show that HIC (r=0.033), SIC (r=0.044), and RIC (r=-0.035) are not significantly correlated with budget emphasis. The results suggest that firms that are high in all three types of IC emphasise business and de-emphasise budget.

Table 5.16: Correlation of IC and Importance of Budget Control Style

	HIC	SIC	RIC
Business emphasis	0.523(**)	0.455(**)	0.488(**)
Budget emphasis	0.033	0.044	-0.035

5.5.1.2 Section Summary

Two factors were obtained out of the PCA on control style, i.e. business emphasis with five variables loaded on it and budget emphasis with two variables loaded on it (see Table 5.43). The two factors were correlated with human IC (HIC), structural IC (SIC), and relational IC (RIC) for propositions testing. The results of the propositions testing suggest that both proposition P3.1 and proposition P3.2 are fully supported (see Table 5.45).

5.5.2 PCA Results for of Forecasting and Conventional Budget Approach

Five items of scorecards and financial/non-financial of performance measurement were subjected to PCA using SPSS. Results of the factor extraction using PCA are presented in Table 5.17. The KMO measurement of sample adequacy (MSA) showed 0.608, exceeding the minimum recommended of 0.5 (Kaiser, 1974) as cited by Hair *et al.* (1998) and Field (2000). The result for BTS (Bartlett, 1954) was 41.445, and the associated significance reached statistical significance (p=0.000). This showed that the data were appropriate for PCA. Two of the factors had eigenvalues over 1, accounting for 68.01% of the variance (see Table 5.17).

Table 5.17: Total Variance on Budget Approach and Forecasting Approach Explained

Factor	Eigenvalues	Variance Explained (%)	Cumulative %
1	2.119	42.381	42.381
2	1.281	25.628	68.009
3	0.737	14.747	82.757
4	0.511	10.214	92.970
5	0.351	7.030	100.000

The five variables scored communalities that ranged from 0.578 to 0.774 (see Table 5.18). Therefore, it could be concluded that a degree of confidence in the factor solution had been achieved.

Table 5.18: Communalities of Budget Approach and Forecasting

	Initial	Extraction
Zero-based budgeting	1.000	0.595
Priority-based budgeting	1.000	0.714
Regular re-forecasting	1.000	0.578
Separates target setting from financial planning	1.000	0.740
Uses rolling forecasts	1.000	0.774

As the solution was considered satisfactory, Varimax rotation was performed to aid the interpretation and the results revealed a two-factor solution, as summarised in Table 5.19. Then the loading of all the items within the two factors was examined. The interpretation of the two factors was consistent with the theory on budget approach and forecasting with budget approach variables loaded on Factor 2 and forecasting variables loaded on Factor 1.

Table 5.19: Rotated Component Matrix of Budget Approach and Forecasting

Variables	Component	
	Factor 1	**Factor 2**
Uses rolling forecasts	0.856	
Separates target setting from financial planning	0.833	
Regular re-forecasting	0.678	
Priority-based budgeting		0.831
Zero-based budgeting		0.771

Factor 1 was named "Forecasting" and factor 2 was named "Non-conventional budget". Their reliability tests showed alphas of 0.7782 and 0.6221 respectively (see Table 5.20).

Table 5.20: Factor Loading and Cronbach's Alpha Analysis of Budget Approach and Forecasting

	Factor loading	**Cronbach's Apha**
Forecasting		**0.7782**
Separates target setting from financial planning	0.856	
Uses rolling forecasts	0.833	
Regular re-forecasting	0.678	
Non-conventional budget		**0.6221**
Priority-based budgeting	0.831	
Zero-based budgeting	0.771	

5.5.2.1 Testing the Importance of Budget Approach and Forecasting Propositions

The following propositions were tested:

P4.1: High IC firms tend to emphasise forecasting

P4.2: High IC firms tend to employ non-conventional budget approach, such as Priority-based budgeting

Results on Table 5.21 indicate that HIC (r=0.239**) and RIC (r=0.231*) are correlated with forecasting significantly. The results also present that SIC (r=0.233) is significantly correlated with non-conventional budget approach. This suggests that

firms that invest highly in human IC and relational IC tend to emphasise forecasting, while firms that invest highly in structural IC tend to emphasise non-conventional budget approach, such as the Priority-based budgeting.

Table 5.21: Correlation of IC and Importance of Budget Approach and Forecasting

	HIC	SIC	RIC
Forecasting	0.239(**)	0.180	0.231(*)
Non-conventional budget approach	0.109	0.233(*)	0.132

5.5.3 Section Summary

Two factors were obtained out of the PCA on budget approach and forecasting, i.e. forecasting with two variables loaded on it and non-conventional budget approach with three variables loaded on it (see Table 5.43). The two factors were correlated with human IC (HIC), structural IC (SIC), and relational IC (RIC) for propositions testing. The correlation analysis (proposition testing) results partially supported proposition P4.1 and weakly supported proposition P4.2 (see Table 5.45).

5.6 Capital Investment Appraisals

5.6.1 PC Results of Capital Investment Appraisals

Four items of capital investment appraisals were subjected to PCA using SPSS. Results of the factor extraction using PCA are presented in Table 5.22. The KMO measurement of sample adequacy (MSA) showed 0.563, exceeding the minimum recommended of 0.5 (Kaiser, 1974) as cited by Hair *et al.* (1998) and Field (2000). The result for BTS (Bartlett, 1954) was 41.911, and the associated significance reached statistical significance (p=0.000). This showed that the data were appropriate for PCA. Two of the factors had eigenvalues over 1, accounting for 75.97% of the variance (see Table 5.22).

Table 5.22: Total Capital Investment Appraisals Variance Explained

Factor	Eigenvalues	Variance Explained (%)	Cumulative %
1	1.957	48.930	48.930
2	1.082	27.038	75.967
3	0.712	17.796	93.763
4	0.249	6.237	100.000

All four variables scored communalities that ranged from 0.534 to 0.847 (Table 5.23). Therefore, it could be concluded that a degree of confidence in the factor solution had been achieved.

Table 5.23: Communalities of Capital Investment Appraisals

	Initial	Extraction
NPV	1.000	0.822
IRR	1.000	0.847
Real Option Value	1.000	0.534
Acceptance of negative NPV in capital investment appraisals	1.000	0.837

As the solution was considered satisfactory, Varimax rotation was performed to aid the interpretation and the results revealed a two-factor solution, as summarised in Table 5.24. Then the loading of all the items within the two factors was examined. The interpretation of the two factors was consistent with the theory on capital investment appraisals with methods of capital budgeting variables loading on Factor 1 and acceptance of negative NPVs and use of Real Options loading on Factor 2 (see Table 5.24).

Table 5.24: Rotated Component Matrix of Capital Investment Appraisals

Variables	Component	
	Factor 1	Factor 2
IRR	0.920	
NPV	0.904	
Acceptance of negative NPV in capital investment appraisals		0.909
Real Option Value		0.554

Factor 1 was named "Methods of capital budgeting" and Factor 2 was named "Acceptance of negative NPVs and use of Real Options". Their reliability tests showed alphas of 0.8753 and 0.4078, respectively. Since the alpha of Factor 2 was lesser than 6, its inter-item correlation was computed. The inter-item correlation result of 0.2561 was considered reliable (Pallant, 2001) (see Table 5.25).

Table 5.25: Factor Loading and Cronbach's Alpha Analysis of Capital Investment Appraisals

	Factor Loading	Chronbach's Alpha	Inter-item Correlation
Methods of capital budgeting		**0.8753**	
IRR	0.920		
NPV	0.904		
Acceptance of negative NPVs and use of Real Options		**0.4078**	**0.2561**
Acceptance of negative NPV in capital investment appraisals	0.909		
Real Option Value	0.554		

5.6.1.1 Testing the Importance of Capital Investment Appraisal Measures Propositions

The following propositions were tested:

P5.1: High IC firms would not likely be employing financial methods of capital budgeting.

P5.4: High IC firms would likely be accepting negative net present value and employing Real Options.

Results on Table 5.26 indicate that IC variables, HIC (r=0.314**), SIC (r=0.321**), and RIC (r=0.257**), are strongly correlated with "Financial methods of capital budgeting". This indicates that high IC firms are employing financial methods of capital budgeting. Only SIC (r=160*) is correlated with "Acceptance of negative

NPV and usage of Real options" and this suggests that firms that invest highly in structural IC are likely to accept negative NPVs and employ Real Options.

Table 5.26: Correlation of IC and Importance of Capital Investment Appraisal Measures

	HIC	SIC	RIC
Financial methods of capital budgeting	0.314**	0.321**	0.257**
Acceptance of negative NPV in capital budgeting and Real options	0.085	0.160*	-0.107

5.6.2 Section Summary

The PCA on capital budgeting produced two factors, i.e. financial methods of capital budgeting with two variables loaded on it, and similarly acceptance of negative NPV in capital budgeting and Real options also with two factors loaded on it (see Table 5.43). The two factors were correlated with human IC (HIC), structural IC (SIC), and relational IC (RIC) for propositions testing. The results of the propositions testing did no support proposition P5.1 and partially supported proposition P5.4 (see Table 5.45).

5. 7 Economic Exposure Management

5.7.1 PCA of Economic Exposure

Four items of economic exposure were subjected to principal component analysis (PCA) using SPSS. Results of the factor extraction using principal analysis (PCA) are presented in Table 5.26. The KMO measurement of sample adequacy (MSA) showed 0.627, exceeding the minimum recommended of 0.5 (Kaiser, 1974) as cited by Hair *et al*. (1998) and Field (2000). The result for BTS (Bartlett, 1954) was 32.059, and the associated significance reached statistical significance (p=0.001). This showed that the data were appropriate for factor analysis. One of the factors had an eigenvalue over 1, accounting for 44.12% of the variance (see Table 5.27).

Table 5.27: Total Variance of Economic Exposure Explained

Factor	Eigenvalues	Variance Explained (%)	Cumulative %
1	1.765	44.122	44.122
2	0.940	23.500	67.623
3	0.714	17.852	85.474
4	0.581	14.526	100.000

All four variables scored communalities that range from 0.355 to 0.510 (Table 5.28). Therefore, it could be concluded that a low degree of confidence in the factor solution has been achieved.

Table 5.28: Communalities of Economic Exposure

	Initial	Extraction
Firm is less affected by fall in stock market	1.000	0.478
Firms will not over-react to fall in stock market	1.000	0.510
IC acts as hedge against unanticipated economic change	1.000	0.422
Managers and staff's creativity and innovation ensure firms' long-term survival	1.000	0.355

One factor was produced by the initial solution (see Table 5.29). The solution was considered unsatisfactory because it was propositioned that a two-factor solution would be obtained.

Table 5.29: Initial Solution for Economic Exposure

	Component
	1
Firms will not over-react to fall in stock market	0.714
Firm is less affected by fall in stock market	0.691
IC acts as hedge against unanticipated economic change	0.650
Managers and staff's creativity and innovation ensure firms' long-term survival	0.596

Varimax rotation with two factors solution forced to it was performed to aid the interpretation and the results are summarised in Table 5.30. Then the loading of all

the items within the two factors was examined. The interpretation of the two factors was consistent with the theory on economic exposure with "Ability to respond to economic uncertainties" items not found in factor 2 and "Stock market influence" item not found in Factor 1 (see Table 5.30).

Table 5.30: Rotated Component Matrix

Variables	Component	
	Factor 1	**Factor 2**
Firm is less affected by fall in stock market	0.847	
Firms will not over-react to fall in stock market	0.800	
Managers and staff's creativity and innovation ensure firms' long-term survival		0.841
IC acts as hedge against unanticipated economic change		0.746

Factor 1 was named "Ability to respond to economic uncertainties" and factor 2 was named "Stock market influence". Their reliability tests showed alphas of 0.5745 and 0.4959, respectively. Since the alphas for both factors were lower than 0.6, their inter-item correlations were computed and the correlations were 0.4095 and 0.3383, respectively, which were considered reliable (Hair *et al*., 1998).

Table 5.31: Factor Loading and Cronbach's Alpha Analysis of Economic Exposure

	Factor Loading	**Cronbach's Alpha**	**Inter-item Correlation**
Stock market influence		**0.5745**	**0.4095**
Firm is less affected by fall in stock market	0.847		
Firms will not over-react to fall in stock market	0.800		
Ability to respond to economic uncertainties		**0.4959**	**0.3383**
Managers and staff's creativity and innovation ensure firms' long-term survival	0.841		
IC acts as hedge against unanticipated economic change	0.746		

5.7.1.1 Testing of the Associations Between Economic Exposure and IC Proposition

The following propositions were tested:

P6.1: High IC firms are likely to have higher ability to withstand economic uncertainties.

P6.2: High IC firms are more likely to be able to better respond to stock market influence.

Results on Table 5.34 indicate that all the IC variables have strong correlations with ability to withstand unanticipated economic change. The results also suggest that HIC (r=0.421**), SIC (r=0.540**), and RIC (r=0.496**) are strongly correlated with unanticipated economic change. This means that all the IC variables have strong correlations with ability to withstand unanticipated economic change. None of the IC variables is correlated with stock market influence. This reveals that high IC firms do not have better response to stock market influence.

Table 5.32: Correlation of IC and Economic Exposure

	HIC	SIC	RIC
Ability to respond to economic uncertainties	.421(**)	.540(**)	.496(**)
Stock market influence	-.019	.017	.096

5.7.2 Section Summary

Two factors resulted from the PCA on economic exposure, i.e. ability to respond to economic uncertainties with two variables loaded on it and stock market influence with also two variables loaded on it (see Table 5.44). The two factors were correlated with human IC (HIC), structural IC (SIC), and relational IC (RIC) for propositions testing. The results of the propositions testing fully supported proposition P6.1 and did not support proposition P6.2 (see Table 5.45).

5.8 Corporate Performance

5.8.1 PCA Results on Corporate Performance

Corporate performance variables consisted of financial and non-financial performance items. Nine of the items were subjected to PCA using SPSS. The item "Overall business performance and practice" was excluded from PCA because it was partly financial and partly non-financial and was considered as a variable by itself. Results of the factor extraction using PCA are presented in Table 5.33. The KMO measurement of sample adequacy (MSA) showed 0.867, exceeding the minimum recommended of 0.5 (Kaiser, 1974) as cited by Hair *et al.* (1998) and Field (2000). The result for BTS (Bartlett, 1954) was 531.089, and the associated significance reached statistical significance (p=0.000). This showed that the data were appropriate for PCA. Two of the factors had eigenvalues over 1, accounting for 70.83%.

Table 5.33: Total Corporate Performance Variance Explained

Factor	Eigenvalues	Variance Explained (%)	Cumulative %
1	5.079	56.430	56.430
2	1.296	14.396	70.825
3	0.650	7.218	78.044
4	0.605	6.726	84.770
5	0.409	4.543	89.313
6	0.334	3.713	93.026
7	0.273	3.039	96.065
8	0.206	2.288	98.353
9	0.148	1.647	100.000

All nine variables scored high communalities that range from 0.561 to 0.795 (Table 5.34). Therefore, it could be concluded that a degree of confidence in the factor solution had been achieved.

Table 5.34: Communalities of Corporate Performance

	Initial	Extraction
Industry leadership	1.000	0.694
Future outlook	1.000	0.755
Profit	1.000	0.756
Profit growth	1.000	0.796
Sales growth	1.000	0.728
After-tax return on assets	1.000	0.719
After-tax return on sales	1.000	0.706
Overall response to competition	1.000	0.649
Success rate in new product launches	1.000	0.571

The initial two-factor solution was considered satisfactory, Varimax rotation was performed to aid the interpretation and the results are summarised in Table 5.35. Then the loading of all the items within the two factors was examined. The interpretation of the two factors was consistent with the theory on corporate performance with financial performance variables loaded on Factor 1 and non-financial performance variables loaded on Factor 2 (see Table 5.35).

Table 5.35: Rotated Component Matrix of Corporate Performance

Variables	Component	
	Factor 1	Factor 2
After-tax return on assets	0.847	
After-tax return on sales	0.822	
Profit growth	0.811	
Sales growth	0.790	
Profit	0.745	
Industry leadership		0.800
Success rate in new product launches		0.755
Future outlook		0.746
Overall response to competition		0.731

Factor 1 was named “Financial performance indicators” and Factor 2 was named “Non-financial performance indicators”. Their reliability tests showed very high alphas of 0.9142 and 0.8307 respectively (see Table 5.36).

Table 5.36: Factor Loading and Cronbach's Alpha Analysis of Corporate Performance

	Factor Loading	Cronbach's Alpha
Financial performance indicators		**0.9142**
After-tax return on assets	0.847	
After-tax return on sales	0.822	
Profit growth	0.811	
Sales growth	0.790	
Profit	0.745	
Non-financial performance indicators		**0.8307**
Industry leadership	0.800	
Success rate in new product launches	0.755	
Future outlook	0.746	
Overall response to competition	0.731	

5.8.1 Testing the Association Between IC on Corporate Performance

Propositions

The following propositions were tested:

P7.1: High IC firms tend to achieve higher non-financial performance level.

P7.2: High IC firms tend to achieve higher financial performance level.

P7.3: High IC firms tend to achieve higher overall business performance and practice level.

Results on Table 5.37 indicate that all three IC variables, HIC (r=0.417**), SIC (r=0.444**), and RIC (r=0.480**), are strongly correlated with non-financial performance. HIC (r=0.346**), SIC (r=0.429**), and RIC (r=0.467**) are also strongly correlated with overall business performance and practice. These suggest that firms that invest heavily in IC tend to have higher non-financial and overall corporate performance levels. Only RIC (r=0.171*) is significantly correlated with

financial performance and this indicates that firms that possess high relational IC value tend to have higher financial performance level.

Table 5.37: Correlation of IC and Corporate Performance Levels

	HIC	SIC	RIC
Financial performance indicators	0.056	0.121	0.171(*)
Non-financial performance indicator	0.417(**)	0.444(**)	0.480(**)
Overall business performance and practice	0.346(**)	0.429(**)	0.467(**)

5.8.2 Section Summary

Two factors were obtained out of the PCA on corporate performance levels, i.e. financial performance indicators with six variables loaded on it and non-financial performance indicators with four variables loaded on it (see Table 5.44). The variable overall business performance and practice was not subjected to PCA because it was a construct on its own. The three factors were correlated with human IC (HIC), structural IC (SIC), and relational IC (RIC) for propositions testing. The results of the proposition testing fully supported both propositions P8.1 and P8.3. The results however, only weakly supported proposition P8.2 (see Table 5.45).

5.9 Corporate Characteristics

5.9.1 PCA of Corporate Characteristics

Six items of corporate characteristics were subjected to PCA using SPSS. Results of the factor extraction using PCA are presented in Table 5.40. The KMO measurement of sample adequacy (MSA) showed 0.594, exceeding the minimum recommended of 0.5 (Kaiser, 1974) as cited by Hair *et al*. (1998) and Field (2000). The result for BTS (Bartlett, 1954) was 137.294, and the associated significance reached statistical significance (p=0.000). This showed that the data were appropriate for PCA. Two of the factors had eigenvalues over 1, accounting for 62.5% of the variance (see Table 5.38).

Table 5.38: Total Variance of Corporate Characteristics Explained

Factor	Eigenvalues	Variance Explained (%)	Cumulative %
1	2.141	35.690	35.690
2	1.609	26.809	62.499
3	0.927	15.452	77.951
4	0.522	8.704	86.655
5	0.501	8.348	95.003
6	0.300	4.997	100.000

All six variables scored communalities that ranged from 0.461 to 0.768 (Table 5.39). Therefore, it could be concluded that a degree of confidence in the factor solution had been achieved.

Table 5.39: Communalities of Corporate Characteristics

	Initial	Extraction
Firms are dominated by rules and paperwork	1.000	0.461
Upper-level management determines everything	1.000	0.768
Front-level mgt just implementers	1.000	0.742
Culture and atmosphere are supportive	1.000	0.618
Front-line managers have decision-making freedom	1.000	0.511
High degree of trust is culture	1.000	0.650

As the solution was considered satisfactory, Varimax rotation was performed to aid the interpretation and the results revealed a two-factor solution, as summarised in Table 5.40. Then the loading of all the items within the two factors was examined. The interpretation of the two components was consistent with the theory on corporate characteristics with items of centralisation variables loaded on Factor 1 and culture of trust variables loaded on Factor 2 (see Table 5.40).

Table 5.40: Rotated Component Matrix of Corporate Characteristics

Variables	Component	
	Factor 1	**Factor 2**
Centralisation		
Front-level mgt just implementers	0.858	
Upper-level management determines everything	0.857	
Firms are dominated by rules and paperwork	0.673	
Culture of trust		
High degree of trust is culture		0.805
Culture and atmosphere are supportive		0.784
Front-line managers have decision-making freedom		0.714

Factor 1 was named "Centralisation" and factor 2 was named "Culture of trust". Their reliability tests showed alphas of 0.7165 and 0.6515 respectively (see Table 55.41)

Table 5.41: Factor Loading and Cronbach's Alpha Analysis of Corporate Characteristics

	Factor Loading	**Cronbach's Alpha**
Centralisation		**0.7165**
Upper-level management determines everything	0.864	
Front-level mgt just implementers	0.853	
Firms are dominated by rules and paperwork	0.677	
Culture of trust		**0.6649**
High degree of trust is culture	0.814	
Culture and atmosphere are supportive	0.790	
Front-line managers have decision-making freedom	0.721	

5.9.1.1 Testing the Association Between IC on Corporate Performance

Propositions

The following propositions were tested:

P8.1: High IC firms would likely be decentralised.

P8.2: High IC firms would likely have high culture of trust.

P8.3: High IC firms would likely be large in size

Table 5.42 indicates that both HIC (r=0.621**) and RIC (r=0.611**) have very high correlation with culture of trust, but SIC (r=0.472**) has a lower correlation with culture of trust. This reveals that firms with high human IC and relational IC value tend to have higher culture of trust than firms with high structural IC value. Only SIC (r=-0.315**) is significantly correlated with centralisation. Since the correlation has negative direction, this indicates decentralisation; therefore, this suggests that firms with high structural IC value tend to have high decentralisation.

Table 5.42: Correlation of IC and Corporate Characteristics

	HIC	SIC	RIC
Centralisation	-0.148	-0.315(**)	- 0.141
Culture of trust	0.621(**)	0.472(**)	0.611(**)
Size			

5.9.2 Section Summary

Similar to the previous section, two factors were obtained out of the PCA on corporate characteristics, i.e. centralisation with three variables loaded on it and culture of trust with also three variables loaded on it (see Table 5.44). Since the correlation direction was negative, it meant decentralisation. The two factors were correlated with human IC (HIC), structural IC (SIC), and relational IC (RIC) for propositions testing. The results of the propositions testing weakly supported proposition P8.1 and fully supported proposition P8.2 (see Table 5.45).

5.10 Conclusion and Summary of Key Findings

The chapter has described the procedures and findings of PCA and proposition testing using correlation analysis. As mentioned before, the purpose of conducting PCA was only to reduce the number of the research variables into a more manageable set. There were some variables which were not included because they were considered to be unsuitable or would reduce the strength of a particular factor. This had further strengthened the reliability of the data that had already undergone purification processes as described in chapter six. Twenty-two factors were obtained from 67 management accounting practices and corporate performance variables as a result of PCA. Table 5.43 and Table 5.44 present as summary of the PCA.

This chapter also has 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. Out of twenty propositions tested, 17 were fully, partially or weakly supported and 3 unsupported. The findings suggest that the level of investment in IC is associated with management accounting practice, business performance, ability to respond to future events, and corporate characteristics. Table 5.45 summarises the findings.

Table 5.43: Management Accounting Practices Variables

Importance of:	**Variables Loaded on Factors**
PERFORMANCE MEASUREMENT	
Importance of:	
Value-based financial performance measures	Shareholder value, EVA, Incentive structure base on value creation, provide incentive, accounts for corporate value
Profit and loss accounts-based financial performance measures	Sales, Profitability
Scorecard performance measures	BSC, Intangible Assets Monitor, Tableau de Bord, Skandia Navigator, Performance Prism
Financial and non-financial measures	Performance measures include both financial and non-financial aspects, future focus
CONTROL STYLE	
Business emphasis	Concern with: cost, general effectiveness, quality, handling subordinates, job effort
Budget emphasis	Budget emphasis, Ability to meet budget
Forecasting	Separates target setting from financial planning, Rolling forecasts, Regular forecasting
Non-conventional budget	Zero-based budgeting Priority-based budgeting
CAPITAL BUDGETING MEASURES	
Financial measures	NPV, IRR
Acceptance of negative NPVs and use of real options	Acceptance of negative NPV in capital investment appraisals, Real options approach

Table 5.44: Association Between IC and Corporate Performance and Corporate Characteristic variables

Importance of:	**Variables Loading**
ECONOMIC EXPOSURE	
Ability to respond to economic uncertainties	Managers' and staff's creativity and innovation ensure firm's long-term survival, IC acts as hedge against unanticipated economic change
Stock market influence	Will not be hit badly by fall in the stock market, Will not over-react to fall in stock market
CORPORATE PERFORMANCE	
Financial performance indicators	After-tax return on assets, After-tax return on sales, Profit growth, Sales growth, Profit, Share prices
Non-financial performance indicators	Industry leadership, Future outlook, Overall response to competition, Success rate in new product launches
Overall business performance and practice	
CORPORATE CHARACTERISTICS	
Decentralisation	Dominated by rules and paperwork, upper-level management determines everything, front-level managers just implementers
Culture of trust	Culture and atmosphere are supportive, front-line managers have decision-making freedom, High degree of trust is culture

Table 5.45: Summary of the Proposition Testing Results Using Correlation Analysis

Propositions	Results
P1.1: High IC firms are more likely to publish IC information in or with their annual reports.	Weakly supported
P1.2: High IC firms are more likely to report IC information internally.	Fully supported
P1.3: High IC firms are more likely to refer to IC in their strategic decisions.	Fully supported
P2.1: High IC firms tend to emphasise value-based financial measures	Fully supported
P2.2: High IC firms tend to employ profit and loss accounts-based financial performance measures	Weakly supported
P2.3: High IC firms tend to employ scorecard performance measures such as BSC	Unsupported
P2.4: High IC firms tend to employ both financial and non-financial performance measures.	Fully supported
P3.1: High IC firms tend to emphasise budget	Fully supported
P3.2: High IC firms have the tendency to de-emphasise budget.	Fully supported
P4.1: High IC firms tend to emphasise forecasting	Fully supported
P4.2: High IC firms tend to emphasise non-conventional budget approach, such as Priority-based budgeting	Weakly supported
P5.1: High IC firms would not likely be employing financial methods of capital investment appraisals.	Unsupported
P5.2: High IC firms would likely be accepting negative net present value and use Real Option.	Partially supported
P6.2: High IC firms are likely to have higher ability to withstand economic uncertainties.	Fully supported
P6.1: High IC firms are more likely to be able to better respond to stock market influence.	Unsupported
P7.1: High IC firms tend to achieve higher non-financial performance levels	Fully supported
P7.2: High IC firms tend to achieve higher financial performance levels	Weakly supported
P7.3: High IC firms tend to have higher overall business performance levels	Fully supported
P8.1: High IC firms would likely be decentralised.	Weakly supported
P8.2: High IC firms would likely have high culture of trust	Fully supported
P8.3: High IC firms would likely be large in size	Unsupported

CHAPTER 6
QUALITATIVE ANALYSIS: CASE STUDIES - EXAMINATION OF IC AND ITS APPLICATION IN MANAGEMENT ACCOUNTING PRACTICES

6.1 Introduction

This chapter will focus on the description and analysis of the qualitative data collected for the research. It aims to probe in greater depth within firms many of the findings reported in earlier chapters. Based on the research framework, it looks at the similarities and differences between the firms in terms of IC, management accounting, culture of trust, performance, and ability to manage economic exposure in the six companies in Kuala Lumpur, Malaysia, which agreed to have their senior managers interviewed.

The interviews were conducted during the months of March and April 2003, with both accounting and non-accounting executives. The sample firms included software and telecommunication company, two banks - one conventional and the other Islamic, a manufacturing company, a broadcasting company, and an Islamic insurance company. The names of the companies cannot be revealed, as the information has to be kept confidential. Eighteen interviews (i.e. three persons from each of the six companies) were conducted with heads of accounting/finance, human resource, and marketing departments, except in the software company and the Islamic bank. In the former, the human resource manager was not interviewed because it had an IC director, which was considered a better person, and he was also involved with human resource. In the Islamic bank, its executive vice-president was interviewed because he also took care of marketing. All these interviews provided valuable insights that could not be achieved through mail survey.

Apart from the interviews, evidence was also obtained from secondary data, such as annual reports, employee bulletins, and company magazines.

The objective of conducting the interviews was to explore the issues considered by the postal survey to seek to understand some of the findings from the questionnaire survey evidence. It was not to find new evidence. The evidence obtained, more in-depth and

richer, as questions like 'who?', 'what?', 'how?', 'when?' and 'why?' could be asked (Yin, 2003).

6.2 Research Interviews

For each company, firstly its background is described; secondly, the status of its IC, human IC, structural IC, and relational IC are examined; and thirdly, the application of IC in (1) management accounting practices: performance measurement, budgeting, and capital investment decisions, (2) economic exposure, and (3) culture of trust are analysed. The analysis of the interviews will be done according to the research framework. Due to the limitations of qualitative data analysis, only the propositions that are related to the first research model are examined.

6.2.1 Software and Telecommunication Company

6.2.1.1 Company Background

The company is involved in the telecommunications and IT-related businesses. Its activities include the manufacturing, servicing and marketing of telecommunication products, as well as the provision of related services. Its IT-related activities include education, software design and development, distribution of computer products, maintenance, networking, and consultancy services, as well as sales of security systems. Among the company's recent pilot projects are its participation in Smart School and E-Government. This marked the beginning of the company's involvement in the knowledge economy, which in turn has positioned it as one of the leaders of the technology sector.

6.2.1.2 IC and KM in Company

The company has a high degree of IC, has been in IT for 15 years, and has accumulated knowledge in the form of software and documentation. It also has high R&D in the form of software development. Its innovation is not only in technology but also in business solutions for customers. The KM system in the company has been formalised since 2001. It is included in strategic planning, but has not yet been institutionalised. However, the company has declared in a brochure that it operates KM. IC has been explained to all staff as important as finance and other functions. The IC function was formed in January 2003,

and called the 'Technology and Innovation Unit'. The company uses the term 'intellectual property' more than IC. The IC director claimed that, nationally, the company is the most mature in the sector in terms of IC management (ICM). It is interesting that the company's knowledge and IC were discovered 'accidentally' after working with government in transfer of technology in engineering methodology projects with foreign companies in 1993. The company's IC director further noted that transfer of technology is actually a transfer of knowledge. Many of the projects involved a lot of computer-based training and simulation. This involved learning which relates to knowledge. When promoting its computer-based training, it produced brochures about KM. After a lot of presentations to customers to invest in software (knowledge acquisition systems), it then realised that it had the capability of KM that it thought should be applied to its own company.

IC in the company is described by the IC director:

> *"Relational capital – we call it relationship capital – we also have a lot of them, structural capital have been formalised over past 2 years or so. The extent of structural capital – the difference between explicit and intrinsic knowledge – I would say that the most explicit form is in the form of project documentation, in the form of software, some policies and procedures, but organisationally we have traditionally, as a group of multiple small companies – some of the companies are in the business of computer software, some in the business of trading, for example, so the level of the structural capital available, I think, is high in some companies and low in some companies. Overall, based on Malaysian standards, we're the most mature company in terms of how we manage IC. Based on international standards, there're many more companies that practise the management of IC more formally. Because they do so, the level of their IC is higher."*

6.2.1.3 Human IC (HIC) in Company

The IC director of the company also noted that,

> *"This is at the moment the highest form and the most valuable to the company because it is the easiest to create, as it does not have to undergo formal process. To be a good company, you must have good people."*

The human resource policy of the company is to get the best people in the world. It implements this to the extent of going to a foreign country to get the best IT people from there. The company looks for well-experienced people, too. Knowledge sharing in the company is cultural and comes informally when people sit next to each other or work together. The company is able to attract and maintain highly qualified people by developing advanced knowledge in its software projects. Very little of the IC, such as trademarks and software performance, are being measured non-financially, such as by percentage of engineers. The next measurement in the plan is by self-measures. The performance measure for HIC is based on their capabilities, a K-based measure. The IC director noted:

> *"The performance measures must be understood by the persons in charge. The system has been in the form of financial system. Non-financial performance measurement system is definitely planned for use in the future."*

6.2.1.4 Structural IC (SIC) in Company

The company has high SIC in the form of software, policies, procedures and projects documentations. It has been formalised in the past 2 years. Even though the company does not really have a formal method of tracking intellectual assets (IA), it is traceable. According to the IC director,

> *"We have a lot of innovations going on, definitely, innovation here is not just in technological form, but also business innovations. The innovation is how we approach the market, how we design solution for customers, and so on. The challenge is how effective it is to convert innovations into revenues. We shouldn't just document the innovations, but also commercialise them."*

The company's intellectual properties are in the form of software, product brands, trademarks, and packaged methodology. Among the software the company has developed are Advanced Integrated Logistic Systems (electronic governance), Work Orchestra Portal (advanced system), Knowing Your Customer (customer relationship management), E-learning Environment system (education), Screenshield electronic security (education), School Management System (education), K-Al Quran (education), World-class

International Airport Management System (integrated airport management system), and Bringing Efficiency to Energy Resources (energy).

6.2.1.5 Relational IC (RIC) in Company

According to the marketing manager, relational IC is called 'relationship capital' in the company. The company has started to apply the IC concept in marketing, i.e. finding a way to approach the market to sell its innovations. The company has just set up a unit called 'Market Capital' to manage RIC, and it is still in the midst of building customer information. The status of customer IC is still weak; however, the supplier IC is good, due to the skill of maintaining a good relationship among the people involved. The company has developed customer relationship management software called "Knowing Your Customer" which it offers to the market. The 'K-customer' system, noted the marketing manager, was still not much implemented:

> *"The environment where customer comes first, K-customer, is still in the midst of building information on customer. At the moment, we are still looking for where we want to go, i.e. putting it in place. The reputation of the company is not wide enough. At the moment, the market share is mainly from the government sector."*

> *"The company manages customer complaints very well, in the way it addresses customer complaints and feedback".*

6.2.1.6 IC in Management Accounting in Company

The company has not yet applied the IC concept in accounting and finance, but plans to do it in the future when the persons in charge and management understand it. "The system is not yet there to support it", said the financial manager. According to her, this is because there is no system to support non-financial performance measures and a non-financial approach to capital investment. The company's highest form of capital investment is human IC (personnel). They were working on projects with Microsoft and Hewlett-Packard companies in training, i.e. transfer of technology programmes (TOT). Even though the non-financial approach is not really applied, the company still accepts projects with negative NPVs for strategic projects. The financial manager further noted that,

"No matter what approach is being used for performance measurement, the bottom line is still financial figures, i.e. financial reports that top management and investors want to look at."

The company has started to use the BSC and its developer, Professor Robert S. Kaplan, himself, was invited to give a talk on it to the company staff in 2002. The BSC, however, is still not fully applied yet. This is an initiative made by the IC director, who was then the head of the innovation unit, to make managers and staff understand the need for, and use of the BSC. He wanted to make a change in the company, but it was difficult for him to get the support from the top management, managers, and staffs because they did not feel it was necessary.

6.2.1.7 Economic Exposure Management

According to the finance manager, the company will not be really affected by the stock market downfall because the majority of its customers are government departments. She thought that even though the company is very rich in IC, she does not believe that IC acts as the IC acts as the company hedge against unanticipated economic and market changes. She also thought that the managers' and staff's creativity and innovation do not fully ensure the company's long-term survival. The reason she gave is that, the popular name became a brand, and there was an idea to some government departments and agencies that the company has taken a lot of the government IT projects, and it is time to give them to other new companies now. The brand (an IC) has become a liability. That is why, she further noted, that the company is now going after non-government projects.

6.2.1.8 Culture of Trust

The financial manager noted that while upper level management of the company takes the main strategic decisions, it also emphasises flexibility. However, front-line managers and staff are given limited freedom to make strategic decisions. A similar picture holds for culture of trust; there is some degree of trust in the culture, but this is limited.

6.2.1.9 Summary of Findings from Company

This is a high IC company which slowly recognizing that it requires a management accounting system (MAS) to support IC activity. IC is not seen as a hedge against

economic uncertainty because the company gets government IT projects. It does not have a good fit between IC, MAS, and organisation structure and trust. This may help explain its relatively poor performance.

6.2.2 Conventional Bank

6.2.2.1 Company Background

The Bank offers services in the areas of commercial banking, finance, nominee and trustee services, insurance, merchant banking, leasing, offshore banking, venture capital, hire purchase, discount house business, factoring, stock broking, property trust fund management, and unit trust fund management. The bank has hundreds of branches in the country, and more than twenty overseas branches, located in large cities such as Singapore, Brunei, Hong Kong, London, New York, Port Moresby, Yangon, Tashkent, Beijing, and Jakarta. The company has a large ATM network nationwide.

6.2.2.2 IC and KM in Company

The bank has a fairly high value level of IC, and IC is considered fairly important. The term knowledge is common in the company. Knowledge management is specialised in the training unit. The bank has KM, and the systems are in almost every unit in the company. For instance, knowledge is managed in its credit, audit, risk management, marketing analysis and planning units, and especially its training unit. KM in the bank is decentralised rather than centralised.

6.2.2.3 Human IC (HIC) in Company

The human resource director claimed that her unit is applying the best practice in HIC management. The managers and staff are bright, creative, highly committed, experts in its functions, innovative, etc.. Knowledge sharing is highly practised. According to the company's employees' newsletter, in the year 2002 the bank launched a new project to change the staff and managers' mindset, "Towards a Customer-Centric Organisation". Among focal points related to Human IC were to become a customer-centric organisation and service quality is the keyword, to move toward a more transparent performance appraisal system, staff are to be informed of the KPIs (Key performance indicator), and are to be measured against a balanced scorecard, to enjoy better career prospects, be able to

see the customers in a single uniform manner, and concentrate on structure, culture, training: the three main areas to make this work. The results were expected to be seen within 2 years. The new mindset directed the managers and staff to "Think Customer". Customers are divided into 2 types, external and internal. The external customer will be discussed under relational IC below. Internal customers are the managers and staff themselves. As written on the bank's employees' newsletter,

> *"We are internal customers, serving each other. We come to an agreement to fulfil the needs of each party and to deliver as agreed."*
>
> *"Good customer service must be practised from within the organisation. We must treat everyone as our customers!"*

The bank's new strategy on human resource management and development was discussed in detail in its 2002 Annual Report. The core elements of the new strategy orientation encompassed:

- Definition and development of new leadership qualities, which are aligned with current and future competitive requirements.
- Speedy acquisition of new skills to augment the new required capabilities, e.g. Customer Relationship.
- Mindset change to be more competitive and customer-focused.
- The attraction, retention, and development of top talents.
- Development of a new performance management system with clearer line-of-sight between business strategy and individual goals, and sustaining high performance by linking recognition/reward to individual performance.

6.2.2.4 Structural IC (SIC) in Company

The bank has separate information systems for each unit, and it is easy for managers and staff to access data, as there are modern links to Internet systems and websites. It also has high investment in IT, and has the best information processing system among the banks in Malaysia. For the time being, the systems are not yet integrated, but they are planned to be in the near future. This is the only bank in Malaysia that has Electronic Point of Sales (EPOS). There is also a portal for knowledge-sharing in the bank. One of the portals was

developed for the Customer-Centric Organisation project, called Enterprise Portal (EP). The bank is in a regulated business and so innovations that can be made are rather restricted. Innovations are mostly in the form of information systems, processes, and marketing. Managers and staff who are innovative are rewarded. Normally, consultants are engaged to develop innovations such as internet banking, EPOS, and the BSC implementation.

6.2.2.5 Relational IC (RIC) in Company

The bank does have fairly good customer and supplier systems, but does not consciously call them relational IC. According to the marketing and planning director, the bank is highly market-oriented, but not highly efficient in satisfying customer needs. He added,

> *"To serve customers efficiently, the following must exist: (1) the system, (2) people, and (3) the procedures and processes. The bank's system and people are good, but there are some problems with its procedures and processes. It is targeting mainly corporate clients (upper level customers); however, loyalty of this market segment is very low. The unit just started using an electronic customer analysis system in May 2003."*

As mentioned in Section 6.2, the second type of customers under the "Customer-Centric Organisation" project was external customers. This was the market, the real customers. Written on the bank's employees' newsletter,

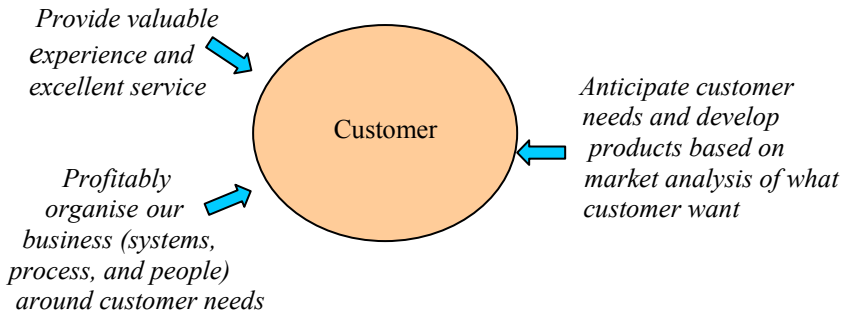
> *"To deliver consistent and valuable experience and excellent service, we put customers in the centre of what we do…"*

> *"We own the customer, so we solve the problem for the customer as quickly and as efficiently as possible."*

As mentioned before, to aid the achievement of the project, the bank provided Enterprise Portal (EP) so that correct information could be provided on the products and services needed for quality service. The managers and staff can have access to the right information at the right time. This is to enable them to be more efficient in their delivery, in their response time to customer needs.

In promoting new products and services, the bank held contests, and the rewards are expensive, such as cars and overseas holidays as prizes. Figure 6.1 illustrates the meaning of the new mindset of the bank.

Figure 6.1: New Mindset



Source: Modified from Bank's employees' newsletter, Issue 6, 2002

Besides customer IC, the bank also has strategic alliance with other companies to develop new products and services, such as with Microsoft, that will extend the bank's cardholder to a wider audience reach. This is specifically to subscribers of Microsoft MSN Malaysia/Singapore sites and users of MSN Explorer.

The bank had always been proactive in its community relations programmes and responds to needs of various communities and organisations. In 2002, among them, the bank contributed to the funds of the National Zoo, and the bone marrow transplant centre of one of the Malaysian public universities.

6.2.2.6 IC in Management Accounting in Company

The bank uses both financial and non-financial measures for performance measurement. It started to use the BSC from June 2002. Budget is very much emphasised in the traditional way. The bank invests in both tangible and intangible assets. In contrast, its capital investment appraisal approach is only financial, and thus, it is not able to capture both the intangible costs and benefits of the investments.

6.2.2.7 Economic Exposure Management

The bank does not have high economic risks. This is because most of its customers are government bodies and agencies, and the bank is well established, and is a leader in its sector in the country. Its reputation is very high, nationally. The finance manager noted,

> *"In term of risk, the position of the bank is not very 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."*

6.2.2.8 Culture of Trust

The bank is quite highly decentralised, as the front-line managers are given quite high freedom to make strategic decisions. Culture of trust is also high, and the atmosphere is supportive and comfortable.

6.2.2.9 Summary of Findings from Company

This company has high IC and adapts management accounting practices (MAP), management accounting techniques (MAT), and organisational culture and trust appropriate for IC. This helps explain its high performance levels relative to other firms within the sector.

6.2.3 Broadcasting Company

6.2.3.1 Company Background

The company's core business is commercial television broadcasting. In addition, the company is also involved in other activities that complement and enhance its core business, such as post- and pre-production services, sports and event management, and training and education in film, broadcasting, and related activities. The company's products, i.e. television programmes, are sold to Middle East and Asian countries, whilst airtime selling is targeted at Malaysian-based advertisers. For the period from August 2001 to May 2002, the company achieved a 47% share of television advertising and 40% share of viewership.

6.2.3.2 IC and KM in Company

As a broadcasting company, it is very rich in IC. IC is very important because it ensures sustainability of the company's competitiveness. IC is particularly high in the company's production houses. These are categorised as news, entertainment, recreation and sports, magazine, documentary, and family programmes production units. Indirectly, reports on the performance of these production houses are reports on IC. The reports are made for internal use and referred to during strategic decisions. The term 'knowledge' is very commonly used, but the term 'IC' is not.

6.2.3.3 Human IC (HIC) in Company

The company's human resources manager noted that IC in the form of HIC is very high at the production houses. The nature of the business requires the managers and staff, especially those in the production houses, to be creative, innovative and highly committed, in order to produce attractive TV programmes. The selection of managers and staff in the company is based on success stories in previous jobs and competencies and talents shown. Knowledge sharing is part of training and is made compulsory. The human resources manager further noted,

> *"Knowledge is not knowledge until it's transferred."*

Teamwork is also emphasised. This is the main way for knowledge to be shared and imparted. The commitment of the managers and staff is still considered as not maximised, because profits are not high, even though the company is the highest rated-broadcaster in the country.

6.2.3.4 Structural IC (SIC) in Company

The company also has very high IC in the form of structural IC; a lot of it is copyright that is generated by the production houses. Every programme and document produced is inventoried, well kept, and the old ones are archived. SIC in the form of technology is used to support HIC in the production houses. Currently, each and every department of the company has its own resource centre. Investments in information and communication technology are quite high, and it is being upgraded. The company plans to buy and install better technology for the year.

6.2.3.5 Relational IC (RIC) in Company

Interestingly, as a broadcasting company, it has two types of customers: (1) TV audience (2) Advertisers. The latter indirectly depend on the former, as the former influence the rate of viewership, and the latter will advertise the products and services if the rate of viewership is high. According to the company's marketing manager, the company is customer-focused, reaching out to clients by road shows and other ways, such as giving out "duit raya" (monetary gifts for Muslims' Eid celebration) and "ang pow" (monetary gifts for Chinese New Year celebration). It fights for long-term market share. Its marketers send out questionnaires and make telephone calls for customer (advertisers) feedback. The satisfaction rate was 80 – 85%. The marketing manager herself gives personal response to client complaints. The IC concept is applied so as to have good relationship with customers, maintenance of the company's brand and image, etc.. Competition with other broadcasting companies is quite high. Promotions undertaken are basically to sell airtime for firms to advertise their products and services on TV. RIC of the company is also high, as it has already established confidence of firms in attracting the highest rate of audience and ratings. About 20% of the clients are loyal to the company. At the moment, competition is stiffer because of the existing of new broadcasting companies, i.e. new TV companies and subscribed TV programmes.

6.2.3.6 IC in Management Accounting in Company

Even though the company possesses very high IC, the IC concept is not comprehensively applied in its accounting and finance. According to the companies head accountant,

> *"Besides traditional financial measures, non-financial measures are also used. Examples of the non-financial measures are viewership, programme ratings, and KPIs on marketers. However, these performance measures are only for internal reports and strategic decisions."*

He also noted that there is no modern framework such as the BSC being used. The company's performance is still reported financially in its annual reports. Budget is very much emphasised and very traditionally practised. Investments of the company are both tangible and intangible, but there is still no real system for capturing the intangible costs

and benefits of the intangible investments. The company would only accept an investment with negative NPV for a social obligation reason.

6.2.3.7 Economic Exposure Management

According to the company's accountant head,

> *"The business is highly risky, as it depends highly on sales of airtime. When there is an economic downturn, airtime sales also fall. The company is a little fortunate, as its IC can act as a hedge 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 television programmes to foreign countries. The CDs are also commercialised domestically to individuals."*

6.2.3.8 Culture of Trust

According to the human resource manager, the production houses are given freedom to be innovative and creative in making the television programmes. The accountants' head, who said that the company's management structure is determined basically by the nature of the business, supported this. This is because the people involved in productions have got to be given freedom to plan strategies and make decisions. The marketing manager also said that the marketers are given freedom to be innovative and creative in finding solutions and doing negotiations with the clients. Thus, this shows that the culture and environment in the company are supportive, and a high degree of trust is the characteristic of the culture, or else the people would not be creative and innovative enough.

6.2.3.9 Summary of Findings from Company

The MAP, MAT, and organisational culture of trust are broadly appropriate for a firm with this levels and form of IC, although no integrated scorecard method is used. Overall performance is above average, i.e. consistent with propositions.

6.2.4 Manufacturing Company

6.2.4.1 Company Background

The company is one of the world's leading suppliers of fast-moving consumer goods, i.e. everyday goods, food and home and personal care. The company has a record of above average performance, and it strives to achieve the best.

The company's strength lies in its ability to tailor products to different markets and anticipate consumer demands. This comes from its in-depth understanding of the countries in which it operates and its policy of listening to its customers. This is manifested in the company purpose, as written in its Annual Review 2002 and Summary of Financial Statement:

> *"Our deep roots in local cultures and markets around the world are out of unparalleled inheritance and the foundation for our future growth. We will bring our wealth of knowledge and international expertise to the service of local consumers – a truly multi-local multinational."*

6.2.4.2 IC and KM in Company

The company has high IC, mainly in the form of brand. The word knowledge is more commonly used than IC. The personnel manager noted,

> *"People like to refer to knowledge, because it is a less formidable term. People can know what knowledge is, i.e. 'know-how' whereas IC belongs to the academic. Somebody must have coined the word intellectual capital and then started to make it a bit more complicated by saying that you can divide it into three, i.e. human capital, structural capital, and relational capital. At the end of the day what you are referring to is know-how of the people, i.e. human capital, know-how to operate the company, i.e. structural capital, and know-how to form good lasting relationships, i.e. relational capital. It's all know-how."*

According to the personnel manager, knowledge in the company is indirectly shared, as there are a lot of inter-functional teams. Knowledge sharing is also done during training sessions conducted by senior managers and staff. Knowledge sharing is in the system. Customer information is shared among departments and among branches in different

countries. Information is also shared among staff and managers through regional, national and international meetings. Knowledge on customers, suppliers, and competitors is shared.

6.2.4.3 Human IC (HIC) in Company

The company's personnel manager noted that the company recruits bright, creative, and action-oriented people. The company prefers action-oriented people. Selection of personnel is based on experience, track record, past accomplishment, reasoning ability, and communication skill. *"The life of a company comes from the people"*, he further noted. The people in the company give high performance, as they are well trained. The climate of the company stimulates development of ideas, encouraging people to contribute ideas and share knowledge. The environment is supportive for innovation. The personnel manager also noted, *"To encourage innovations, ideas are implemented, executed, and recognised"*. The company implements job rotations at all levels, and indirectly this does prevent loss in the event of key people leaving the company.

6.2.4.4 Structural IC (SIC) in Company

The company has a lot of electronic databases such as people finder, manuals, procedures, and record of company performance. People in the company can get access to all Internet sites and are linked to other branches globally. Most staff and managers also have e-mail systems. All the systems and procedures allow people to be creative and innovative. If there is a procedure or a system that is blocking these, it will be abolished. There is a system called 'innovation funnel' where people throughout the company can put ideas into it. A decision will be made whether the idea can be acted upon or not. New ideas would be developed and translated into products. There is also a system called vendor management system that links the company to the vendors. Innovation is paramount within the Home and Personal Care markets in order to maintain a strong market position. The company's R&D teams help it to anticipate and meet consumer needs (from a document that introduces the company):

> "*Our research and development expertise allows us to anticipate the evolving needs of consumer and to create innovations to meet them. Internet technology is improving the way we share best practice and innovation around the world."*

On IT system (from the same document above):

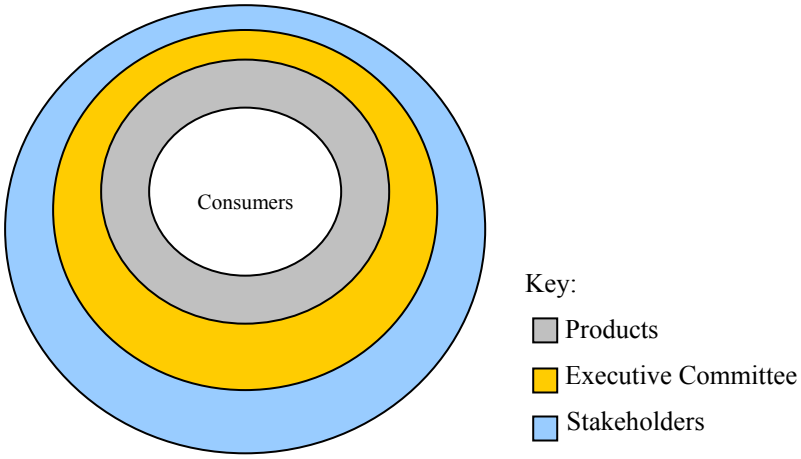
> "*Our global IT systems help us to share information around the business and to use our scale and scope to meet consumer needs and reduce our costs."*
>
> *"In our drive to provide better value for customers and consumers, we have always valued the sharing of information across product sectors and geographical locations. IT has boosted this knowledge-sharing culture, allowing us to make the most of the vast amount of information held by our people around the world."*

The company's computer networks provide its employees with common tools for sharing information – allowing them to deal with millions of electronic messages. Teams pool information, marketing stories, and knowledge via dedicated sites, making this knowledge available to its people.

6.2.4.5 Relational IC (RIC) in Company

Some of the company's brands are market leaders and some are not. Overall, it has 14 global brands. In Home & Personal Care, it has sustained the leading brand growth in excess of 6%. In particular, its personal care brands continue to perform well and its home care margins increased sharply. The company claims to be the leader in customer satisfaction, as it is a consumer-driven company. In Malaysia, the company's products are 'everyday products'. Customer loyalty is reflected in the fact that the company, which has been in Malaysia for more than fifty years, is growing. The units in the company have regular meetings of managers and staff, where they are briefed on the company's performance and made to understand its target market segment. Representatives of the company also meet with customers (wholesalers and retailers) every month to get feedback from them, besides doing market research. A customer care line is installed to listen and respond to customer complaints. The company is consumer-focused, as shown by Figure 6.2. It also has a long-standing, good relationship with suppliers; it has a rating system for them. It works closely with suppliers to obtain the best raw material, to work to reduce their impact on the environment, and to act as a responsible corporate citizen.

Figure 6.2: Customer-Focused Organisation



Source: Modified from a document that introduces the company

The company puts a priority upon its reputation. This is evidenced by the chairman's statement in the company's annual review 2002 and summary financial statement,

> *"The company recognises that clear values and committed social responsibility are essential to how it conducts itself. At a time when the way businesses behave is coming under great scrutiny, its corporate reputation has become an even more important asset."*

> *"…We have sound and clearly understood strategies, brands that serve people's basic needs and aspirations and generate dependable cash flow. These are the essential elements, together with a proud corporate reputation, which will enable us maintain momentum of our Path to Growth, even in difficult times that may lie ahead…."*

6.2.4.6 IC in Management Accounting in Company

According to the financial accountant of the company's Malaysian branch, the company has both financial and non-financial measures for performance. It measures the climate of the company, i.e. whether people of the company are happy or not, by using a 'global people survey'. Managers and staff are asked about their opinions regarding their

colleagues, subordinates, and superiors. The other measures are statistical, for measuring efficiency and effectiveness, such as stock holding, capacity utilisation, and customer service. However, the non-financial measures are not published in the annual report. As mentioned in the company's Annual Review 2002 and Summary Financial Statement, "The accounts are prepared under the historical cost convention…", showing that the traditional financial method was still used in the company. They are reported internally and referred to in strategic decision-making. For the Malaysian branch, BSC is used, but only in the marketing department, as it is considered not necessary for other departments. The company's strong brands are considered to act as a hedge against market and economic uncertainties.

6.2.4.7 Economic Exposure Management

In terms of risk, the company's supply chain director thinks that the position of the company is not risky, as its brands and trademarks act as a hedge against unanticipated economic and market change. Furthermore, company managers and staff creativity also ensure the company's long-term survival.

6.2.4.8 Culture of Trust

The company is highly decentralised. Its culture is characterised by a high degree of trust, its front-line managers are given the freedom to make strategic decisions, and the atmosphere is supportive and comfortable.

6.2.4.9 Summary of Findings from Company

A high IC company that adapts MAP, MAT, and organisational culture and trust appropriate for its level of IC. This helps explain its high performance levels relative to other firms within the sector.

6.2.5 Islamic Insurance Company

6.2.5.1 Company Background

The company commenced business with only two branches. The basic concept of 'takaful' (Islamic insurance) is the provision of insurance as a form of business in conformity with Islamic law, based on the Islamic principles of Al-Takaful and Al-Mudharabah. Al-Takaful means the act of a group of people reciprocally guaranteeing each other, while Al-

Mudhrabah is the commercial profit-sharing contract between the provider of funds for a business venture and the entrepreneur. The company offers family 'takaful' plans, which encompass savings, as well as the cover of mutual financial aid in case of untimely death, disablement or hospitalisation of a participant. General 'takaful' offers fire, accident, marine, engineering, and motor 'takaful'. The company established a Retakaful Pool for Fire Takaful Scheme under the General Takaful Business in 1996, after the formation of an Asean Takaful Group. Subsequently, the company incorporated Asean Retakaful International (L) Ltd (ARIL), a retakaful entity offering family and general Retakaful business. The company has been awarded ISO for services.

6.2.5.2 IC and KM in Company

Being a service company, its IC is mostly in the form of HIC and RIC. There is no formal KM in the company, and even the term 'knowledge,' is not very often used. The term 'IC' has never been heard of.

6.2.5.3 Human IC (HIC) in Company

According to the human resource division general manager, recruitments of employees depend on their creativity, experience, right attitude, and commitment. Employees of the company are always reminded to be hardworking, trustworthy, having team spirit, helping one another, sharing knowledge, etc. They are encouraged to be creative and innovative, and this is more common among the marketing people, as their jobs require them to be highly so. It is emphasised that the company's employees need to be at par with or better than competitors in terms of knowledge. This is communicated clearly to all employees in order to achieve the target. All employees are required to attend training, special briefing, or motivational talk. A special group of officers are required to attend trainings for at least 48 hours a year.

6.2.5.4 Structural IC (SIC) in Company

The company claimed to have high innovation. It launches new products every year. It has the latest form of information and communication technology (ICT) and has them custom-built. It claims to have the best form of ICT in the industry internationally, and plans to sell the technology to similar companies in foreign countries. Procedures and processes are documented in the form of manuals. The company plans to have an

information bank in the future. As stated by the chairman of the company in the company's 2002 annual report, the company was among the pioneer to introduce and promote e-commerce application in the insurance/takaful industry with the launching of the "Financial Link Portal" in October 1999.

6.2.5.5 Relational IC (RIC) in Company

The company, according the marketing division general manager, has high RIC in the form of brand, image, and reputation. He also noted,

> *"The rating for the company's ability to pay claims, evidenced by the Central Bank report, is graded as A1. Our customers are loyal because the company gives high profit sharing and the record for non-renewal is only 1%. There is an increase in takaful participation due to the creativity of the marketers. They go to corporations to sell takaful, and at the same time try to get the staff of the corporations buying takaful for individuals and family participation".*

The marketing division general manager also noted that the company's efficiency is considered average at both satisfying customers and responding to their complaints. He added that there is still a lot more to learn. Even though there is no formal market research planned to be undertaken, the marketers indirectly do research when they do promotions and get feedback from customers when they have their regular monthly meetings with them. The marketing general manager said that another reason for increasing takaful participation is the company's annual launching of new products, and this attract more customers. The company chairman stated in the company's 2002 annual report that special programmes would be focused on the strategy of enhancing the skills of the specialised marketing executives (marketers) in order to promote the individual sector of the Family Takaful Business. The chairman claimed that the company is market-driven and customer-focused, and will continue to be so in order to remain competitive and successful.

According to the company 2002 annual report, in that year, the company held some community programmes, such as "Takaful Day for Women" a jointly-organised health care campaign in collaboration with a government medical centre in Kuala Lumpur.

Under this programme, free medical check-up was provided and the participants would be able to understand more about takaful products. Seminars on understanding the Takaful concept were also held in 5 big cities in Malaysia.

6.2.5.6 IC in Management Accounting in Company

The finance division general manager of the company noted that the company uses both financial and non-financial measures of performance. Examples of non-financial measures are efficiency and effectiveness of issuing insurance certificates in number of days and customer structural growth. The non-financial measures are used just for internal reporting and strategic decisions. BSC is used as a framework for measuring performance, but mainly for the risk management of the company. The reason for this is because it helps the company to fulfil a lot of requirements, such as corporate governance, as the framework makes it easy to monitor performance.

Budget is very important and really emphasised in the company. The management has monthly meetings to monitor planning implementation and to ensure objectives are achieved.

The company's capital investments are in the form of both tangible and intangible assets. The majority of the investments are in new systems and operations. The capital investment appraisals are financial, and projects with negative NPVs have never been accepted.

Except for after-tax return on assets, share price, and after-tax return on sales, the recent performance of the company relative to its key competitors in the industry is very high.

6.2.5.7 Economic Exposure Management

The finance division general manager further noted that the company has a fairly high business risk. It would fare no better than its competitors in an economic downturn situation. The finance general manager noted,

> *"It is evidenced by the Central Bank report that the company has 36% growth rate, while the industry's growth is negative. It is the nature of the product, that gives high benefits to the participants, that becomes the hedge against economic*

downturn. For an example, for life insurance, participants can withdraw their contributions even in the first year and still get some profits ('mudharabah') from the profit sharing scheme. It's the way we trade, participants can always get back their money whenever they want to stop contributing. This is the 'syariah' (Islamic) model"

This is supported by a statement by the chairman in the company's 2002 Annual Report,

"During the year under review, the global economic slowdown and September 11 events had a major impact on the insurance and takaful industry worldwide. Despite these challenges, ----- (the company) still managed to record yet another year of satisfactory growth of 36 per cent for both Family and General Takaful business …."

6.2.5.8 Culture of Trust

The style is still traditional, and so is the organisational management structure. Freedom to plan strategies and make decisions is given more to marketing people. Staff are encouraged to be creative, but they must get approval of the management if they want to implement new ideas.

6.2.5.9 Summary of Findings from Company

A high IC company, with MAP, MAT, and organisational culture of trust considered appropriate for its level of IC. Its high overall performance is consistent with propositions.

6.2.6 Islamic Bank

6.2.6.1 Company Background

The bank started operations in 1999, is one of the fully-fledged Islamic banks to be established in Malaysia, and is poised to play its role in providing Islamic banking products and services to Malaysians, irrespective of race or religious beliefs, thus contributing to the development of modern Malaysia.

According to the chairman of the bank, Islamic banking and financial institutions, today, manage assets more than $200 billion, while an additional $200 – 300 billion-worth of assets were being managed by Islamic windows of international banks in New York, London, Paris, Geneva, Tokyo, and other financial centres. In the last four decades,

Islamic banking has grown at an average rate exceeding 10% per annum. It is now a multi-billion dollar industry. Its growth in Malaysia is encouraging. Today, it accounts for about 8.2% market share of the local banking industry. This bank contributes about 16% of the market share in Islamic banking in Malaysia (Internal circulation of the bank's bulletin: 10th edition, Issue 1, 2003).

6.2.6.2 IC and KM in Company

Even though the bank is new, it already has high IC, because it is brought over from the Islamic banking windows of a formerly large bank. "The bank officers and staff were already trained when it started operation from the former bank with the basic skills to operate the bank from day one", the bank's chairman remarked (The way Forward, Internal circulation of the bank's bulletin: 10th edition, Issue 1, 2003). As this is a service company, IC in the bank is mainly in the forms of HIC and SIC. KM is being practised in the bank, but like most companies in Malaysia, the term IC is new to its people.

6.2.6.3 Human IC (HIC) in Company

As a service business, human IC or people are very important. The bank has to depend highly on human IC, i.e. intangible assets, rather than tangible assets. This is considered to be the highest type of IC in the bank. People are important to the bank, and are included as one of its business perspectives. "People (employees) are considered the bank's customers too, but internal customers", noted the bank's executive VP operations and control. He added that people, system, and relationship with customers are the basic requirements in the service industry.

> *"If you have a system, but you have no people, you can't deliver your service. If you have people, but you don't have the system, you can't deliver the service. If you have people and the system, but you don't have relationship, you can't get the business."*

According to the VP human resource (HR) department,

> *"The bank applies a scientific approach in selection and recruitment of its employees, is concerned with paper qualification, gives aptitude tests, and looks at work history (experience and creativity), etc.. The employee must really be worth recruiting because the bank is paying slightly higher than the market. As an*

Islamic bank, the employees must be instilled with Islamic values, and this 'transition' time normally takes about 6 months."

"Performance is rewarded based on KPI. Employees are rewarded on their creativity and innovativeness. The bank plans to improve its business in the capital market, such as issuing bonds and private debt securities, etc., and so it was looking for experts in these areas. The bank is willing to pay very high salaries on a contract basis if the experts can bring business and generate higher income for it. This shows how the bank values human IC."

On knowledge sharing, the VP human resource division noted,

"Knowledge sharing is a culture in the bank. E-mails are used as a means of communication and knowledge sharing. Whenever a manager or staff goes to a course, he/she has to share it with other managers and staff."

6.2.6.4 Structural IC (SIC) in Company

The bank delivers innovative services to customers by bringing IT applications to greater heights. The bank embraces Internet technologies, such as e-commerce application and Internet banking. Using the capability of the Windows 2000 server network platform, the bank developed its corporate intranet by adopting and implementing a Digital Nervous System (DNS) framework. The bank developed a DNS within its organisation, to facilitate knowledge management, and e-commerce, as it expanded its IT infrastructure in the year 2000.

Through ICT, the bank has reduced work processes. This has made it possible for accounts to be closed daily. The bank accepts improvement suggestions from staff at all levels to encourage innovations, and this reduces procedures and processes. Knowledge sharing is very much encouraged through teamwork, which is a culture in the bank. Key people are taken care of in order to prevent them from leaving the company.

The bank has high innovations, according to the senior VP of finance. New services have been introduced, and the latest was on home financing and refinancing packages, as shown by an advertisement in a pamphlet.

6.2.6.5 Relational IC (RIC) in Company

The company is still in the stage of brand building. The bank is customer and market-driven. The bank segments its market into consumers, commercial, corporate, and investment, as noted by the executive vice-president, operations and control division,

> *"The branches are focusing more on consumers, the target is more on consumers, i.e. housing loans and all the retail products. The other sectors are commercial, corporate, and investment banking. Investment banking is for high level of the corporate sector. The budget is also prepared according to market segment."*

The executive VP of operations and control noted,

> *"All the products and structure built are based on customer needs. Every amount spent is thought of in terms of adding value to the customer. We conduct surveys to get customer feedback from time to time on the service we provide. We also place suggestion boxes at every branch for the public to make suggestions for our improvement. We always ask our customers about their satisfaction with our service. Customer satisfaction is one of our key performance indicators. We are efficient in satisfying customers, but there is still room for improvement. A centralised unit in the corporate communication department is handling all public complaints, and the complaints will then be directed to the respective units for their actions."*

However, according to its CEO, the bank is still not well known to the market, as he stated in the Internal circulation of the bank's bulletin: 10th edition, Issue 1, 2003,

" ...The perception of the public about the bank is not encouraging, either many still do not know our existence, or if they do, they perceive the bank to be manned by Muslims and offer products and services to Muslims only. Many hardly notice us, as our marketing efforts are not effective and our product lines have not changed."

The company also emphasises good relationship with customers, as noted by the executive VP, operations and control,

> *"We have good relationships with our customers. Corporate customers normally have facilities with several bankers. The facilities utilisation is obviously based on the relationship. The relationship depends on whether there is stiff competition or not, on the services, and on the bank's relationship with the customers. I visited a chairman of a company to ask the company to help us. During the visit he called all his people who were involved with finance, to help us, and after the visit they started to use all our facilities. It all depends on your relationship."*

6.2.6.6 IC in Management Accounting in Company

Both financial and non-financial performance measures are used in the bank. According to the senior VP finance division, as a bank, it has to comply with the Central Bank's benchmark. This is because the Central Bank requires the financial figures such as the ROE to calculate the industry average. The Central Bank strictly monitors the management and operation of all the banks in the country. For the time being, the performance measures required by the Central Bank are mainly financial. Recently, the Central Bank has come up with non-financial measures, but it is still at interim level.

Some examples of the bank's non-financial measures are efficiency measures, such as turnaround time, loan processing time, counter service (customer queuing time), and customer complaints' processing time. BSC was introduced by the bank's consultant in 2002, and has been implemented since January 2003, starting with the marketing department. It is still too early to assess the progress of the BSC implementation. The executive VP, operations and control division, noted,

> *"….the BSC is too academic that some Key Performance Indicators have got to be modified, customised to the bank's systems and processes….."*

Besides BSC, the bank also has another model of measuring performance called Total Business Value, a custom-made system.

According to the senior VP, finance department,

> *"Budget is highly emphasised in the bank, and a combination of the traditional budget style and modern style is implemented. Since investments are in the form of both tangible and intangible assets, both financial and non-financial methods are used in capital investment appraisals. Negative NPVs would also be accepted if the project proposal were really convincing, such as giving good market and business analyses."*

The BSC was considered a big programme, as evidenced by the chief executive officer's (CEO) statement in his article in an internal circulation of the bank's bulletin, 10th edition, Issue 1, 2003.

> *"The Balanced Scorecard, like other initiatives, need the whole support of every staff from CEO to the lowest level. It is a start to a new performance-oriented culture, which will set our future business direction firmly."*

> *"The Balance Scorecard, which started with key departments has identified the Bank's Key Performance Indicators. At the end of the programme, all departments, branches, units, and members of the staff in the bank will have their own balance scorecard to work with. To ensure the success plan, sufficient resources will be placed at your disposal and I would expect results after this."*

According to the senior VP, finance division, the bank's overall performance and success rate in new product launches are very high. Other performances are a little lower. After-tax return on assets is very low. This was supported by the CEO's statement on its performance (Internal circulation of the bank's bulletin: 10th edition, Issue 1, 2003):

> *"Our bank's performance since incorporation has been satisfactory. ...Looking at out performance, the bank has been making profits for the past 3 years, but considering the Return on Asset and Return on Equity of the bank as compared to the banking industry average, we are still far from satisfactory."*

With the help of a consultant firm, the bank has identified key issues, drivers, objectives, critical processes, and key performance indicators (BSC). Among them are liquidity, productivity, and cost income ratios. Its KPI relationship diagram illustrates the relationship between the KPIs of financial, customer, operations, and people; taking into account both financial and non-financial performances.

6.2.6.7 Economic Exposure Management

In terms of risk, the senior VP, finance department, thinks that the position of the bank is not risky, as its brands and quality of service fulfil customer needs. The bank is considered to be a fairly high performer relative to its key competitors in the industry.

6.2.6.8 Culture of Trust

The management organisation structure is decentralised, as the organisation's atmosphere is highly supportive, full freedom is given to the front-line managers to plan strategies and make decisions, and the culture is characterised by a high degree of trust.

6.2.6.9 Summary of Findings from Company

The company has high performance and the appropriate MAP and MAT adapted, as well as appropriate organisational culture of trust explains its overall high performance relative to its competitors'.

6.3 Similarities and Differences Among Six companies

6.3.1 IC in General

All six companies claimed to have high IC value and regard it as important. Only the software company uses the term 'Intellectual Property', the other five companies use the term 'knowledge'. All of them are aware of KM, and practise it formally or informally, but only the software company is advanced in ICM. It even has a post of 'Intellectual Capital Director'. None of them publishes its IC information in or with its annual reports, while all of them report IC information internally, and refer to IC in strategic decisions.

6.3.1.1 HIC

All the companies invest highly in IC and select managers and staff strictly. The HIC in all the companies is comprised of experts, highly committed, creative, and innovative

people. Knowledge sharing and team spirit are common among the HIC in all the companies. Only the software company and Islamic bank consider its HIC as its highest form of IC. As for the former, HIC is also considered to be the most valuable.

6.3.1.2 SIC

The common form of SIC among the companies is IT. They all have high investment in information systems. The software, manufacturing, insurance, and broadcasting companies have high product innovations. Except for the insurance companies, the other three have physical products. The banks' nature of business is regulated and product innovation is restricted. Thus, their innovation is mostly in the form of processes and procedures (see Table 6.1).

6.3.1.3 RIC

Five of the companies have high RIC, as they all have high image and reputation. The Islamic bank is relatively new, and so it is not yet really well established. All the companies are market-driven and customer-focused. The conventional bank admits that it is not highly efficient in satisfying customer needs. Only the software company is applying the IC concept in its RIC (marketing), such as developing a customer information system (see Table 6.1).

6.3.2 IC and MAP

6.3.2.1 Performance Measurement

The six companies are applying both financial and non-financial measures. They all employ sales and profitability as two of them. Only the software and manufacturing companies are employing EVA as one of their financial measures. None of them considers that their performance measures are able to capture their IC contribution. The companies have started to use the BSC, except the broadcasting company.

6.3.2.2 Budgeting

Budget is still very much emphasised in all of the companies. All of them put high importance on the ability to meet the budget, concern for costs, and ability to increase the general effectiveness when evaluating job performance. Qualitative criteria are not fully emphasised by all of them, except by the software company and the conventional bank.

Only the conventional bank employs priority-based budgeting, and only three of them employ activity-based budgeting. As mentioned before, all of them emphasise budget and, thus, none of them relies on forecasting only.

6.3.2.3 Capital Investment Appraisal

All of the companies employ financial methods of appraisals, and ROCE/ARR and NPV are the most common. None of them is employing Real Options. The majority of the investments are intangible in four of them. It is interesting to note that besides the manufacturing company, the majority of the assets of the conventional bank also are tangible. All of them lack a system of defining, requesting, and reviewing intangible investments, and their financial methods are not able to capture intangible costs and benefits. Only the software company, the broadcasting company, and the Islamic bank accept projects with negative NPVs, even though not all the time.

6.3.3 Business Performance Relative to Key Competitors

None of the companies has low performance for non-financial performance, such as industry leadership and success rate in new product launches, and overall business performance. Only the software and the insurance companies consider their success rate in product launches as medium. On average, the companies perform highly in terms of profit, profit growth, and sales growth, except for the broadcasting company. Only the latter has a high share price.

6.3.4 Corporate Characteristics

Two of the companies have low decentralisation. The other four companies are highly decentralised. Out of the six, five have high trust. The software company only has medium trust in its managers and staff.

6.3.5 Economic Exposure Management

All of the companies' IC, such as brands and trademarks, acts as its hedge against unanticipated economic and market change. Their manager and staff creativity and innovation ensure its long-term survival. All of them, except the broadcasting company,

think that they will not be hit badly by the fall of the stock market. All of them will not over-react to the fall, as they see the phenomenon as short-term.

6.4 Propositions Testing

The findings are then tested against the propositions based on the first research model. Table 6.2 shows that the number of propositions supported and unsupported are almost equal.

Table 6.2: IC Status in Six Companies

Types of IC	Software and Telecommunication	Conventional Bank	Broadcasting	Manufacturing	Islamic Insurance	Islamic Bank
HIC	Highest form of IC and most valuable. Recruit best people in IT. Knowledge sharing is cultural and happens informally.	Applies best practice in HIC management. Knowledge sharing high.	Very high HIC, especially in production houses. Teamwork emphasised and knowledge sharing is compulsory.	Selection of personnel rather strict. Managers and staff well trained and highly committed. Good, creative ideas implemented and recognised to encourage innovations.	Managers and staff always reminded to be committed, have good team spirit, and share knowledge. Creativity and innovativeness higher among marketing managers and staff.	Considered to be highest type of IC. Willing to pay high salary if staff expert and able to generate higher new and higher income. Knowledge sharing encouraged through teamwork.

SIC	Highest: software design and development, procedure documentations. Innovations (software) not well inventoried, but traceable.	Most SIC in technology form. Data access systems and facilities provided to customers in modern technology. Innovation in terms of products restricted because of regulated nature of business.	Very high SIC – TV programmes, movies, documentaries, etc. SIC (technology) supports HIC in production houses. All innovations and intellectual properties inventoried, well-kept, and old ones archived.	High in form of electronic databases, manuals, procedures, and performance record. Systems and procedures encourage creativity. Innovation high within Home and Personal Care department.	Launch new products every year. Has latest form of ICT, which is custom-built. Claimed to have best technology systems in industry.	Innovative services in form of information and Internet systems. IT also used to facilitate KM and e-commerce. Staff innovations have reduced procedures and processes.
RIC	Started to apply IC concept in marketing and still building customer information. Supplier IC high.	Highly market-oriented but not highly efficient in satisfying customer needs.	Customer focused – does road shows to reach to clients. RIC high as company has high reputation and very popular.	Lot of strong brands and many products are market leaders. Consumer- driven and very, very high customer satisfaction.	RIC high in form of brand, image, and reputation. High rating for ability to pay claims. Record for non-renewal only 1%.	Customer and market-driven. Always think of adding value for customers.

Table 6.3: Proposition Testing Against the Case Studies' Findings

Propositions	Software	Conventional Bank	Broadcasting	Manufacturing	Islamic Bank	Islamic Insurance	Summary
P1.1: High IC firms are more likely to publish IC information in or with their annual reports.	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	
P1.2: High IC firms are more likely to report IC information internally.	Supported	Supported	Supported	Supported	Supported	Supported	**
P1.3: High IC firms are more likely to refer to IC in their strategic decisions.	Supported	Supported	Supported	Supported	Supported	Supported	**
P2.1: High IC firms tend to emphasise value-based financial measures	Unsupported	Unsupported	Unsupported	Supported	Unsupported	Supported	
P2.2: High IC firms tend to de-emphasise profit and loss accounts-based financial performance measures	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	
P2.3: High IC firms tend to employ scorecard performance measures such as BSC	Supported	Supported	Unsupported	Supported	Supported	Supported	**

P2.4: High IC firms tend to employ both financial and non-financial performance measures.	Supported	Supported	Supported	Supported	Supported	Supported	**
P3.1: High IC firms tend to emphasise business	Supported	Supported	Supported	Supported	Supported	Supported	**
P3.2: High IC firms have the tendency to de-emphasise budget.	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	
P4.1: High IC firms tend to employ forecasting	Supported	Supported	Unsupported	Supported	Unsupported	Supported	

P4.2: High IC firms tend to employ non-conventional budget approach such as priority-based budgeting	Supported	Supported	Unsupported	Supported	Supported	Supported	**
P5.1: High IC firms would not likely be employing financial methods of capital investment appraisals.	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	
P5.2: High IC firms would likely be accepting negative net present value	Supported	Unsupported	Supported	Unsupported	Supported	Unsupported	**
P6.1: High IC firms are likely to have higher ability to withstand economic uncertainties.	Unsupported	Supported	Supported	Supported	Supported	Supported	**
P6.2: High IC firms are more likely to be able to better respond to	Supported	Supported	Supported	Supported	-	Supported	**

stock market influence.							
P7.1: High IC firms tend to achieve higher non-financial performance levels	-	-	Supported	-	-	-	**
P7.2: High IC firms tend to achieve higher financial performance levels	-	-	-	-		-	**
P7.3: High IC firms tend to achieve higher overall business performance levels	-	-	-	-	-	-	**
P8.1: High IC firms would likely be decentralised	Supported	Supported	-	Supported	Supported	Supported	**
P8.2: High IC firms would likely have high culture of trust.	Supported	Supported	Supported	Supported	Supported	Supported	**
P8.3: High IC firms would likely be large in size.	Supported	Supported	Supported	Supported	Supported	Supported	**

Key: ** Supported by at least 4/6

6.5 Chapter Summary

This chapter has provided a detailed description and discussion of the qualitative primary data collected from the companies involved.

In general, the chapter provides an assessment of various issues relating to IC value and its effects on MAPs, corporate characteristics, economic exposure management, and business performance. It summarises important findings on the above issues found in the six companies. The similarities and differences in relation to the issues are also summarised.

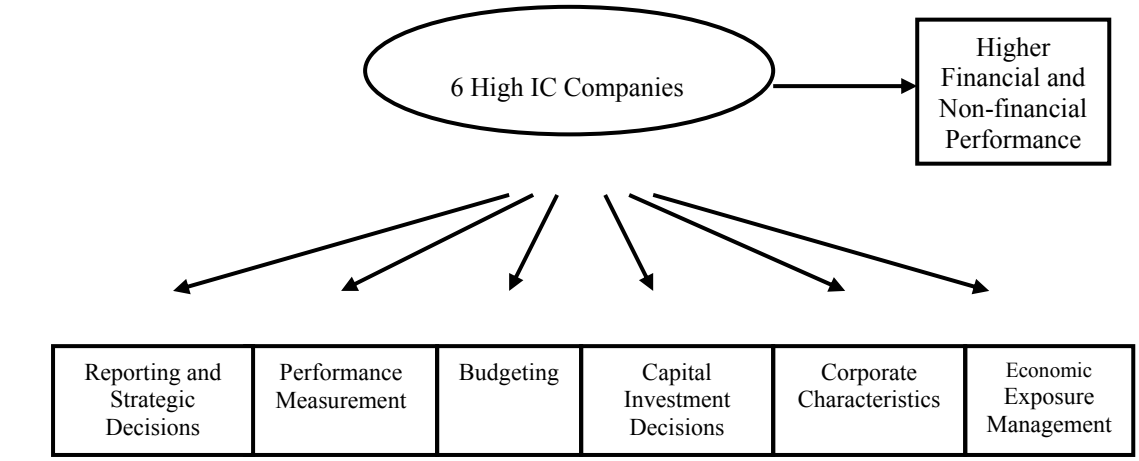
The findings indicate that all the six companies report IC information internally, and it is referred to in their strategic decisions. This shows that IC is regarded as important and influences firms' strategic decisions. None of the companies publishes IC information in or with their annual reports. This is because the annual reports only emphasise financial measures and these measures are unable to capture IC performance. The findings themselves have an answer to this, as all the companies emphasise financial measures, and only two companies also emphasise measures related to values, such as EVA.

The findings also show that all six companies emphasise budget, which is the budget-constrained style, as well as emphasising business, such as concern on cost, general effectiveness, quality, jobs effort, etc.. All of the companies also emphasise financial methods of capital investment appraisals, including the software company, which is considered to have the highest IC, besides being the most advanced in terms of IC management. Its finance manager noted that it is planning to use both financial and non-financial measures in the future. Only three of the companies accept negative NPVs, even though not all the time, and this is not surprising at all, as such NPVs are not acceptable in financial measures.

Three of the companies are highly decentralised and have high culture of trust. The other three have either low decentralisation or medium decentralisation with high or medium culture of trust. All of the companies consider themselves highly responsive to change, i.e. they claim that their IC acts as a hedge against economic uncertainties and stock

market influence. Figure 6.3 summarises the findings from all six companies. The findings were also tested against the propositions based on the first research model. Table 6.8 shows that the number of propositions supported and unsupported are almost equal. This will be discussed in detail in Chapter 10.

Figure 6.3: Summary of Findings in All Six Companies



IC reflected in internal reporting **All companies** IC referred to in strategic decisions **All companies**	Emphasise measures related to value **2 companies** De-emphasise financial measures **None** Employ both financial and non-financial measures **All companies** Emphasise scorecard measures **None – 5 have started to use BSC**	De-emphasise budget **None** Emphasise business – cost, quality, general effectiveness, etc. **All companies** Emphasise forecasting **3 companies** Employ non-conventional budgeting **3 companies**	Acceptance of negative NPVs and employ Real Options **None** Financial appraisal **All companies**	Highly decentralised and have high culture of trust **3 companies** Not highly decentralised and have medium culture of trust **3 companies**	Higher ability to withstand economic uncertainties **All companies** Better able to respond to stock market downturn **All companies**

CHAPTER 7

DISCUSSION OF KEY FINDINGS AND CONCLUSION

7.1 Introduction

This final chapter summarises and discusses findings from the questionnaire survey and the case studies. It discusses the contributions of the study, makes recommendations to practitioners and academics based on the findings, and explores the limitations of the research. Lastly, it puts forward recommendations for future research.

The first aim of the research was to explore the management accounting practices of firms with high IC investment, and to investigate whether these accounting practices enhance overall firm performance. The second aim was to examine the fit between IC, MAP and MAT, and corporate characteristics, such as size, organisational structure, culture of trust, and managerial incentives, in achieving higher corporate performance level. Five questions were investigated:

(1) Do firms develop management accounting practices appropriate to their level of IC?

(2) Are firms with high levels of IC better able to withstand economic uncertainties and stock market influence?

(3) Do firms with high levels of IC have appropriate corporate characteristics?

(4) Do firms with high levels of IC outperform firms with lower levels of IC?

(5) Do firms with a good fit between IC, management accounting practice and techniques, and corporate characteristics outperform firms with a poorer fit?

To address the research aims and questions, research models were constructed based on the research questions, propositions tested were developed based on the models, and findings were discussed based on the propositions results.

7.2 Discussion of Key Findings

The discussion of the findings is divided into two parts: (1) discussion based on findings from the survey and the case studies in Figures 7.1, 7.2 7.3, and 7.4, (2) findings viewed within wider theories. The next sections consider the management accounting practices of high IC firms.

7.2.1 IC Reporting for Strategic Decisions

The survey found that high IC firms are more likely (1) to present IC information in internal reports, and (2) to refer to IC information in strategic decisions (see Figure 7.1). The finding is supported by the case studies, as all six companies do report and refer to IC information in their strategic decisions (see Figure 7.2). Gordon *et al.* (1978) note that the literature on accounting systems has the tradition of emphasising the inputs and outputs of decision-making, and this shows the importance of the internal reporting system. According to Atkins *et al.* (1995) and Drury (2000), one of the management accountants' roles as 'staff' is to provide information for top management to make strategic decisions. The information provided in the form of internal reporting (the inputs) is a very critical factor contributing to the quality of the strategic decisions to be made (outputs). Traditionally, the internal reports are to help management in planning and control, and feedback and control on operating performance. The type of information is more subjective and judgemental, valid, and relevant, when compared to that of financial accounting.

It is important that firms' internal reports reflect IC investments and performance, as it should aid planning and managerial strategic decisions. According to Edvinsson and Sullivan (1996), knowledge firms derive their profits from innovation and knowledge-intensive services. Such firms are termed 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. According to authors such as Barth (1998), Adriessen and Tissen (2000), Barsky and Marchant (2000), Leadbeater (2000), Litman (2000), and Ratnatunga (2002), as cited by Ratnatunga *et al.* (2004), many global

business surveys suggest that managers believe that it is the intangibles, i.e. brands, intellectual property, know-how, and copyrights, that have high influence on their companies' value.

According to Tayles *et al.* (2002), it is within the internal management figures that measures to define and quantify the role and impact of intellectual capital will become of real strategic value. Firms that invest highly in IC, or knowledge firms such as software, pharmaceutical, consultancy, legal, auditing, etc. that have very high IC (intangible assets), have higher significance, and should have a new form of report, because they are knowledge-based, their important resources are intangibles, and their major output is knowledge. There are a lot of definitions of IC. However, according to Van der Meer-Kooistra and Ziljstra (2001), all IC definitions include at least the following:

- Knowledge and experience embodied in individuals, either in tacit or explicit forms.
- Organisational systems and processes such as internal processes, procedures and administrative systems.
- Innovation and technology.
- Business relationships with customers, suppliers, and strategic partners.

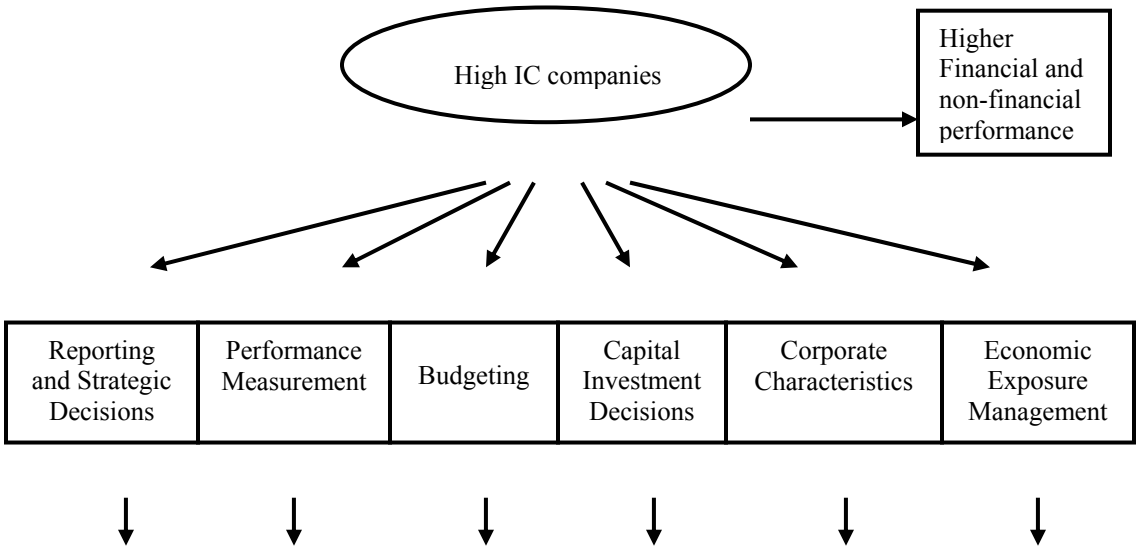
From the definition of IC and the type of input and output of firms' management decision-making, it could be seen why firms which invest highly in IC's internal reporting would tend to reflect IC more, and their management would be more likely to refer to the report in their strategic decisions than those which do not invest highly in IC. It is the nature of their business, and if they fail to do so, their internal reporting system is inadequate and inappropriate. In consequence, the strategic decisions would be immensely affected, resulting in corporate failure.

The implication of this is that IC firms have to have an appropriate measure, such as the BSC, and Celemi's intangible asset monitor, to evaluate IC in order to have accurate internal reporting that will influence strategic decisions. As Leitner and Warden (2004) point out, as noted by Abysekera and Guthrie (2004), the need for firms to be able to

effectively manage, measure, and report on intangible assets has led to the development of a number of measurement tools, such as content analysis.

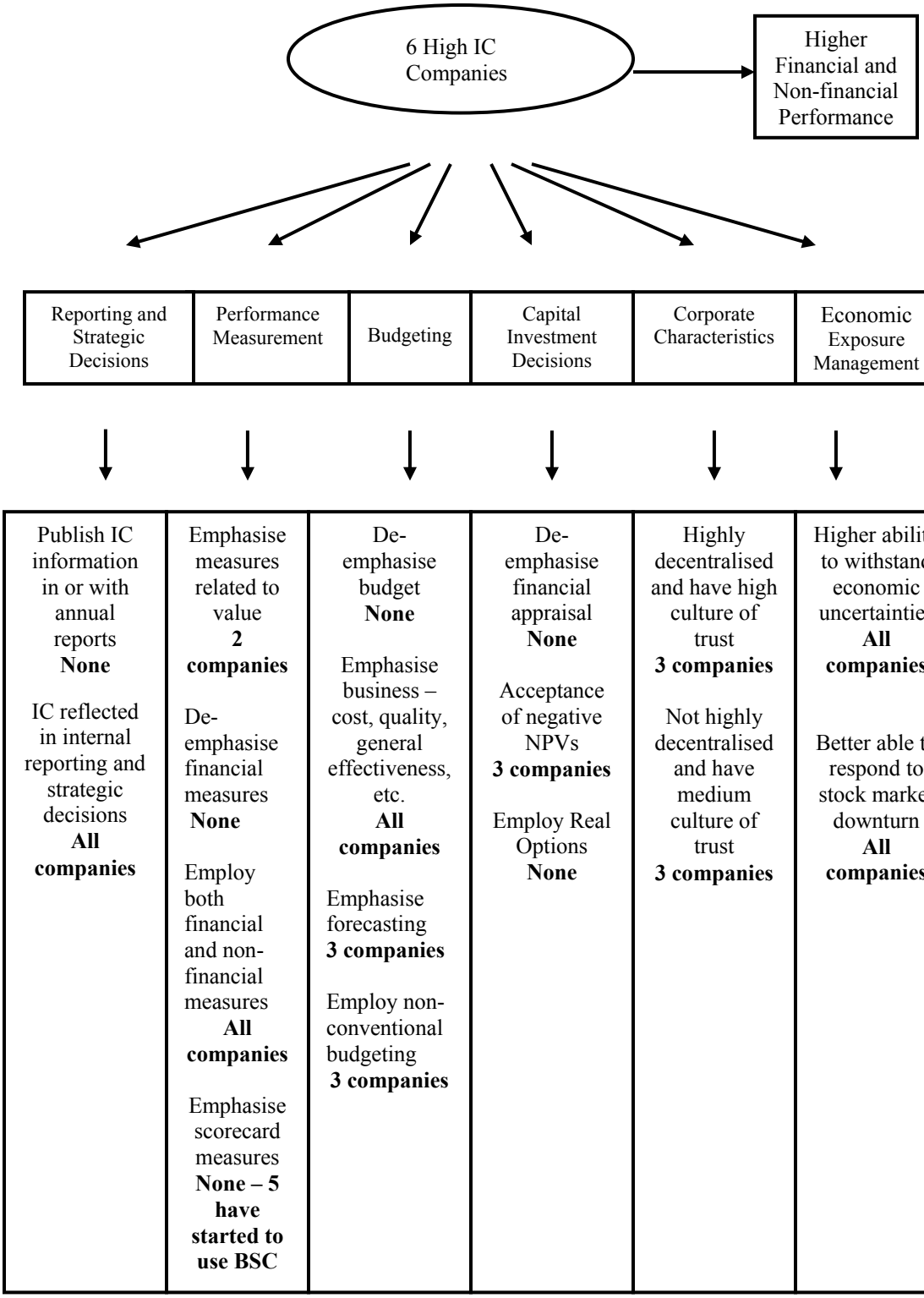
Efforts have been made by the International Accounting Standards Board (IASB) to set a standard for reporting intangible assets (IAS 38) (Grojer, 2001). Ratnatunga *et al.* (2004) argue, "Even if generally accepted accounting principles cannot accommodate such value-creating information for external reporting, we need to develop them for internal reporting that is less constrained." The information provided as input for strategic decisions should also include competitors' information, in which the SMA approach is highly recommended. The failure of accountants to adopt a SMA approach (not only for inclusion of information on competitors), and focus on its evaluation, appraisal and measurement, will also result in the neglect of what may prove to be the organisation's most valuable resource (Tayles *et al.*, 2002).

Figure 7.1: Summary of Findings in Surveyed Companies



IC reflected in internal reporting **Fully supported** IC information referred to in strategic decisions **Fully supported**	Emphasise measures related to value **Fully supported** De-emphasise financial measures **Weakly supported** Employ both financial and non-financial measures **Fully supported** Emphasise scorecard measures **Unsupport-ed**	De-emphasise budget **Fully supported** Emphasise business – cost, quality, general effectiveness, etc. **Fully supported** Emphasise forecasting **Fully supported** Employ non-conventional budgeting **Fully supported**	De-emphasise financial appraisal **Unsupport-ed** Acceptance of negative NPVs and employ Real Options **Partially supported**	Highly decentralised **Weakly supported** Have high culture of trust **Fully supported** Large in size **Unsupport-ed**	Higher ability to withstand economic uncertainties **Fully supported** Better able to respond to stock market downturn **Unsupport-ed**

Figure 7.2: Summary of Findings in All Six Companies



7.2.2 Performance Measurement

Performance measurement is important for planning, control, and decision-making. The traditional performance measures that have been used in accounting are financial.

Findings in Figure 7.1 show that high IC companies are emphasising value-based financial performance measures, such as Shareholder Value Analysis (SVA), Market Value Added (MVA), and EVA. This is expected to be relevant, because management is separated from the owners (shareholders), so the management, as an agent to the shareholders, are supposed to create and add value to the shareholders' interests. Value-based approaches require appropriate recognition of the value of IC to operate effectively. Shareholder Value is created by earning a Rate of Return on invested capital that exceeds the firm's Weighted Average Cost of Capital (Value-based Management.net, 2004). Market Value Added (MVA) is the difference between the market value and the book value of a firm's capital (Peterson, 2004). The extent of the appropriateness of such measures depends on the extent of their ability to incorporate IC's costs and benefits, thus EVA is highlighted in this study because of its higher ability to do so, as noted by Bontis (1999). EVA is a measure that rewards the managers when they are able to add value for the shareholders. The major contribution of Stern Stewart (owner of EVA) is the measurement of residual earnings, capital, and cost of capital (Lovata and Costigan, 2002). This is supported by Barsky and Bremser (1999) who suggest that EVA's measurement provides management with an explicit incentive structure that creates value for shareholders. It is a tool to assist corporations to pursue their prime financial directive by aiding in maximising the wealth of their shareholders (Stewart, 1991).

EVA addresses the shortcomings in conventional accounting practice, and thus solves problems like the accounting of intangibles and long-term investments with a high degree of uncertainty, such as capitalisation and amortisation of R&D, market building, restructuring charges, and other strategic investments with deferred pay off-patterns (Stewart, 1994; O'Hanlon and Peasnell, 1998; Barsky and Bremser, 1999; Simons, 2000). The findings from the case studies (see Figure 7.2) show that only two out of six emphasise this. The others are also working to increase shareholder value, but they are

using other indirect methods, such as through promotions and increasing general effectiveness. This finding implies that companies are working hard at increasing shareholder values, i.e. they are taking care of the investors' money, and they are in the right direction.

Figure 7.1 reveals that the de-emphasis of the profit and loss-accounts-based performance measure by high IC firms is weakly supported. This is because only companies that invest highly in human capital are more likely to de-emphasise it, but companies that are investing highly in structural and relational IC are emphasising it (described in Chapter 7). This implies that high human IC companies are emphasising non-financial measures, such as KPIs and the BSC.

Roslender and Fincham (2001) point out that it is not easy to incorporate IC into the traditional accounting framework, as the principle of objectivity will be violated. IC is intangible, and due to this nature, it is very subjective to measure. How does a firm value know-how, employee qualifications, customer data, and distribution channel? Attempts to incorporate human asset into the accounting framework have been made since the 1960s. They are termed human asset accounting, human resource accounting, and human worth accounting (Sackman, 1989; Flamholtz and Main, 1999). However, they have not been well accepted (Johanson *et al.*, 2001). Perhaps this is the reason why some companies, such as Skandia AFS and Celemi of Sweden, just produce IC statements which partly contain stories and narratives of their IC.

According to Robinson and Kleiner (1996), some examples of human IC are the firms' know-how and problem solving, decision-making, and learning abilities of managers' and staff'. Kennedy (2001) argues that tacit knowledge is not readily transformable into explicit knowledge (structural IC). It takes a long time to learn, and the above are some examples of such knowledge; they require a lot of experiments and practice. Even though tacit knowledge is embodied in individuals in companies, this type of knowledge is still considered to be the asset of the companies, as the individuals are their employees.

This finding supports the views of Buckowitz and Petrash (1997), Flamholtz and Main (1999), Petrash (1996), and Stewart (1994), as cited by Abeysekera and Guthrie (2004). Firms such as the Skandia Group, the Canadian Imperial Bank of Commerce, Hughes Space and Communications, Dow Chemicals Firm, Buckman Laboratories International and Telia included human IC information by incorporating the measurement of human IC into their strategic management and internal and external reports.

In relation to the above, Human Resource Accounting, Human Resource Cost Accounting, and Utility Accounting have never been accepted within firms because of the vagueness about what constitutes an asset and a resource, respectively (Johannson *et al*., 2001). The accounting profession does not recognise employees as tangible assets of the company. Salaries paid to them are just considered expenses and written-off periodically. However, from a managerial perspective, employees are recognised as valuable resources. The accounting profession has to recognise them as intangible assets. Financial accounting has a very limited number of items allowed to be included in the balance sheet. Human resources are not included, the economic reason for this being that human resource is difficult to trade and price (Leadbeater, 2000).

Besides high structural and relational companies in the survey findings, analysis of interviews in the case studies reveals that all the companies emphasise a profit and loss accounts-based financial performance measure. The finance manager of the software company's remark summarised the reason, *"No matter what approach is being used for performance measurement, the bottom line is still financial figures, i.e. financial reports that top management and investors want to look at."*

Non-financial measures focus on intangible resources: key customers, internal processes, and learning and growth (Simons, 2000). The findings in both Figures 7.1 and 7.2 show that high IC companies are observed to emphasise them more than low IC firms. This is because, as mentioned before, high IC companies have high intangible assets (resources), and these assets are difficult to quantify for financial evaluation (Leadbeater, 2001; Roslender and Fincham, 2001, Powell, 2003). Therefore, the high IC companies have to

employ both financial and non-financial measures in order to capture the intangible value of the assets' (IC) costs, benefits, and contribution.

Scorecard measures are comprehensive measures that include both financial and non-financial performance and, because of that, IC's contribution is captured. Examples of these are the Balanced Scorecard (BSC), Skandia Navigator, and Celemi's Intangible Assets monitor. According to Norreklit (2000), they are tools which change the way of communicating about strategies, since it is no longer restricted to financial measures. It is a framework for designing a set of measures for key activities drivers (Lipe and Salterio, 2002). They are (1) financial, (2) external customer, (3) internal process, and (4) innovation and learning (Kaplan and Norton, 1992; Bontis *et al*., 1999; Bourne and Bourne, 2000; Amaratunga *et al*., 2001). Compared to other scorecard measures, BSC is the most popular because consultants have promoted it more vigorously. Of the case studies companies, five have started to use the BSC, however. Therefore, it is concluded that high IC firms of all types tend to employ both financial and non-financial performance measures. This supports Usoff *et al.* (2002) who suggest that high IC firms should use non-financial performance measures in order to capture IC's contribution. It is concluded that high IC firms are more likely to employ both financial and non-financial measures than low IC firms. This is in line with Otley (2002) who suggests that financial performance measurement should not be dismissed, nor privileged. Since high IC firms are not emphasising a scorecard measure, there is no difference between high IC and low IC firms in terms of this practice.

7.2.3 Budgeting

There are two groups among the practitioners in Europe and the U.S. who are concerned about the weaknesses on budgeting; the first group calls for improving the budget, and the second calls for its abandonment (Beyond Budgeting group) (Hansen *et al,* 2003). Some of their concerns are that budgets are not linked to strategy, lack of commitment for command and control, budgets encourage myopic decision-making, and dysfunctional budget manipulation (Bunce *et al.*, 1995; Hope and Fraser, 1997, 1999; Stewart, 1999; Fanning, 2000; Wallander, 2000; Hope and Fraser, 2001; Jensen, 2001; Hansen *et al*.,

2003). Both groups argue that the traditional budgeting approach is not relevant in the information age (Hansen *et al*., 2003). Even though there have been innovations in budgets, such as activity-based budgeting and priority-based budgeting, there are some authors who call for them to be discarded (Fanning, 2000). They suggest that budgets are just a waste of time because of their disadvantages. They believe that firms can do better without a budget. Even improved budgeting is not recommended. They suggest using the BSC and regular re-forecasting in place of the budget (Stewart, 1990; Hope and Fraser, 1997, 1999; Wallander, 1999). A study done by Hansen *et al*. (2003) suggests a bridge between the two groups, and research perspectives to find solutions to help the practitioners. There is still no conclusive solution.

The study findings show that high IC firms are more likely to emphasise business effectiveness and de-emphasise budget than low IC firms (see Figure 7.1). Business emphasis is focusing on concerns for increase in general effectiveness, quality, cost, handling staff, and job effort. The findings show that high IC firms are strongly associated with a business focus, but not with a budget emphasis. Findings from the case studies are consistent with this, where all the companies also emphasise business, but are inconsistent in terms of their emphasising budgets (see Figure 7.2). Budgets have been traditionally employed in firms, and because of this, from the interviews in the case studies, superiors find it hard to plan and measure performance without the budget. Firms are profit-seeking organisations, and it is obvious why they emphasise business effectiveness in their performance evaluation.

The findings in Figure 7.1 show that high IC firms are more likely to use forecasting and non-conventional budgets than low IC firms. The common types of non-conventional budget employed are zero-based and priority-based. Four of the case studies companies use non-conventional budget and forecasting. This supports earlier arguments that the typical short-term budgeting focus is not consistent with high IC firms (Hope and Fraser, 1997, 1999; Fanning, 2000). The implication for this is that, as suggested by Hansen *et al*. (2003), it depends on the firms' situation; a firm that is undergoing business process reorganisation might implement 'beyond budgeting', and others might just improve their

budgeting process, such as adopting activity-based budgeting. They conclude that a "synergy between practice and research will create management accounting approaches that are superior to those developed by each group independently".

7.2.4 Capital Investment Decisions

The findings summarised in Figure 7.1 show that high IC firms are more likely to employ financial methods, such as accounting rate of return, payback, net present value, and internal rate of return, for their capital investment appraisals. Case studies found that all companies invested in both tangible and intangible assets, and their methods of capital investment appraisal were mainly financial (see Figure 7.2). There is a consistency in both findings. This shows that there is no difference between high and low IC companies in their methods of capital investment appraisal, i.e. they are using financial methods regardless of the value of their intangible investments. This seems to be unparalleled with the expectation for the practice of high IC firms. Authors such as Irani *et al.* (1998), Mouck (2000) and Segelod (2000) put forward similar arguments as the authors who are against financial performance measurement and budgeting: financial methods are no longer appropriate for the k-economy which emphasises intangible business transactions and assets. In this case, financial techniques of investment appraisals are considered inadequate because they are unable to capture the intangible costs and benefits of intangible investments. As argued by Segelod (2000), many professional service firms which are knowledge-intensive in nature mainly invest in intangible investments, such as training and development of new competence, while manufacturing firms invest less in tangible assets, and more in R&D, training, marketing, software, and computerised machinery. In consequence, firms now devote less attention to formal capital investment decisions. Obviously, financial methods are now inappropriate, therefore high IC firms that have high investment in IC should employ more strategic capital investment methods that are capable of providing better justification for the advantages or disadvantages of their future investments. An example of the methods is real option, or going against the indication of financial measures, such as acceptance of negative NPVs.

It is interesting to find that where structural IC is greater, firms are more likely to accept negative NPVs. The investments are mostly in the form of intangible assets (IC), so understandably, even though financial techniques indicate against it (negative NPVs), management still accept the capital investment proposal on intangible assets. Three of the companies in the case studies accept negative NPVs, even though not all the time, each with a different reason:

(1) Social obligation – broadcasting company

(2) Proposals very convincing – Islamic bank

(3) Strategic projects – software company

Real options are option-like features found in 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. Such investments have non-quantifiable benefits that, according to Pike and Neale (2002), "could open up the possibility of further wealth-creating opportunities". They term these *strategic options*, and give the following as examples of opportunities included in them:

(1) Entering new markets.

(2) Development of follow-up products.

(3) Improvement of existing practices.

(4) Development of brand extension.

MacDougall *et al*. (1999) cite Myers (1977, 1978) and Kester (1984) as noting that strategic benefits are not being included in the financial measures of projects. This is supported by Yong and Sanders (2002) who suggest valuing complex information technology investments based on real option theory. According to MacDougall *et al*. (1999), real options include the option to delay an investment, build it in stages (time-to-build option), alter scale (expand, contract, shut down, and restart), abandon, switch inputs, or outputs, and grow.

Both survey and case studies findings are consistent in showing that high IC firms are not employing real options for the benefits mentioned above (see Figures 7.1 and 7.2). This

shows that there is also no difference between the practice of high IC firms and low IC firms in not employing real option. The conclusion from the above findings is that for high structural IC firms there is a strong support that they are more likely to accept projects where the financial appraisal does not support such action (negative NPVs) than low structural IC firms. This reflects the more strategic approach adopted by such firms, and the fact that many of the benefits are longer-term and hard to quantify.

7.2.5 Economic Exposure Management

The expectation implied by IC literature is that firms that manage their IC are better able to respond to unanticipated economic and market change. Findings from the interviews with managers in the case studies 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 terms 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".*

The survey findings, as shown in Figure 7.1, indicate that high IC companies are more likely to be better able to withstand economic uncertainties than low IC companies, for the reason that their IC acts as a hedge against it. However, the high IC firms are not likely to be better able to respond to market downturns than low IC firms. This is

inconsistent with the findings from the case studies, as related above; managers interviewed think that their companies have the ability to do both (see Figure 7.2).

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. 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.

According to Saigol (2002), firms were facing a lot of difficulties and having hard times after the economic downturns in the year 2000. The question raised was what happens to the good economics of the 1990s, when many companies, such as Microsoft and Coca-Cola flourished? Wall *et al*. (2004) also ask the same questions. What happens when economic conditions deteriorate and stock markets fall? Can IC help management to cope with profitability and market uncertainties? Wall *et al.* (2004) argue that after all its pioneering work on IC, Skandia still faced the same hardship as other companies during the economic downturns. The authors make Enron's case as one of the examples of several big companies' creative accounting (as the results of its IC's role) being exposed.

The study findings (see Figures 7.1 and 7.2) show that high IC firms are likely to be better equipped to withstand unanticipated economic change than low IC firms. This suggests that ICM is very important. Edvinsson and Malone (1997) note that ICM is leveraging human IC and structural IC together. Edvinnson and Malone divide IC into two categories, and they include customer IC (relational IC) in structural IC. This definition could be improved by suggesting that ICM is leveraging human IC, structural IC, and relational IC together to create more and better IC, which will create competitive advantage. Some examples are good image, reputation, and brand. This relational IC is the product of good product or service design (structural IC), which is the result of the creativity of human IC. All this will make the firms well established and stable enough to withstand economic uncertainties.

However, the findings also show that high IC companies are not better able to withstand stock market downturns than their low IC counterparts. High IC firms are no better, but in about the same position as low IC firms in their ability to withstand them. As mentioned above, relatively, all firms are affected during such downturns. What is more important is long-term survival, and the findings show that IC can help firms achieve that.

7.2.6 Association between IC and Corporate Performance

It is argued that 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 than low IC firms. Superior performance on these dimensions should in the longer term be reflected in financial accounting and stock market performance measures. There is a strongly held perception by respondents that their 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. The findings show that high IC firms have higher overall and non-financial performance than low IC firms (see Figure 7.1). The findings from the case studies are different for non-financial performance measures, but the same for non-financial performance measures (see Figure 7.2). All the finance managers in the six companies think that their financial performances are high.

Therefore, firms that invest highly in all types of IC are likely to perform better in terms of non-financial performance (e.g. industry leadership and overall response to competition) and overall performance than firms with little IC investment. Firms that invest highly in relational IC are likely to perform better than firms with little investment in relational capital in terms of financial performance measures. This partially supports the Bontis (1998) findings in terms of IC's influence on firms' performance. These Bontis findings show that human IC has indirect influence on performance, while both structural and relational IC have direct influence. The results are also in line with Nonaka and Takaechi (1995) and Teese (2000). This is an important finding, as it supports the views that IC influences performance, and so low IC firms should increase their IC and manage it so that it will also strategically increase their performance.

7.2.7 Association with Corporate Characteristics

In order for the managers and staff to be innovative and creative enough to produce designs, patents, and copyrights for example, they should be given high freedom and trust (Barney, 1986). The findings in Figure 7.1 show that high IC firms tend to have higher culture of trust than low IC firms. The finding supports the views of authors that high IC is associated with corporate characteristics, such as decentralised organisation structures and culture of trust (Barney, 1986). It is also reinforcing Hope and Fraser's (1997) suggestion that front-line managers should be given freedom to set policy and make strategic decisions so that they will become more creative and innovative. This is culture of trust, or specifically, it is decentralisation.

There must however be some differences between decentralisation and culture of trust. Decentralisation is part of culture of trust. It is not necessary for firms with high culture of trust to be high in decentralisation. This is proved by findings both among the surveyed companies and the case study companies. Only three companies are highly decentralised, and three have high culture of trust (see Figure 7.2). These are not three separate companies, and two of the companies that have high culture of trust do not have high decentralisation. The reason for low decentralisation could be the advancement in IT, competitive pressures, and corporate restructuring due to reengineering. These have resulted in automation and centralisation of many transactional aspects of accounting. A lot of the management accounting undertakings are done by the business managers, instead of the accountants themselves (Birkett, 1995; Siegel and Kulesza 1996). There is high probability that the above (low decentralisation and its reason) is also true for other functions in firms.

The finding also contradicts the Usoff *et al*. (2002) view that larger firms can afford ICM better than small firms and, therefore, size influences IC. This means that size does not influence IC.

The above discussion can be concluded as (1) Firms that invest heavily in IC are likely to have a higher culture of trust than firms that do not invest highly in IC, and (2) High IC firms are not necessarily larger than low IC firms.

7.3 Summary of Significant Findings Arising From This Study

(1) High IC firms are more likely to report IC information internally and refer to the information in their strategic decisions

(2) High IC firms tend to emphasise value-based financial measures, such as EVA and shareholder value.

(3) High IC firms are more likely to employ comprehensive scorecard performance measures such as the BSC, and they are also more likely to employ both financial and non-financial performance measures such as KPIs.

(4) High IC firms have the tendency to de-emphasise budget and emphasise business, such as concern for cost, general effectiveness, quality, and jobs' effort.

(5) High IC firms tend to employ forecasting and non-conventional budget approach such as priority-based budgeting.

(6) High IC firms are still employing financial methods of capital investment appraisals.

(7) High IC firms have higher ability to withstand economic uncertainties because their IC, i.e. the innovativeness and creativity of their managers and staff act as a hedge. However, the firms are not better able to respond to stock market downturns.

(8) High IC firms tend to achieve higher overall business performance levels, i.e. in both financial and non-financial performance levels

(9) IC firms are not highly decentralised, but they would likely have a high culture of trust.

(10) Higher performance levels are associated with firms with high IC.

7.4 Conclusion

Relatively few surveys have been reported on management accounting for IC. In this study, the question of whether the level and form of IC within firms influences MAP, ability to respond to future events, corporate characteristics, and overall business performance has been addressed. This study offers findings based on a sample of large Malaysian firms.

Findings based on the first research model suggest that the level of investment in IC is associated with MAP, business performance, and the ability to respond to future events. As mentioned previously, the findings in general support the views on the difficulty of quantifying IC, which affects MAP in terms of internal reporting (Gordon *et al.,* 1978; Atkin *et al*., 1995), performance measurement (O'Hanlon and Peasnell, 1998; Bourne and Bourne, 2000; Norreklit, 2000), budgeting (control and planning) (Hope and Fraser, 1997, 1999; Fanning, 2000; Wallander, 1999), and capital investment decisions (Irani *et al.*,1998; MacDougall, 1999; Mouck, 2000; Segelod, 2000; Yong and Sanders, 2002). The implication of these findings is that firms with high investment in IC should practise management accounting that is appropriate to the levels of IC in order to achieve higher performance and be able to respond to unanticipated economic and market uncertainties.

Further analyses based on the second model were undertaken to explore the 'fit' between level of IC, appropriate management style, MAP, and corporate characteristics to ascertain whether firms with stronger fit enjoy higher corporate performance levels. Findings of the second exploration suggest (1) IC is a predictor of performance, and (2) a good fit between IC and MAP is a predictor of corporate performance level. This finding is concluded in the following paragraphs.

This study has found strong empirical support that there is a strong relationship between IC and firms' performance. Three methods of analysis were used to test the propositions on this: correlation, performance tree (mean analysis), and regression analysis. All the results from the tests strongly support the proposition. The proposition was largely based

on the Bontis (1998) finding that IC influences performance, and the above results support this. It is interesting to find out that among the three types of IC, i.e. human IC (HIC), structural IC (SIC), and relational IC (RIC), SIC and RIC have the same strong influence on overall performance, while HIC has no influence, and even has a negative relationship with overall performance (see Appendix H). This means that the higher the HIC, the lower is overall performance. This also supports the Bontis (1998) finding, even though differently. As mentioned before, Bontis finds that SIC and RIC have direct influence on performance, whereas HIC has a non-direct influence on performance, but it has a direct influence on SIC and RIC. This is a validation of a growing body of literature on IC (Petty and Guthrie, 1999). The primary implication of the finding is that firms should manage their IC in order to achieve higher performance and achieve or sustain competitive advantage (Edvinnson and Malone, 1997; Wiig, 1997; Coates, 2000; MacDonald, 2000). It does not imply that HIC should be ignored, because without HIC, there is no SIC and RIC (Roos, 1997; Robinson and Kleiner, 1996; Sullivan, 2000).

The findings of the study also show that higher performance levels are achieved where the MAP is appropriate to the level of IC. IC is an intangible resource/asset, and therefore it is not quantifiable, so firms have to employ appropriate management accounting methods and techniques in order to capture its contribution and value. The information obtained from the appropriate MAP helps firms to make strategic decisions that increase performance. The next important finding is related to the above: firms with high IC and high MAP outperform firms with high IC and low MAP. High MAP means MAP that is strategic and appropriate to the IC levels. Similar to the above, with the information obtained from high MAP, firms can make informed strategic decisions that increase performance. Another related finding is that firms with low IC and high MAP do not have higher performance, as the MAP is not appropriate for their IC levels. This finding supports the previous one. The logic behind this is that high MAP is not necessary, as IC is low, and so the low (traditional) MAP is already good enough. In this case, the high MAP does not increase performance.

This study was exploratory, and there was no existing theory that was found to be directly related, to be taken as a basis. It thus largely adopted the resource-based view theory of the firm and the agency theory, the closest theories deemed to be suitable for IC and companies as discussed in Chapter 4. The next two sections discuss the findings based on the two theories.

7.5 Contributions of Research

Since there are two research models, the findings of this study contribute substantially to knowledge, practitioners/firms, management accounting, and academics. The contributions are as follows:

First and foremost, again, quoting Petty and Guthrie (2000), "IC is a relatively new field to research. Research in this field is still at an infancy stage. It is a challenging topic to research but this makes the research highly significant because of the high incidence of contributing to a new knowledge". This is hoped to have proved true for this research.
As mentioned in Chapter 1, when stating the significance of the study, since research in IC is still at an early stage, there are very few previous studies on this topic. Very few of these focus on the impact of IC on all the five aspects of MAPs (e.g. Bontis 1998, 1999; Dooley 2000, Reeds, 2000; Lovero, 2001; Mouritsen *et al*., 2001;Tayles *et al*. 2002; Usoff *et al*., 2002). Therefore, the main contribution of this study lies in its being among the early studies on IC in relation to MAP. In conjunction with that, this study helps enrich the literature on management accounting, in particular, and accounting in general.

This research contributes as a guideline for practitioners and firms. They may find some valuable guidance on IC creation and management, and what types of corporate, characteristics (size, culture of trust, structure linked to performance measurement) enhance IC's influence on corporate performance.

The research also contributes as guidelines for academics. The guidelines can lead to teaching material and improvement of the syllabus and curriculum of courses, not only on

management accounting, but also on financial accounting, finance, strategic management, human resource management and development, marketing, information system, etc.. This is discussed further in Section 7.6 below.

This study also acts as a pilot study for further research. It is hoped that it is not only a motivation for it, but also a source of information and guidelines in terms of its empirical framework, methods, and findings.

7.6 Recommendations

Based on the findings of this study, the following recommendations are made to practitioners or firms, and academics.

Practitioners and firms are recommended to choose appropriate MAP and techniques appropriate for the levels of IC in a particular firm, in order to gain maximum benefits from their IC. From this study, they may also find guidance on the kind of corporate characteristics (size, culture of trust, structure linked to performance measurement) that enhance IC's influence on corporate performance. Detailed recommendations are as follows:

Since there is a lack of external reporting of IC, firms are recommended to measure their IC and publish the results in or with their annual reports so that the users of the information can know the firms' true values, as (Petty and Guthrie, 1999) suggest.

The survey findings show that firms are not employing scorecard performance measures. Even though the findings from the case studies show that five out of six companies were using the BSC, at the time of the study they had just started, and its use was still not fully implemented. Therefore, firms should employ these kinds of scorecard, such as the BSC, so that a comprehensive performance measurement is undertaken. Such performance measurement is important as a basis for strategic decisions. The scorecard includes non-financial measures, and this will complement the financial methods, as they are incapable

of capturing IC's contribution (Usoff *et al.*, 2002), which is strategic information for firms' performance as a whole.

Firms with high investment in IC (intangible assets) should emphasise the use of non-financial methods, such as the real options of capital investment appraisals. This is strategic, because financial methods are incapable of capturing intangible costs and benefits and, therefore, well-informed decisions cannot be made as Irani *et al*., (1998) point out.

High IC firms should highly decentralise. This is because high decentralisation implies the existence of a high culture of trust. As suggested by Barney (1986) and Hope and Fraser (1997), a high culture of trust enhances creativity and innovations, as lower level managers are given high freedom to make decisions. According to Brooking (1996, 1999), internal corporate strength, such as corporate culture, is also IC, i.e. infrastructure assets.

It is found out that higher performance levels are highly associated with firms with high IC, firms with large size, and decentralised structure. Therefore, firms are recommended to increase their IC, increase in size, and highly decentralise, in order to achieve higher performance levels.

Firms should educate their board of directors, managers and staff, and shareholders on IC and its critical importance to the firm, by sending them to attend courses on IC or organise courses in-house. This will make it easier for them to implement IC concepts, not only in MAPs, but in other functions, as well. When the top management and shareholders do not understand IC, they just seek financial reports on performance only, and thus finance managers think that there is no point in taking the trouble to prepare the complicated non-financial performance report. This was the case in one of the case studies, i.e. the software company.

As suggested by Petty and Guthrie (2000), the infancy stage of research into IC offers the potential for researchers to make meaningful contributions that are theoretical, methodological, or empirical. Practitioners and firms can do researches on IC besides the R&D for research on innovations and market research for brands. The incorporation of all the three components of IC, HIC, SIC and RIC, according to their relevance to the firms themselves, is recommended.

There are efforts made by the International Accounting Standards Board to set a standard for reporting intangible assets (IAS 38) (Grojer, 2001). Calls should be made for quicker action by the board to do so, as accounting should keep pace with the fast change in the economy (k-economy) in order to ensure the reliability of the corporate financial reporting, or rather the corporate performance reporting, and to keep the relevance of accountants.

Academics, not only in the accounting discipline, but also those in finance and strategic management, etc., should plan the syllabus and curriculum of their courses. Besides topics on EVA and the BSC that are already commonly taught, they could see that more topics, such as real options and re-forecasting, most importantly, IC, should be emphasised.

As mentioned in the recommendations to practitioners, academics should also be motivated, as suggested by Petty and Guthrie (2000). Research in IC is still at an early stage; it is therefore hoped that this research will become a source of motivation for more academic research in IC.

7.7 Limitations of Study

No matter how hard one tries to be perfect, it is impossible to be so. Likewise, this study is far from perfect, and the following are some of the main limitations. Notably, however, the limitations listed below did not impair the results of the study.

As stated in Chapter 1, the scope of the research was constrained to management accounting practice, i.e. internal reporting, performance measurement, budgeting, and capital investment decisions, and the sample was taken from KLSE listed companies in Klang Valley, Malaysia. Even though it was justified that most of the companies were located here, the findings might be better in terms of 'generalisability' if a wider population, such as companies from the whole country, were surveyed.

The main instrument of the research was the questionnaire survey, and this made the research as a whole rely heavily on the perception and opinions of companies' finance managers or accountants who answered the questionnaire. Even though the reliability and the validity of the questionnaire were checked, there must exist some form of bias when they evaluate their own performance. The bias could have been reduced if outsiders who have formal or informal relationships with the companies, such as their customers, suppliers, allied partners, and competitors, were asked to evaluate the company's performance. Examining annual reports could also check the information given by the respondents. Again, the large number of companies was the constraint for the above.

Sampling is considered to be the greatest limitation of the study. According to Hair *et al.* (2003), an exploratory research may use non-probability sampling for exploratory research, but this makes it impossible to generalise the findings with confidence. Due to the aim of making confident generalisation, probability sampling was chosen for this research. As described in Chapter 5, the first decision made was to survey management accountants who worked for large firms, since there was an opportunity to get CIMA Malaysia Division's help with the survey. However, the very poor response received from the members forced the decision to survey a more controlled sample, with a clearer unit of analysis. Even though the second sample was considered better, and after all the efforts made, the response was still much lower than expected. It was then decided to combine the data from both samples in order to increase the data. The decision must have hampered the confidence level of generalisation.

'Scarce resources' is a popular assumption in economics. In the context of this study, it was a reality, not just an assumption. A lot more things could have been done, some have been mentioned above, if there had been no limit of time and financial resources. An example of this is the idea of increasing the response for the questionnaire survey.

7.8 Recommendations for Further Research

Similar to other exploratory research, this research has many potential implications for further research. This pertains to both the methodology for data collection and data analysis. The following recommendations are made citing as appropriate supporting literature.

It is thought that the findings of this study would have higher confidence level if the IC value of the companies were calculated by employing any of the methods available, such a CIV and Baruch Lev's method. This can be done by doing the same research in a few companies (case studies), as it would not take too much time and effort.

Besides the above, the case studies should involve managers from different functions of the organisations so that more information is obtained. The staff, as well as the customers, suppliers, allied partners, and competitors, should also be surveyed or interviewed as a means of triangulation, and to reduce bias.

Further research is recommended to examine a wider scope of research, for example linking IC and management accounting with other disciplines, such as marketing, human resource, information system, strategic management, and law.

There are quite a number of researches on relational IC (related to brand values and brand accounting) and human IC (related to corporate performance and market share). There are very few researches on structural IC, besides researches on innovation and intellectual properties, one by Petrash (1996).

This study focused on four business sectors: technology, consumer products, trading and services, and finance. Further research can be conducted, incorporating all the components of structural IC, including technology know-how, process, and procedures. If the same research is repeated, other high IC sectors, such as large legal and consultant firms (e.g. public accounting, architecture, and management) should be the focus. This study was constrained when choosing KLSE listed companies, while most of the consultant and legal firms are registered under partnership.

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Appendix A: Questionnaire

INTELLECTUAL CAPITAL QUESTIONNAIRE

SECTION A: Intellectual Capital (IC) / intangible assets
The following items explore aspects of intellectual capital. Please respond to the following statements.

Please make sure to respond to each statement by circling the appropriate number [1 = strongly disagree, 7 = strongly agree] [NA = not applicable] *based on how you feel about the statement. Please use 4 sparingly. Please move to the next statement if you feel unable to respond to the statement.*

		Strongly disagree						Strongly agree	
IC1	Our organisation possesses a high degree of intellectual capital.	1	2	3	4	5	6	7	NA
	In our organisation,….								
IC2	…intellectual capital is very important.	1	2	3	4	5	6	7	NA
IC3	…the term 'knowledge' is used rather than 'intellectual capital'.	1	2	3	4	5	6	7	NA
IC4	…intellectual capital is measured by using financial measures such as Return on Assets, Profits Before Tax and Return on Investment.	1	2	3	4	5	6	7	NA
1C5	…intellectual capital is measured by using non-financial measures.	1	2	3	4	5	6	7	NA
IC6	…information on intellectual capital is published in or with the annual report.	1	2	3	4	5	6	7	NA
IC7	…information on intellectual capital is reported internally.	1	2	3	4	5	6	7	NA
IC8	…intellectual capital is referred to in strategic decision-making.	1	2	3	4	5	6	7	NA
	Our organisation …..								
H1	…selects managers and staff according to their brightness and creativity.	1	2	3	4	5	6	7	NA
H2	…gets the most out of the managers and staff.	1	2	3	4	5	6	7	NA
H3	…requires knowledge sharing among managers and staff.	1	2	3	4	5	6	7	NA
	Our managers and staff are generally…								
H4	…experts in their particular jobs and functions.	1	2	3	4	5	6	7	NA
H5	…able to develop new ideas and knowledge.	1	2	3	4	5	6	7	NA
H6	…able to focus on the quality of service provided.	1	2	3	4	5	6	7	NA
	Our organisation's….								
S1	…data systems makes it easy to access relevant information.	1	2	3	4	5	6	7	NA
S2	…systems and procedures support innovation.	1	2	3	4	5	6	7	NA
	Our organisation….								
S3	…requires knowledge sharing and encourages learning.	1	2	3	4	5	6	7	NA
S4	…has relatively high investment in innovation.	1	2	3	4	5	6	7	NA
S5	…keeps track and makes full use of our intellectual assets such as patents and copyrights.	1	2	3	4	5	6	7	NA
S6	…has a high rate of generation of new ideas and products compared to our competitors.	1	2	3	4	5	6	7	NA
S7	...provides a sufficiently high annual information technology allocation (for personnel, hardware, software, etc.) to allow us to provide quality service.	1	2	3	4	5	6	7	NA
	Our organisation….								
S8	…documents knowledge in manuals, databases, etc.	1	2	3	4	5	6	7	NA
S9	…protects vital knowledge and information to prevent loss in the event of key people leaving the organisation.	1	2	3	4	5	6	7	NA
R1	…has customers loyal to our organisation / product.	1	2	3	4	5	6	7	NA
R2	… is market-oriented / customer-focused.	1	2	3	4	5	6	7	NA
R3	… is efficient in satisfying customer's needs and requirements.	1	2	3	4	5	6	7	NA
R4	….has most managers and staff who generally understand the organisation's targeted market segments and customer profiles.	1	2	3	4	5	6	7	NA
R5	… gets as much feedback from our customers as we can.	1	2	3	4	5	6	7	NA
R6	….has marketing managers and staff who continually meet with customers to find out what they want from the organisation.	1	2	3	4	5	6	7	NA
R7	… listens and responds to / manages customer complaints.	1	2	3	4	5	6	7	NA
R8	… has good relationships with its suppliers.	1	2	3	4	5	6	7	NA
R9	… devotes considerable time to vetting and approving suppliers.	1	2	3	4	5	6	7	NA
R10	….maintains long-standing relationships with a number of important suppliers.	1	2	3	4	5	6	7	NA

SECTION B: Performance Measurement
The following items explore the role of performance measurement

Please indicate the type(s) of financial performance measurement used in your organisation and indicate their degree of importance.

Please make sure to respond to each statement by circling the appropriate number [1 = strongly disagree, 7 = strongly agree] [NA = not applicable] *based on how you feel about the statement. Please use 4 sparingly. Please move to the next statement if you feel unable to respond to the statement.*

	Types of Financial Measure	Least important						Most important	
TM1	Sales / Revenues	1	2	3	4	5	6	7	NA
TM2	Profitability (e.g. Return on Capital Employed, Return on Investment, Return on Asset, Profits Before Income Taxes)	1	2	3	4	5	6	7	NA
TM3	EVA (Economic Value Added)	1	2	3	4	5	6	7	NA
TM4	Target Profit	1	2	3	4	5	6	7	NA
TM5	Shareholder Value	1	2	3	4	5	6	7	NA

The following items relate to both financial and non-financial measure. Again, please respond by circling the appropriate number, based on how you feel about the statement.

		Strongly disagree						Strongly agree	
PM1	Our performance measures include both the financial and the non-financial aspects of our organisation.	1	2	3	4	5	6	7	NA
	Our performance measures….								
PM2	…capture the intellectual capital contribution.	1	2	3	4	5	6	7	NA
PM3	…focus on future success.	1	2	3	4	5	6	7	NA
PM4	…focus on past performance.	1	2	3	4	5	6	7	NA
PM5	…focus mainly on financial aspects.	1	2	3	4	5	6	7	NA
PM6	Our organisation's financial measures of performance properly account for all ways in which corporate value could be added or lost.	1	2	3	4	5	6	7	NA
PM7	Our organisation's financial measures provide management with an explicit incentive structure that creates value for shareholders	1	2	3	4	5	6	7	NA
	Our framework (s) for measuring performance is/are the…								
FM1	…Balanced Scorecard (BSC).	1	2	3	4	5	6	7	NA
FM2	…Intangible Assets Monitor.	1	2	3	4	5	6	7	NA
FM3	…Tableau de Bord.	1	2	3	4	5	6	7	NA
FM4	…Skandia Navigator.	1	2	3	4	5	6	7	NA
FM5	…Performance Prism.	1	2	3	4	5	6	7	NA

SECTION C: Budget
The following items explore the aspects of budgeting. Again, please respond by circling the appropriate number, based on how you feel about the statement.

		Strongly disagree						Strongly agree	
BT1	The budget is emphasized in our organisation.	1	2	3	4	5	6	7	NA
	In evaluating performance, management gives high importance to our…..								
BT2	…ability to meet the budget.	1	2	3	4	5	6	7	NA
BT3	…concern with costs.	1	2	3	4	5	6	7	NA
BT4	…ability to increase the general effectiveness of unit's operation.	1	2	3	4	5	6	7	NA
BT5	…concern with quality.	1	2	3	4	5	6	7	NA
BT6	…ability to handle subordinates.	1	2	3	4	5	6	7	NA
BT7	…effort put into the job.	1	2	3	4	5	6	7	NA
BT8	Our managers tend to manipulate and manage 'around' plans.	1	2	3	4	5	6	7	NA
BT9	Our managers' and staff goals and appraisal are not linked to the budget.	1	2	3	4	5	6	7	NA

		Strongly disagree						Strongly agree	
	Our organisation is now using …								
BI1	…zero-based budgeting.	1	2	3	4	5	6	7	NA
BI2	…priority-based budgeting.	1	2	3	4	5	6	7	NA
BI3	…regular re-forecasting.	1	2	3	4	5	6	7	NA
BI4	…activity-based budgeting.	1	2	3	4	5	6	7	NA
	Our organisation…..								
BI5	…separates target setting from the prediction of financial performance.	1	2	3	4	5	6	7	NA
BI6	…uses rolling forecasts, instead of the traditional budgeting.	1	2	3	4	5	6	7	NA
OS1	…is dominated by rules and paperwork.	1	2	3	4	5	6	7	NA
OS2	The upper-level management of the organisation determines everything to be done.	1	2	3	4	5	6	7	NA
OS3	The front-line managers are just the implementers.	1	2	3	4	5	6	7	NA
OS4	The organisation's culture and atmosphere is supportive.	1	2	3	4	5	6	7	NA
OS5	The front-line managers are given the freedom to plan strategies and make decisions.	1	2	3	4	5	6	7	NA
OS6	The organisational culture is characterized by a high degree of trust.	1	2	3	4	5	6	7	NA

SECTION G: Capital Investment Decisions

The following items explore the role of capital investment decisions.

Please identify the type(s) of financial methods used for capital investment and project appraisal in your organisation and indicate their degree of importance.

	Types of Financial Methods	Least important						Most important	
CFM1	Return on Capital Employed / Accounting Rate of Return	1	2	3	4	5	6	7	NA
CFM2	Net Present Value	1	2	3	4	5	6	7	NA
CFM3	Internal Rate of Return	1	2	3	4	5	6	7	NA
CFM4	Payback Period	1	2	3	4	5	6	7	NA
CFM5	Profitability Index	1	2	3	4	5	6	7	NA
CFM6	Real Option Value	1	2	3	4	5	6	7	NA

Please respond to the following statement, again based on your feelings about each.

		Strongly disagree						Strongly agree	
	In our company….								
CI1	…the majority of our investments are in the form of tangible assets such as machinery and equipment.	1	2	3	4	5	6	7	NA
CI2	…the majority of our investments are in the form of intangibles such as emerging technologies, innovations, training, new markets and new products	1	2	3	4	5	6	7	NA
CI3	Our financial methods of capital investment appraisals are not able to capture the intangible costs and benefits of the investments.	1	2	3	4	5	6	7	NA
CI4	There is no system of defining, requesting and reviewing intangible investments in our organisation.	1	2	3	4	5	6	7	NA
	Our organisation…..								
CI5	…accepts projects with negative NPV.	1	2	3	4	5	6	7	NA
CI6	…uses strategic analysis to evaluate investments.	1	2	3	4	5	6	7	NA

SECTION E: Risk Management

The following items explore the role of risk management.

Please respond to the following statement, again based on your feelings about each.

		Strongly disagree						Strongly agree	
	Envisage a situation where there is a downturn in the economy. Your organisation….								
RM1	…will be less affected by the fall in the stock market than others in your sector.	1	2	3	4	5	6	7	NA
RM2	…will be hit badly by the fall in the stock market.	1	2	3	4	5	6	7	NA
RM3	…will not over-react to the fall in the stock market because it sees the phenomenon as short-term.	1	2	3	4	5	6	7	NA

RM5	Our intellectual capital, such as brands and trademarks, acts as our hedge against unanticipated economic and market change.	1 2 3 4 5 6 7 NA
RM6	Our managers' and staff creativity and innovation ensure our organisation's long-term survival.	1 2 3 4 5 6 7 NA

SECTION F: Performance

Please respond the following items with regard to your perception about your organisation's recent performance relative to key competitors' in the industry.

	Performance	Very low						Very high	
P1	Industry leadership	1	2	3	4	5	6	7	NA
P2	Future outlook	1	2	3	4	5	6	7	NA
P3	Profit	1	2	3	4	5	6	7	NA
P4	Profit growth	1	2	3	4	5	6	7	NA
P5	Sales growth	1	2	3	4	5	6	7	NA
P6	After-tax return on assets	1	2	3	4	5	6	7	NA
P7	Share price	1	2	3	4	5	6	7	NA
P8	After-tax return on sales	1	2	3	4	5	6	7	NA
P9	Overall response to competition	1	2	3	4	5	6	7	NA
P10	Success rate in new product launches	1	2	3	4	5	6	7	NA
P11	Overall business performance and success.	1	2	3	4	5	6	7	NA

SECTION G: Further Information

We would be very grateful if you would fill in the following personal details that will help with future communication and the analysis of the survey results. Please at least fill in these ***. Neither you nor your organisation will be identified subsequently.

Name: (in capital letters, please)_____

Department: _____

Position: _____

Length of employment: ☐ years ☐ months

Length of time worked: ☐ years ☐ months

Name and address of your organisation: _____

_____

Your organisation's telephone number: _____

Your telephone number: _____

Your e-mail address: _____

*** Your organisation's type of business: (Please tick (/)) ☐ Technology ☐ Consumer products

☐ Industrial products ☐ Trading & Services ☐ Finance ☐ Properties ☐ Plantation

☐ Construction ☐ Plantation ☐ Other (Please specify) _____

*** Number of employees in your organisation: ☐☐☐☐☐

*** Your organisation's sales / turnover (for the year 2002): _____

Would you like to have a copy of the findings of the study? (Please tick (/)) ☐ Yes ☐ No

Thank you very much for your participation in this survey.

Appendix B: Cover letter for Questionnaire

Dear Sir / Madam,

ACCOUNTING FOR INTELLECTUAL CAPITAL AND ORGANISATIONAL KNOWLEDGE

With the evolution of the 'Information Age', intellectual capital (IC) and knowledge management (KM) enables organisations to develop / maintain sustainable competitive advantage. This study aims to explore the nature of IC and its implications for management accounting and finance. This questionnaire seeks to capture the forms, importance and implications of IC in your organisation.

IC is defined as 'the possession of knowledge, applied experience, organisational technology, customer relationships and professional skill that provides companies with a competitive edge in the market'. IC is " knowledge that can be converted into profits".

IC can be divided into human capital, structural capital and relational capital. Structural capital consists of innovation capital (intellectual assets) and process capital (organisational procedures and processes). Human capital is people, which cannot be owned by companies. Relational capital is the knowledge of market channels, customer and supplier relationships, as well as a sound understanding of governmental or industry associations.

We would be very grateful if you would help me by responding to the following questions on Intellectual Capital and Knowledge Management

In answering this questionnaire, please try to act as your organisation's representative. The design of the study concentrates on the organisation not the individual. Please complete **all** items in the questionnaire. All the information you provide will be strictly confidential. Your responses will only be presented in aggregate form and no single firm's results will be highlighted.

The questionnaire should take about 20 minutes to complete. Your participation in this research study is very much appreciated. Please return the questionnaire within 14 days. If you have any questions or concerns, please do not hesitate to contact us.

Yours faithfully,
Nor Hamimah Binti Mastor
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Faculty of Management and Human Resource Development,
Universiti Teknologi Malaysia,
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