AN EVIDENCE-BASED TAXONOMY OF INTELLECTUAL CAPITAL - MALAYSIAN PERSPECTIVES

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ABSTRACT

The present wave, speed of information and technological change has significantly transformed the traditional business operation and competition globally. The new economy, which is knowledge-based, recognized intellectual capital (IC) as a significant contributor to corporations' market value and hence their competitive advantage. Despite much attention given on IC for the past two decades, there is still no concrete concensus on its components and definitions. This is perhaps due to the dynamic nature and multi-disciplinary concept of IC. This paper seeks to propose a grouping of IC items based on empirical evidence in the form of managers' responses to questions about the IC practices inside their organisation. A postal questionnaire was implemented across 178 companies listed on the main market of Bursa Malaysia. The empirical grouping of IC derived by factor analysis is compared with a priori groupings constructed from the IC literature. It was found that the conventional three a priori categories - namely human capital, structural capital and customer capital – expand into four components with innovation capital as the fourth component. Nevertheless, there is a remarkable consistency between literature-based expectations and empirical groupings particularly in emerging economies such as Malaysia. This evidence-based finding of the broad four-category IC components, together with the empirical identification of more detailed facets, makes a contribution to the as yet largely normative literature on the classification of the components of IC. The findings, however, were based on the Malaysian companies' perspectives and may not be applicable to other cultures or countries.

Keywords: Intellectual Capital, Measurement, IC Index, Malaysia

INTRODUCTION

The present wave and speed of information and technological change has significantly transformed the traditional business operation and competition globally. The new economy, which is knowledge-based, recognized intellectual capital (hereafter IC) as a significant contributor to corporations' market value and hence their competitive advantage (Chen, et al., 2005). In the knowledge-based economy, IC is regarded as a value creator (Foong and Wong, 2009; Garcia-Meca, et al., 2005) and plays a vital role to strengthen corporations' future growth (Lowell, 1997). According to Whiting and Miller (2008), a corporation's value creation tends to be based on the knowledge of its people (intangible) rather than on tangible or physical assets. Research undertaken by Ocean Tomo on S&P 500 indicates that intangible assets[1] reflects more than 80% of the corporations' balance sheet value; while the physical and financial accountable assets comprises less than 20% of the true value of the average corporation (Ocean Tomo, 2010)[2]. The high percentage of intangibles reflects the vital role that IC plays in achieving the corporations' objectives and performance (Abeysekera, 2006; Whiting and Miller, 2008).

After more than two decades of its existence, IC is still considered as an elusive phenomenon (Choong, 2008). IC researchers such as Guthrie et al., (2012) described intellectual capital research (ICR) in three distinct stages (Dumay and Garanina, 2013). The first stage of ICR began in late 1980s (Dumay, 2013). Initially, it focused on the awareness and importance of IC in "creating and managing sustainable competitive advantage" (Petty and Guthrie, 2000, p.155). The second stage of ICR examined the impact of IC on corporate performance and value creation (Guthrie et al., 2012). At this stage, various models and approaches were developed in measuring, managing and reporting of IC. Presently, the ICR is coming to the third stage that is critically examining IC in practice (Dumay and Garanina, 2013).

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[1] The term, 'intangible assets' is used interchangeably with IC in this paper.
[2] The calculation of the figure for intangibles is based on the differences between the market and book values of the corporations.

This paper proposes an evidence-based grouping of IC items based on managers' questionnaire responses and tests the validity of the *a priori* literature-based IC model against that of empirical findings. The study was conducted in Malaysia, one of the emerging economies in Asian countries, which aspires to become a develop economy by the end of this decade.

This paper is structured as follows. Section 2 reviews the definitions and conceptualization of IC. It also discusses the importance of IC in contributing to the Malaysian economy that aspired to become a developed nation by the end of this decade. This is followed by the research methodology used in coming up with the IC taxonomy based on the Malaysian perspectives. Section 4 provides the results and discussions. The conclusion and limitations are provided in Section 5.

INTELLECTUAL CAPITAL AND ITS CONCEPTUALISATION

Given the context-specificity of IC and that it originated from business practices, there is none as yet, a universally accepted definition of IC (Choong, 2008). Edvinsson and Malone (1997) describe IC as the possession of knowledge, applied experience, organizational technology, customer relationships and professional skills that provide a competitive edge in the market. It is context specific; something that is absolutely peculiar to each and every corporation. As a result, the value of an organization differs from another by the knowledge, skills and abilities of its employees due to the criterion of idiosyncratic organizational capabilities. Many are aware of its essence but find difficulty in evaluating and reporting it. Customers, investors and financiers are influenced by its existence in their investing and lending decisions.

DEFINITIONS OF IC

The construct of IC has emerged over the past two decades as a key factor in explaining firm performance, especially in a knowledge-based economy. IC refers to the value of ideas and knowledge acquired and used by a firm. Each firm's unique way of directing, managing and transforming its resources is one aspect of its IC. A literature review across disciplines indicates that there is a wide range of definitions that can be considered as IC (Choong, 2008). Among the early definitions of intellectual capital are the ones provided by Edvinsson and Malone (1997), who describe it as a combination of human capital and structural capital which has the ability to transform knowledge and intangible assets into wealth creating resources. Meanwhile, Stewart (1997) refers to IC as the intellectual material that has been formalised, captured and leveraged to produce a higher-valued asset. These definitions are further expanded by Miller et. al., (1999) that include the sum and synergy of a company's knowledge, experience, relationship, process discoveries, innovations, market presence and community influence. They also categorised these assets into four components of intellectual capital: human capital, renewal capital, structural capital and relationship capital.

The literature is proliferated with different terms to describe either the same or different information used in relating to IC. Petty and Guthrie (2000), Tan et al. (2008) and Choong (2008) provide a good account of the various definitions and classifications of IC. A number of contemporary classification schemes have refined the distinction by specifically dividing IC into the categories of external (customer-related) capital, internal (structural) capital, and human capital (e.g. Sveiby, 1997; Roos et al., 1997; Stewart, 1997; Edvinsson and Malone, 1997).

Analysis of the classifications of IC indicates that by and large, various researchers have adopted the three categorization – human, structure and customers of Sveiby (1997), suggesting that the categorization of IC is consistent (Choong, 2008). This finding is consistent to Marr and Adams (2004). They find that there has been a general convergence towards a three-grouped framework consisting of human capital, organizational (or structural capital, and relational capital; based on Sveiby (1997), MERITUM (2002), and Bontis (2001).

CONCEPTUALISATION OF IC

Review of literatures reveals that there are many researchers describing the conceptualization of IC in various ways. Choong (2008), for example, reviews IC in terms of its definitions, categorizations and reporting models in order to create a common understanding and systematic classification of IC items or components so that it can be interpreted with substance. In terms of IC classifications and conceptual models, researchers such as Sveiby (2007), Tan et al., (2008) provide a succinct summary of the seminal works on IC. They take a chronological approach in order to highlight how the concept has evolved as newer researchers have built on earlier models. This study will summarise the conceptualisation of IC based on the earlier classifications and conceptual models of IC that were developed so far.

There are three significant components identifiable from all of these literatures which centre on people, organization and relationship. The IC embedded in people results from the blending of attributes like knowledge, abilities, attitudes and relationships. It is found in the mind, body and actions of individuals. Its essence is actually the human intellect. Since its scope is within the employee, it is lost to the organization when people leave that organization. The organizational component results from the systems, processes, structure, culture, strategy, policy and innovative capacity. The essence is found in organizational routines developed from internal organizational links. The relationship component provides value to the organization through both internal and external links. It explains the value of an organisation's relationships with people with whom it does business.

The three conceptualizations of IC components discussed above are seen from a macro perspective. There are a number of attempts to identify the various constituents of IC by developing taxonomy. To date, there is no globally accepted classification of IC. Most definitions seem to agree that there are three important elements: (i) source of probable future economic benefits, (ii) lack of physical substance, and (iii) can be retained and traded by the firm (Brand Finance Institute, 2009). The scope has been

wider and evolved with more classification such as human resources and capabilities, organisational competencies (databases, technology, innovation, routines and culture), organisational strategy, designs and processes, customer and supplier networks. To illustrate, researchers such as Sullivan and Sullivan (2000), Chen et al. (2004) argue that innovation is becoming a key factor for a company to keep its long-term competitive excellence in the new millennium and emerging economies. Chen et al. (2004) view that economic growth in developed countries has been driven by innovation rather than by investment. In their empirical research, Chen and her colleagues proved that innovation capital is the pivotal link of IC for the samples studied in China.

In line with researchers such as Chen et al. (2004), Sullivan and Sullivan (2000) and Sullivan (1998), the present study undertakes "innovation" as one of the important components in IC conceptualization particularly in the knowledge-based and emerging economy such as Malaysia. Emphasizing the importance of innovation in the new millennium, innovation is therefore not subject to structural capital; as a classified by Leif Edvinsson in Skandia Navigator, but a 'capital' by itself.

Basically, it can be surmised from the above discussion that the typical or basic components of IC are made up of human capital, structural capital and customer capital representing the firm's employees, organizational capabilities and customer relationships. Innovation capital constitutes the fourth components which represent the pivotal link of IC.

IC AND MALAYSIAN ECONOMY

Globalization of the market place imposes serious threats to emerging economies of many developing countries such as Malaysia. Technological advancements, trade liberation and global financial crisis have changed the Malaysian economic landscape tremendously. In order to be competitive and achieve sustainable economic growth, Malaysia has embarked on a mission to develop a knowledge-based society as highlighted in its Third Outline Perspective Plan, 2001-2010 (Economic Planning Unit, 2001). Subsequently, a Knowledge-Based Economy Master Plan was launched in 2002. The Master Plan outlines the various strategies to accelerate the transformation of Malaysia to a knowledge-based economy (ISIS, 2002).

Malaysia's conscious and deliberate shift to a knowledge-based economy has involved investment in research and development (R&D), knowledge-intensive activities , technology-related capacity and skills, innovation and high ICT penetration and internet usage. In order to remain competitive in the knowledge economy, Salleh and Selamat (2007) view that Malaysia can no longer rely on investment in capital or physical assets; rather growth must be driven by productivity and innovation supported by effective management of both tangible and intangible resources. Report by the Brand Finance Institute (2009) reveals that Malaysia is ranked at 23rd place (out of 53 nations) in the world for intangible assets' contribution to enterprise value for year 2008 (29th in 2007). For the same year (2008), the Institute discloses that companies have experienced a dramatic shift from tangible to intangible assets as the main source of value creation.

Under the National Innovation Model, the Malaysian government realizes the need to shift the resources based economy and production based economy to sustainable economic where knowledge and "know-how" become the main drivers for economic growth (MPC 18th Productivity Report, 2011). This has led to the migration into Innovation base economy. Thus the factors of production in traditional economy are not relevant in the Innovation Economy (MPC 18th Productivity Report, 2011).

Among the strategies adopted in order to realise national vision, Government encourages active partcipation by private sectors in the areas of high-technology and knowledge-intensive (Economic Planning Unit Report, 2009). In the knowledge-based economy, company's core assets are their IC made up of the combined knowledge of human, structural and relational resources (Salleh and Selamat, 2007). As more companies begin to realise the value of IC, it has taken the centre stage in company's efforts to create competitive advantages (Kaplan and Norton, 2004) and thus, the management of IC is imperative to the success of these companies. Accordingly, Lev (2001) opines that if intangible resources are assets that enable firms to gain sustained competitive advantage, stakeholders should be given appropriate information about those resources in order to understand the true value of a company.

Therefore, this study is significant in the Malaysian context as the IC component (or taxonomy) determined in this research should also of interest to various groups of users, supplementing them with information on IC in their decision making process. The relationship between IC and company performance and market value can be used for prediction by these users. In addition, the breakdown of IC component should aid the accounting profession in developing a more systematic external reporting for IC such as disclosing them in the annual reports in the future.

RESEARCH METHOD AND DATA

The aim of this paper is to test empirically the extent to which the classification of elements of IC proposed in the normative IC literature is supported by perceived reality of IC practices in companies. A postal questionnaire survey was implemented across 803 companies listed in the main market of Bursa Malaysia[3] on 1st April, 2011. These companies are from the construction, consumer products, hotel, industrial products, infrastructure projects, plantation, property, technology and trading/services sectors. Certain industries such as Mining, REITS and Finance were excluded from the study due to their specialised nature and the additional requirements imposed on the financial sector. In the first three weeks after the questionnaires sent out, 105 respondents returned the questionnaires. Subsequently, a follow up letter "calling for response" was sent out one week after the due date together with a blank questionnaire and reply-paid envelope to the remaining 698 non-respondents. Finally, a personalised phone call was made to most of the non-respondents a week after the follow up letter was issued. After all these

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[3] The list excludes corporations which were classified under PN4 and PN17 by the Bursa Malaysia.

efforts (reminders, phone calls and e-mails), an additional 74 questionnaires were received by the third week of May. Hence, a total of 179 questionnaires were received, thereby providing 22.3 per cent response rate.

One of the top management (CEO/COO/MD/CFO) in each company was asked to indicate the extent of IC practices in their companies from "1" to "6" where "1" represents "never practised" and "6" represents "very greatly practised". Given the dynamic nature of IC, there may well be a gap or differences between the IC practices in different companies and/or sectors. In this research an attempt was made to explore concepts with as much objectivity as possible so it was decided to base the taxonomy on perceptions of the level of IC practices in companies in Malaysia.

AN EMPIRICAL FACTOR ANALYSIS CLASSIFICATION OF THE IC STATEMENTS

There were 65 IC statements relating to the IC practices in respondent's organization. The IC practice is made up from the sum of scores derived from the respondents' answers to the questionnaires. In order to group the variables (65 statements of IC) on the basis of the questionnaire responses, factor analysis technique is applied. This statistical technique enabled the determination of the natural clusters of items from a large correlation of matrix expressed as dimensions or factors (Field, 2009; Hair et al. 2010) of the components of IC. This is particularly useful because the 65 IC statements were extracted from a number of different studies in what is not always a consistent literature (Huang, et al., 2007). In addition, the principal conceptualization of IC (either as a single phenomenon or encompassing of human capital, structural capital, innovation capital and customer capital) actually has many facets or aspects. The concept cannot be measured individually but needs to be derived as composites or numerous directly measurable statements.
SPSS (19.0) was used to conduct the factor analysis. Steps that have been identified in the factor analysis technique application (Field, 2009; Pallant, 2007); Costello and Osbone, 2005; Nie et al., 1975; Kim and Muller, 1978a and b) are discussed below:

a) The extraction process of the initial factor
b) The rotation to a terminal solution; and
c) The selection of the number of factors

THE EXTRACTION OF THE INITIAL FACTORS

The extraction method used in this paper is the principal axis factoring (PAF) rather than the principal component analysis (PCA). Fabrigar et al., (1999) suggest one of the fundamental factor methods when it is evident that the multivariate normality assumption has been violated. In SPSS, this method is labeled as the "principal axis factor". It was found that the data on the IC practices is not normal. Hence, it is only deemed appropriate to employ the principal axis factoring in place of the principal component analysis. In addition, the decision is further supported by Costello and Osborne (2005) who stressed that while principal components with varimax rotation is the norm, it is not optimal, when the data do not meet the required assumptions, as is often the case in the social sciences.
Secondly, principal axis factoring should reveal any latent variables that cause the manifest variables to covary. This is an important aspect of factor analysis when *a priori* groupings of IC were extracted from the literature. While the principal component analysis does not discriminate between shared and unique variance, factor analysis such as principal axis factor takes into account. The shared variance of a variable is partitioned from its unique variance and error variance to reveal the underlying factor structure and only the shared variance appears in the solution (Costello and Osborne, 2005).

THE ROTATION TO A TERMINAL SOLUTION

Rotation adheres to the initial solution extraction. It involves finding simpler and more interpretable factors via rotation while keeping the number of factors and communalities of each variable fixed (Kim and Muller 1978a and b). Communality is defined as the amount of variance in a variable explained by the factors extracted and it is the variance shared between the factors and the item (Field, 2009; De Vaus, 2002). In other words, communality is the proportion of common variance that exists in a variable. The higher the communality statistics, the better is the fit of that item contained in the analysis. The assumption that is being employed is that in the orthogonal rotation the factors have become uncorrelated while the factors are on the contrary in the oblique rotation (Nie et al., 1975; Kim and Muller, 1978a & b). In this study, the factor analysis was performed using an orthogonal rotation called the varimax rotation. This technique rotates the factors while keeping them independent and staying at right angles to each other. It was found that varimax rotation produces a result with many variables with dual loadings (cross loadings) greater than 0.30. So, the data was explored further by re-run the factors using direct oblimin rotation which allows factors to correlate since the variables of IC are not completely independent. The result produced reduces the complex structure to fewer items but the cross loadings (dual or triple loadings) on each IC variable still exist. After much deliberation, the study chose to proceed with results from varimax rotation since it "results in more interpretable clusters of factors and hence simplifies the interpretation of factors" (Field, 2009, p644).

THE SELECTION OF THE NUMBER OF FACTORS

There are a number of techniques that can be used to assist in the decision concerning the number of factors to retain such as Kaiser's criterion (or eigenvalue rule), Scree test and Parallel analysis (Pallant, 2007).

The widely used procedure of determining the number of initial factors for extraction is a rule of thumb - the rule named either as the Kaiser or eigenvalue criterion (Field, 2009; Kim and Mueller, 1978a & b). According to Kaiser's technique or eigenvalue rule, only factors with an eigenvalue of 1.0 or more are retained for further investigation. The eigenvalue of a factor represents

the amount of the total variance explained by that factor (Pallant, 2007). In this study, as proposed by Kaiser (1960), factors with an eigenvalue greater than one are regarded as relevant. This criterion stems from the idea that the eigenvalues represent the amount of variation explained by a factor and that an eigenvalue of one represents a substantial amount of variation.

Scree Plot is a simple line segment plot that highlights the fraction of the total variance in the data as elaborated or represented by each principal component. The principal components are ordered, and by definition, are therefore assigned a number label, by lowering the order of contribution to total variance. The principal components with the largest fraction contribution are given the label name taken from the preferences file. Such a plot, when read left-to-right across the abscissa can often make clear a separation in the total variance fraction, where the 'most important' components have ceased to exist and the 'least important' components take their place. The point of separation has consistently been referred to as the 'point of inflexion' (Field, 2009) or 'elbow' (Pallant, 2007).

In this study, a principal axis factoring (PAF) was conducted on the 65 IC statements with the orthogonal rotation (varimax). Before moving on to the results, this study employs the Barlett's test of sphericity and Kaiser-Meyer-Olkin (KMO)'s measure of sampling adequacy and Scree plot to test the proportion of variance in IC variables that might be explained by several implied factors. The Kaiser-Meyer-Olkin (KMO) measure and the Barlett's test of sphericity verified the sampling adequacy for the analysis. The KMO = 0.935 ('superb' according to Field, 2009), exceeding the recommended value of 0.6 (Kaiser, 1974) and Barlett's test of sphericity (Barlett, 1954) reached statistical significance, supporting the factorability of the correlation matrix (see Table I). An initial analysis was run to obtain eigenvalues for each component in the data. Fourteen components had eigenvalues over Kaiser's criterion of 1 and in combination explained 73.7% of the variance. In Social Science discipline, usually a total variance of 60% and above is acceptable (Hair et al. 2010). The scree plot was slightly ambiguous and showed inflexions that would justify retaining the first four components. Given the supporting literature on IC, and the convergence of the scree plot and Kaiser's criterion on fourteen components, this is the number of components that were retained in the final analysis.

Table I: KMO and Barlett' Test Measure of Sampling Adequacy
KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.935
	Approx. Chi-Square	7511.498
Bartlett's Test of Sphericity	df	903
	Sig.	.000

EMPIRICAL GROUPING OF IC STATEMENTS

The list of 65 IC statements was drawn from the literature. In the questionnaire, the variables were grouped, *a priori*, into four categories; human capital, structural capital, innovation capital, and customer capital. Except for the innovation capital, the other three classifications were commonly grouped together by researchers (for example Bontis (1998); Stewart (1997); Roos et al. (1997); Sveiby (1997). This *a priori* classification is particularly relevant to the emerging economies such as Malaysia. Chen et al., (2004), Draper (1998) as well as Van Buren (1999) also treat innovation capital as a component by itself rather than be part of structural capital as some researchers (Chatzkel, 2002; Roos et al., 1998; Edvinsson and Malone, 1997) classified it.

Inspection of the correlation matrix revealed the presence of many coefficients of 0.3 and above. Where the pattern matrix produces IC items with cross loadings (that is dual loadings), it is necessary to identify which of the 14 factors they belong to. This is done by examining the factor loadings in the rotated factor matrix. These loadings are correlations between the item and the other components. In general, the higher the loading, the more that variable belongs to that component. The factor solution is only considered stable if the items meet two criteria: significance of item loading and simplicity of factors structure (Hair et al., 2010). Both criteria were applied by deleting items that showed loadings of less than 0.30 on all factors (De Vaus, 2002) and items whose loadings were greater than 0.30 on two or more factors (cross loadings). As a result, 2 items (Q19 – 'individual employees receives ample recognition for value-adding performance' and Q24 – 'employees often attend specific training and competency courses'), both item of human capital, do not belong to any factors as its entire factor loadings are less than 0.3 and hence deleted. There are six items with cross loadings. Based on Hair et al.'s (2010) guidelines, six items (Q9, Q15, Q27, Q33, Q38 and Q52) were deleted.

Hair et al. (2010) also provide guidelines relating to the selection of significant factors. They suggest that a factor should have, at least, 2 variables. By virtue of Hair's (2010) guidelines, it was found that seven items (Q14, Q17, Q20, Q25, Q26, Q49 and Q65) exist by itself and hence they are omitted. As a result, the empirical groupings of IC factors are only seven and hence are named as IC1 to IC7.

RELIABILITY TEST ON THE FACTOR GROUPINGS

The decision to support retention of factors is taking into consideration the results of the internal consistency, measured by Cronbach alpha. Alpha value above 0.7 is thought to be sufficient to achieve the reliability for measurement, based on Nunally and Bernstein (1994). The results from reliability test saw seven items being deleted since their alpha value is less than 0.7 (See

Table II for the Reliability Test Results). These items were from IC6 (two items) and two items each from IC5 and IC7. Consequently, the final empirical groupings of IC factors are left with only four factors which consist of 43 IC statements.

Table II: Reliability Test Results

Factors	Cronbach's Alpha	No. of Items	Decision
IC1	0.743	12	Accept
IC2	0.876	11	Accept
IC3	0.722	11	Accept
IC4	0.701	9	Accept
IC5	0.657	2	Delete
IC6	0.580	3	Delete
IC7	0.584	2	Delete

RESULTS AND DISCUSSION OF THE FINDINGS

IC is a multi-disciplinary concept and applicable to many different business-related disciplines, thus, the understanding of its concept and component also varies (Huang et al., 2007). Previous researchers may not have agreed on the precise definition of IC; however, the common consensus is that it contains human capital, structural capital and customer capital (see Chong, 2008) which are the typical *a priori* groupings. In more recent development however, innovation capital , which is regarded as a part of structural capital in Skandia Navigator, is becoming a key factor for a company to keep its long-term competitive excellence particularly in the new economic era (Chen et al., 2004). It has been argued that the economic growth in developed countries has been driven by innovation rather than by investment (see Chen et al. 2004). Therefore, innovation is not subject to structural capital; in fact it is a pivotal link of IC. Innovation is unable to exist and stand by itself but with the conjoint effects of human capital and structural capital. Innovation is made up of the combination of competent individuals (employees), reasonable systems and regulations, culture and technique. In addition, innovation capital is a driving force to the growth of customer capital. In the present knowledge era with stiff competition, the product life-cycle is becoming shorter and an organization may be forced to be out of business if it is unable to develop new products to meet customers' demand (Chen et al. 2004). New emerging economies such as China, India, Vietnam, Malaysia and others may not be able to join the "big league" if the innovation capital is less emphasized.
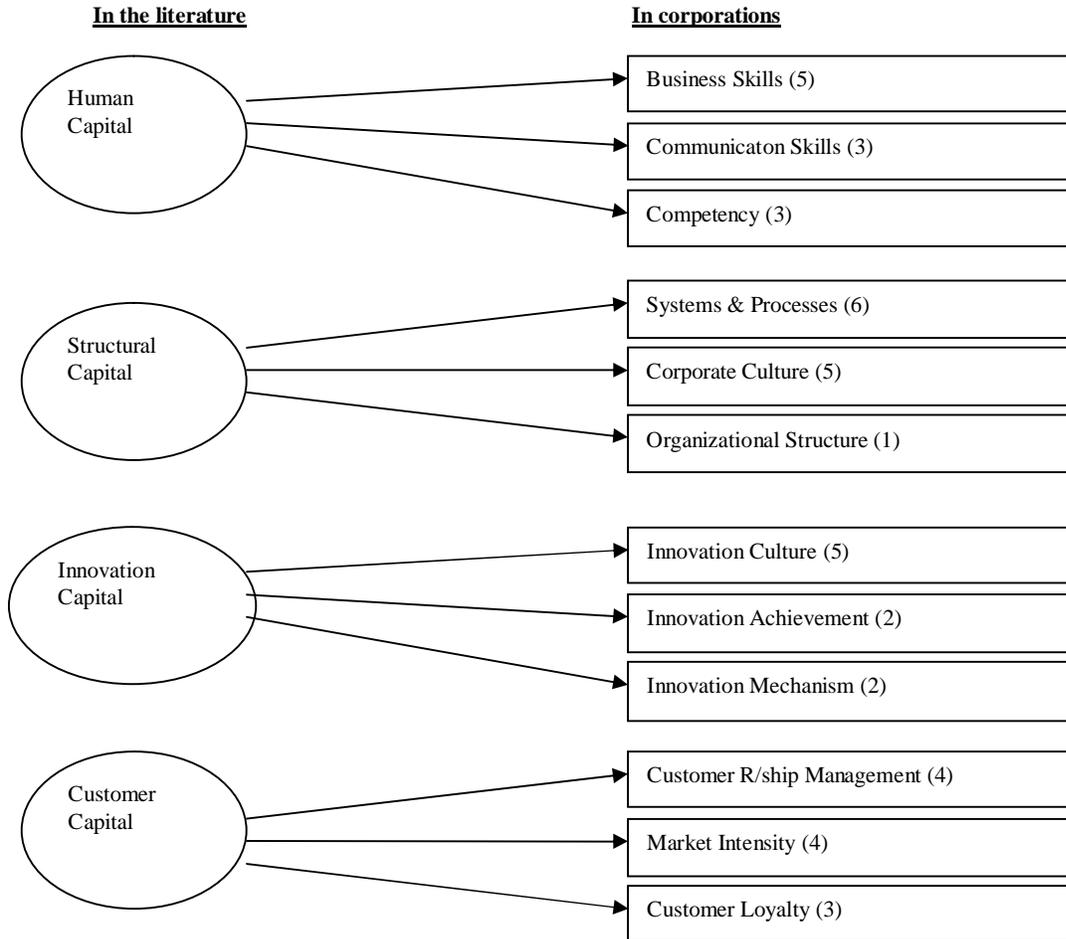
Basing from the above argument and literatures, the present study set *a priori* groupings of IC into four components; human capital, structural capital, innovation capital and customer capital. At the first glance, the four factors produced in the study appear to differ from the *a priori* grouping of variables. Further scrutiny, however, reveals that the four empirical groupings are in fact sub sets of the *a priori* groupings (see Figure 1). Though the IC statements were extracted from the literature, their grouping is found to be relatively consistent between theory and actual practice in corporations, that is, the pattern of IC practices across corporations reveals clustering of the existence or absence of IC statements. The same four components of IC are obtained, namely human capital, structural capital, innovation capital and customer capital and these categories are largely confirmed by factor analysis. The degree of consistency, based on very credible factor analysis results (see Table 5.4 above for the results of KMO and Barlett's test of sphericity), is a remarkable finding of this study and should make a contribution to IC management practices in corporations. These empirical groupings of the IC management practices have relevance for the taxonomy of IC measures. In addition, Scree plot graphically shows that there are four meaningful factors that are related in this study (see Figure 1).

Figure 1 : The results of scree plot
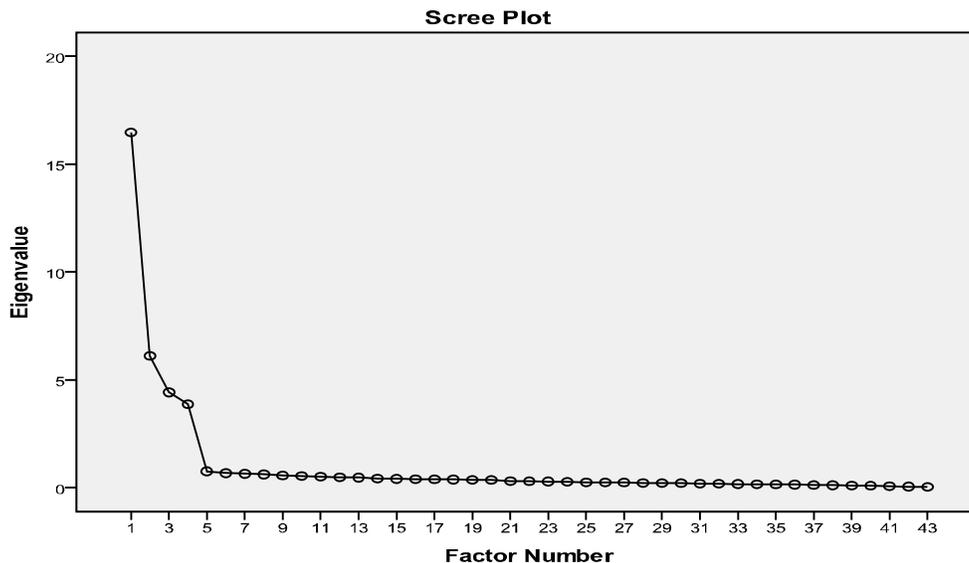
Hence, based on the empirical test that was conducted and the previous literatures, the study extracted four factors that contribute in a great way to the IC practices in corporations in Malaysia. The statements that cluster on the same components suggest that factor 1 (IC1) represents structural capital, factor 2 (IC2) represents customer capital, factor 3 (IC3) represents human capital and factor 4 (IC4) represents innovation capital. A comparison between the groupings of IC practices expected from the literature and those found empirically is shown in Figure 2.

Figure 2 : IC Practices - From A *Priori* Groupings to Empirical Groupings

In the literature   **In corporations**

Human Capital → Business Skills (5), Communicaton Skills (3), Competency (3)

Structural Capital → Systems & Processes (6), Corporate Culture (5), Organizational Structure (1)

Innovation Capital → Innovation Culture (5), Innovation Achievement (2), Innovation Mechanism (2)

Customer Capital → Customer R/ship Management (4), Market Intensity (4), Customer Loyalty (3)

Note: The number in parentheses denotes the number of IC statements

CONCLUSION AND LIMITATION

The challenge of dealing with IC is compounded by the interrelationship of its components. While it is clear that the four subdivisions or components of the a priori classification are not discrete; they overlap, are inter-connected and context-specific. This research contributes to the understanding of categories of IC, but its limitation should be acknowledged. First, it should be pointed out that the study has taken a broad perspective of IC and therefore has not addressed the detail in some more specialised literatures (social capital, for example) or individual company idiosyncrasies. Secondly, the generally acknowledged limitations of survey research and postal questionnaires are recognised. However, appropriate response bias tests were performed satisfactorily and every effort was made to ensure the most appropriate person in the organisation to respond to the questionnaire was identified. Lastly, the methods of sampling and statistical tests applied suggest that the responses are representative of the wider population from which they are taken, that is the Malaysian companies from various sectors. However, whether they are generally representative of categories of IC in other parts of the world where different cultures prevail is a further limitation.

Notwithstanding these limitations, this study makes contribution in that it helps clarify possible subsets of IC to which managers or researchers may refer when they manage, measure and report IC. This contributes to the literature on the classification of the IC items. A more sophisticated grouping of IC enables managers to better understand what constitute IC in their companies giving them greater opportunity to "manage or practise" of this intangible asset.

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