

VALUE ADDED INTELLECTUAL CO-EFFICIENT (VAICTM)

A POPULAR METHODOLOGY TO MEASURE INTELLECTUAL CAPITAL

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Abstract :

Purpose – The aim of this paper is to theoretically examine Value Added Intellectual coefficient (VAICTM) as a methodology to measure Intellectual Capital (IC).

Design/methodology/approach - The value added intellectual coefficient (VAICTM) approach developed by Ante Pulic to determine the IC performance is adduced as one of most prominent tools leveraged by researchers and practitioners. The article seeks to aver that the required data to calculate different constituents of IC have to be obtained from the audited and published annual reports of organisations especially those listed on the stock exchanges.

Findings – The VAICTM model provides a robust tool for assessing the efficient use of intellectual capital. The model can be used by management to assess their own organisations' performance.. Its advantages and disadvantages are listed and possible approach postulated.

Research limitations/implications – The paper analyses research articles from 1997 to 2013 to give a bird's eye-view of VAICTM. Empirical data are not provided here since it seeks to conceptually showcase only the power of the tool.

Practical implications – The application of the VAICTM model presented in this paper provides a basis for practical application for management. The literature survey from scholarly, peer-reviewed, international journals may serve as a useful input for business and industry alike to apply the methodology to address the factors affecting IC performance. This could be done to maximise their value creation. This paper provides information to the stakeholders to assess the value creation IC capabilities of organisations.

Originality/value – The paper is one of the first systematic studies to map the theoretical underpinning of the VAICTM model providing inputs from empirical sources to stakeholders interested in the efficacy of VAICTM.

Keywords- Intellectual Capital, Value Added Intellectual Coefficient, Human Capital Efficiency, Structural Capital Efficiency, Capital Efficiency Employed

Paper type - Literature Review

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I. INTRODUCTION

Intellectual Capital (IC) in the management and legal literature, intangibles in the accounting literature and knowledge assets used by economists refer essentially to the same thing and are used interchangeably [8]. In the last two decades, the importance of IC as a driver of national and international economic growth has steadily increased [120; 136,24]. Often regarded as a fourth factor of production in addition to land, labour and financial capital [54; 60,59], IC is said to epitomise the intangible value drivers of companies and play an increasing role in their corporate performance as well as having an impact on their financial achievements such as market valuation (Bozbura, 2004; Brennan,2001; Petty and Guthrie, 2000). IC constitutes all factors of production which are invisible on the traditional balance sheet but decisive of a company's long-term profitability (Choudhury, 2010).

Reference [19; 112;14] believe that IC is the set of intangible assets which increase not only firm performance but also enhance organizational value. IC is associated with the main source of individual, organizational as well as national competitiveness in today's knowledge economy [113]. Canadian Institute of Chartered Accountants' survey concludes that intellectual assets are crucial for firm's success [55]. Reference [2]al. estimate that investment in IC creates twice fruits as compared to the same amount of investment in physical assets. Reference [50;120;87] emphasised the importance of IC which they consider to be the main source of value creation in the new economy. The UK DTI (2007) also reported that, on average, UK companies create much more value addition (VA) than other European companies. In fact, UK companies' ability to compete in the global economy largely and increasingly depends on creating higher levels of VA through investments in IC [141]. Yet, traditional accounting statements may appear to inadequately reflect the true value created by intangibles in companies as well as to address the gap between market and book value in many of today's companies [24; 35].

II. KNOWLEDGE ECONOMY AND IC

A. Knowledge Economy

Reference [96] defined a knowledge economy as one in which the production, distribution and use of knowledge is the main driver of growth, wealth creation and employment across all industries – not only those industries classified as high-tech or knowledge intensive. As the knowledge economy grows and, possibly, becomes the dominant form of commerce, then companies will largely depend on the performance of their IC for value maintenance and growth [120; 119; 135]. Reference [24] noted that the ongoing growth of national and global “knowledge” economies has seen growing interest in processes focused on the development of IC. Added to this, the growth of the knowledge economy involves an accompanying increase in the importance of defining and measuring IC, if there is to be any effective management of that asset item [25]. Knowledge and IC are so intertwined that to meet the organisation's strategic needs, and due to the similarities, differences and complementariness, IC management (ICM) and Knowledge Management (KM) should be integrated to achieve added value [142].

B. IC : The roots of the company

Intellectual capital management means focusing all business activities towards the future – strengthening the company's abilities, while eliminating the weaknesses, and in such a way to continuously improve business operation. Leif Edvinsson has been using a wonderful image for the company that of a fruit tree (Figure 1).

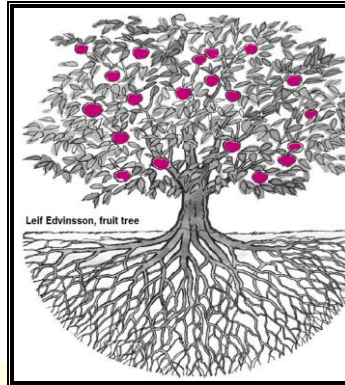


Figure 1: Leif Edvinsson Fruit tree to depict IC [69, p.14)

Managers consider the visible parts (e.g. trunk, branches and yield) the most important. Therefore, this aspect is carefully looked after and cultivated. The reports (financial statements, balance sheets etc.) focus mainly on this part and if the fruit tree is sold, the buyer will pay for what he sees. However, we should try to gain better insight into the capabilities of the fruit-tree to produce healthy and rich yield in the long run, look for additional information, not visible at first glance. These are hidden in the roots and vital veins placed inside the trunk and the branches. The taste of the fruit and the colour of its leaves only show how healthy the fruit tree is at the moment. But, we must look at what is happening with the roots, with the flow of vital juices, sap and substances hidden inside. This is what determines the value of the tree tomorrow. Rotten roots, which are degenerating and going to ruin under the ground, can easily destroy the fruit tree which presently looks so healthy and promising. That is the essence of intellectual capital management. Taking care of and fostering the invisible factors, which are vital for tomorrow's business success (the roots, vital veins flow... etc.). Not many companies do that. However, this should be day-to-day activity and effort, equal to the attention paid to physical and financial capital. Numerous employees are engaged in analysing this resource; the whole financial department – finance manager, head of accountancy department, book-keepers, warehouse manager etc. The question is – who takes care of intellectual capital, the roots of the company? [69].

C. Definitions and Attributes of IC

Definitions of IC are plentiful. However, researchers and IC practitioners do not seem to be united on one generally accepted definition [29] It may be a broad term that is also seen by some as being synonymous with intangible assets, invisible assets, knowledge assets, knowledge capital, information assets, human capital and the hidden value of companies, to name just a few [15;128]. Reference [22, p. 13] identifies IC as “market assets,” “human-centered assets,” “intellectual property assets,” and “infrastructure assets” that when combined with an organization's other productive resources will eventually lead to value creation. IC is usually classified into three main categories, based upon one of the most popular classifications by [120], who classifies IC as internal structure, external structure and employee competence. This classification of IC by [120], is often referred to and adopted by the IC literature [7;3;133;130], with slight modification of the terminology of the categories into internal capital, external capital and human capital [4]. The attributes of the three IC categories are derived from previous research studies [59; 73; 138; 140; 84]. First, employee competence (Human Capital) refers to individual's ability and capacity in a wide variety of situations to create both tangible and intangible assets. Second, internal capital refers to patents, concepts, models, computer and administrative systems organizational culture and spirit which are created by employees and are generally owned by the organisation. And third, external capital refers to relationships with customers and suppliers, including brand names, trademarks and the organisation's reputation or image [120;139]

D. IC Framework

There are a number of frameworks designed to better classify and study the elements of IC. Some of the more popular frameworks are the balance scorecard by [74], the classifications of resources by [62], the intangible assets monitor by [120], the Skandia Value Scheme by [50] and the three categories of “Knowledge” by the Danish Confederation of Trade Unions [45]. These frameworks have been developed independently and at different times over the past decade. Many of them are conceptually similar. However, the major distinctions are the basic assumptions and classifications that lead to different levels of aggregation of the IC elements

IC is often represented as an hierarchical structure like that in Figure 2 [50;111;11;12; 2001; 13]. Reference [78] says an approach which has potential for practical application in the analyses of information from the financial reports of a business is the VAICTM developed by [100;101;102;107]. According to [101;102] VAICTM indicates corporate value creation efficiency (corporate intellectual ability). Therefore, the higher the value of VAICTM the better that management is utilising the company’s value creation potential. This model takes into consideration a number of the features and elements precisely and concisely identified in Figure 2.

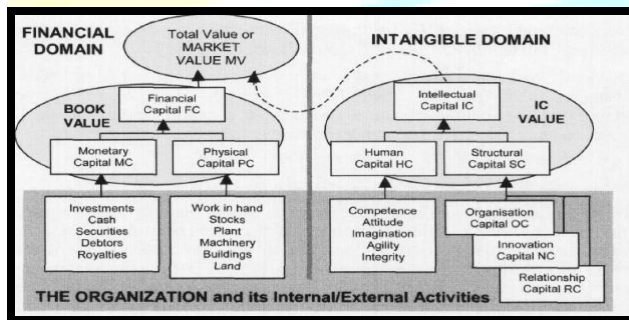


Figure 2: Typical IC framework as given in literature (Adapted from [92], p 252)

The figure has been divided between financial and intangible domains which are precisely relevant to the VAIC framework this article exclusively focuses on. These are also relabelled as book Value (BV) and IC value (ICV) and leads to an equation $MV = BV + IC$ [50; 70]). This means Market Value (MV) equal Book Value (BV) and Intellectual capital (IC) of an organisation.

E. Measurement of IC

If one cannot measure, one cannot manage [85]. IC researchers opine that identifying, valuing, measuring IC is increasingly important for knowledge-intensive companies [10; 49;112;118]. Measuring, documenting and keeping records represent an integral part of any business activity. Without a measuring system business lacks orientation in corporate, national and global terms. Companies look for methods to create as much value with the given intellectual and financial capital [101,102], to achieve competitiveness. The competitive success of companies is based less on physical and financial resources, and more on management of intellectual capital [128]. However, traditional financial systems do not fully reflect whether a company is successful [103].

There has been an attempt by [121] to categorise (Figure 3) various measurement methods into four approaches [86]. Several approaches to measuring intangibles were developed by academics and practitioners, including [122]. Hence, there is no universally accepted IC measurement method among the 42 methods identified in the relevant literature [5].

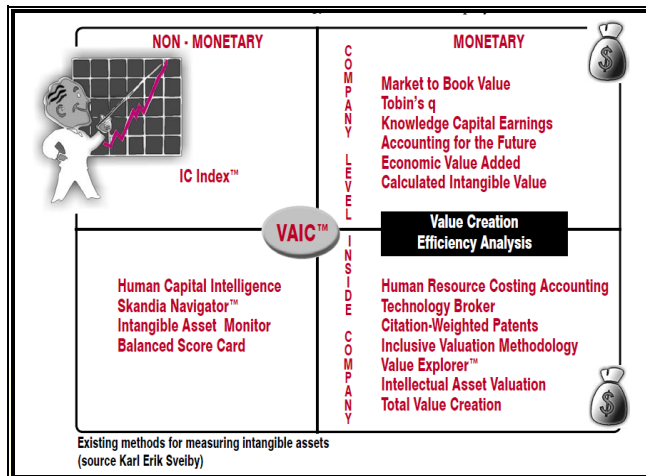


Figure 3: Methods to measure IC/Intangibles Assets [69, p.39]

But the four-pronged categorisation did not include the one that is known as the Austrian approach or VAICTM methodology. VAICTM appears to be falling outside the four approaches. For the purposes of the following discussion, VAICTM is the fifth approach that is reviewed and discussed below [29]. Let us see them one by one:

- (a) Market capitalisation approach, which defines the value of a company's IC as the difference between the company's market capitalisation and its book value. It includes such tools as: Tobin's q [118;11]; market-to-book value [118].
- (b) Direct intellectual capital approach, which focuses on the value of specific, individual intangible assets. It includes such tools as: citation-weighted patents [11]; the value explorer [5].
- (c) Scorecard approach generates indicators and indices for identified intangible assets. It includes such tools as: balanced scorecard [74;75]; Skandia navigator [50; 111; 120]; value chain scoreboard [80;43;91].
- (d) Economic value-added approach; was intended to be a comprehensive measure for studying the performance of the whole business; economic value added (EVATM) [15]. If we accept the assumption that a company's increase in EVATM only results from the effective management of the company's knowledge assets, and nothing else, then EVATM might seem a reasonable proxy for measuring IC. This may be a challenging assumption to accept because tangible assets also contribute to the well-being of a company as indicated by the resource-based view [9]. IC alone may not function without the support of tangible assets such as stock, machinery and financial capital
- (e) Austrian Approach (Return on Assets approach) which defines a company's IC as the excess return on its tangible assets. It includes such measures as: the Austrian value-added intellectual coefficient Approach [99]; knowledge capital earnings [80]).

The authors are of the view that a summary of these approaches [121;29] manifests the preponderance of these models in vogue and the related need of a standard to aid value reporting [47] and one reporting [48;66] that the world is transitioning towards from strategy, operations, people [17;] governance [23] and sustainability [57] perspectives. This must be done without fail for building public trust [44] and winning investors over [83] so that contemporary organisations can progress from good to great [39] that are built to last [40]

Commonly used models include [56]:

- (a) The Balanced Scorecard [75].
- (b) Skandia's IC Navigator [50].
- (c) Sveiby's The Intangible Asset Monitor [120]
- (d) Intellectual Capital Services' IC-Index™ [112]
- (e) Value added intellectual coefficient, VAIC [100].

These models focus on the impact of IC on shareholders' goal. One of the widely accepted and recognized measurement methods in the world is the Value Creation Efficiency Analysis" (powered by VAIC™- www.vaic-on.net), which was invented (shown in figure 4) by Dr. Ante Pulic, a Croatian economist and a recognized global IC expert. Reference [101;102;103;106;108] was one of the first scholars in the field of IC research to focus explicitly on the connection between IC and economic performance and the first to base his analyses solely on company balance sheet figures, i.e. financial indicators.

Another factor that sets Pulic apart from the rest of the field is that he straightforwardly applies established IC concepts in the realm of company economics [117]. Pulic is inspired by the concept of knowledge understood as capacity to act, where act is intended in both a practical (i.e. ability to drive a car) and intellectual sense (i.e. ability to analyze a text). This definition of "knowledge" is adopted by many authors, including [120], an author who Pulic refers to [65].

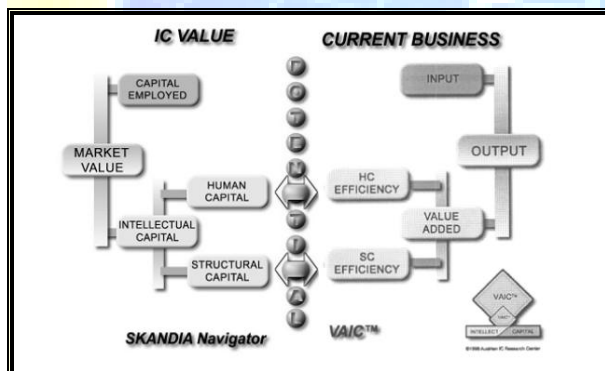


Figure 4: Conceptual Framework of VAIC™ Method (Source: [101;102] 2000, p.714)

Prior research on VAIC™ could be gauged from the overview of the 28 most important VAIC model-based studies performed in the previous two decades. They are presented in Appendix 1.

The value creator (i.e. the resources) is in the denominator for assessing the value creation per invested monetary unit in intellectual capital [107]. There is no sign of equation between the two sides.

This means that MV is not equal to output. The left side represents the accumulated result of previous business including built in expectations. The right side is the result of current business performance. A comparison of both sides provides information as to whether the current business results meet strategic goals and have a value creation or value destruction tendency. The implementation of the VAIC™ software provides control of value creation efficiency, which enables managers to leverage their company's potential and maximize its value in the marketplace [101;102, p. 714]. This model assumes that both physical and IC are used in production. Both physical and IC are investment items and are treated as functions of value creation.

The results of applied IC are used as a proxy measure to measure firm performance. In other words, the amount of VA and the efficiency in utilizing IC can be quantitatively measured, using the formulae given in Appendix 2 [71]. The basic assumption is that IC alone cannot operate independently without the support of, for example, financial and physical capital [103;115;128]. Simply stated, corporate intellectual ability, as measured by the VAIC™ coefficient, is an indicator of the overall efficiency or ability of a company to use the total resources of IC and physical capital in creating value for the company. A higher VAIC™ coefficient shows that more value is created with the same amount of company resources [107].

The steps involved in VAIC calculation is given in Appendix 2. The relationship between the components shown in Appendix 2 and their relevant role in evaluating the contribution to the growth in capital is highlighted in Figure 5.

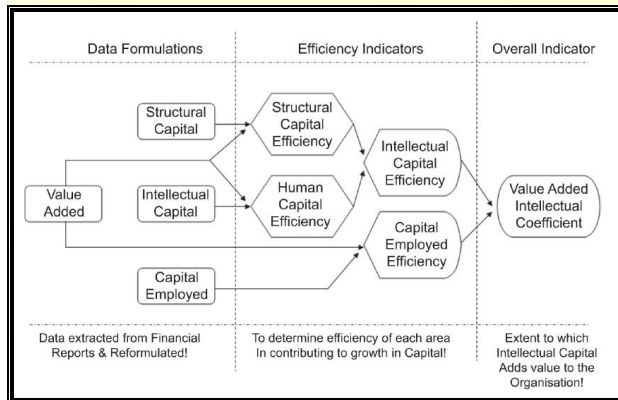


Figure 5. Overview of VAIC™ Model (Source: Laing et al., 2010)

F. VAIC™ in practice

VAIC™ method is still in the early stages of its application in management accounting practices and needs to be empirically validated with a large number of companies in a decision-making context [141]. Studies empirically analyse the role of VA as an indicator of IC and also empirically validate the method of VAIC™ to assess the impact of IC under the following triptych: economic performance (Model 1), financial performance (Model 2), and stock market performance (Model 3). The sample of listed companies and their original data sample and analysed subject to the following selection criteria:

- Following [52; 116], companies with negative book value of equity, or companies with negative HC or SC values are excluded from the sample.
- Companies for which some data are missing (unavailability of annual reports in consequence of merger, repurchase, suspension, delisting) are also excluded.
- Finally, in order to control for the presence of extreme observations or “outliers” in the sample, companies with selected variables situated at the extremities of every distribution are eliminated [141]

The model was argued by [5] to be a better tool for analysing intellectual capital because the data is publicly available in Annual Reports of listed companies.. Unlike other approaches to measuring intellectual capital criticised for the extent of subjectivity associated with their underlying indicators this model derives the data from a readily identifiable source [133]. The VAIC™ model involves a simplified process [114] with the data used in the calculations being derived from audited information [52], which when combined provide a far more objective and verifiable data set [100]. The VAIC™ model requires the calculation of a number of variables and coefficients in order to arrive at the final indicator [107; 77]. The process was explained initially by Pulic (2004) restated by [77] and then further advanced by [93].

1) *Independent Variables:*

These include four independent variables (Pulic 2000a, b):

- (1) CEE, indicator of value added of Capital Efficiency Employed.
- (2) HCE, indicator of value added of Human Capital efficiency.
- (3) SCE, indicator of value added of Structural Capital Efficiency.
- (4) VAIC, indicator of Value added Intellectual Coefficient which is the composite sum of the three separate indicators mentioned above.

The efficiency of intellectual capital can be established precisely on all the above-mentioned levels [69].

However, later researchers introduced additional independent variables like Research & Development (R&D), Intellectual Property Efficiency (IPE), Corporate Social Responsibility (CSR) and Corporate Governance (CG) [33] not foresaw by Pulic in his VAIC™ methodology. This means that these factors also definitely influence the business performance of an organisation-a green field for future IC researchers.

2) *Dependent and control variables:*

Studies apply different ones. Yet, this paper presents a model in Table I.

Table I: Dependent and control Variables [30]

Dependent variables	Measuring construct	Measurement/computation
MB	Market valuation	The ratio of market capitalisation to book value of common stocks
ROA	Profitability	The ratio of operating income to book value of total assets
ATO	Productivity	The ratio of total revenue to book value of total assets
ROE	Return on equity	The ratio of net income to total shareholders' equity
Note: Return on equity may also be viewed as a profitability measure which accounts for the profits that are attributable directly to shareholders		
Control variable	Meaning	Measurement/computation
FSIZE	Firm size	Natural log of market capitalisation
DEBT	Firm leverage	Ratio of total debt to book value of total assets

3) *An IC model [33]:*

In order to respond to a research objective, researchers propose to empirically test the hypotheses use the following four equations relating to:

- Operating Performance: Gross Profit Margin
- Financial Performance (ROA and ROE)
- the stock market Performance (Earnings Per share)

Results are evaluated through descriptive statistics, correlation analysis, linear multiple regression vis-à-vis the aforesaid four models.

All the data needed for the computation of VAIC may be found in a company's audited financial reports

III. INTERPRETING VAICTM RATIOS

Financial ratios have become an accepted technique for evaluating financial performance of firms [41; 126]. A substantial body of research has emerged examining the efficacy and relevance of the various financial accounting ratios [125;126]. In an attempt to provide a similar set of guidelines for the

interpretation of the ratios derived from the application of the VAICTM model a number of principles and propositions are formulated (Table II). These propositions are intended to act as guidelines.

Table II.. Efficiency Description of efficiency Levels [109; p.13]

EFFICIENCY	DESCRIPTION OF EFFICIENCY LEVELS
2.50	(Or more) is a sign of very successful business performance. This result is mainly received by companies from hi-tech businesses and other conjunctive sectors. This is the lowest level of efficiency that can greatly ensure safe business and workplaces.
2.00	This is a minimum for efficient business performance in most sectors (enough value is being created in order to cover for employees' salaries, amortisation, bank interests, taxes, dividends to shareholders). Enough is left for intensive investment in development
1.75	Business is in relatively good shape but does not guarantee long term safety. All liabilities are liquidated. However, there is not enough for business investments and therefore future business success is uncertain
1.25	Worrying - survival of a company is endangered. Not enough value is created to ensure business development. Some inputs are not covered, as well as some liabilities towards stakeholders.
1.00	Much worrying, on the edge of survival. Output is insufficient for covering all inputs necessary for operational business . With this efficiency only labour expenses are covered. In case that efficiency is below 1, then not enough value is created to cover obligations towards employees.

The first principle is that a positive result is better than a negative result. This principle is based on the proposition that a positive result can be interpreted as being satisfactory. This would apply to both the Intellectual Capital Efficiency (ICE) and VAIC. In support of this principle, reference is made to the accounting [63] finance [20]) and economic (Gans et al., 2009) literature, which posits that when

evaluating a choice between two alternative courses of action (e.g. a special order applying differential analysis) a positive contribution is always considered favourable no matter how small.

The second principle is that in order to add value to the business, a ratio must be greater than 1:1. The proposition is based on the notion that the ratio must be greater than 1:1 in order to add value because at 1:1 the firm is simply at break-even point. Support for this principle and proposition comes from the long held assumption in the accounting [63], economics [53] and finance [20] literature regarding break-even or marginal cost. The VAICTM model is examining the relationship between the resources being used as indicated by Value Added (VA), Human capital (HC), Structural Capital (SC), Capital Efficiency (CE), and the level of value creation efficiency as indicated by Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), Capital Efficiency Employed (CEE) and Value Added Intellectual Coefficient (VAIC). That is, the value creator (i.e. the resources) is in the denominator for assessing the value creation per invested monetary unit in intellectual capital [107, p. 67].

The third principle is that ratios which are higher than the previous year are an indicator of an efficient use of the asset. The proposition is that trends occurring over longer periods of time are better indicators of performance. The accounting, economic and finance literature support the argument that trends are a valuable indicator of the performance of a company and can also be useful to highlight matters that may require further investigation. According to [101;102;107] VAICTM indicates corporate value creation efficiency (corporate intellectual ability) and therefore the higher the value of VAICTM the better that management is utilising the company's value creation potential [78].

Corporate intellectual ability (VAICTM) measures the overall intellectual ability of a company based on the stakeholder view. These are two different measurement systems that capture different aspects of corporate performance, with VAICTM focusing on the amount of value added (VA) created for stakeholders. The lack of association between VAICTM and productivity might perhaps be explained by these two different concepts of measurement used in the research, which was noted by some IC researchers as a potential source of inconsistency [35;52;89]. However, the answer may actually reside in the fact that the companies surveyed by researchers are more dependent on other strategic assets than on IC to enhance not just productivity but also other financial performance measures.

IV. ADVANTAGES OF VAICTM MODEL

The justification for adopting the VAICTM methodology is summarised [29;35;52;54;89;128;132] below:

- It produces quantifiable, objective and quantitative measurements without the requirement of any subjective grading and awarding of scores or scales. It aids further computation and statistical analysis of a large sample size that may run into thousands of data items collected over a period of time.
- It provides indicators that are relevant, useful and informative to all stakeholders, but not just shareholders, and with which they may also identify and compare the key components of IC in order to assess company performance.
- It uses financially oriented measures so that any indicators, relations or ratios computed may be used for comparison along with traditional financial indicators commonly found in business, which are based on monetarily derived units or measures.
- It uses relatively simple and straightforward procedures in the computation of the necessary indexes and coefficients, which may be simple to understand, especially for management and business people who are accustomed to traditional accounting information.
- It produces a form of standardised measurement. The indicators or indexes computed may be consistently applied to and used for comparison across divisional, company, industry and national level. In other words, benchmarking may therefore be possible.

- It makes use of public or published financial data so that it may enhance the reliability of the measurement, and improve data availability.
- It provides an IC measurement system that is consistent with the stakeholder-view and resource-based view by using a value added approach.
- It treats human capital or employees as the most important source of IC, which is consistent with all major IC definitions found in the literature.
- It has a track record in deployment and application in IC research of listed companies in many countries, to which researchers may refer in reviewing published papers.
- Accountants can also adopt the VAICTM method as a potential measure to report on IC. In addition, investors can use the VAICTM method to help them select companies for their portfolios that have a track record for continuous creation of VA in an efficient and sustainable way.
- Finally, governments can use the VAICTM method to assess different companies and different sectors in the economy in terms of VA of their IC. This may result in better economic policies and an improvement in the management of the new economy. In fact, findings of [141] will support the UK DTI in their decision to compile and disclose the data on VA in the Value Added Scoreboard as the results are coherent with the OECD's new approach on the role of IC in value creation.

V. LIMITATIONS OF VAIC METHODOLOGY

Firstly, modifications were made to the VAICTM methods by introducing (a) R&D expenditure [31;93;35] as proxy for innovation capacity [18]; (b) advertising [35] and marketing costs [93] to improve customer or relational capital efficiency (c) process capital efficiency [93] and (d) Technology Capital Efficiency [32] These critical elements are for future researchers to study.

Secondly, [88] suggest that the failure of the VAICTM methodology to provide consistent results raises criticism on its effectiveness raising doubts on its reliability.

Thirdly, [38] criticized the VAICTM approach for its inability to measure IC in companies with negative book value or negative operating profit. Reference [117] argues that the VAIC approach involves an unsettled conception of IC capitalisation via its components of human and structural capital.

Fourthly, it may not sufficiently identify the synergistic effects for value creation from interactions of different forms of capital [5]. The VAICTM methodology depicts clearly how much each component (among human capital, structural capital, and capital employed) contributes to value-added. However, there may be interactions among the components of IC [14] and so it may not be possible to calculate exactly the contribution to value creation from each resource. For example, advances in IT or computer automation (which is an element of structural capital) could sometimes enhance labor productivity (which might then be interpreted as an increase in human capital efficiency). Therefore one may not be able to isolate the weighting of each factor in facilitating an increase in HCE, SCE, or CEE

Fifthly, in the context of the VAICTM methodology, both physical and financial capital of the company [16;102;104;105] are included. Further research should identify the specific type of asset playing a leading role in these companies. Policy makers and business leaders concerns, uncovering the underlying reasons for its heavy reliance on physical capital and the progress being made in the enhancement of structural capital. It is necessary to understand whether the reliance on physical capital is merely a response to the capital market's expectation, or a true reflection of business needs. [30].

Sixthly and lastly, empirical finding dictates that the three components of VAICTM may be a better tool than the aggregated measure of VAICTM for explaining or predicting the financial performance of companies. This is corroborated by the study conducted by [35]. Regression models involving the three

VAICTM components had a much higher explanatory power than models using VAICTM as an aggregate IC measurement [30] and [35] suggest that stakeholders may have emphasized various aspects or components of IC differently [35;52].

VI. SUMMARY

VAICTM complements the existing measurement models and for this reason can be included, as innovative indicator of ICE, in the multicriterial dashboards such as the Balanced Scorecard (BSC), the Skandia Navigator and the Intangible Asset Monitor. When correctly understood as a measure of efficiency of HC, the VAICTM can be used in a complementary and integrating way with respect to other methodologies [65]. The inherent limitation of many micro-level models was alleviated by the introduction of the VAICTM model in the IC literature. Since then, the VAICTM model has been used extensively to compare the IC performance in different settings [93]. VAICTM involves a simplified process [114] with the data derived from audited information [52], which when combined provide a far more objective and verifiable data set [100;101;002]. The simplicity, subjectivity, reliability and comparability of VAICTM make it an ideal measure as original contribution to the existing IC literature [71]. VAICTM methodology offers a more standardised and objective measurement base compared with other models of IC measurement which require customization to fit characteristics of individual companies [52]. Reference [103,104.105] has discussed that among several methods to calculate and report IC, the VAICTM is an accepted, comprehensive and standardized model to evaluate and compare the IC performance of the firms to compare them both internally and externally [90]

There is a growing body of research which uses VAICTM as a performance measure for the comparison of companies and as a predictor for company performance [29;30;72;73; 6; 123; 97; 116;137;54;35;89;52).

The findings of [114] allow managers to apply the VAICTM method to better harness and manage their IC and to benchmark against the best competitors in their sectors. A study conduct through the annual reports of 20 financial institutions, which were listed in the finance sector of Bursa Malaysia. for the period 1999 to 2007 proved that each component of VAICTM had the correlation between the three resources and profitability. This was consistent with the result of [52; 116]. This is an encouraging result as it implies that the management should be able to realise the full potential of an organization's IC to maximise the stakeholder's benefit. Studies provide strong empirical evidence that IC is an asset that can be utilised as a vehicle for firm's improvement particularly the profit [124]. Reference [101;102;103] has found a high correlation between market value and VAICTM

Companies look for methods to create as much value with the given intellectual and financial capital [101;102,103], to achieve competitiveness. The competitive success of companies is based less on physical and financial resources, and more on management of intellectual capital [128]. However, traditional financial systems do not fully reflect whether a company is successful [104;105;106]. The focus of Pulic is not to measure the value of IC, as in Skandia Navigator, but the value created by IC, or by human resources, as he intends the main concept of IC. This is a relevant result because it constitutes a clear answer toward the theses aimed to support the impossibility of measuring the created value in a context of knowledge organization. It offers an objective and financially-based measure of IC efficiency as it makes use of audited financial data that is readily accessible [29].

The quantitative data obtained could be complemented by a qualitative study that would take account of the qualitative aspects of IC and corporate performance. This mixed method research strategy [42] would significantly enhance not just the scope, but also the level of reliability and validity of the investigation.

VII. CONCLUSION

VAIC™ method is merely a step towards the creation of an accounting system for a new economic era [101;102]. The traditional accounting model, which is conceived for companies operating in an industrial economy, remains focused on physical and financial assets and ignores most IC assets. Interestingly, even the International Accounting Standards/International Financial Reporting Standards (IAS/IFRS)[2], including the ones recently modified by the International Accounting Standards Board, did not contribute to redefining many of the concepts, principles and valuation methods of IC assets [114]. The relative lack of IC accounting recognition and its growing role in the value creation process, imply that financial statements have lost some of their value for shareholders and many other users [26;8;95;96]. The omission of IC measurement in traditional accounting statements may appear to be an obvious gap that needs to be filled. However, it is likely to be a long-term endeavour involving the participation of the accounting and legal professions, academics, business communities and legislators to reach a consensus over the accounting and measuring of IC. In the meantime, making intellectual capital disclosure a mandatory requirement for listed companies may be one way forward. This would allow companies to include IC statements as a supplementary report to their financial and accounting reports [30].

The authors opine that the [66] can anchor this process in the future where value reporting and one reporting (financial and sustainability) must be the sine qua non of the Business World in which IC would catalyse strategy, operations, governance and sustainability for a seamless value creation calling from the IC perspectives of both competitive strategy and blue ocean strategy. Such a global approach would enable and empower the thought leaders, regulators, accounting world, business leaders and governments to come on to a common platform to streamline IC management, measurement and reporting (ICMMR) to unleash the power of IC for a golden morrow of humanity. This is indispensable and imperative in a world where market capitalisation of organisations exceed the GDP of very many countries. Hegel's idea of synthesis or Kant's transcendental dialectic is the need of the hour. "And/both" thinking involving reconciliation of opposites seems like an emergent contemporary theme (having spiritual and philosophical roots) that only "critical-emancipatory" mode (to promote enhancement in consciousness that creates action to achieve a desired state of being) can accommodate [113].

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Note :VAICTM is the trademark of Ante Pulic of the Austrian Intellectual Capital Research Centre. Further details can be found at: www.vaic-on.net. VAICTM is an intellectual capital measurement methodology dealt with in this paper.