

# Methods for Measuring Intangible Assets

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The research into measuring the Intangible Assets or the Intellectual Capital of companies has produced a plethora of proposed methods and theories over the last few years. In this latest update of the Paper I provide a brief overview of approaches that I have come across with links to more information. The list is an ever-expanding community effort, so if you are aware of a method that I have missed, please notify me!

## Measure for Value Creation - not for Control or PR!

Rarely is the question asked, why measure intangibles? The answer is not self-evident. Intangibles are difficult and expensive to measure and the results are so uncertain, so the reason had better be a good one.

### The Fundamental dilemma

The main problem with measurement systems is that **it is not possible to measure social phenomena with anything close to scientific accuracy**. All measurement systems, including traditional accounting, have to rely on proxies, such as dollars, euros, and indicators that are far removed from the actual event or action that caused the phenomenon. This creates a basic inconsistency between managers' expectations, the promises made by the method developers and what the systems can actually achieve and makes all these systems very fragile and open to manipulation. Therefore, the first question for any one embarking on a measurement initiative must be: **What is the purpose of our measuring initiative?**

### Management Control purpose Ë Don!

The most common reason for measuring and reporting is to improve internal performance, i.e. **management control**. It is so common that the purpose is generally not even stated explicitly. The idea is founded on one of the most quoted management slogans; **you can only manage what you measure**. It is a simple slogan and unfortunately completely erroneous.

The trouble is that people don't like being measured upon. I don't. Do you? Or are the measuring systems only for measuring the others? We find all kinds of ways to evade and obstruct the systems. Then add an individual reward system tied to the measurement system and we have an explosive concoction. The temptations to manipulate the system become overwhelming! And, who controls the controller? Consider Shell Oil's management control failure:

Oil and gas reserves are very important of an oil company like Shell. The trouble is that Shell in the late 1990s made oil reserves a target with a reward tied to it for the managers if they succeeded in increasing them. Guess what, the Shell oil reserves displayed a healthy development since 1998. Everything seemed to go well, until the end of 2003. In January 2004 a deeply embarrassed Shell board had to confess that they had overstated the reserves by 4,4 billion oil equivalents, or 23% of the total reserves and the abuse had been going on for at least five years. The managers were fired of course, but the problem is in the system.

Oil and gas reserves cannot be measured exactly since estimation of reserves involves subjective judgment. If this can happen with physical resources, what do you suspect can happen with valuing intangible assets? Is your company immune? If this could happen in Shell, what do you imagine might go on in your own company? The traditional accounting system that is heavily regulated by governing bodies and audit and with heavy penalties imposed on offenders suffers from regular manipulation. Imagine the abuse an intangibles measurement system is open to; there is no standard, no audit and it is voluntary only.

## PR purpose Æ Watch out!

Why are the oil and gas companies pioneers in reporting their environmental impact? Why is there a surge in triple-bottom line reporting? The majority of the companies that have been the pioneers in **reporting** intangibles externally, have done so for one major reason; **PR**. The PR reason seems to hold true for most of the stakeholder reporting, triple-bottom line reporting and also the IC scorecards pioneered by companies such as Skandia and Celemi.

We need not suspect more sinister 'Enron' motives, just because the purpose is PR, but we, as readers, must be prepared to ask the **why**, when we judge the validity of the numbers reported.

It seems that Skandia's share price, for a while at least, benefited from the company being one of the pioneers in IC reporting according to presentations made by Skandia managers during the boom years in 1999 - 2000. However, those who bought Skandia shares based on their IC supplements back then were looking at losses amounting to 90% in 2002! So unless shareholders are prepared to ask the **why**, the costs for intangibles reporting may come out of their own pockets in the end.

## Learning Motive Æ Why so few?

So entrenched are the traditional measuring paradigms that executives and researchers have not even started to explore the most interesting reason for measuring intangibles; the **learning motive**. Measuring can be used to **uncover costs** or to **explore value creation opportunities** otherwise hidden in the traditional accounts. What is the trend of cost of staff turnover? What is the value of the learning that takes place when staff interact with customers? What is the value creation opportunity lost in having inadequate processes?

The learning motive promises the highest long-term benefits. First; the learning motive offers the best way around the manipulation issue. If the purpose is learning, not control or reward, the employees and managers can relax. Second, a learning purpose allows more creativity in the design of metrics, a more process-oriented bottom-up approach and less of top-down commands.

[Read more about why measuring for learning is a better alternative than measuring for control.](#)

But where does the fine line go? When is a system control and when is it learning? When does learning become control? Admittedly, this is not easy, but here are a few pointers. First; the process of developing the metrics is different. The metrics are produced bottom-up, with heavy involvement from all relevant groups. No trumpets from the accountants' ivory tower! Secondly, the indicators are used by the same people who produce them and they use them to improve their own processes, not somebody else's. Third, the indicators are reported openly to everyone. Fourth; when the indicators suggest a difference between say, a high-performing and a low-performing unit, the units in question are required to meet and the difference becomes the starting point of a dialogue to discover hidden value; are we measuring the same thing? What is it that we can do better? Fifth; the indicators are never the basis of a reward system. If rewards are to be distributed at all they should be group-based and allocated to those, who make the highest value improvement, i.e. possibly the previous low-performing unit!

# The Four Approaches for Measuring Intangibles

The suggested measuring approaches for intangibles fall into at least four categories of measurement approaches. The categories are an extension of the classifications suggested by Luthy (1998) and Williams (2000).

- **Direct Intellectual Capital methods (DIC).** Estimate the \$-value of intangible assets by identifying its various components. Once these components are identified, they can be directly evaluated, either individually or as an aggregated coefficient.
- **Market Capitalization Methods (MCM).** Calculate the difference between a company's market capitalization and its stockholders' equity as the value of its intellectual capital or intangible assets.
- **Return on Assets methods (ROA).** Average pre-tax earnings of a company for a period of time are divided by the average tangible assets of the company. The result is a company ROA that is then compared with its industry average. The difference is multiplied by the company's average tangible assets to calculate an average annual earning from the Intangibles. Dividing the above-average earnings by the company's average cost of capital or an interest rate, one can derive an estimate of the value of its intangible assets or intellectual capital.
- **Scorecard Methods (SC).** The various components of intangible assets or intellectual capital are identified and indicators and indices are generated and reported in scorecards or as graphs. SC methods are similar to DIS methods, expect that no estimate is made of the \$-value of the Intangible assets. A composite index may or may not be produced.

The methods offer different advantages. The methods offering \$-valuations, such as ROA and MCM methods are useful in merger & acquisition situations and for stock market valuations. They can also be used for comparisons between companies within the same industry and they are good for illustrating the financial value of Intangible assets, a feature, which tends to get the attention of the CEOs. Finally, because they build on long established accounting rules they are easily communicated in the accounting profession. Their disadvantages are that by translating everything into money terms they can be superficial. The ROA methods are very sensitive to interest rate and discounting rate assumptions and the methods that measure only on the organisation level are of limited use for management purposes below board level. Several of them are of no use for non-profit organisations, internal departments and public sector organisations; this is particularly true of the MCM methods.

The advantages of the DIS and SC methods are that they can create a more comprehensive picture of an organisations health than financial metrics and that they can be easily applied at any level of an organisation. They measure closer to an event and reporting can therefore be faster and more accurate than pure financial measures. Since they do not need to measure in financial terms they are very useful for non-profit organisations, internal departments and public sector organisations and for environmental and social purposes. Their disadvantages are that the indicators are contextual and have to be customised for each organisation and each purpose, which makes comparisons very difficult. The methods are also new and not easily accepted by societies and managers who are used to see everything from a pure financial perspective. The comprehensive approaches can generate oceans of data, which are hard to analyse and to communicate.

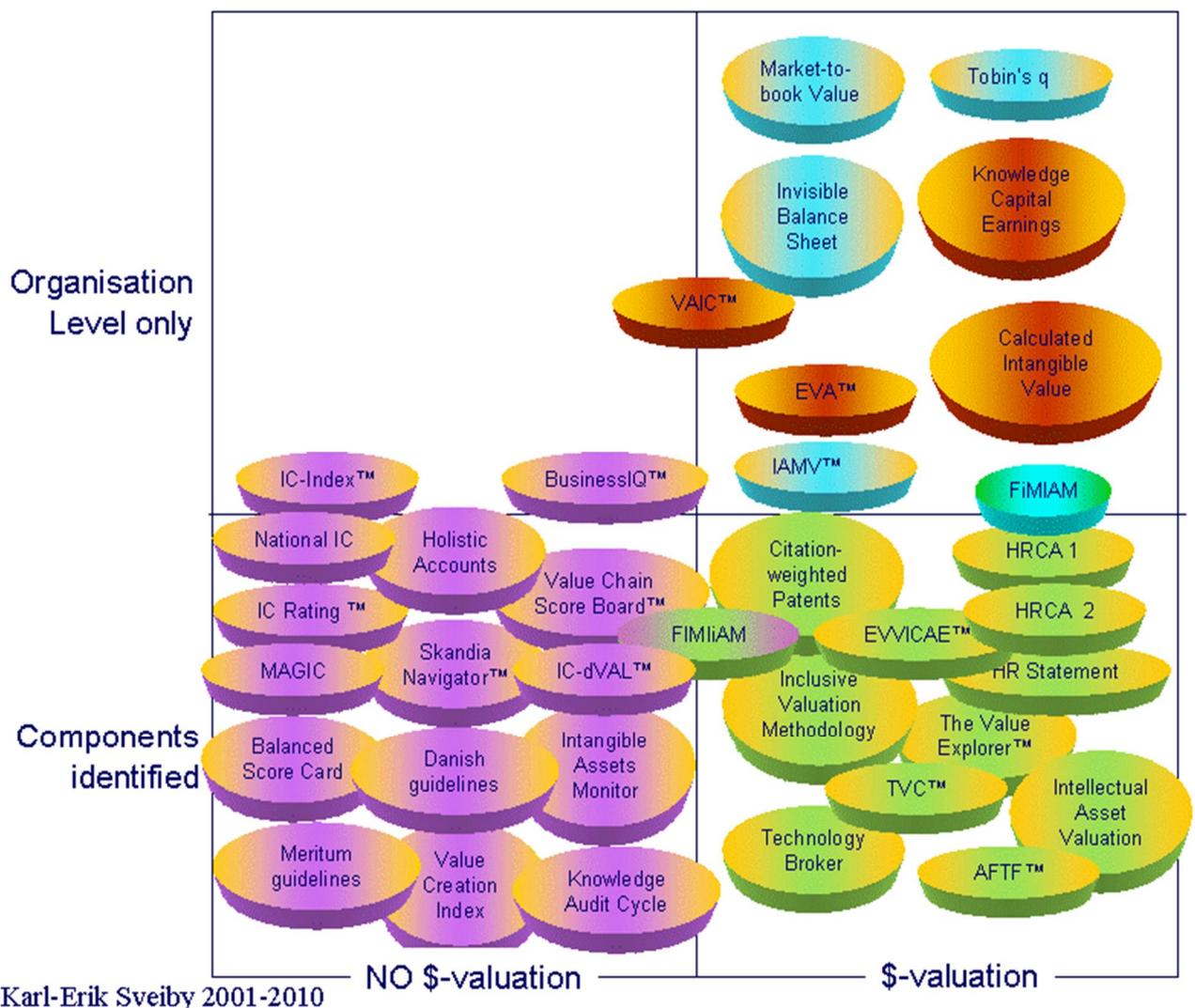
The intangibles measuring approaches best suited for the measuring motives are:

1. Monitor Performance (Control). Best are Baldrige award-type of performance indicators and KPIs.

- 2.Acquire/Sell Business (Valuation). Best are Industry rules-of-thumb (\$ per click, \$ per client, brand valuation).
- 3.Report to Stakeholders (Justification, PR). Best are IC supplements, EVA, Triple-bottom line.
- 4.Guide Investment (Decision). None of the intangibles approaches can beat traditional Discounted Cash Flow.
- 5.Uncover Hidden Value (Learning). Best are score cards and Direct IC methods.

No one method can fulfil all purposes; One must select method depending on purpose, situation and audience.

## Intangible Assets Measuring Models



## 42 Methods for Measuring Intangibles in Chronological Order

Approx. year	Label	Major Proponent	Category	Description of Measure
2009	ICU Report	<i>Sanchez 2009</i>	SC	ICU is a result of an EU-funded project to design an IC report. Contains three parts: (1) Vision of the institution, (2) Summary of activities, (3) System of indicators.
2008	EVVICAÊ	<i>McMcCutcheon (2008)</i>	DIC	Developed by the Intellectual Assets Centre in Scotland as a framework based on the work of Patrick H. Sullivan (1995/2000).
2008	Regional Intellectual Capital Index (RICI)	<i>Schiama, Lerro, Carlucci (2008)</i>	SC	Uses the concept of the Knoware Tree with four perspectives (software) to create a set of indicators for regions.
2007	Dynamic monetary model	<i>Milost (2007)</i>	DIC	The evaluation of employees is done with analogy from to the value of assets. The value of an employee is the sum of the employee's investments in an employee, less the value adjustment of
2004	IAbM	<i>Japanese Ministry of Economy, Trade and Industry.</i>	SC	Intellectual asset-based management (IAbM) is a guideline developed by the Japanese Ministry of Economy, Trade and Industry. An IAbM Management philosophy. (2) Past to present report. (3) Present indicators. The design of indicators largely follows the MEBI model. Johanson & al. (2009)
2004	SICAP		SC	An EU funded project to develop a general IC model specialised for public administrations and a technological platform to facilitate efficient services. The model structure identifies three main components: human capital, public structural capital and public relational capital. (2010)
2004	National Intellectual Capital Index	<i>Bontis (2004)</i>	SC	A modified version of the Skandia Navigator for nations: National Financial Wealth and Intellectual Capital (Human Capital +
2004	Topplinjen/ Business IQ	<i>Sandvik (2004)</i>	SC	A combination of four indices; Identity Index, Human Capital Index, Reputation Index. Developed in Norway by consulting firm Sandvik. <a href="http://www.humankapitalgruppen.no">http://www.humankapitalgruppen.no</a>
2003	Public sector IC	<i>Bossi (2003)</i>	SC	An IC model for public sector, which builds on Garcia (2000) model. It identifies traditional three of particular importance for public administration, also identifies negative elements, which generate intellectual capital. Intellectual liability represents the space between ideal management and the duties a public entity must fulfill for society. Described in Garcia (2000)
2003	Danish guidelines	<i>Mouritzen, Bukh &amp; al. (2003)</i>	SC	A recommendation by government-sponsored research project to report their intangibles publicly. Intellectual capital statement includes: 1) a narrative, 2) a set of management challenges, 3) a number of indicators. <a href="http://en.vtu.dk/publications/2003/intellectual-capital-guidelines">http://en.vtu.dk/publications/2003/intellectual-capital-guidelines</a>
2003	IC-dVALÊ	<i>Bonfour (2003)</i>	SC	öDynamic Valuation of Intellectual Capitalö. Indicators from the dynamic competitiveness are computed: Resources & Competencies, Structural Assets (Structural Capital and Human Capital indices). <a href="http://www.jicjournal.com">Journal of IC vol 4 Iss 3 2003</a>
2002	Intellectus model	<i>Sanchez-Canizares (2007)</i>	SC	Intellectus Knowledge Forum of Central Investigation on the value of knowledge is structured into 7 components, each with elements and variables in organizational capital and technological capital. Relationship between organizational capital and social capital.
2002	FiMIAM	<i>Rodov &amp; Leliaert (2002)</i>	DIC/MCM	Assesses monetary values of IC components. a combination of indicators for measurement. The method seeks to link the IC value to market value. <a href="http://www.jicjournal.com">Journal of IC vol 3 Iss 3 2002</a>

2002	IC RatingĤ	<i>Edvinsson (2002)</i>	SC	An extension of the Skandia Navigator framework incorporating Assets Monitor; rating <i>efficiency, renewal</i> and <i>risk</i> . Applied <a href="http://www.icrating.com/">http://www.icrating.com/</a>
2002	Value Chain ScoreboardĤ	<i>Lev B. (2002)</i>	SC	A matrix of non-financial indicators arranged in three categories: development: Discovery/Learning, Implementation, Commercialization. (2005): <i>Intangibles: Management, Measurement and Reporting</i>
2002	Meritum guidelines	<i>Meritum Guidelines (2002)</i>	SC	An EU-sponsored research project, which yielded a framework of Intangible Assets in 3 steps: 1) define strategic objectives and resources, 2) actions to develop intangible resources. Three types of Capital, Structural Capital and Relationship Capital. The original model found here. Meritum is also further developed by members of the project found on <a href="#">P.N Bukh's home page</a> .
2001		<i>Caba &amp; Sierra (2001)</i>	SC	An IC measuring model for public sector based on the Euroforum Management Model (EFQM). It integrates the elements from the model which compose intellectual capital: human capital, structural capital. Described in Ramirez Y. (2010)
2001	Intangible assets statement	<i>Garcia (2001)</i>	SC	An IC measuring model for public sector based on the IAM model. It focuses on growth/renovation, efficiency and stability.
2001	Knowledge Audit Cycle	<i>Schiama &amp; Marr (2001)</i>	SC	A method for assessing six knowledge dimensions of an organization in six steps. 1) Define key knowledge assets. 2) Identify key knowledge processes. 3) Implement and monitor improvements. 4) Implement and monitor improvements. 5) Implement and monitor improvements. 6) Implement and monitor improvements. (2002). <i>Profit with People</i> by Deloitte & Touche. Harvard Business School <a href="#">homepage</a> .
2000	Value Creation Index (VCI)	<i>Baum, Ittner, Larcker, Low, Siesfeld, and Malone (2000)</i>	SC	Developed by Wharton Business School, together with Capgemini, Business Innovation and Forbes. They estimate the importance of intangibles in explaining the market value of companies. Different factors that managers claim to focus on the factors that markets consider important. <a href="http://www.forbes.com/asap/2000/">http://www.forbes.com/asap/2000/</a>
2000	The Value ExplorerĤ	<i>Andriessen &amp; Tiessen (2000)</i>	DIC	Accounting methodology proposed by KPMG for calculating the value of intangibles: (1) Assets and endowments, (2) Skills & tacit knowledge, (3) Norms, (4) Technology and explicit knowledge, (5) Primary knowledge. Described in Journal of IC 2000. <a href="http://www.weightlesswealth.com/downloads/Implementing">http://www.weightlesswealth.com/downloads/Implementing</a>
2000	Intellectual Asset Valuation	<i>Sullivan (2000)</i>	DIC	Methodology for assessing the value of Intellectual Property.
2000	Total Value Creation, TVCĤ	<i>Anderson &amp; McLean (2000)</i>	DIC	A project initiated by the Canadian Institute of Chartered Accountants to project cash-flows to re-examine how events affect planning. <a href="http://www.cica.ca/about-the-profession/cica/annual-reports">http://www.cica.ca/about-the-profession/cica/annual-reports</a>
1999	Knowledge Capital Earnings	<i>Lev (1999)</i>	ROA	Knowledge Capital Earnings are calculated as the portion of earnings (above industry average and consensus analyst future estimates) over and above book assets. Earnings then used to capitalise Knowledge Capital.
1998	Inclusive Valuation Methodology (IVM)	<i>McPherson (1998)</i>	DIC	Uses hierarchies of weighted indicators that are combined, and converted to absolute values. Combined Value Added = Monetary Value Added + Value Added.
1998	Accounting for the Future (AFTF)	<i>Nash H. (1998)</i>	DIC	A system of projected discounted cash-flows. The difference between the end of the period and the beginning of the period is the value added during the period. <a href="http://home.sprintmail.com/~humphreynash/future_of_accounting">http://home.sprintmail.com/~humphreynash/future_of_accounting</a>
1998	Investor assigned market value (IAMVĤ)	<i>Standfield (1998)</i>	MCM	Takes the Company's True Value to be its stock market value plus Intellectual Capital + (Realised IC + IC Erosion + SCA (Sustainable Capital))

1997	Calculated Intangible Value	<i>Stewart (1997)</i>	MCM	The value of intellectual capital is considered to be the difference between the market value and the company's book value. The method is based on the company's premium earnings, i.e. the earnings greater than the industry, result from the company's IC. It is hence a forward-looking model. Kujansivu & Lönnqvist (2007) gives a good example.
1997	Economic Value Added (EVA)	<i>Stern &amp; Stewart 1997</i>	ROA	Calculated by adjusting the firm's disclosed profit with charges for intangible assets. EVA provides an indication of whether the firm's intellectual capital is being created. EVA is the property of the consulting firm Stern Stewart and Stewart. A good evaluation of the method is found here: <a href="http://www.sternstewart.com/?content=proprietary&amp;p=eva">http://www.sternstewart.com/?content=proprietary&amp;p=eva</a>
1997	Value Added Intellectual Coefficient (VAIC)	<i>Pulic (1997)</i>	ROA (doesn't quite fit any of the categories)	An equation that measures how much and how efficiently intangible assets employed create value based on the relationship to three major categories: (1) human capital; (2) human capital; and (3) structural capital. VAIC = EVA/IC; <a href="http://www.vaic-on.net/start.htm">http://www.vaic-on.net/start.htm</a>
1997	IC-Index	<i>Roos, Roos, Dragonetti &amp; Edvinsson (1997)</i>	SC	Consolidates all individual indicators representing intellectual capital into a single index. Changes in the index are then related to changes in the company's value.
1996	Technology Broker	<i>Brooking (1996)</i>	DIC	Value of intellectual capital of a firm is assessed based on the firm's response to twenty questions covering four major components: Human Capital, Intellectual Property Assets, Market Assets, and Structural Assets.
1996	Citation-Weighted Patents	<i>Dow Chemical (1996)</i>	DIC	A technology factor is calculated based on the patents developed by the firm and its performance is measured based on the impact of research and development. A series of indices, such as number of patents and cost of patents, are used to measure the firm's patents. The approach was developed by Dow Chemical Company (2001).
1995	Holistic Accounts	<i>Rambøll Group</i>	SC	Rambøll is a Danish consulting group, which since 1995 reports its performance in an Accounting report. It is based on the EFQM Business Excellence Model. Describes nine key areas with indicators: Values and Management, Human Resources, Structural Resources, Consultancy, Customer Relationships, and Financial Results. Their report can be downloaded from <a href="http://www.ramboll.com">http://www.ramboll.com</a>
1994	Skandia Navigator	<i>Edvinsson and Malone (1997)</i>	SC	Intellectual capital is measured through the analysis of up to 73 intangibles (73 intellectually based and 73 traditional metrics) that cover five areas: (1) customer; (2) process; (3) renewal and development; and (4) financial. The company brought it to fame, but Skandia no longer produces it.
1994	Intangible Asset Monitor	<i>Sveiby (1997)</i>	SC	Management selects indicators, based on the strategic objectives, to monitor aspects of creating value from 3 classes of intangible assets: Human Capital, Internal Structure, External Structure. Value Creation model includes: (1) human capital utilisation/efficiency; and (2) risk reduction/stability. <a href="http://www.sveiby.com/articles/companymonitor.html">http://www.sveiby.com/articles/companymonitor.html</a>
1992	Balanced Score Card	<i>Kaplan and Norton (1992)</i>	SC	A company's performance is measured by indicators covering four perspectives: (1) financial perspective; (2) customer perspective; (3) internal process perspective; and (4) learning perspective. The indicators are based on the strategic objectives. <a href="http://www.balancedscorecard.org/">http://www.balancedscorecard.org/</a>
1990	HR statement	<i>Ahonen (1998)</i>	DIC	A management application of HRCA widespread in Finland. HRCA divides personnel related costs into three classes for the human capital: development costs, and exhaustion costs. 150 listed Finnish companies published an HR statement in 1999.
1989	The Invisible Balance Sheet	<i>Sveiby (ed. 1989) The öKonradö group</i>	MCM	The difference between the stock market value of a firm and its book value is divided into three interrelated families of capital; Human Capital, Organizational Capital, and Structural Capital. The three categories first published in this book in 1989. <a href="http://www.sveiby.com">Download English translation of book here.</a> Download the <a href="http://www.sveiby.com">Invisible Balance Sheet</a> .

1988	Human Resource Costing & Accounting (HRCA 2)	Johansson (1996)	DIC	Calculates the hidden impact of HR related costs which reduce made to the P&L. Intellectual capital is measured by calculating assets held by the company divided by capitalised salary expense field in its own right. <a href="#">HRCA journal.</a>
1970s	Human Resource Costing & Accounting (HRCA 1)	Flamholtz (1985)	DIC	The pioneer in HR accounting, Eric Flamholtz, has developed calculating the value of human resources. Several papers are on his home page. <a href="http://www.harrt.ucla.edu/faculty/bios/flamholtz">http://www.harrt.ucla.edu/faculty/bios/flamholtz</a>
1950s	Tobin's q	Tobin James	MCM	The "q" is the ratio of the stock market value of the firm divided by assets. Changes in Tobin's q provide a proxy for measuring effective intellectual capital. Developed by the Nobel Laureate economist <a href="http://en.wikipedia.org/wiki/Tobin's-q">http://en.wikipedia.org/wiki/Tobin's-q</a>

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