

Intellectual Capital: The Real Source of Value Creation

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Abstract

Intellectual capital refers to collective intangible assets in a firm. Such assets are considered as real drivers of value in the new economy. Despite their importance, these assets are rarely valued by firms. If intellectual capital can be measured then it could provide an indicator of a firm's value creation capacity in future. This article explores the methods that can be used to value a firm's intellectual capital.

Introduction

Intellectual capital includes intangible assets that are the real source of value creation in a company. This source of wealth is not tangible like machinery, land or building. It is the information and knowledge that is applied in the value creation process along with the tangible assets. Traditionally, intangible assets like brand name and customer loyalty were included in the balance sheet under the heading 'goodwill'. Intellectual Capital goes a step further to include assets like the company's ability to adapt to its fast changing environment or the ability to learn and maintain the future value creation capability either through in-house research and development or by purchase of technology and patents from outside.

According to Petty and Guthrie (2000), the rise of the "new economy" which is principally driven by information and knowledge, is attributed to the increased prominence of intellectual capital (IC) as a business and research topic. They have asserted that IC plays a vital role in the determination of enterprise value and national economic performance. According to Keong Choong (2008), the field of intellectual capital is maturing to one in which it is possible to analyze its existing definitions and classifications to construct a formal body of items that can be considered as intellectual capital for use in its study and application.

There is no generally accepted definition of intellectual capital. However, many have offered views that provide a general concept. One of the most succinct definitions of intellectual capital is given by Stewart (1997) as "packaged useful knowledge." He explains that this includes an organization's processes, technologies, patents, employees' skills, and information about customers, suppliers, and stakeholders. Various other definitions use concepts such as ability, skill, expertise, and other forms of knowledge that are useful in organizations. A comprehensive definition of intellectual capital is offered by Brooking (1996) as "Intellectual capital is the term given to the combined intangible assets which enable the company to function". Important underlying concepts in these definitions include the notion that intellectual capital is something that is knowledge based, captured in an identifiable form, and useful in organizations. Intellectual capital is not simply available, free-floating human brainpower.

The above definitions of intellectual capital, however, do not provide the specificity required to identify and measure it. For this purpose, various researchers have given a classification of the components of intellectual capital. According to Edvinsson and Malone (1997), intellectual capital includes three forms of capital i.e. Human Capital, Structural Capital and Customer Capital. Human Capital includes the capabilities, the knowledge, skill and experience of the company's employees and managers. It also includes the creativity and innovations of the organizations i.e. how often are new ideas generated in house, implemented and the ratio of their success. Structural Capital is described as the embodiment, empowerment and supportive infrastructure of human capital. It includes the physical systems used to transit and store intellectual material. Structural Capital is itself composed of three types of capital viz. Organizational Capital, Innovation Capital and Process Capital. Organizational Capital is the company's investment in systems, tools and operating philosophy that speeds the flow of knowledge through the organization as well as out to the supply and distribution channels. Innovation capital refers to the renewal capability and the results of innovation in the form of protected commercial rights,

intellectual property such as trademarks and other intangible assets such as the theory by which the business is run. Process Capital is those work processes, techniques such as ISO 9000 and employee programs that augment and enhance the efficiency of manufacturing or the delivery of services. Customer Capital includes the relationship of a company with its customers. This relationship is distinct from that of its dealings with employees and strategic partners and this relationship is of absolutely central importance to the company's worth because the cash flow starts from the customer relationship. Indices of Customer Capital include measures of satisfaction, longevity, price sensitivity and even the financial wellbeing of long term customers.

Valuation of Intellectual Capital

The value of firms in the new economy is being determined increasingly by firm's intangible assets while tangible assets account for relatively little value. Traditional methods of valuation, based on accounting principles, tend to undervalue such companies (Sullivan and Sullivan, 2000). There are two general methods for measuring intellectual capital. The first method is to do a component-by-component evaluation. This includes valuation of a company's human, structural and customer capital. The second method is to measure the value of intellectual assets in financial terms at the organization level without reference to individual components of intellectual capital.

Component-by-component Measurement

One of the component-by-component approaches is the Skandia "Navigator" approach based on the Edvinsson-Malone model. Edvinsson and Malone (1997) define Organization Intellectual Capital as iC , where 'C' is an absolute value of Intellectual Capital in rupees and 'i' is that organization's co-efficient of efficiency in using that absolute value.

The Intellectual Capital Absolute Measure (C) Indicators have been taken as follows:

1. New markets development investment
2. Industry development investment
3. Change in IT inventory
4. Employee training and development investment
5. Partnership/ joint venture development investment.
6. Upgrades to Electronic Data Interchange (EDI) or electronic networking system.
7. New patent, copyright investment

The above list is not definitive and a number of other indices may be included in the Intellectual Capital value. This list emphasises the future earning capabilities because it captures more of what investors need to know about the future value of a company. The items in this list have been operationalised as follows:

New markets development investment: This includes the expenditure on the development of new customers and clients. All expenditure on advertisement and publicity has to be included here.

Industry development investment: This measure looks at the participation of the company in industry-wide efforts such as trade organizations and should include things such as salaries of executives on loan to associations and other contributions.

Change in IT inventory: This includes the amount spent by the company on new IT equipment over the course of the year.

Employee training and development investment: This includes training of both part time and full time employees regarding new products/services or for the development of overall skills of the employees.

Partnership/ joint venture development investment: The investment made by the company for entering into partnership or joint venture is included here.

Upgrades to Electronic Data Interchange (EDI) or electronic networking system: The investment made by the company to make its electronic networking system better is included here.

New patent, copyright investment: This includes investment on the acquisition or development of patents or copyrights.

The co-efficient (C) = (N / X) , where (N) is the sum of the decimal values for the nine absolute indices and (X) is the number of those indices i.e. C is the average of the above indices.

The next step is to create a countervailing figure that tests these investments against real life productivity, value creation, and user evaluation that is denoted by the Co-efficient of Efficiency (i). The absolute (C) variable emphasises an organization's commitment to the future and the efficiency (i) variable grounds those claims in present performance.

The Intellectual Capital Co-efficient of Efficiency (i) indices are as follows:

1. Market Share(%)
2. Customer Satisfaction Index(%)
3. Leadership Index(%)
4. Motivation Index(%)
5. Index of R&D resources / total resources(%)
6. Index of training hours(%)
7. Employee retention(%)

These items have been operationalised as follows:

Market Share(%): This represents the market share of a company in the Indian industry.

Customer Satisfaction Index(%): This represents the satisfaction level of customers in the company.

Leadership Index(%): This index measures the leadership qualities of the managers of a company.

Motivation Index(%): This index measures the motivation level of employees of a company.

Index of R&D resources / total resources(%): This index measures the funds allocated for R&D out of total funds available to the company.

Index of training hours(%): It reflects the percentage of time that the company devotes to training and development, which is crucial to its continued competitiveness.

Employee retention (%): This measures the retention ratio of employees. It is measured as (1-Employee Turnover Ratio).

The co-efficient (i) = (n / x) , where (n) is the sum of the decimal values for the seven efficiency indices and (x) is the number of those indices i.e. (i) is the average of the above indices. The value of Intellectual Capital is obtained by the product of i and C .

Organization Level/Financial Basis Measurement

Stewart (1997) suggests three measures of intellectual capital at the organization level: market-to-book ratio, Tobin's q and calculated intangible value. The general idea with these measures is to determine the value that the stock market gives to a company and then compare this value with the value given by the company's balance sheet. Any difference is attributed to the intangible value of intellectual capital not captured by traditional accounting system. Each of these measures is described briefly below along with an example of how calculated intangible value is determined.

Market-to-book Ratio.

The market-to-book ratio assumes that a company's approximate worth (tangible assets plus intangible assets) is indicated by its market value i.e. the market price per share of common stock multiplied by the number of shares outstanding. Therefore, the difference between book value shown on the company's balance sheet and market value gives an approximate measure of the intellectual capital that is a part of a company's total worth but which does not appear in the balance sheet.

This measure by itself has limited value for several reasons. First, stock prices are affected by many economic factors not associated with a company's tangible or intangible assets. Second, book values represent depreciated historical costs that rarely coincide with the "true" value of revenue-generating tangible assets.

Tobin's q.

James Tobin, a Nobel prizewinning economist, developed a measure, q , to help predict investment decisions. He hypothesized that the combined market value of all the companies on the stock market should be about equal to their replacement costs. In other words, the ratio of all the combined stock market valuations to the combined replacement costs should be around one. Tobin's q is essentially the same as the market-to-book ratio except that Tobin used replacement cost of tangible assets rather than book value of tangible assets in the calculation. The theory is that if q is greater than 1 and greater than competitors' q then the company has the ability to produce higher profits than other similar companies and the company has something intangible i.e. the intellectual capital, that gives it an advantage.

Tobin's q can be calculated by taking the book value of a company, adding back accumulated depreciation, and making appropriate adjustments for price changes in different classes of assets from the time of purchase. This procedure neutralizes many of the difficulties with the market-to-book ratio.

Calculated Intangible Value.

NCI Research has developed a method for companies to estimate the total value of their intangible assets. NCI is affiliated with the Kellogg Business School at Northwestern and the leader for this project was Thomas Parkinson, who runs the Evanston Business Investment Corp. that invests in high-tech companies, mostly startups. He made the assumption that the market value of a company reflects not only its tangible physical assets but also a component attributable to the company's intangible assets. To value the company's intangible assets, NCI Research gave a measure called Calculated Intangible Value (CIV) that is calculated by a seven-step process that has been discussed later in the paper.

The value of Intellectual Capital by this model is measured by the following seven steps:

- Calculate average pretax earnings for the past three years.
- Take the average year-end tangible assets for the same three years from the balance sheet.
- Divide the earnings by the assets to get the return on assets (ROA).
- Find the industry's average ROA for the same three years.
- Calculate the "excess return". Multiply the industry-average ROA by the company's average tangible assets. Subtract this value from the pretax earnings in step one. The result is the excess return.
- Calculate the three-year-average income tax rate and multiply it by the excess return. The result is subtracted from the excess return to get an after-tax number – the premium attributable to intangible assets.
- The net present value of the premium is calculated by dividing the premium by the company's cost of capital.

Conclusion

With increasing dependence on intangible assets, the value of a firm primarily depends on the value of its intellectual capital. Intellectual capital is now considered as the hallmark of a business. This makes it imperative to define measures of valuing this important asset. There are primarily two methods of valuation of intellectual capital, that is, component by component valuation method and organization level measurement method. Both the methods try to value intangible assets but from different perspectives. With continuing research, these methods may get improved and become universally acceptable.

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