

Editorial**The Valuation of Capabilities: A New Direction for Management Accounting Research***Janek Ratnatunga***Introduction**

The world economic order is changing at a rapid pace. In the last decade countries and regions have unified, large economies have opened doors to capitalism, computers and telecommunications have virtually collapsed time in linking financial and commodity markets. Competition has intensified between corporations and between nations and the virtual, real-time global economy is now a reality.

Many economic estimates indicate that manufacturing and agriculture in more developed countries account only for between 20-40% of output and employment. At the same time the service sector is generating a growing share of output and employment. This same trend is occurring in both developed and developing economies.

Economic activity in all sectors increasingly involves the processing and analysing of information, making judgments and providing services, rather than the manufacturing and marketing of physical commodities. Even in manufacturing, science is breeding new industries and information technology is making both production processes and products more technologically complex. In the service area, activities like entertainment and tourism are employing a growing share of the workforce. This means that in both manufacturing and services, intangible assets - brands, intellectual property, know-how and copyrights - are more valuable to companies than ever before.

Competitiveness is thus increasingly based on how organisations harness these

intangible assets. Thus, in an increasingly open world economy, it is harder to sustain competitiveness purely on the basis of the traditional tangible assets, as these are also easily available to the competition. It is the intangible assets that now provide the true *competitive advantage*.

By the second quarter of fiscal year 2000, Microsoft had a market value of over \$600 billion, but the book value of their assets was approximately \$45 billion (7.5%)—\$22 billion of which were current assets. Microsoft's physical assets were less than \$2 billion (4% of the book value of total assets and only (0.3% of market value). This is a perfect example of the new economy in which a company's value is found not in earthly measures like revenues, P/E ratios, or market share, but in intellectual capital—organisational culture, customer loyalty, and brand equity. And Microsoft isn't alone: Over the past two decades, the difference between market and book values of U.S. companies has reached unprecedented levels (Barsky and Marchant, 2000). This gap is also the source of many criticisms of traditional financial accounting, which encounters growing difficulty in reliably valuing these vital intangible assets.

One measure of the growing scale of intangible assets is the gap between the value of a company's (mostly tangible) assets in its balance sheet and the market-value of its shares. This ratio, known as the '*market-to-book-(MB) ratio*', has grown especially large for service and high-technology companies. In May 1997, for example, the MB ratio for General Motors (a high tangible assets company) was 1.6, compared with an MB ratio of 13.4 for Microsoft (a high intangible assets company). Only about 7% of Microsoft's stock market value was accounted for by traditional, tangible assets recorded on its balance sheet. The missing 93% was due to its intangible assets of brands, research and development and people. Although this trend is not confined to high-tech companies, it is most apparent in these. Market-to-book ratios may have risen in part because book valuations have been slow to adapt to the changing asset base of

modern businesses. Business surveys around the globe suggest that managers believe intangibles are increasingly critical to their company's performance. However, these assets are rarely recorded on balance sheets or measured in annual reports. The UK Accounting Standards Board, for instance, quoted a 1991-92 survey showing that 81 % of large companies reported no intangible assets in their balance sheets. A more recent survey found that 76% of 226 quoted companies did not record any intangibles on their balance sheet (Leadbeater, 2000).

Thus, new types of "measurements" are needed for both tradable and non-tradable assets in order for organisations to meet the challenges present at the corporate, national and international levels, especially in the areas of decision-making and performance evaluation. If the financial accounting profession cannot provide value-creating information to such leaders and managers, we need to develop them in managerial accounting that is less constrained by the standard setting profession.

This editorial first considers the role of accounting within changing economic paradigms, especially the new information economy. It then specifically looks at the valuation of intangibles, and the social costs of inadequate valuations. The paper then summarises the literature pertaining to various new measurements that have been developed to make organisational valuations, and compares and contrasts the strengths and weaknesses of these new measurements. Such a discussion will, hopefully, identify new directions for those undertaking applied management accounting research.

The Role of Accounting within Changing Economic Paradigms

An *Agricultural - economy* was the dominant economy for over 10,000 years. The "fuel" of this era was *food* (see Figure 1). The "economic engine" was *labour* (human or animal), and the "economic-driver" was the *farmer*. Single-entry was the dominant form of accounting. Some

"trade" took place during this period, resulting in both the origins of "cost accounting" and of "double-entry" accounting (Ratnatunga, 2000 and 2001).

The *Industrial - economy* began to take over in the mid-eighteenth century. The "fuel" of this era was coal (and later petroleum). The "economic engine" was machinery; driven by engineers and accountants. The double-entry accounting paradigm permitted both the formation and maintenance of large, complex businesses, and the accumulation of the capital necessary to build the factories of the industrial revolution.

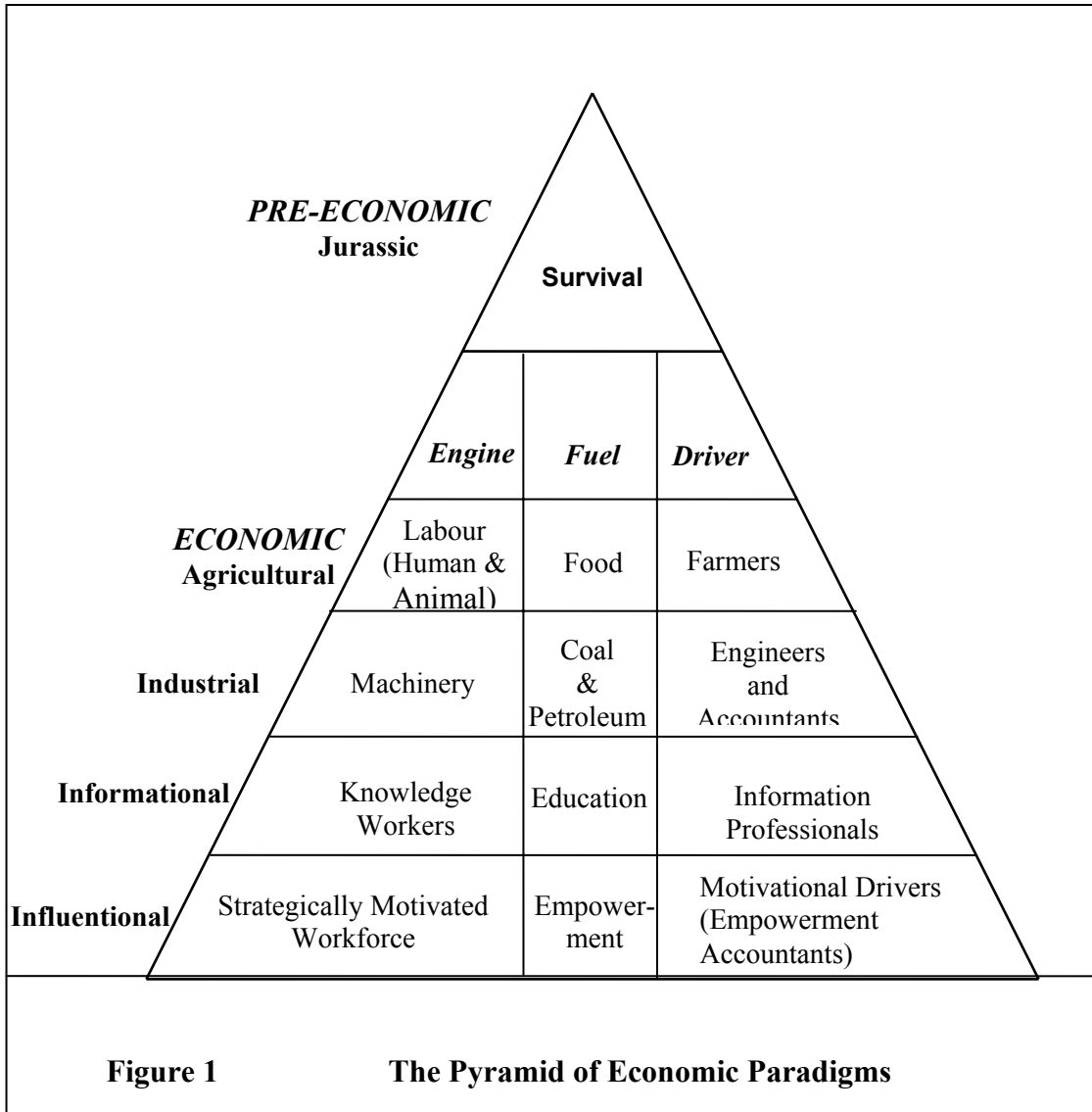
However, the last 20 years has seen the emergence and rapid growth of the *informational - economy*. The "fuel" of this era has been *education*. The "economic engine" has been the communication of *knowledge*; hence the need for information technology (IT) coupled with telecommunications (e.g. the internet, e-commerce, B2B, B2C, etc.).

In this informational-economy *accountants have struggled to remain as one of the economic drivers*. Unfortunately, there is a significant amount of evidence that indicates that accounting (and accountants) has not been able to meet the informational requirement of managerial leaders in this relatively new economic paradigm. This is specifically because the economic engine has changed from a tangible asset (machinery) to an intangible asset (knowledge). Many professional accountants are still supplying information-era managers and owners with information better suited to industrial-era managers. This has resulted in other professions, such as IT specialists and industrial engineers claiming to be better equipped to be the information professionals of the informational – economy paradigm.

Now, even as the accounting profession is trying to grapple with the new measures required by managerial leaders in the *informational* economy, a newer economic paradigm has emerged, one that argues that whatever new measures derived should ultimately *motivate* the economic engines

of this economy; i.e. the strategically motivated workforce (again an intangible asset). Managerial leaders see empowering the workforce as the fuel that will enable this engine to be driven, giving them a strategic ownership culture. And the driver? Many professions will vie for this role, such as industrial psychologists, human resource professionals and organisational behaviour experts. However, it is ultimately it is how

the workforce performs in meeting *quantifiable* organisational objectives and the *rewards* they receive for good performance that will drive their motivation to align themselves to an organisation's strategy. Thus the "motivational drivers" will come from within the ranks of the information professionals, and accountants could have a major part to play in this emerging economic paradigm.



The Accounting Challenge: A New Information Reporting Paradigm

More scientists are doing more science more productively and translating product ideas more quickly into commercial

applications than ever before. This has resulted in a spectacular acceleration of technological change. The speed at which new ideas are translated into commercial products is very apparent in most industries. Examples abound in travel, communications, medicine, pharmaceuticals, robotics, information processing and

genetic engineering. This is the information-era in full economic flow.

There is growing anecdotal and empirical evidence, however, that our current Industrial-era accounting paradigm is becoming increasingly *irrelevant* within the economic paradigm of the information era. Divisions are arising among academics and practitioners over the “fundamentals of measurement” (with conventional cost-based procedures being no longer generally accepted). The relevance of the financial statements in terms of both accuracy and timeliness is being increasingly questioned. The audit expectations gap in public accounting is growing to a point of questioning the relevancy of the audit process, especially in providing a valuation of a company. The increasing levels of price tendering for public accounting services indicates the characteristics of a commodity market - including the view of such services being “substitutable commodities”.

In managerial accounting, academics have reported the irrelevance of traditional product costing and control techniques. Accountants are seeing performance measurement in organisations being executed more and more by non-accountants (e.g. especially in the areas of quality; benchmarking; and in the calculation of throughput times). Non-financial indicators (NFIs) are playing an increasingly important role in providing strategic and control information to top management; and also in running the day-to-day operations of companies.

It is slowly beginning to dawn on many accountants that organisations can no longer base their future prosperity solely on the technological and financial strengths they may have in the more traditional assets of the industrial economy, such as raw materials, land, machinery and labour. In increasingly open global markets, products can be made and shipped anywhere. Financial capital is less scarce and production technologies can be copied by emerging industrial nations with increasingly well-educated workforces. All of the more traditional assets are available

to such emerging competitors on equal if not better terms. Organisations must therefore, base competitiveness on distinctive assets that can be used to generate high-value added products. These assets are know-how, skills, creativity and talent.

Even traditional, relatively slow-moving industries can face sudden and disruptive competition brought on by new technology. For example, intermediaries who have sold products to consumers – such as stock brokers, insurance brokers and travel agents - find themselves competing with new entrants who go direct to the consumer using the telephone and the internet. Meeting this competition means combining continuous improvement with a capacity to reinvent and renew (Porter, 1985).

It is important to point out that the value of intangible assets is highly *context-dependent*. They increase in value when deployed in competition to serve consumers, thereby providing a source of competitive advantage which competitors find hard to imitate. Knowledge assets that are valuable in one setting may lose their value elsewhere. Attaching a durable value to a piece of information, a brand or a competence, is difficult, especially in fast moving markets driven by fashion, branding or rapid technological change. For example, although accountancy and computer games companies depend heavily on human capital, they do so in quite different ways. A qualification-based measure appropriate for an accountancy firm would be next to useless for a computer games company which is ideas generating. These ‘context dependent’ assets increase in value when deployed in competition to serve consumers, thereby providing a source of competitive advantage which competitors find hard to imitate because it usually combines some unspoken, routine or tacit ingredient. Similarly, the knowledge needed by a hotel chain or an airline is different from that required by an advertising company or a biotechnology start-up.

The above discussion indicates that even if formal intellectual property such as patents

and copyrights can be valued, valuing the associated *tacit knowledge* is hard. Often explicit know-how found in a manual, a recipe, or a patent, is of little value without the tacit knowledge and judgment required to realise it in practice. Often this tacit knowledge is embedded in corporate routines, which are constantly evolving. Thus, viewing know-how as an 'asset' (tangible or intangible) may be too static an approach. A better approach is to view the intangibles that give a company's a source of competitive advantage, as the organisation's '*capabilities*', rather than as assets or capital in some fixed sense. For example, the know-how of a single organisation may only become valuable when combined with the know-how of partners and suppliers, manufacturers and distributors.

In summary, the intangible capability assets' have become so much more important as a source of competitive advantage precisely because they are so difficult to pin down, break up, parcel out and be imitated by competitors. That is also why it is so difficult for investors, managers and knowledge-holders and especially financial accountants to value these organization capabilities. However, deriving a value of an organisation without attempting to value the intangibles that give rise to these capabilities is also a meaningless exercise in this new economy. If financial accountants are unable to measure these 'capability assets' due to the restrictions placed on them by accounting standard setters, then it creates an opportunity for management accounting researchers to take up the challenge.

Capability Assets – The Wider Issues

The Difficulties in Establishing a Market

The problems for financial accountants in valuing the increasingly 'knowledge-driven' capability assets are their lack of contractibility and tradability. This makes such assets difficult to price and thus difficult to value. Accounting is at its best when accountants can record observable

transactions. Knowledge assets and other intangibles are difficult to trade, and as a result it is difficult to establish a reliable market value for them. One approach to alleviating this problem is to try and create more efficient markets for trading these assets. Reliable accounting values would then emerge as a derivative of more reliable market values.

One major constraint in developing a market for intangibles and related capabilities is that buyers and sellers find it hard to find out about opportunities for trade, partly because companies often like to keep their know-how secret. It is often perceived as dangerous for the sellers of know-how to disclose the details of what they are selling because the information once released, cannot be easily 'recalled'. Buyers, however, may be unwilling to buy without such disclosure. Trade in know-how requires levels of trust not required for transactions involving standard commodities (Leadbeater, 2000).

Thus, although better trading markets may develop in the future for some intangible assets, these will never develop for all. There will remain a significant amount of intangible assets that are non-tradable. However, a true economic value of the firms must include these types of intangible assets as well. Thus, new types of "measurements" are needed for both tradable and non-tradable assets in order for organisations to meet the challenges present at the new economy.

The Social Needs for New Measures of Valuation

The starting point for developing new measures for valuing intangibles is to understand the drawbacks of over-reliance upon purely financial measures. The criticisms of traditional financial accounting are familiar. It must be noted that the increasing gap between share market values and accounting book values (the MB ratios) for organisations creates real costs in terms of social harm and other major inefficiencies. Because financial accounting is so poor at valuing intangibles (let alone the capabilities that they generate) five

potential social costs are generated as follows:

- **Insider Trading.** Insiders within a company, or close to it, are in a far better position to assess the strength of intangible assets and capabilities than outsiders lacking such specialist knowledge. As a result, the insiders may be able to trade on this information.
- **Higher Costs of Capital.** Investors or bankers often regard only tangible assets as security. This may especially disadvantage young, high-tech companies having little track record, which will have to pay more on unsecured loans, again at a social cost to the community.
- **Misallocation of Capital.** Without proper regulation of information disclosure about intangibles, it may be possible for companies to manipulate perceptions leading to *over-valuation* by investors. Shares in some fashionable, knowledge-intensive industries may have been subject to such over-valuation. The inadequate disclosure of information may thus distort the allocation of capital between various sectors of the economy.
- **Reduced Incentives for Knowledge Workers and Entrepreneurs.** The current approach to accounting for intangible assets makes it difficult to unravel the contribution that different people make to a business. It is difficult for knowledge workers to assess their true worth in such a situation, or what rewards they should receive, thus allowing the firm to profit from the under-valuation of their human capital. This is a significant social cost.
- **Increased Volatility.** Inadequate disclosure about the quality of intangible assets may feed volatility and uncertainty in capital markets. Excessive volatility of share prices were very evident in the dot.com frenzy, where investors became increasingly attracted to companies which had often made no profits but seemed to have promising

B2B and B2C web sites in development. Such ventures now find it harder to get backing, leading to a roller-coaster ride for their share prices. This volatility, and misallocation of capital, might be eliminated with improved disclosure requirements, especially for listed companies that are knowledge intensive.

Traditional Valuation Approaches to Intangibles

Valuation problems affect most intangible assets. For example, how should a customer list be valued? Should it be at replacement cost in terms of the marketing and advertising spend of re-building it? Or should it use income projections? Or take the incremental income due to the customer list? Or take a market price, determined by how much it would sell for if it were sold? There are several possible responses. Thus, traditional approaches (as listed below) do not work well for intangibles. The more common traditional valuation responses are to use of the following three approaches:

- **Replacement Costs.** One way to value an asset is to assess its replacement cost. While this may be possible with discrete items of property, plant and equipment (PPE), with a skilled workforce or a brand value, it may be difficult to separate these from other assets. Assessing the full costs of replacement is thus very hard.
- **Income Projections.** Another way is to estimate the income an asset will generate over its useful life and work out a net present value. Again, it is difficult to isolate the income attributable to an intangible, especially where it is wrapped up with a tangible product. A past income stream will be a misleading guide to a product's value in a market experiencing rapid technological change.
- **Market Valuation.** How much would people be prepared to pay for an intangible asset? There are growing signs in the US at least of a market in R&D and a few other intangibles. Yet

formal R&D is only one of many intangible assets. Most do not have market prices. They are unique, tacit and cannot be traded, especially when combined to create an organisational capability.

New Valuation Attempts

Public companies have a built-in valuation: the stock market. It is believed that an information-efficient market values the company whenever trading occurs. Stock market price multiples or ratios, such as price/earnings, price/sales, price/cash, and price/assets, help create a framework for valuing a company. (The numerator is the company's share price, and the denominators can be found in the company's annual report.) Most of the ratios used to value public companies can also be used to value private firms by using a "representative" PE Ratio or MB Ratio.

Such ratios are, however, only the start of the process of valuing a company properly. Share prices can be artificially inflated or deflated, and accounting numbers are 'method-based', based on GAAP's accrual accounting framework, so they are not necessarily "real". They also leave out the much of the intangible assets such as intellectual capital.

Although intellectual assets may not be visible, they can still be measured and managed. If managers want to cultivate intellectual and other intangible resources, they need to develop performance measures that link internal productivity to market value. The question is: how does one link reasonably objective financial statement measures to the somewhat subjective measures of intangibles such as intellectual capital? Despite the difficulties, however, organisations that develop integrated mechanisms to capture and manage these vital resources will be best prepared to generate sustained returns to shareholders.

There have been numerous developments in attempting to value intangibles more reliably. These are developing from two directions. First, there is a range of new approaches to performance measurement

and internal corporate reporting using modified discounted cash flow techniques and accrual accounting adjustments. Second, there is the Balanced Scorecard, which attempts to link financial performance to intangible drivers like employee quality and morale and customer satisfaction. These models are emerging because managers want more information about intangibles to manage them more effectively. Attempts are also being made to value intangible assets more accurately for investors. This usually means showing how non-financial information about brands, patents, research and development or customer loyalty can be linked systematically to a company's share market valuation.

These approaches are not exclusive. Different kinds of measures might be more relevant to different audiences. Some are designed primarily to give managers and workers a clearer picture of the strengths and weaknesses of their business and change the way they think and act. Others may be designed to help analysts and investors assess the contribution that intangible assets make to financial performance.

Some of the better-known measures are listed below:

Cash Flow Measures:

- TVC® Total Value Creation
- AFTF Accounting for the Future
- SVA Shareholder Value Added

Accrual Accounting Measures:

- HRA Human Resource Accounting
- The Value Explorer®
- EVA® Economic Value Added

Market-Based Measures

- MB Market to Book Ratios
- TQ Tobin's Q
- IAMV® Investor Assigned Market Value
- MVA® Market Value Added

Index- Based Measures:

- IVM Inclusive Valuation Methodology
- Skandia Navigator®
- IC-Index®
- BSC The Balanced Scorecard

Consensus - Based Measures:

- Technology Broker
- IAM Intangible Assets Monitor

Cash Flow Measures

Although there is some general evidence that cash flow generation is better linked to share market valuations than profits and earnings, the link is far from being well established. One study found a high correlation between cash flow and market valuations (Deloitte & Touche, 1996). Another study found that between 1977 and 1996 operating cash flows were no better guide to market value than reported earnings, although the researchers of that study acknowledged that cash flow measures might be very useful in special circumstances such as when a company is in financial distress or is a high-tech start-up with high investment in intangibles (Lev and Zarowin, 1998). Some of the cash flow based methods are:

- **Total Value Creation, TVC[®] :** This was the outcome of A project initiated by the Canadian Institute of Chartered Accountants. TVC uses discounted projected cash-flows to re-examine how events affect planned activities (Anderson and McLean, 2000).
- **Accounting for the Future (AFTF):** This is a system of projected discounted cash flows. The difference between AFTF value at the end and the beginning of the period is the value added during the period (Nash, 1998).
- **Shareholder Value Added (SVA).** This is the main cash flow based method. Shareholder Value Added (SVA) was developed by Alfred Rappaport and gained its importance during 1980s. SVA measures net operating profit after tax and the cost of capital invested in the business. A related cash value-added approach measures past and projected cash flows from strategic and non-strategic investments. In his 'scratch-

pad' model, Rappaport (1986) considered seven key value drivers that were the main source of SVA:

- Sales growth rate
- Operating profit margin
- Cash tax rate
- Fixed capital needs
- Working capital needs
- Cost of capital
- Planning period

The first five value drivers resulted in the 'free cash flow' (FCF) available to an organisation. The FCFs that were generated over a planning period and then discounted by the organisation's cost of capital determined, according to Rappaport, its true strategic value. In the more sophisticated models, Rappaport states that it is important consider more than the five basic value drivers of FCFs, i.e. to also take into account the dynamics of competition within the marketplace. Amongst many strategic approaches to competitive analysis Porter's competitive industry advantage (five-forces) model (Porter, 1980) was considered a key in determining strategic value, especially in establishing the length of the planning period. For example, a potential player may make an entry into the market, however in order for that player to become a possible threat, it would take four to five years, especially if there are barriers to entry. Such barriers to entry are often intangible assets, and firms having such protections and other competitive advantages would have significant off-balance sheet assets that can generate significant cash flows and thus value.

Accrual Accounting Based Measures

To compensate for traditional financial accounting shortcomings, a number of consultants and analysts have developed measures designed to better capture shareholder value. Economic value-added, for example, has become an increasingly popular measures aimed at increasing the relevance of accrual-accounting based financial reports. Some of the other measures in this category are:

- **Human Resource Accounting (HRA):** This calculates the hidden impact of HR related costs that reduce a firm's profits. Adjustments are made to the P&L. Intellectual capital is measured by calculation of the contribution of human assets held by the company divided by capitalised salary expenditures (Johansson, 1996).
- **The Value Explorer[®]:** This is an accounting methodology proposed by KMPG for calculating and allocating value to 5 types of intangibles: (1) Assets and endowments, (2) Skills & tacit knowledge, (3) Collective values and norms, (4) Technology and explicit knowledge, (5) Primary and management processes (Andriessen and Tiessen, 2000).
- **Economic Value Added (EVA[®]):** EVA[®] was developed in the 1980s by New York consultants Stern Stewart & Co as an indicator of returns to shareholders. It aims to strip out many accounting system anomalies by presenting a simpler measure of the difference between the cost of capital and profit. EVA[®] is designed to focus managers on the cost of the capital they use and so encourage them to generate more value from the assets they manage. In its basic form, EVA[®] can be calculated using two methods: the Capital Charge Method and the Spread Method

The first approach, the *Capital Charge Method*, calculates EVA[®] as follows:

$$\text{EVA}^{\text{®}} = \text{NOPAT} - (\text{total capital} \times \text{cost of capital})$$

The second approach is referred to as the *Spread Method* and the corresponding formula is:

$$\text{EVA}^{\text{®}} = \text{Total Capital} * (\text{NOPAT/Total Capital} - \text{Cost of Capital})$$

EVA[®] is calculated after adjusting for distortions introduced by generally accepted accounting principles (GAAP)

as required for financial reporting (such as expensing vs capitalisation, price-level adjustments, depreciation methods, etc.). Stern Stewart has a list of 164 different adjustments that could be used, depending on circumstances and the materiality of the adjustment, to modify reported accounting results in order to improve the accuracy with which EVA[®] measures real economic income.

Stern Stewart therefore estimates that balance sheets often need restating to give an accurate picture of capital employed and this frequently involves adding in intangibles. Critics argue that EVA[®] is still too historic a measure and does not provide any sense of the linkages between a company's investment in intangibles and its financial performance. It has also been criticised for being biased *against* investments in intangibles. EVA[®]'s weakness is in using a measure that is essentially short-term and based on historic costs. Its strength is its ease of use by analyst external to an organisation, and its unerring focus on increasing market value by focusing on non-performing assets. EVA[®] sees this as the goal pursued by shareholders, and whose interests can be aligned with management.

Market-Based Measures

The popular measures in this category are as follows:

- **Market-to-Book Ratio (MB Ratio):** Here the value of intellectual capital is considered to be the difference between the firm's stock market value and the company's book value (see Stewart, 1997 and Luthy, 1998).
- **Tobin's q:** The "q" is the ratio of the stock market value of the firm divided by the replacement cost of its assets. Changes in "q" provide a proxy for measuring effective performance or not of a firm's intellectual capital (Stewart, 1997 and Bontis, 1999).

- **Investor Assigned Market Value (IAMV[®])**: This measure takes the Company's True Value to be its stock market value and divides it into Tangible Capital plus Realised Intangible Capital plus Intangible Capital Erosion plus its Sustainable Competitive Advantage (Standfield, 1998).
- **Market Value Added (MVA[®])**: A related measure to EVA[®] is Market Value Added (MVA[®]), which was designed to get over the criticisms of EVA[®] in using book values. MVA[®] compares total market value (less debts) with the money invested in the firm, in the form of share issues, borrowings and retained earnings. MVA[®] utilises the value-based planning approach implicit in EVA[®], where the goal is to increase shareholder value by focusing on the share price. If the goal of the firm is 'growth' then an emphasis on size and market share may cause the return on capital to be inadequate to compensate shareholders for the risks they are taking, and share prices will fall as a result. EVA[®] and MVA[®] attempt to align the interests of managers and shareholders by managing physical and human assets to yield optimum returns. The MVA[®] measure can only be used in listed companies in which share market values are known. Companies such as GE and Coca-Cola focus on market value-added as the prime performance indicator of their businesses.

Index-Based Measures

Popular measures in this category are:

- **Inclusive Valuation Methodology (IVM)**: This uses hierarchies of weighted indicators that are combined, and focuses on relative rather than absolute values. Combined Value Added equals the Monetary Value Added combined with Intangible Value Added (McPherson, 1998).
- **Skandia Navigator[®]**: Here intellectual capital is measured through the analysis of up to 164 metric measures (91 intellectually based and 73 traditional metrics) that cover five components: (1) financial; (2) customer; (3) process; (4) renewal and development; and (5) human (Edvinsson and Malone, 1997). More on the Skandia Navigator[®] will be discussed later.
- **IC-Index[®]**: This approach consolidates all individual indicators representing intellectual properties and components into a single index. Changes in the index are then related to changes in the firm's market valuation (Roos, Roos, Dragonetti and Edvinsson, 1997). Again more on this index will be discussed later.
- **The Balanced Scorecard**: Both the cash flow measures such as SVA, and accrual accounting measures such as EVA[®], undeniably ignores the *non-financial factors* that drive a business. To counter this, the balanced scorecard was developed (Kaplan and Norton, 1992). The scorecard aims to balance financial measures of performance, such as cash flow and return on capital employed, with measures of innovation and renewal (such as the percentage of revenues from new products, R&D success rate, etc.) measures of internal processes (such as cycle times, quality and productivity) and measures of customer satisfaction and retention. The scorecard is principally a management tool for executives to measure the effectiveness of their business strategy in delivering financial results. It measures the performance of a business mainly in relation to its strategy. One survey in the US found that almost two thirds of large companies were experimenting with a measurement system akin to a scorecard (Leadbeater, 2000).

The scorecard has been refined to reflect criticisms among practitioners. One problem was that companies often came up with too many measures. Kaplan and Norton (1992) acknowledge that a scorecard used to diagnose how well a company is doing will probably need

more measures than one designed to set strategy. A recent development is the *Dynamic Balanced Scorecard* that allows managers to track the way financial performance feeds into investment in intangibles. Its attraction is that, properly designed, it should allow managers to view at a glance the key indicators of business performance and their linkages to financial measures. A possible cost is that by gathering this information in one tool the organisation and its executives might be deprived of the variety of information flows a business needs to remain agile.

Barsky and Marchant (2000) report a study done by Ernst & Young in 1997, which found that the most valuable non-financial metrics to investors were:

- Strategy Execution
- Management Credibility
- Quality of Strategy
- Innovation
- Ability to Attract Talented People
- Market Share
- Management Experience
- Quality of Executive Compensation
- Quality of Major Processes
- Research Leadership

Consensus-Based Measures

These measures use some amount of managerial judgement in the valuations. The approach is to estimate the dollar-value of intangible assets by identifying its various components. Once these components are identified, they can be directly evaluated. In the index based measures they are evaluated by using an aggregated coefficient. In this approach they are evaluated individually. Some approaches in this category are:

- **Technology Broker:** The value of intellectual capital of a firm is assessed based on diagnostic analysis of a firm's response to twenty questions covering four major components of intellectual capital (Brooking, 1996).
- **Intangible Asset Monitor:** Here management selects indicators, based on

the strategic objectives of the firm, to measure four major components of intangible assets: (1) growth (2) renewal; (3) efficiency; and (4) stability (Sveiby, 1997).

Moving Towards Strategic Financial Value Statements

We believe that all of the above measures have strengths in moving the valuation of an organisation closer to its true economic value in this new economy. Of the more popular measures, SVA uses discounted cash flows and thus adheres to the principles of financial economics, i.e. that the present value of an organisation is the summation of all future cash flows discounted by the cost of capital. EVA[®] and MVA[®] use the financial statements as a starting point and thus by starting with certified published accounts much individual analyst subjectivity is removed. The Balanced Scorecard uses both financial and non-financial indicators as drivers of value.

However, all of the measures have their weaknesses. SVA's focus on transaction-based cash flows during some 'planning period' does not capture the potential that intangibles have on cash flows beyond the planning period, and also on non-cash flow based benefits during and after the planning period that still add value. EVA[®] and MVA[®] start with the past, and this may not be a good indicator of future value. The Balance Scorecard, even in its dynamic form, is not a self-contained set of statements that report on an organisation's value, much like the profit and loss account and balance sheet did in the industrial-era.

Attempts have been made, using a combination of the above approaches, to value some categories of intangible assets that when combined, provides an organisation the *capability for creating value*. The following section briefly summarises some of these specific approaches:

- **Measures of Human Capital:** Linking these employee measures to a market valuation of a company is difficult. One

approach is to estimate what it would cost a company to treat its workforce as an asset, which it had to lease, rather than as workers to which it paid a wage. Thus labour is represented as a debt-financed asset instead of an expense. Details of wage rates and other elements of compensation are taken from the financial systems and adjustments are made for workforce size, productivity growth rates and other KPIs. This is a very crude measure, but results have shown that if there were more reliable measures of human capital they would be worth as much as traditional assets (Rossett, 1998).

- **Measures of Customer Assets:** One approach in valuing customers is by analysing a '*Customer Satisfaction Index*' (CSI), often used in organisational Balanced Scorecards. A 'one unit' increase in an organisation's score on the CSI can then be correlated with an increase in the share market value of a 'representative' company on the stock market. In other words, customer satisfaction is viewed as a predictor of financial performance. Research in this area in the USA has shown that this link varied from being very strong in communications and utilities to being very weak for manufacturing. The research also established that as customer satisfaction rose, so did customer retention (Ittner and Larcker, 1998).

Another approach is to report separately customer acquisition costs, rather than being lumped in with other salaries and general expenses. This is particularly possible with an ABC system (Cooper and Kaplan, 1988). There should be scope for companies to disclose customer recruitment, retention and satisfaction information with their financial reports, especially as information technology systems make it easier for companies to disclose and analyse this information. Different kinds of customer information will be relevant to different industries. For example, in airlines, yields and load factors may be the more important measures. A third

approach is to capitalise customer acquisition costs in the same way as long-term contracts, insurance contracts and franchise sales.

- **Measures of Brands:** The valuation of brands is fraught with difficulty and attempts to put them on balance sheets have been highly controversial. Various marketing specialists, however, claim to have developed reliable models for valuing brands. One approach is to attempt to assess brand earnings through cash flows attributable to licenses and related sales. This approach is basically an enhanced SVA approach. Brand strength is scored against seven criteria:
 - The market in which it participates
 - The stability of the market
 - The degree of customer loyalty
 - Brand leadership in a market
 - Long-term investment in the brand
 - Geographic scope, and
 - Degree of protection

This brand score is combined with the assessment of brand earnings to yield a brand valuation. Research has also shown that there is a significant correlation between brand values and market valuations, suggesting that investors use non-financial information to reach a valuation of a brand as an asset while accountants do not, at least as far as internally generated brands are concerned (Barth, 1998).

- **R&D Valuation Measures:** As discussed earlier, one approach to the valuation of R&D is to use 'options models'. In theory, 'options' are simple. In the film industry, studios routinely buy options on thousands of scripts that never get made into films. When they buy the option they purchase the right to make it into a film but they are not obliged to do so. An option has a value even if the film never gets made; i.e. the script is denied to potential competitors. Options are, therefore, a way for people to hedge their bets until the very last moment when they have to make a decision to go ahead or pull out. In markets beset by uncertainty buying this

extra time and space to make a decision has a value in its own right even if the project does not come to fruition.

Companies acquiring research and technology from universities are also using options. By buying an option on a piece of research, a company typically funds patent applications and pays an option fee to the inventor, usually to allow further research. At the outset, basic science research projects often hold a great deal of promise: they could go up in smoke but they could create a new market. The more uncertain and volatile the pay-off, the more it makes sense for a company to hold an option. That way the company avoids a dangerous choice between meeting the full cost of taking the idea into product development or pulling out and risking the loss of a great product. At each stage, the company can either choose to renew the option, terminate it, or even sell it. As the project progresses, it should be possible to gather more information about its prospects. The less uncertain the outcome the less sense it makes for a company to hold an option. The company then has to make up its mind to pull out or to continue supporting the project to its completion. The details of these options are rarely disclosed, but they provide a way for companies, investors and outsiders to value the underlying asset: i.e. the knowledge embedded in the research programme.

- **Patents and Trademarks Valuation Measures:** Many companies are developing more systematic internal measures of the value of their patents (similar to the Dow Chemicals system illustrated earlier). At the same time researchers have begun to unravel the links between patents and share market values. Patents may be a better measure of a firm's knowledge capital than spending on research and development because they are a measure of output, while spending on R&D is a measure only of input (Giriliches, 1996). The strength of a company's patent portfolio can be assessed from several different vantage points: the number of patents;

the frequency with which they are cited in others within the industry or in scientific research; and the age of the portfolio. Examination of a company's patent stock could be much more informative than a catch-all valuation of R&D which would lump together pure and applied research, product and process development, successful and unsuccessful projects. Some of the other similar intellectual capital-based assets in an organisation are as follows:

- In-House Technical Expertise
- Specialised Market Experience
- Unique Data or Information (or the ability to gather it if necessary).

There are many pitfalls in these new measurements and valuation processes. The above specific examples seem to endorse the idea that intangible assets can be tied down and measured if only accountants had enough time and information. This is a mistake: intangible assets are highly complex and fluid and their value is volatile and highly context dependent.

Summary

There should be no controversy within the field of accounting and financial reporting that issuers of financial statement should provide the readers of financial statements with all material information that is both relevant and reliable. The relevance of intangibles and related capabilities has not usually been questioned, but the reliability of the valuations has often been questioned.

Intellectual capital measurement is a fast-growing part of the knowledge management market. It has many attractions, at least in theory. It helps managers and investors to visualise the role of intangible assets in creating organisational capabilities that in turn enhance corporate value. These new measurement systems all use similar measures of human capital, customer relationships and structural capital, for example in the latter case, those embedded in corporate relationships and joint-ventures.

There are, however, significant downsides. Many of these new measurement and valuation systems appear elegant but would require large investments in data collection. Many measure 'assets' which have no obvious bearing on financial performance. To overcome these difficulties, much focused research is required to find useful ways in which to visualise and value the intangible assets of a company, especially when combined with the ethical and social audits now becoming more common among large companies. Such measurements could also overlap with new performance measurement systems such as the Balanced Scorecard, especially in the valuation of *capability enhancing assets*.

Many of these measures are internally generated, and the management accountant should play a key role in the provision of the measures required

References

- Andersen, R. and McLean, R. (2000), "Accounting for the Creation of Value", *Canadian Institute of Chartered Accountants*.
- Andriessen and Tiessen (2000), *Weightless Weight – Find Your Real Value In A Future Of Intangible Assets*, Pearson Education London.
- Barskey, N.P. and Marchant, G. (2000), "Measuring and Managers Intellectual Capital", *Strategic Finance*, February, pp 59-62.
- Barth, M.E. (1998), "Brand Values and Capital Market Valuation", *Working Paper*, Graduate School of Business, Stanford University, January, California.
- Bontis, N. (2000): Assessing knowledge assets: A review of the models used to measure intellectual capital. *Working paper*, Queen's Management Research Centre for Knowledge-Based Enterprises. Available Online: <http://www.business.queensu.ca/kbe>
- Boston Consulting Group (BCG) (1993), "Cash is all that Counts", *Managing for Value*, Boston.
- Brooking, A. (1996), *Intellectual Capital: Core Assets for the Third Millennium Enterprise*, Thomson Business Press, London.
- Cooper, R. and Kaplan, R.S. (1988), "Measure Costs Right: Make Right Decisions," *Harvard Business Review*, September-October, pp 96-103.
- Deloitte and Touche (1996), *Value Based Measures*, Deloitte and Touche, London.
- Edvinsson, L. and Malone, M.S. (1997), *Intellectual Capital: Realising Your Company's True Value by Finding its Hidden Brainpower*, Harper Business, New York.
- Giriliches, Z. (1996), "R&D and Productivity: Economic Results and Measurement Issues", in-Stoneman, P. (Editor), *Handbook of Economics of Innovation and Technological Change*, Blackwell, Oxford.
- Ittner, C. and Larcker, D. (1998), "Analysing the American Customer Satisfaction Index", *Conference Paper*, First Conference on Intangibles, Stern School of Business, New York University, New York.
- Johansson, H. (1996), "Human Resource Costing and Accounting". Available on line: <http://www.sveiby.com.au/IntangAss/OECDartUlfjoh.htm>
- Kaplan, R.S. and Norton, D.P. (1992), "The Balanced Scorecard-Measures that Drive Performance", *Harvard Business Review*, January-February, pp 71-79.
- Leadbeater, C. (2000), *New Measures for the Economy*, Centre for Business Performance, Institute of Chartered Accountants of England and Wales. London.
- Lev, B. and Zarowin, P. (1998), "The Boundaries of Financial Reporting and How to Extend Them", *Working Paper*, Stern School of Business, New York University, New York.
- Litman, J. (2000), "Genuine Assets: Building Blocks of Strategy and

Sustainable Competitive Advantage”, *Strategic Finance*, November, pp 37-42.

McPherson (1998), “*Inclusive Valuation Methodology*”, cited in Skyrme (1999), *Measuring the Value of Knowledge*. Business Intelligence

Nash, H. (1998) “Accounting for the Future, a disciplined Approach to Value-Added Accounting” Available on-line.

Porter, M.E. (1980), *Competitive Strategy: Techniques for Analysing Industries and Competitors*, The Free Press. Boston.

Porter, M.E. and Miller, V.E. (1985), “How Information Gives You Competition Advantage”, *Harvard Business Review*, July-August, pp 149-160.

Rappaport, A. (1986), *Creating Shareholder Value: The New Standard Business Performance*, The Free Press, Boston.

Ratnatunga, J. (2000), “Future Directions in the Globalisation of the Accounting Profession”, in Dahiya, S.B. (Ed), *The Current State of Business Disciplines*, Vol.1, Spellbound Publications, India, pp 145-150.

Ratnatunga, J., (2001) “Empowerment Accounting: The Influencing Model For Leaders”, *Mt. Eliza Business Review*, Vol. 4, No.2, Summer-Autumn, pp. 57-65.

Roos, J, Roos, G., Dragonetti, N.C. and Edvinsson, L. (1997), *Intellectual Capital: Navigating in the New Business Landscape*, Macmillan, Houndsmills, Basingtoke.

Rossett, J. (1998), “Human Resources and the Measurement of Risk: The Case of Union Contracts”, *Working Paper*, Graduate School of Business, University of Chicago, April. Chicago.

Skyrme, D. and Associates (2000) “Measuring intellectual capital – A plethora of methods” Available Online: <http://www.skyrme.com/insights/24kmeas.htm#meas> Accessed: October.

Standfield K (1998), *Extending the Intellectual Capital Framework*. Available

on line
<http://www.knowcorp.com/article075.htm>

Stewart, T.A. (1997), *Intellectual Capital: The New Wealth of Organizations*, Doubleday/Currency, New York.

Sveiby, K.E. (1997) *The New Organizational Wealth: Managing and Measuring Knowledge Based Assets*, Berrett Koehler, San Francisco.

