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Dealing with the Management of Intellectual Capital: The Potential Role of Strategic Management Accounting

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**DEALING WITH THE MANAGEMENT
OF INTELLECTUAL CAPITAL:
THE POTENTIAL ROLE OF STRATEGIC
MANAGEMENT ACCOUNTING**

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ABSTRACT

Given the considerable increase in knowledge-based and technology driven companies, the accounting profession has been wrestling with the valuation of intangibles and particularly intellectual capital. This paper is based on our interaction, as a multi-disciplined team, with service businesses and their concern to make visible and hence manageable the value of the intellectual capital of their employees and infrastructure. It is observed that valuation should not be left to the market but that internally the role of strategic management accounting can inform valuation, support decisions and promote competitive advantage. This could be undertaken by reference to strategically driven and formally established performance measures which are incorporated into a proposed valuation model.

Keywords: Intellectual Capital, Service Businesses, Performance Measures, Valuation, Strategic Management Accounting.

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INTRODUCTION

With the growth in the knowledge-based economy, it is becoming increasingly the case that, rather than technology or tangible assets alone, the intangible assets of the firm and its 'intellectual capital' are the keys to achieving sustainable competitive advantage. It is acknowledged that there has been a dramatic increase in the number of formations of knowledge-based and technologically driven companies and with this conventional financial accounting methods and investment appraisal approaches are particularly challenged because, for these companies, wealth creation is a function of intangibles Segelod (1998) (James, 1999).

This paper proposes the construction of a valuation analysis model for the application of a strategic management accounting approach to support the measurement and management of intellectual capital. It draws particularly on the authors' experience of the issues in a service company environment, particularly managing the 'Human' elements of Intellectual Capital, in a hi-tech telecommunications Call Centre.

Intellectual Capital can be considered as the total stock of human capital or knowledge-based equity that a company possesses. An organisation needs to be able to classify these assets, identify how they support the strategic goals, quantify their contribution to the value of the organisation and consider how the assets compare to those of their competitors. This paper make a contribution in this regard.

There is certainly evidence (Roos, 1997; Rennie, 1999) suggesting that new techniques are needed to measure and manage the intellectual capital of a company. Johnson (1999) further builds on this taking the firm as a 'bundle of assets', he proposes that without clearer measurement, management may overlook the revenue potential and value-added benefits of intangibles and intellectual capital. Notwithstanding developments in non-financial reporting, Batchelor (1999) presents a case for a new type of statement covering intellectual capital. The principal argument is that certain aspects of the firms intellectual capital do not readily respond to currently available approaches and metrics and hence benchmarking.

DEFINING INTELLECTUAL CAPITAL

There have been a number of attempts to categorise intangible corporate resources. Of the more recent work, Roos *et al* (1997) propose a

division into two distinct areas: Human Capital and Structural Capital. The former rests in the people of the organisation, and therefore is transferable. The latter is latent within the company, so is related to the company's presence in the market. On similar lines Sveiby (1997) has proposed a categorisation into human, customer and structural capital, see Figure 1.

Although the frameworks are useful for classification of intangible assets, they do not reflect the flow of intellectual capital in an organisation or provide a basis for its management. Dierickx and Cool (1989) make the distinction between stocks of intangible assets and the flows of knowledge using the 'bathtub' metaphor:

At any point in time stock is indicated by the level of water in the tub. It is the cumulative result of flows of water into the tub (through the tap) and out of it (through leakage). If we take Research and Development as an example, the amount of water in the tub represents the stock of know-how at a particular moment in time, whereas the current R & D spend is represented by the water flowing in through the tap. The fact that know-how depreciates over time is represented by the flow of water leaking through the hole in the tub.

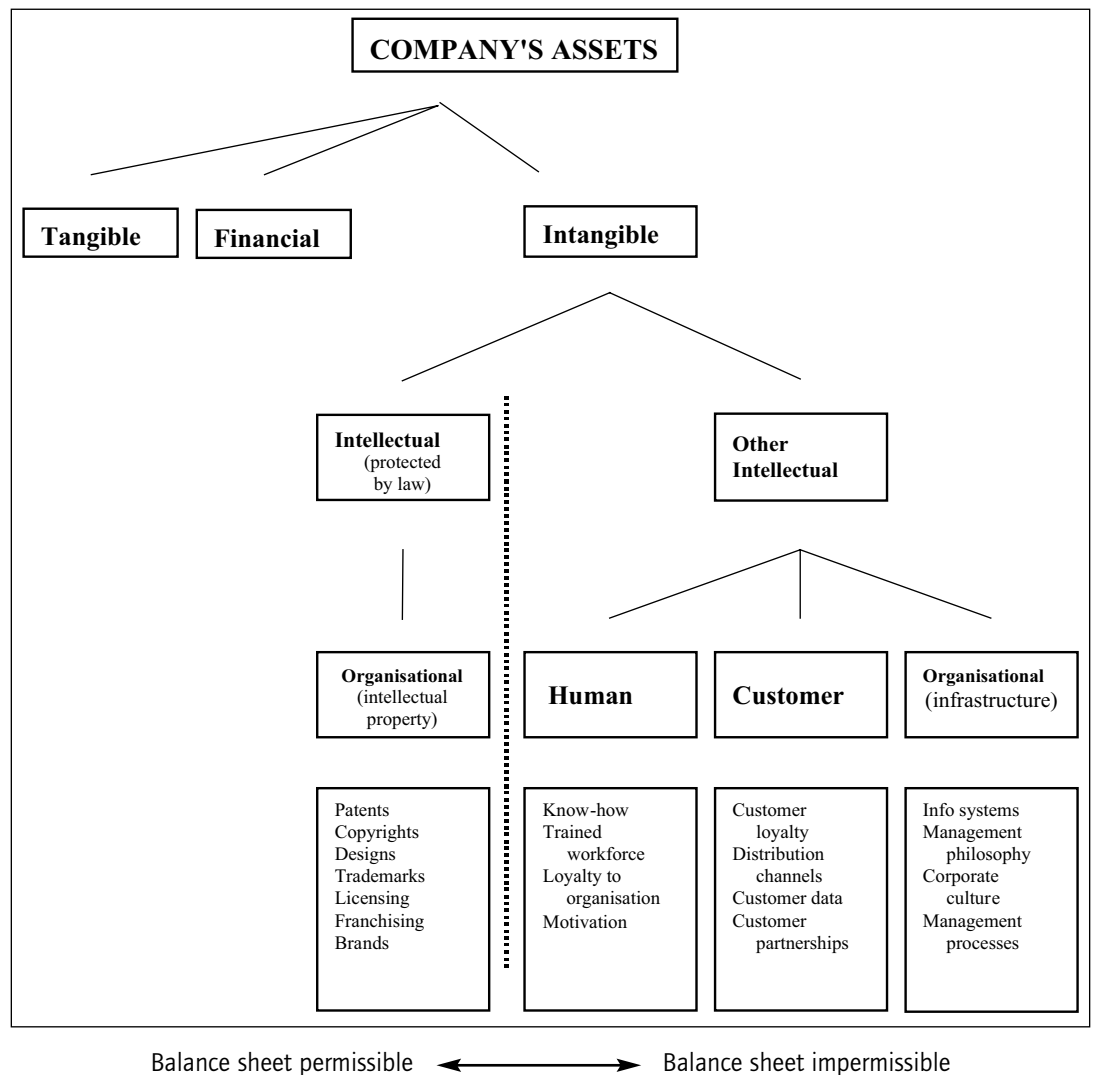
Amassing intellectual capital is not necessarily a 'zero-sum game' (Roos and Roos, 1997). Research has shown that knowledge is generating increasing and exponential returns - unlike the accepted factor endowments of land, labour and capital (Arthur, 1996). Hence an understanding of the value in transfers of knowledge can be used to leverage the overall sum of intellectual capital in an organisation.

STRATEGIC MANAGEMENT ACCOUNTING

Strategic Management Accounting (SMA) is of relatively recent origin. Simmonds is generally acknowledged to be the first to coin the term (Simmonds, 1981). He defined SMA as "the provision and analysis of management accounting data about a business and its competitors for use in developing and monitoring the business strategy" (p.26). He saw profits stemming not from internal efficiencies but from the firm's competitive positioning in its market.

Govindarajan and Shank (1992) approach SMA from a different perspective, they addressed the role that cost information plays in strategic management. To this they apply three themes:

FIGURE 1 ASSET CLASSIFICATION MODEL



Value Chain Analysis, Strategic Positioning Analysis and Cost Driver Analysis to formulate a framework concerned with the relationship between strategy and management accounting. They refer to this framework as “Strategic Cost Management” which Shank defines as “the managerial use of cost information explicitly directed at the stages of the strategic management cycle” (1989, p.50).

Further perspectives on SMA have been offered by Bromwich (1990, 1992) and Wilson (1995). Bromwich focuses on the final goods markets. He defines SMA as “the provision and analysis of financial information on the firm’s (product) markets and competitor’s costs and cost structures and the monitoring of the enterprise’s strategies and those of its competitors in these markets over a number of periods” (Bromwich, 1990, p.28). Wilson’s commentary highlights an “outward and forward” focus. Two of the approaches (Bromwich, and Govindarajan and Shank) derive primarily from Porter’s (1985) model of competitive positioning.

There is scope for greater emphasis on and attention to dimensions of SMA, it is still in its infancy. Research suggests that the term is used sparingly within organisations and with limited appreciation of its meaning (Guilding et.al. 2000).

STRATEGIC APPLICATION IN A SERVICE ENVIRONMENT

When it is those elements of unique intellectual capital that form the constituent parts of the company’s competitive advantage, strategic management accounting provides a vital fulcrum in the leverage of those assets, assisting in the creation of value and so further strengthening the company’s competitive strategy. Incorporating data and feedback from the service environment, it can provide managers with relevant control and measurement indices that are pertinent to the resolution of their daily problems, yet also provide useful prediction mechanisms for use at the strategic planning level.

It is within the internal management figures that measures to define and quantify the role and impact

of intellectual capital will become of real strategic value. In the modern service based company, it becomes of even greater significance to embrace an effective and relevant treatment of intellectual capital within the management accounting function. Studies by McKinsey in 1993 confirmed the vital importance of this in a service environment, it was held that organisation of labour skills, rather than the level of investment in capital equipment, was the determinant factor of productivity.

The challenge, therefore, is to devise a system of accounting procedures that are in alignment with the unique attributes and the competitive strategies of the company. Booth (1998) submits that the secret behind this primary objective of value creation lies in the understanding of the value in transfers of knowledge and, therefore, how a business may be best managed to increase the overall sum of intellectual capital. We suggest that, in order for management accounting to be of real strategic value, it must be possible to identify and value, with some precision, the component elements of the generic intellectual capital of the company.

PERFORMANCE MEASUREMENT AND HUMAN RESOURCE METRICS

The use of financial and non-financial measures of performance is not new, a prominent current methodology is the Balanced Scorecard (BSC). The (BSC) was proposed in a series of three articles (Kaplan & Norton 1992- 1996) in the Harvard Business Review. It came about in recognition of the fact that financial measures are lagging indicators of performance; it sought to provide leading indicators, permitting corrective action before financials are impacted.

The BSC is conventionally constructed using four groups of measures, which represent shareholder interests *arising from* external customer perspective *and* internal business processes *both of which are influenced by* company's learning and improving ability. However, these are only generic groupings. During the stages of its evolution attention has been drawn to the need to link it to the strategy of the organisation and the ability of the BSC to communicate and make the organisation mission real.

The Tableau de Bord was popular in France long before the Balanced Scorecard appeared. Like the BSC it counters the tendency to take actions to improve short-term profitability at the expense of long-term performance. The Tableau de Bord is the company's 'dashboard'; it is a wide-ranging set

of measuring instruments to show the degree to which the firm is fulfilling its objectives. Each organisational level will have its own Tableau de Bord, with measures appropriate to that level.

As with a vehicle dashboard, the Tableau should not overwhelm its user with too much information. It should report the performances of a small number of indicators, and compare these to some datum such as previous performance or industry benchmark. Epstein & Manzoni (1998) point out that the Tableau de Bord is more than just a tool; it is an overall management approach. They add that there has been a tendency to include too many measures, and these have concentrated on financial measures or internal systems rather than customer requirements, and they have not been used to contribute to understanding. Furthermore they do not convert all measures to a single currency that would allow pay-off between activities to be measured.

Human Resource Metrics

The HRM profession is acutely aware of the importance of retaining the HR component elements of the company's competitive advantage. The measurement of human capital is, of course not new, Roslender and Fincham (2001) draw attention to Human Resource Accounting and its origins in the 1960's. There is increasing evidence that current HR policies are being written to support the retention of human skills in the face of dissipation or loss: the retention of those skills turns on more than just a salary or benefits package. Mayo (1999) endorses the idea that the source of "value" in the modern company is through the creation and flow of knowledge.

Cowey (1999) supports the notion of 'learning' and 'development' in a knowledge company. He argues that unless organisations genuinely understand how value is created in this environment, investments in learning, training and development will not come to complete fruition. Acknowledging the fact that the intangible assets that underpin such a theory in the modern company are fragile and susceptible to depreciation, he sets out a framework for "The Intangible Asset Inventory".

There is growing reliance on quantitative measurement and external benchmarking in the assessment of the latent value in human capital. Grossmann (2000) stresses the importance of devising unique metrics tailored to assess the strategic value of knowledge, and its effectiveness to the organisation, rather than just adopting measures of managerial efficiency. Clearly setting

out the usefulness of metrics that follow strategic thrust, he argues that there is feasibly an interface between accepted financial accounting ratios and the concept of quantifying what is in the minds of the team. He uses an example based on an ROI ratio, linked to a programme of investment in human resources. Two critical factors are observed, namely, what quality the company most values about the programme measured and an efficient method of assigning a monetary equivalent to that value. These views have some merit, but fall short of a full investigation of the problem because no precise model or valuation protocol is suggested. We take these principles further by examining some typical management situations experienced in a high tech service provision company.

THE MODERN SERVICE COMPANY

As the service sector in the UK continues to grow, the need to be able to effectively measure the value of people and knowledge has become an extremely relevant and pressing subject for discussion. Guthrie et.al. (2001) point out the particular importance of IC in service businesses and, based on their Australian experience, that it is these service businesses which tend to predominate the economy of developed nations. The emphasis has shifted within this sector from '*what we own*' to '*what we know*' and the attempt to quantify this intangible asset is both a strategic challenge and a value adding activity. The more successful companies in the service sector appear to be able to utilise their intellectual capital more effectively than their competitors and invest in continuous improvement in these areas.

There are a number of reasons why a service company would want to implement a mechanism to measure its intellectual capital. This may be needed on a regular basis for strategic planning purposes, or the requirement may be reactive to a significant change within the organisation. Some of these reasons, to which we have been directly or indirectly exposed, are:

- Strategic Thrust - competitive advantage based on service differentiation: is it more important to have high value intellectual capital and hence high service levels than be a lowest-cost producer organisation?
- Evaluate ROI - to quantify the 'soft' and 'hard' benefits of investments such as training and development: investments in technology -v- investments in people - which creates the most value?

- Management Control - to quantify the value of people and know-how rather than simply understand the costs, as an aid to decision making at operational level
- Future Planning - are the most costly or valuable assets creating the core competencies and future competitive advantage of the organisation? For example in recruitment profiling, reflecting the 'ideal' employee, targeting the right staff for retention
- Valuation of organisation - in the case of an impending corporate disposal, to secure additional funds, de-merge, or to understand growth or decline of business based on asset specificity rather than profits
- Rationalisation programmes - to reduce staffing levels and target appropriate staff for redundancy based on their value adding capability, or to implement withdrawal or sale of other intellectual capital, for example brands and patents

If managers ignore the value of intellectual capital or under-estimate its contribution, decisions may be taken that damage the 'knowledge' or intellectual capital of the business in the longer term. There is a real danger that the value of intellectual assets may become 'hidden' values. The failure of accountants to adopt a Strategic Management Accounting approach and focus on the evaluation, appraisal and measurement of it will also result in the neglect of what may prove to be the service organisation's most valuable resource.

Human Capital in a Pure Service Provider

Applying the asset classification model (Fig. 1.) to our service company, Human Capital in practical terms refers to the know-how, capabilities, skills and expertise of the employees in the organisation and their value to the internal and external stakeholders. Although many service organisations gain their competitive advantage through this source, they often do not have in place the metrics to allow accurate judgement of their performance.

Call Centres in particular are extremely competent in capturing information about efficiency but pay little attention to the qualitative employee characteristics that create value for the organisation. A call centre advisor would normally be assessed in terms of number of calls taken, ability to answer the customer query and

number of *productive* hours (taking calls or performing 'in-fill' administrative tasks between calls) against the number of hours worked. The cost of the operators would be measured against their productive value. However, a measure of productivity, eg.. number of calls answered is not as helpful as, a measure of value added, say number of customers satisfied.

However, other qualitative measures should be considered, to assess the actual effectiveness and value in real terms of that person. Instead of measuring efficiency by the amount of time spent on the telephone, measure effectiveness, the number of conversions or suggestions for improvements to the system. Ideally, adjusted or weighted monetary values could be placed on some of the measures suggested below: Table 1.

Customer churn evaluation involving identification customers lost, those retained, new customers, etc. is particularly prevalent in the telecommunications sector in the UK at the moment, where the cost of failure has received much attention. Interestingly, this competitive force may lead to acceleration in the introduction of appropriate measures that enable organisations to quantify both customer and employee value. US telecommunications giant, GTE, has already set the ball rolling by implementing a version of the Balanced Scorecard to assess its employees using non-financial indicators. BT is also in the process of piloting the use of a personal

performance scorecard within some of its call centres: this is in response to the size of the sector in developmental terms, which accounts for one in a hundred of the UK working population. There is scope therefore for a improvement in terms of the creativity and originality of the performance measures selected but also in terms of value placed on the improvement in intellectual resources employed. This is where some measure of financial value makes for a further advance.

VALUATION OF INTELLECTUAL ASSETS

Shareholder value will be created not just as a result of operating efficiency, but also as the result of a set of conditions pertaining to the company, its products and its markets. This will dictate the number of customers, the amount of business each transacts, and the price those customers are willing to pay. In order for strategic management accounting to demonstrate enhanced shareholder value, it is necessary to understand the linkage between profitability and assets (both tangible or intangible) and the relationship between development of assets and the inputs controlled by management. Various valuation approaches and tools have been devised, that attempt to assist the manager in measuring these intangible assets and understanding their worth to the firm.

The simplest approach is the valuation of an asset in isolation. Myers (1996) reports that Dow Chemicals has sought to value its intellectual

TABLE 1. PERFORMANCE MEASURES COLLECTED IN THE SERVICE ENVIRONMENT

<p>Number of repeat calls generated about same query</p> <ul style="list-style-type: none"> ➤ Usually 1 in 20 calls generates a further call when the original query is not satisfactorily resolved - leading to higher costs if budgets have been based on customers ringing 3 times a year rather than 4. The more valuable advisors have a 'get it right first time' philosophy <p>Average number of customer complaints</p> <ul style="list-style-type: none"> ➤ As handling complaints is a 'back office' function, the advisor is unlikely to be easily measured in terms of the number of complaints he/she has generated or contributed to in the customer lifecycle. Most complaints are the result of poor human performance, not systems failure. Employees can directly contribute to customer loss and impact on the bottom line. <p>Number of suggestions per employee</p> <ul style="list-style-type: none"> ➤ A good indicator of how supportive the employee is of the organisation's strategic goals and objectives. Employees are more likely to stay in an environment where their ideas are valued and they get satisfaction from their work. Even within a call centre environment, employees can be autonomous within pre-defined boundaries. <p>Value added per £ salary cost</p> <ul style="list-style-type: none"> ➤ When the metrics are translated into £ generated for the company, we can make a direct comparison with the individual's salary cost to identify if the employee is in fact 'value for money'. Employees that perform the tasks but generate little value would be the first employees to be made redundant in a rationalisation programme. Those employees contributing the most in value terms should be rewarded accordingly and help create a profile of the 'ideal' employee to recruit in future. <p>Training - Return on Investment</p> <ul style="list-style-type: none"> ➤ Simply measuring the hours of training given does not reflect whether the employee is more satisfied or effective. Firstly, the training itself must support the core competencies and strategic objectives and, secondly, the individual must be measured against a number of indicators, before and after the training, to assess both the 'soft' and 'hard' benefits. The short-term attitude of managers focused on cost reduction, through cuts in training and development budgets, may result in reduced staff loyalty. Self-interest replaces organisational support. Organisations need to identify the repeatable success formulas; e.g. training programmes that have reduced customer complaints, so decreased churn (movement to competitor) by an arbitrary proportion: say > 2%.
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assets by tightly defining the intangible and assigning a valuation range. McConnachie (1997) has described Dow's Intellectual Asset Management Model in detail. It is Dow's ambition to publish this information in a supplement to the annual report, to assist analysts, shareholders and other investors.

Skandia Insurance Company has been publishing such supplements since 1994, documenting both intellectual and non-intellectual assets such as employee competence, work processes, and trademarks (Edvinsson 1997). It also quotes a range of indices indicating 'capability of renewal and development'. It embarked upon this course to help it identify those factors influencing the growth of the business, and to better manage them.

These examples address each intangible asset individually. However, it is difficult to apportion benefits due to overlap of intangibles. Conversely, there is the risk that the firm will be undervalued, either due to the omission of certain intangibles, or the failure to recognise synergistic effects between intangibles (King and Henry 1998).

As an alternative, it may be more appropriate to measure the value of a firm's intangibles including intellectual capital in totality. The starting point might be to equate the value of intangibles to the difference between the firm's market valuation and its book value, i.e. Market Value Added (MVA). This has the virtue of simplicity. However, to state that MVA is wholly attributable to intangibles is to overstate the worth of intangibles, as MVA will at least in part be attributable to the earnings potential of the tangible assets. Furthermore, it is at the mercy of share price fluctuations.

Lev has proposed a Knowledge Scorecard, which seeks to derive the Net Present Value (NPV) of intangible assets (Mintz 1999). The methodology begins by averaging the last 3 years' actual earnings and the next 3 years' forecast earnings. Then the theoretical return for non-intangible assets is calculated - Lev assumed 7% for tangible assets and 41/2% for financial assets. Earnings not accounted for by these non-intangible assets are therefore assumed to be attributable to intangible assets: Knowledge Capital Earnings (KCE). By estimating an appropriate discount rate, which Lev took to be 101/2% (the average after-tax rate of return for knowledge-rich industries), the knowledge capital which generates these KCE can be calculated thus:

$$\text{Knowledge Capital} = \frac{\text{KCE}}{\text{Discount rate}} = \frac{\text{KCE}}{0.105}$$

Where KCE = Average earnings - (Tangible assets \times 0.07) - (Financial assets \times 0.045)

Having derived the value of knowledge capital, further comparisons and ratios are possible, including:

Knowledge Capital : Book Value - the degree to which the company is knowledge-based.

Knowledge Capital Earnings / Sales - the Knowledge Capital Margin.

By adding Knowledge Capital to Book Value, the Comprehensive Value can be found, summarising the value of all the company's assets. The Market Value : Comprehensive Value ratio shows significantly lower values than the Market Value : Book Value ratio. A Market Value : Comprehensive Value ratio of 1:1 implies that earnings expectations are perfectly reflected in share price.

Such is the importance attached to the valuation and management of intangibles that CFO Magazine has made the evaluation of intangibles in leading companies into an annual event, Mintz (2000). Dzinkowski (1999) describes a very similar approach called Calculated Intangible Value (CIV), for which Stewart (1997) has provided worked examples.

Whilst the measurement of intangible assets is an interesting topic, it does not help the manager to decide what actions to take in order to maximise those assets and, in turn, shareholder value.

PROPOSED MODEL

Booth (1998) has pointed out that the problem is not so much the calculation of the value of intangible assets, rather the real task is to work out how to create value. In this sense, the approaches for calculation of intangible assets such as the Knowledge Scorecard or the Calculated Intangible Value are of little direct value to management or the strategic management accountant. It is not helpful to have a total comprehensive or market value, nor can this value realistically be left to the market. Mouritsen (1998) observes that the valuation of intellectual capital cannot be left to the market because it is quite possible that the firm has more insight into internal capabilities than the market. Furthermore, there is a need for internal management information to be produced which makes visible

and hence manageable the intellectual capital in employees and infrastructure. What is required is a closer identification of the various dimensions and values of an organisation's intellectual capital and the impact of decisions on individual and overall valuation.

Non-financial performance measures such as the Balanced Scorecard or Tableau de Bord can make some contribution in this regard. Some performance measures can be developed which deal with lead and lag aspects, additionally input and output, objective and subjective measures can be produced. However, other observers note that performance measures are often more suited to the control of short-term operational targets, *e.g. number of orders delivered on time*, but this perhaps underestimates the advances that have been made in various reporting models. They do not however, conveniently offer assistance in answering temporal questions such as whether the short-term depression of profits caused by a staff training programme would be more than offset later through higher customer retention and lower cost-of-sale. This of course is a vexed question and Kaplan and Norton (1996) would no doubt suggest revisiting measures to evaluate this impact, but such a step does not compensate for comparison using predicted financial values in our 'totaliser' model presented diagrammatically in Fig 2.

It is therefore proposed that the most appropriate approach is to combine these principles and bring together both valuation and performance measurement for Intellectual Capital. The overall objective is deemed to be the maximisation of the Market Valuation of the company. This is derived from the discounted values of the Economic Value Added in each period.

The Economic Value Added (EVA) is calculated thus:

$$\text{EVA} = \text{Net sales} - \text{Operating expenses} - \text{Taxes} - \text{Capital charges}$$

The 'financial outputs' should be derived from the values of a range of business conversion measures, coupled together recognising their inter-relationship and using cause-and-effect linkages. The values of these business conversion measures in turn should be derived from financial inputs, similarly joined. These linkages should reflect relative impact one on another and the lead/lag nature of certain of the relationships.

The model would place values, albeit approximate values, on the performance measures generated by

a firm's performance scorecard. It would be a "time-phased totaliser" as its output would ultimately be a single value, this being the net present value of future returns. The necessary modelling tools are readily available, in the form of systems dynamics (the application of a set of behavioural rules to a system over time) or simulation modelling. Such a model would be company-specific, reflecting the characteristics of the firm's industry, and working with those aspects that it believes form the structure of its competitive advantage. Differing summary sets of data would be drawn from the model to suit differing organisational subdivisions and adhoc data extracted to deal with specific intellectual capital decisions. Drawing on the call centre situation this could be a choice between staff training programmes or new technology to deal with a particular customer churn problem. Following Govindarajan and Shank (1992), building the model would involve reference to how the company competes, its value chain, strategic position and cost driver analysis. The fact that benefits derived from the development process and post-implementation learning are of significant use in addition to the numbers themselves should not be lost sight of

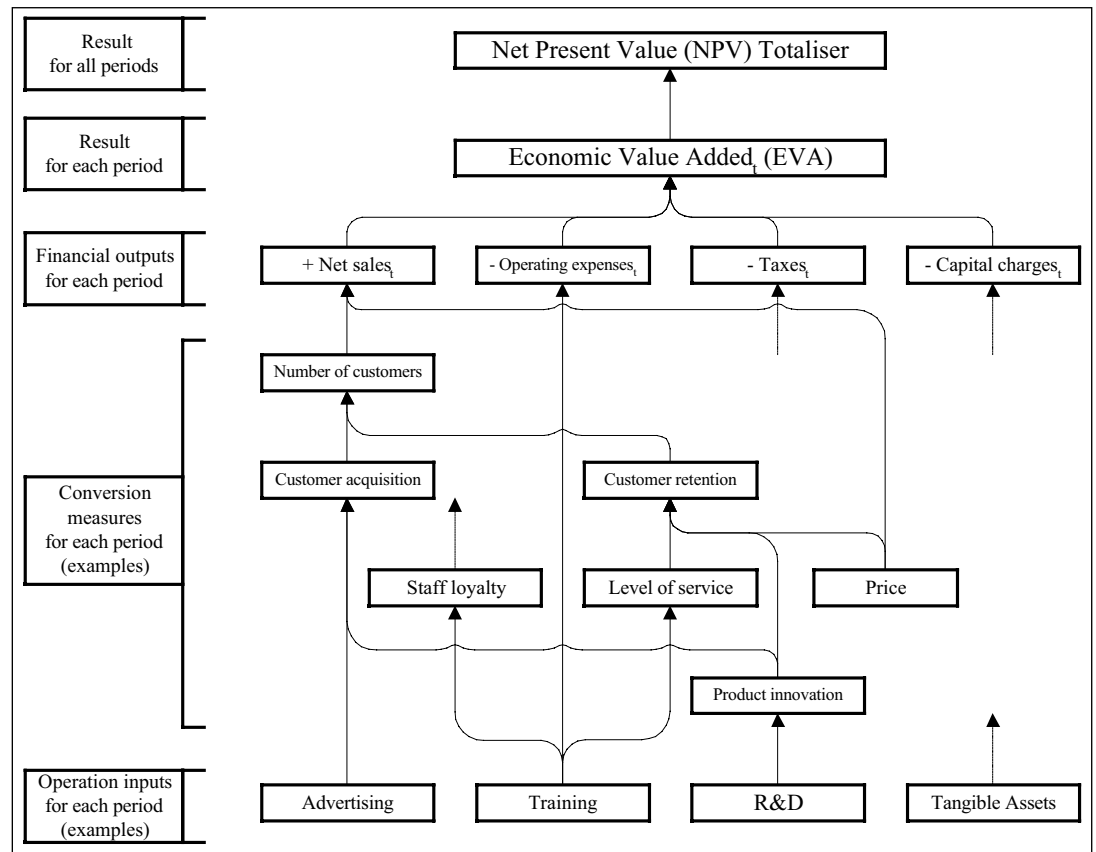
To explain in a little more detail the model and one of the issues with which management would have to deal and which would have relevance to our call centre setting. The number of customers in one period is influenced by the retention rates applicable to existing customers plus the number of new customers attracted thus:

$$\text{Number of customers}_t = (\text{Number of customers}_{t-1} \times \text{Retention rate}_t) + \text{Number of new customers}_t$$

The retention rate is a function of the level of service quality delivered and the extent to which this influences the sales generated. This again is influenced by training, employee attitude etc. These would all be components of the valuation and measurement of the related intellectual capital.

The development of such a model is not without its difficulties and consequences. This sort of management accounting information is clearly of strategic importance to the business. It has been demonstrated that non-financial information also is an important input in the model and in shaping strategy. Hence the management accountant now must work with other specialist management disciplines in the collection and analysis of data, rather than working alone in the generation of financially orientated data (Lord, 1996; Van Cauwenbergh, 1996).

FIGURE 2. OVERVIEW OF THE MODEL OF VALUATION AND PERFORMANCE MEASURES



Other challenges and limitations of this approach should not be overlooked. Dixon (1998) argues that, although theory suggests a company should build up its arsenal of strategic information, in practice the informational demands placed on the management may be more costly than the benefits accruing. Inevitably there will be difficulty in establishing exact values and relationships but this should not detract from applying the model in all cases of strategic importance to the company. There are an increasing number of situations where the provision of strategic management accounting information requires the exercise of careful estimation and management judgement. Bromwich and Bhimani (1994) point out that although many companies find this difficult it is precisely this information on costs and relationships which are important for strategic management accounting. For example, Bromwich (1990) has suggested a technique called 'attribute costing' where specific product attributes that appeal to customers (for example, operating performance, reliability, warranty, after sales service etc.) may be costed. This is a problematic exercise not in line with conventional costing, however, a recent international survey revealed both perceived merit in and actual practice of this approach (Guilding et.al. 2000). Inevitably this involves estimation of factors and their relative weight, which has similarities to the requirement

for our proposed model.

Relating to the service sector call centre operation discussed previously the model will facilitate greater insights into, say, the investment spend on training compared to technology. The hours spent on training courses will not be a helpful statistic, the key question is what is the return on the investment in developing competence in the call centre, does it support core competence in the centre, what is the extent of anticipated benefits, does it support strategic objectives? Our model can be engaged to help answer such questions.

CONCLUSION

It is proposed that greater attention should be focused upon intangible assets and intellectual capital as internal measures. They would be used for internal and external benchmarking. A model has been proposed to assist managerial decision-making by indicating the most appropriate course of action to enhance shareholder value.

The unique element of the model proposed here is that it draws together a number of aspects of the approaches already described:

- It uses a discounted EVA approach to determine the Comprehensive Value of the enterprise,

- It models the firm as a series of inputs, conversion processes, and financial outputs,
- These are joined together using cause-and-effect linkages which are developments of performance measures.

The benefits of this approach with the model are:

- Information is generated in a form that can be used as a supplement to the annual accounts for the benefit of management and, if appropriate, stakeholders - for example bankers.
- It can assist management in making decisions, particularly where alternatives need to be investigated and valued.
- It avoids the categorisation of the Balanced Scorecard, and a firm-specific operational 'Tableau de Bord' can be derived.

Naturally the model can help to provide an understanding of the way in which the business functions, and its versatility suggests it is equally applicable to tangible and intangible assets though in this context it is seen to have particular relevance to intangible assets and intellectual capital.

When the firm-specific model has been refined, neither the model itself nor its linkages should be published; the way in which the firm's resources are deployed may be an element of its competitive advantage. Nevertheless, it may be advantageous to publish the current values of some of the outputs, in order to assist the market in determining the 'correct' market valuation.

In summary, Strategic Management Accounting (SMA) has a significant role to play by providing tools to assist the company in augmenting shareholder value. Management accountants should not only provide the tools, but also should be responsible for evaluating, monitoring and providing management information, to the strategic planning level, with cross functional responsibility for implementation in all departments

The approach proposed enables alternative investments to be compared on a level playing field, regardless of whether they are derived from, or result in, tangible or intangible assets. We have been able to demonstrate how the model aids in strategic decision making by proposing that SMA can be instrumental in delivering pertinent information to senior managers that relates to the unique nature of a service-based environment.

Ultimately this strengthens the feedback loop up to the strategic planning level. This linkage is of particular relevance in the modern service company, typically based on a relatively flat structure with more empowered customer-facing teams. In this respect, we believe our proposed model and the suggested application of management accounting in the service environment is of long term strategic merit.

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