Valuing human resources: an analytical framework

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Abstract

Purpose – The purpose of this paper is to develop an analytical framework that links the expenditures on human capital to the resulting long-term benefits, and thus provide a model for reporting human capital on balance sheets. The framework identifies different kinds of accounting treatments for different kinds of human capital related expenses.

Design/methodology/approach – This paper sub-divides expenditures related to human capital into four categories, based on the expenditure-long-term benefits relationships, using a Cartesian axes-based approach.

Findings – The paper shows that a sub-class of expenditures occur that are within the control of the organisation and provide economic benefits over several periods. As such, these expenditures can be capitalised. Furthermore, expenditures that do not provide long-term benefits or result in lower productivity also exist. These need to be addressed by the management.

Research limitations/implications – This model needs to be formally field-tested.

Practical implications – The analytical framework may be used in practice by managers for analysing the benefits of the different types expenditures on human capital. It can also be used by researchers to analyse the benefits of the expenditures on different types of intellectual capital and financial accounting standard setters to standardise the appropriate accounting treatments for different types of human capital related expenditures.

Originality/value – This is the first study that breaks down the human capital related expenditures into comprehensive categories based on the expenditures-benefits relationships such that positive and negative intangibles are identified, and examines the financial accounting and strategic managerial accounting implications of both kinds of intangibles.

Keywords Intellectual capital, Intangible assets, Human capital

Paper type Research paper

Introduction

A growing divergence between market and book values of firms indicates that current balance sheets are omitting items of value (Lev and Zarowin, 1999). A variety of terms are used to refer to these omitted items, including intangible assets and intellectual capital. The difference between market and book values of assets is often used as a proxy for such intangibles in accounting research, with the underlying assumption that the market efficiently includes the value of the intangibles in the prices of shares.

Lev and Zarowin (1999) found a significant rise in the market-to-book ratios of US firms, from 0.81 in 1973 to 1.69 in 1992, offering evidence that a very large portion of the market value of the companies is not shown on balance sheets. This research indicates that the value of intellectual capital that is missing on balance sheets has grown over the years, and is becoming substantial. However, while the existence of intangible assets is widely acknowledged, an accepted method of measurement is yet to emerge (Seetharaman *et al.*, 2004; Andreou *et al.*, 2007).

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Published intangibles measurement models can be categorised into four groups, based on:

(1) scorecards (e.g. Kaplan and Norton's (1992) balanced scorecard, Edvinson and Malone's (1997) Skandia navigator and Sveiby's (1997) intangible assets monitor);

(2) monetary values (e.g. Brooking's (1996) technology broker, Sullivan's (2000) intellectual asset valuation and Anderson and McLean's (2000) Total Value Creation™);

(3) market values (e.g. Tobin's Q and market to book values, discussed in Stewart, 1997); and

(4) return on assets (e.g. Economic value added, discussed in Stewart, 1997).

Though these models are frequently cited in academic research on intangible assets, particularly as a means of making intangible assets visible, no method has yet emerged to covert these intangibles into monetary figures that are suitable for reporting in audited financial statements. Thus, while there is consensus that the different models do identify intangible assets that are at present missing on balance sheets, no acceptable method is currently available to report all of these assets on financial statements.

One way to address this gap is to look at intangibles on a piecemeal basis rather than as an aggregated whole. It is easier to examine an individual intangible asset in-depth, rather than the entire gamut of intangibles in aggregate. Taking this approach, the accounting for an important component of intangible assets, human capital, is examined in-depth in this paper. A framework for valuing this asset is then developed.

Accounting for human capital

History

Bontis *et al.* (1999, p. 393) mention that human capital represents "the combined intelligence, skills and expertise that gives the organisation its distinctive character". Accounting for human capital dates back by several decades, with interest in this area rising, falling and rising again since the 1960s (Theeke, 2005; Flamholtz *et al.*, 2002). The related developments can be divided into five stages:

(1) *Early to mid-1960s.* Establishment of underlying human resource accounting concepts.

(2) *Late 1960s.* Advent of academic research and the development of measurement models.

(3) *Early to mid-1970s.* Increasing interest in human resource accounting.

(4) *Late 1970s.* Interest in human resource accounting declines.

(5) *From the 1980s to present.* Renewed interest in human resource accounting.

The current, renewed interest in this area is driven by the increasing attention given to intangibles, with the recognition that the wealth creation capabilities of organisations today are driven largely by intangible assets.

Models and functions

An accepted model for human resource accounting could improve both internal and external reporting. A good idea of the costs and benefits of various human resource

decisions and options would lead to better managerial decisions, that are informed by pertinent and relevant hard facts (such as those related hiring, layoffs and job cuts). As for external reporting, the presence of human capital accounts on balance sheets will indicate items of value that are at present absent in financial reports, and improve the value relevance of financial statements. This will also help to reduce the gap between market and book values.

Flamholtz *et al.* (2002) indicates three functions for human resource accounting:

(1) offering numerical information regarding the cost and value of people in organizations;

(2) providing an analytical framework that supports and helps decision making; and

(3) cultivating a human resource perspective amongst decision makers.

Several models are available for valuing employees, including monetary and non-monetary approaches. The non-monetary models (Likert *et al.*, 1969; Flamholtz, 1972; Ogan, 1976) provide indications of increases and decreases in the value of employees over time, using organizational and behavioural variables. These models do not provide monetary values that can be used on balance sheets.

Models that provide monetary assessments of human capital include approaches that capitalise past costs (Likert, 1967), discount wages and salaries (Lev and Schwartz, 1971) and utilise replacement costs (Flamholtz, 1973).

Value relevance of human capital

Current international accounting standards do not allow the recording human capital as an asset on balance sheets, even as a line item within the context of intangible assets, within the scope of International Financial Reporting Standard 138 (also known as International Accounting Standard 38).

Nevertheless, research shows that such information does make a difference in the decisions of users. Elias (1972) found that information on human resources influenced users' decisions regarding investment in common stock. Schwan (1976) found that the inclusion of information on human capital led to significantly better forecasts of net income, as compared with using only conventional indicators. Flamholtz (1976) offers evidence that values of human resources do influence the decisions of certified public accountants, with statistically significant differences between decisions based on traditional personnel numbers and either monetary or non-monetary human resource related values.

Recognition of human capital as an asset

An item is recognised as an asset on the balance sheet when it is likely that the firm will realise economic benefits from this item as a result of past expenditures (including the condition of sufficient control over the assets so the associated benefits flow to the firm) and these benefits can be measured reliably. Regarding recognising human capital as assets, pertinent issues include the fact that employees are free to leave the organization whenever they want to (for example, expenses such as training to improve employee productivity may not result in benefits to the firm if the employee chooses to work elsewhere after the training) and the value of the benefits (such as the incremental improvement as a result of training) are difficult to measure.

These issues have served as stumbling blocks for the recognition of human capital on balance sheets.

In reality, however, not all employees leave the organisation following training. In particular, when the training is specific to an organisation and is not applicable anywhere outside the organisation, it is far more advantageous for employees to remain as valuable, trained resources in their current organisation and enjoy the resulting benefits rather than move to some other firm where their training would be of little use. Regarding the reliable measurement of future benefits, Likert's (1967) approach of capitalising past costs could serve as a basis for an approach that is acceptable from the perspective of accounting regulations.

Assuming that firms are unlikely to invest in excess of potential benefits in all of their business outlays (including the acquisition, training and retention of human resources), the benefits that will be derived from expenditures on human resources will at least be equal to or exceed the monetary values of such expenditures. Following the concept of conservatism, one could consider the value of the benefits from a firm's human capital to be at least equal to the sum of human capital related expenditures spent on that human capital. At present, all of these expenditures are expensed in the financial statements. Such expensing supports the assumption that the benefits from the expenditures on human resources are unlikely to provide benefits beyond the accounting period in which they were incurred.

However, this assumption does not reflect reality. Although some human resource related expenses might fail to provide economic benefits beyond a single period, there are some expenditures that would definitely provide benefits over several future periods.

A detailed analysis of human resource related expenditures will help to identify a set of expenditures that provide benefits over several future periods and can be capitalised, as well as another set of expenses that offer benefits only in the period in which they are incurred, and thus should be rightfully expensed. An analytical framework for analysing various human capital related expenses is shown in Figure 1. This analytical framework helps to categorize expenses into four levels, according to the benefits they provide. Following the cost-benefit characteristics of various

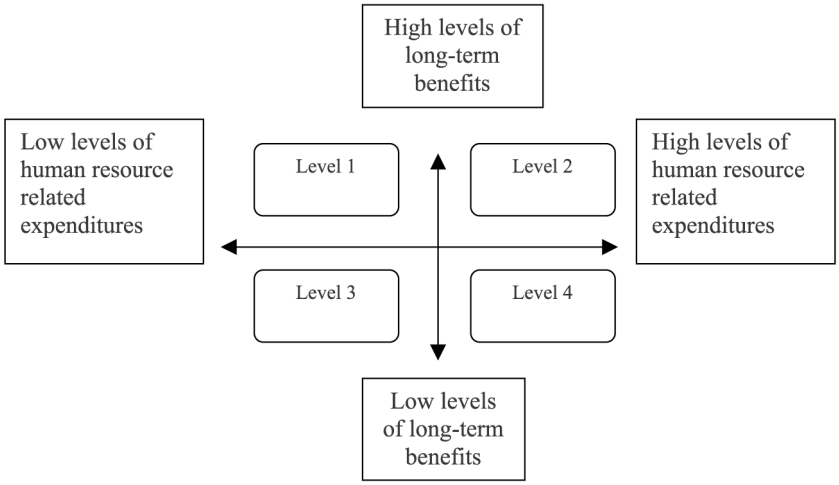

Figure 1.
An analytical framework for analysing human capital related expenditures

categories of human resource related expenditures, the framework offers a guide as to when these expenditures should be capitalised and when they should be expensed.

The analytical framework

The analytical framework is a tool that seeks to identify the different kinds of cost-benefit relationships, so that appropriate accounting treatments (for external reporting purposes) can be established for the different types of expenditures on human resources. Furthermore, this analysis also doubles up as a decision-support tool for strategic performance management, meeting the needs of management accountants.

This framework builds on the theory that the link between expenditures on human resources and the resulting benefits are likely to differ. In some cases, low investment in human resources may result in high levels of long-term benefits, while in other circumstances similar levels of investments can lead to limited benefits. Conversely, high levels of human capital related expenditures might provide either high or low levels of long-term benefits. The analytical framework (Figure 1) provides a visual display of these circumstances.

The analytical framework identifies four levels of human resource related expenditure-benefit relationships:

(1) Low levels of human capital related expenditures that provide high levels of long-term benefits.

(2) High levels of human capital related expenditures that provide high levels of long-term benefits.

(3) Low levels of human capital related expenditures that provide low levels of long-term benefits.

(4) High levels of human capital related expenditures that provide low levels of long-term benefits.

Characteristics and examples of the different levels of expenditures

Level 1 expenditures

Level 1 expenditures are those that bring high levels of long-term benefits to the company despite limited human resource related expenditures. A good example is paid leave by the company for studies and examinations given to employees who choose to further their education and training mostly at their own expense. When the firm in question is relatively large, and there are practically no competitors that are able to offer comparable benefits to staff who complete their studies successfully, the firm is very likely to benefit from the improvement in the staff's performance as a result of these activities (since the staff is now better trained and is more productive and will not leave for greener pastures since there are no competitors that they can move to).

Furthermore, if the firm ensures promotional opportunities at the completion of such studies or training, and offers continued career growth possibilities based on service, then the possibility of the employee continuing to serve the firm for several periods becomes very likely, and the expenses incurred in this case should be capitalised.

The capitalised value can be amortised over the remaining service period of the employee, up to retirement. An exception to this treatment occurs when the said expenditure is immaterial, in which case it may be expensed. In cases of firms that are have open positions for employees with higher qualifications, and have a strong

preference for hiring internally, but choose not to fully fund the pursuit of higher education or professional qualifications perhaps because there is uncertainty regarding the possibility of successful completion of such studies, this proposed capitalisation of the pertinent expenses is applicable.

An interesting analysis occurs when the vertical and horizontal axes are visualised as Cartesian coordinates. Then, the extreme top left of Figure 1 shows a situation where negative human resource related expenditures lead to very high levels of long-term benefits. If the negative expenditures are interpreted as the opposite of normal expenditures, that is, inflows of funds rather that outflows, then this situation indicates a revenue generating activity that is able to develop human capital and provide long-term benefits.

Such a situation occurs, for example, when a firm opens up training sessions or seminars that are useful in developing human capital for its own employees as well as the public, and charges a fee for participants outside of the firm. Successful seminars and training sessions in such cases will result in a net inflow of funds (negative expenditures) while supporting activities that indeed improve the firm's own human capital and provide long-term benefits. The net inflow of funds is recognised as revenue in the period in which it occurs, rather than as human capital related expenditures.

From the strategic management accounting viewpoint, these activities could possibly offer a win-win situation for firms, where their human capital becomes well-trained while the firm generates revenues. However, the management needs to ensure that such training meets the specific requirements of the firm, which in some cases might only be fulfilled by customised training, designed for the firm's specific environment.

Nevertheless, Level 1 expenditures provide excellent value to the firm and should be encouraged.

Level 2 expenditures

Level 2 expenses occur when the firm incurs a high level of human capital related expenditures and also experiences a high level of long-term benefits from such expenditures.

One example is complete funding for further education and professional training for employees (as compared to the limited funding discussed in Level 1 expenditures). Again, when the firm in question offers the best possible options for career growth for employees who successfully complete their education or training, such that these employees are unlikely to leave for better career options elsewhere, the expenses incurred to support these educational activities should be capitalised and amortised over the remaining service of the employee, since it is very likely that the firm will benefit over this period of time.

It is possible to capitalise expenses of this nature even in cases where the employee might be able to move to competitors, under certain circumstances. For example, if the firm ties the service of the employee to the firm with a compulsory service bond of several years upon completion of the studies or training, with a particularly heavy penalty for breaking the bond, then it is very unlikely that the employee will leave the firm before the expiry of the bonding period. As such, the expenses incurred for the studies or training should be capitalised and amortised over the period of the bond.

Another example of Level 2 expenditures that qualify for capitalisation would be training that is very firm specific, which is applicable only to a particular firm and not

useful anywhere outside the firm. A situation such as this might occur when a large monopolistic firm implements an enterprise resource planning (ERP) system that is tightly customised to its particular business processes, culture and unique internal protocols. Since, its products and processes are not likely to be repeated elsewhere, the ERP-related firm-specific training is likely to benefit the employees as long as they remain only in that particular firm. When the said training also offers new opportunities for moving up in that organisation, the trained employees are even more unlikely to move on to competing firms, and as such the related training costs should be capitalised.

However, training of this nature is beneficial only up till the next upgrade cycle, since technology evolves over time and the newer technology generally makes pervious training obsolete. As such, the costs of training should be amortised over the estimated length of time before the next upgrade occurs.

From the strategic management accounting perspective, Level 2 training helps to build long-term value for the firm and provides value for money. As such, it should be encouraged.

Level 3 expenditures

Level 3 expenditures occur when the firm incurs limited human capital related costs for developing its human capital and also reaps limited long-term benefits. Such situations could be found in firms that are very cost conscious and perhaps prefer to acquire trained staff from other firms rather than establish a systematic internal training system to meet their business needs. As such, they are likely to minimise the outlay for training and other human capital development activities.

For example, a company might negotiate deep discounts for its computer systems, and require the vendor to add training as part the purchase. In such cases, the vendor is likely to conduct minimal training to remain within his own budget, which would result in little meaningful development of the purchaser's human capital. The pertinent expenses in this case should be expensed, since there is limited long-term benefit.

Considering the vertical and horizontal lines in Figure 1 as in Cartesian axes again, the extreme lower left location indicates a point where negative human capital expenditures give rise to "negative" benefits. This situation can be interpreted as circumstances where the training generates inflows of funds (revenues) but provides results that are detrimental to the company, such as lower productivity. For instance, the firm might choose to offer generic training courses for its own staff as well as the public (where the public pays a fee), in order to sell the programmes to a wider audience and generate revenues, rather than offer training that is customised to its specific systems and is thus useful to its own employees. The result is that the training might not meet to needs of the firm's employees, who end up with limited knowledge on using the new systems in their own firms. Such limited knowledge would lower productivity in environments that demand well-trained, knowledgeable workers who are very familiar with the specific customisation of complex technology for the environment of their particular firms.

From a financial accounting perspective the resulting negative expenditures are revenues, to be reported in the period in which they occur. However, from a managerial accounting and performance enhancement perspective, these activities should not be condoned. Instead, the training and other human capital development activities should be reviewed, and customised training of employees should be established to build

long-term value (that is, the management should consider methods of converting these to Level 1 or 2 expenditures).

Level 4 expenditures

Level 4 expenditures occur when the firm experiences heavy human resource related expenditures that result in limited, if any, benefits. A good example of such expenditures can be found in ERP systems that fail to deliver on their promises, perhaps because the training provided, though expensive, did not explicitly address the specific needs of the firm (note that this is in contrast to the Level 3 situation where such training was opened to the public. In this case, the training is assumed to be limited to the employees of the firm).

There is also another category of expense that falls within this level that involves less than ethical employee behaviour. For instance, following effective training on using the web for a variety of purposes, such as gathering pertinent information for the company via various web sites and studying e-commerce possibilities that the firm could employ, some workers may discover that they could surreptitiously conduct online shopping and other such activities during office hours, resulting in lower productivity following the training. This would be a case of negative intangibles, where an expenditure to build intangible advantages may provide the opposite effect.

In both of the cases discussed above, the related expenditures should be expensed, since the future benefits are limited. However, in the second case, the managerial accounting implication is that the firm might end up spending more on surveillance activity or some sort of blocking mechanisms to prevent the abuse of the systems during working hours, which leads to the firm reporting additional expenses related to the corrective actions.

Formulae

The mathematical treatments for capitalising and amortising human capital related expenditures and the subsequent amounts to be shown in the years following the capitalisation are as follows.

Capitalisation of expenditures on the balance sheet in the year in which they occur:

$$\mathrm{HC} = \sum_{i=1}^{m} E_i,$$

where, E = expenses related to human capital, i = each of a total of m capitalisable expenses related to human capital.

A certain portion of this capitalised amount is to be amortised and shown as an expense in the income statement of each period, as follows:

$$\mathrm{HC_a} = \frac{\sum_{i=1}^{m} E_i}{n},$$

where, $\mathrm{HC_a}$ = amortisation expense for human capital, n = the number of years over which this benefit is likely to occur. In this case, the benefits are assumed to occur evenly throughout the period n, which supports this straight-line depreciation approach.

The capitalised amount of the human capital related expenditures that appears on the balance sheet in the years after which they are capitalised is:

$$HC = \left[\sum_{i=1}^{m} E_i\right] - [p \times HC_a],$$

where, p = the number of years that have passed after the capitalisation of expenditures (with the condition that $p \leq n$).

After n years, the entire capitalised amount would have been written-off and this item will no longer appear on the financial statements. However, if the firm continuously incurs human capital related expenditure, then there will be continuous capitalisation of such expenditure (where it is appropriate to do so, as discussed above) and an item for human capital will continuously appear as an intangible asset on the balance sheets.

Based on the argument that such expenditures indeed bring benefits to the firm over the long-term, the continuous presence of this item on the balance sheet actually indicates that the firm is continuously undertaking human capital development activities that are beneficial over the long-term and improves the value relevance of the financial statements.

Performance analysis and detailed implications for managerial accounting

The identification and breakdown of the total expenditure into the four levels has several implications for strategic managerial accounting and analysis. While the level-by-level analysis above covered the managerial implications briefly, this section looks at these implications in detail.

Essentially, Level 1 expenditures indicate a situation where the firm is able to obtain high levels of long-term benefits with little capital outlay. In fact, in certain cases, it suggests possibilities where the firm might be able to develop its human capital while generating revenues, rather than incurring expenses. However, in reality, there are limitations to the specific circumstances where such revenue generating activities are effective.

For instance, when the firm offers to provide just paid study leave for employees who choose to pursue further studies, there might be too few takers, in which case it would need to look at alternative ways for building the necessary, qualified and skilled base of labour to improve its long-term business prospects (such as hiring outsiders or offering full funding and other incentives to increase the numbers of employees who may want to pursue the option of further studies).

Furthermore, there are also limitations to the option where the firm may open up training classes and human capital development courses, using its private facilities, to its own employees and outsiders who pay the necessary fees, with the aim of developing the human capital inherent in the participants. It should be mindful that although it generates revenues in these cases, it would not be getting a competitive edge that is unique, since outsiders who work in competing firms can also get the benefits of the same training. In general, managers should be mindful that this option is suitable only for generic training programs, such as developing language skills and presentation techniques, rather than detailed firm specific training or anything that involves confidential information, such as operating the firm's internal accounting modules.

Level 2 expenditures would be reflective of high-level training that would indeed provide long-term benefits that are unique to the firm. This could, for example, involve training in customised ERP systems that have been built specifically around a particular

firm's production and working methodologies, and which could not be replicated elsewhere. The management could strategically promote expenditures of this nature because it provides a competitive edge in the market and the trained personnel are unlikely to leave for greener pastures since the specific training is useful only in this particular firm.

The management could also plan on improved career options and other incentives to encourage employee retention, since this training would result in improved productivity for the firm. Furthermore, even when the firm chooses to fully fund non-firm specific training and educational activities (such as the pursuit of higher degrees or professional qualifications), especially to fulfil regulatory and other requirements, it could bond the employees for several years to ensure that these expenditures will be beneficial over several years.

Level 3 expenditures involve a situation where limited expenditures on human capital results in limited benefits to the firm. The management would need to examine these expenditures and consider ways of improving the benefits derived from such activities.

For instance, instead of negotiating for a training package as part of an already discounted contract for the supply of computer systems, the managers find might it more beneficial to engage the services of professional trainers whose work in developing the human capital would add greater long-term value to the firm.

In essence, the firm might find that replacing these Level 3 expenditures with Level 2 expenses would bring greater long-term benefits and help to create a competitive advantage.

The Level 4 expenditures, that indicate a situation of low levels of long-term benefits despite high levels of expenditures, should be examined and, wherever possible, be developed into Level 1 and 2 expenditures. The firm must pay careful attention to potential negative intangibles. For example, training pertaining to internet-based systems, which may lead some employees to abuse office time and facilities for personal web surfing activities, could be contained by warnings that employee activity may be monitored and severe penalties may be enforced for such counterproductive activities.

The financial and managerial accounting implications for the four levels of human capital related expenditures are summarised in Table I.

Current accounting treatments of expensing wages, salaries, annual leave and all other payroll expenses assume that these expenses do not provide long-term benefits over several periods and as such they are categorised under Level 4. Though it is arguable that, for example, good terms and conditions (including excellent pay and working hours) would result in long-term employee loyalty and hence provide long-term benefits, the link between the long-term loyalty and employee benefits is difficult to prove, and hence these items are best expensed, as is the current practice in financial reporting.

Nevertheless, Table I provides an argument for capitalising Level 1 and 2 expenses when the circumstances indicate that the economic benefits from the resultant expenditures will provide long-term benefits.

Limitations and future research

This study provides a theoretical framework for categorising different kinds of human capital related expenditures into four levels. The different possible financial

Expenditure level	Financial accounting implications	Managerial accounting implications
Level 1	To be capitalised when the long-term benefits are likely to flow to the entity, unless these expenses are immaterial in which case they may expensed in the period in which they occur	Such expenditures offer great benefits, gained with limited expenditures. Should be promoted whenever possible. However, the types of human capital development activities within this category are limited
Level 2	Should be capitalised and amortised over suitable periods	Represent long-term value for money and provide a competitive advantage. Should be pursued as part of strategic moves
Level 3	Should be expensed in the period in which they occur	Provide little value. The management should try to develop these into Level 1 or Level 2 expenditures
Level 4	Should be expensed in the period in which they occur	Indicates the possibility of "negative intangibles" which could possibly reduce productivity. The management should set controls in place to prevent and contain potential negative consequences. Should try to develop these into Level 1 or Level 2 expenditures

Table I.
Implications of the four levels of human capital related expenditure for financial and managerial accounting

accounting treatments follow from the respective categories. This theoretical model also provides insights into the different potential managerial actions that may be undertaken, based on the characteristics of the different levels. However, the model needs to be formally field tested, as compared with the limited, informal current field testing, to be validated in practice. Future work could involve an analysis of the different human capital related expenditures in organisations that might volunteer for research and study.

In addition, this analytical framework can also be used to analyse other types of intellectual capital.

Conclusions

This paper presents a framework that is useful to both financial and managerial accounting. It breaks down all of the expenses related to human capital into four categories, and suggests common treatments for each category. It is possible for firms to apply this framework to analyse their human capital related expenditures in practice and make the appropriate managerial accounting decisions. Expenditures that build long-term value can be reported in the performance discussion section of the annual reports. Such discussion enables users to compare different firms based on their efforts in implementing activities that contribute to development of human capital, and select the firms that are strategically building long-term value.

Furthermore, this analysis points out that within the expenditures related to human capital, which are all expensed under current accounting standards, there exists a sub-group that fulfils the pertinent accounting regulations. This paper makes a case for

capitalising this sub-group, identified using a common approach across all firms, on balance sheets, as intangible assets within the scope of International Financial Reporting Standard 138. This step will improve the value relevance of published financial statements and benefit the accounting profession as well as the users of accounting reports.

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