Valuation of Human Capital as a Component of Knowledge Assets

Jay Liebowitz
University of Maryland Baltimore County

Kathleen Wright
George Washington University

Follow this and additional works at: http://aisel.aisnet.org/amcis1998

Recommended Citation
http://aisel.aisnet.org/amcis1998/203

This material is brought to you by the Americas Conference on Information Systems (AMCIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in AMCIS 1998 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.
Valuation of Human Capital as a Component of Knowledge Assets

Jay Liebowitz
Robert W. Deutsch Distinguished Professor
Department of Information Systems
University of Maryland-Baltimore County

Kathleen M. Wright
Department of Management Science
The George Washington University

Abstract

One of the more difficult aspects of developing knowledge management as a strategic tool is the inability to derive a valuation model that can be consistently applied across organizations. This paper examines traditional accounting conventions, as well as more recently developed activity based costing concepts and extends them as a valuation model for human capital as a component of knowledge management. A simple amortization scheme based on asset service life completes the throughput of information through the asset account process. The predictive power is derived, not from the absolute dollar value, but from the changes in valuation that occur over time.

Introduction

Even before recent advances in technology pushed the economy from the Industrial Age firmly into an information based economy, business management strategists have understood that the wealth of an organization is not comprehended solely in its working capital and physical assets. But as information driven processes pervade all business sectors, the development of human capital--workers not only understanding technology, but applying it across contingencies--has rapidly increased as a proportionate component of production in relation to traditional manufacturing and service costs.

Unfortunately, managers are lacking an essential tool; a framework for capturing, measuring and analyzing the costs of developing human capital, and a methodology for allocating those costs to the work performed. Traditional accounting models emphasize wealth creation by focusing on working capital and the physical 'tangible' assets typically used in the manufacturing environment. Some intangible assets have been incorporated into the balance sheet, but this list does not include human capital--or other knowledge assets--except as part of the catch-all "goodwill".

To be useful, a proposed human capital valuation model must provide information benefits that outweigh the preparation costs and be easily integrated with traditional accounting information. The model must also supply a recognized standard of measurement that is consistent with an external reference for evaluation and analysis. The purpose of this paper is to extend traditional accounting conventions for valuing physical assets to the intangible, and to introduce activity based costing concepts as a possible methodology for driving asset recognition. Finally, a simple amortization method based on the average asset service life serves as the basis for cost allocation.

Current Accounting Conventions

Flamholtz (1985) has identified three basic criteria for the derivation of an asset, which he applies to human resource valuation as well as physical assets:

(1) it must provide future benefits in the form of added cash inflows or the avoidance of cash outflows;
(2) given that there is uncertainty as to the timing and potential realization of future cash flows, there must be a generally accepted surrogate that has recognized monetary value; and
(3) it must be owned or controlled by the organization.

One of the arguments against capitalizing human capital costs is that of the uncertainty of the anticipated benefits and the difficulty in deriving a valuation. Nevertheless, valuation of physical assets are often as problematic, and historical cost has proven to be an acceptable proxy in cases (such as real estate) where there is also great uncertainty. In terms of its informative value, the inclusion of intangible asset costs may in itself be a sufficient symbolic representation of expected future benefits without an explicit linear relationship. Amir and Lev (1995) in their recent study of the cellular communications industry identified a strong correlation between the number of FCC geographic area licenses held by cellular companies and their stock...
returns. In this case, a non-monetary measure--number of licenses--is regarded by the stock market as a more reliable indicator of future wealth than either the earnings levels or earnings changes over time. Assuming that there is a linear relationship between the monetary cost of the license as an asset and its geographic range, could a financial indicator serve a similar purpose?

Several disparate sources have proposed utilizing the concepts derived from accounting activity based costing models (Wilkins, 1997) for asset recognition. Activity based costing has recently become popular as a means of refining the allocation of indirect costs across products and services. Indirect costs, such as depreciation, indirect labor, management, support services, are combined as resource pools, each one relating through a value added activity to a specified goal. While traditional cost accounting allocates costs across a uniform measure such as direct labor or machine hours, activity based costing allocates resources to products on a per activity basis. The underlying premise is that by aligning the products with the costs of the activities that create them, there is a more sophisticated and meaningful basis of analysis with which to make decisions.

Activity based costing generally requires an extended management commitment for implementation. It requires not only a detailed analysis of the resource and activity drivers, but also sophisticated systems support to capture and maintain the detailed transactions. The result, however, extends the set of possible accounting events that drive cost recognition and could potentially be used as a methodology for identifying both activities and related costs that add value in the form of future benefits.

### Activity Based Valuation: A Proposed Model

From the previous discussion, it is possible to derive the following set of theoretical assumptions for incorporation in a model for the recognition and expensing of Human Capital:

- That Human Capital meets the criteria for definition as organization intangible assets. Although it is impossible to derive the value of human capital in absolute terms, it is possible to use a nominal valuation mechanism that will be informative to both internal and external users.
- That in order to provide a common basis for measurement within, as well as across organizations, and to integrate the valuation of intellectual capital with other financial measures, the monetary unit is the most appropriate unit of measure.
- That because of uncertainties relating to the eventual realization of these assets, it is difficult to value them in terms of future cash inflows; however, the valuation of these assets based on the historical costs associated with generating them is a suitable surrogate, and is in accordance with accounting convention.
- That increases to the categories of intellectual capital are identifiable by means of the activities that are associated with producing future, intangible benefits. These activities have costs associated with them, which can be used for valuation purposes.
- That the accounting conventions of depreciation and amortization (which are already used for accepted intangible assets) can be extended on a conceptual basis to a model for expensing intellectual capital assets.

The model itself is fairly straightforward in conception:

Using training and development costs as a representative example, the first step is to identify activity drivers with a long-range human capital objective. Under current accounting rules, training costs are expensed during the same financial period in which they are incurred. The activity based inflow model would differentiate between those costs associated with activities generating a short-term benefit (e.g., specific training to be used immediately) as opposed to long-term objectives (generalized training in which the benefits extend across the employee service life). These latter costs would not be expensed, but rather incorporated (capitalized) as inflows to the balance sheet human asset accounts, with the expectation that they will ultimately extend and enhance the service life of the employees.

With the assumption that the simplest expensing mechanism will be as informative as a more complex methodology, an amortization scheme is proposed, based on average years of service:

\[
\text{Period Expense} = \sum \frac{\text{Activity-Based Valuation Costs}}{\text{Average Service Life}}
\]

Activities that decrease the average service life (e.g., downsizing, early retirement, other efforts that ultimately increase turnover rates) will decrease the average service life, which, in turn increases the expenditure of human capital in any given period. Conversely, activities that tend to extend average employee service life (development activities, employee benefits, etc.) will also increase the average service life, resulting in a smaller human capital amortization allocation in each subsequent time period.

Although each organization has considerable latitude as to what costs should be included, the external validity concerns are met by relating these back to actual incurred expenditures (including accrued obligations). The advantages of the approach lies
in its simplicity and the avoidance of a propensity to be over-optimistic in projecting the potentially realizable benefits of intangible assets, by grounding the valuation in historical costs. It is not valuation in its absolute terms that is informative, but the changes in valuation over time that provide the predictive power.

References