

Intellectual capital in theory and practice

By Johan Hansson and Pähr Andersson

Introduction

"There is more to the picture than meets the eye" Georges Braque

The interest in capitalizing intellectual assets has grown in the last few years as companies have begun to realize that the book value of a company's assets does not correspond with the current market value. A prevalent definition of a company's intellectual capital is therefore the difference between the book value and the market value of its shares. The true value of a company would then be its total book value and its intellectual capital put together. The question is how we best account for this total value of the organization. The predominant valuing principles that are the basis of present day balance sheets cannot be said to represent a comprehensive picture of how a company is really doing and what it is worth. The staff's competence and knowledge, which are strong contributors when creating value in modern day companies, must be documented in a way that reflects reality.

This is not to say that the smartness perspective only includes brainpower; the skills of competent craftsmen, mechanics, healthcare workers etc., are equally important components in the human capital that creates added value and competitiveness. These resources must be identified and translated into a language that economists can understand. It cannot be done without great effort since economy and psychology (here a collective term for the behavioral sciences) come from partly different schools which is a hindrance in bridging the gap to establish common accounting principles.

Analogue - digital systems

These two different "languages" can be said to represent human science and natural science respectively and they must be integrated in order to capitalize on the intellectual assets. Tools and methods for translation must be created, since the quantification of human competence into measurable economic quantity cannot be based on simplified, rectilinear theories about economic growth. Man is infinitely complex and a unique being. If human behavior is to be captured with quantitative numbers, it must be done through operational definitions of what is to be described, i.e. how the "soft" component is to be defined.

The problem is that human behavior can be seen as an analogously functioning system, i.e. behavior varies like an indicator on a weighing scale. This creates difficulties in the translation to a digital system where actions and results are represented by numbers. In the binary number system like the one computers are based on, there is only zero and one, yes or no. There is no room for subtle distinction or ambiguity. It is either - or, never both. Words like maybe and partly are barred and restricted to the analogous sphere. We can be a bit more varied when dealing with economic quantities which are measured in the decimal number system. But it takes more than integers to describe subtle differences and it takes an infinite number of decimals to imitate the representation in an analogous system. This is why a conversion function is needed to tie the analogous, the uniquely human, to the digital, the "hard" economic descriptions.

It is also extremely important to point out the complementary relationship of the analogue and digital systems. Both are equally important and one is as good as the other. It is not a question of either - or. The question is how we integrate these different rules of play and make them work together. Unfortunately analogue phenomena like human experience and relationships usually have to back down in the face of economic cut-backs. The paradox is that it is almost always the "soft" values that corporate executives hold up as their principal competitive assets and success factors. You will have a hard time finding a company presentation that does not mention the fact that human knowledge and competence are crucial to its future.

Man is the source

Human capital is not synonymous with people. A person cannot be reduced to a measurement, an object. Economy as a scientific discipline cannot and should not define what it is to be human. However, the staff's problem solving capacity in the company can operationally be defined as human capital and thereby converted to economic terms. Had it been possible, it would of course have been more convenient to measure the individual added value for all members of staff resulting in a number which correlated with their contribution to the company's value creation. In the present situation this would prove to be very difficult, mainly because there is no instrument that can accurately measure the "soft" human qualities - creativity, intuition, emotion, compassion etc. For some professional categories, however, e.g. salesmen of standard products, it is possible to measure individual value creation through sales statistics.

Intellectual capital is in the financial capital's ballpark, which means that man and his competence must be adapted to established economic accounting principles. At present, we must accept that the more elusive forces motivating man cannot be directly translated into economic terms. If we want to change these conditions, a new set of rules must be established that is not based on economic numerical systems. Thus a new ballpark, i.e. a fundamental change of systems is established. This would also involve a gigantic pedagogical effort which should not be underestimated. Most importantly, human capital is primary in relation to structural and business capital. A company is made up of people who resolve different types of problems. If we take them away, and the task they perform, we take away the source of the flow of information that structural and business capital depend on. Even if certain manual services can be cut back or down-sized in e.g. banking or insurance companies, thereby becoming more cost-effective, we cannot remove the human competence that is needed to implement such a change. It is the staff's knowledge and competence that create added value in the new knowledge-based economy. Therefore, human capital must continue to be developed in order to generate the added value that clients and shareholders demand. *Human capital must continue to grow and develop and if not, it will stagnate and regress.*

Changing the three "Currencies"

In our ambition to capitalize on the intellectual capital there must be a conversion of human capital to structural capital and business capital. This is an essential process since it is where the Analogue-Digital conversion takes place. Employee competence and knowledge must be transferred to the company infrastructure, its products and customers. In so doing, their competence and know-how can be reproduced and become company property.

Should a competent employee resign, it does not have to mean disaster, since his or her knowledge has been linked to the company's database for documented experience (or equivalent). One could say that the

smaller the difference between "what is left when employees leave for the day" (Edvinsson, 1997) and what they actually accomplish when they are at work, the more successful the company is at capitalizing its intellectual resources. The consequences are that human capital can only be valued indirectly. We cannot measure people in dollars and cents, at least not with the methods used today. In other words, human capital will not be reflected explicitly on the balance sheet. What can be done, however, is that employee competence can be converted - the result of what is going on in their heads and the different emotions that influence their subsequent behavior in the organization - to structural as well as business capital. Otherwise it would be impossible to capitalize on human ability. Note however, that the conversion is a secondary effect of the investment that the company must make to stimulate further development of human capital. The main players are the people, the basis of intellectual capital.

Unlike structural and business capital, human capital cannot be owned since brainpower can never be separated from its owner. Rather, there must be a cooperative effort which benefits both the organization and the individual; a form of contract between the company and the employee. To succeed, both parties must be givers, they must share their resources if a successful partnership is to develop. Therefore, the company must create a fertile environment for individual growth so that the employees will want to stay. Otherwise there is a risk that the human capital will disappear, which in the long run could undermine the company's very existence.

After the AID-conversion - the transformation of human capital into structural and business capital - a new process awaits; a digital/digital conversion (DID-conversion) from structural/business capital to the balance sheet. The structural and business capital key figures and calculated costs must now be transferred to value accounts through established principles. This process is only beginning, but still is quite simple (DID-conversion is done within the same decimal system) once the standards have been established.

Part of the process has already been established in e.g. goodwill and patent values. Economists know that they can be elastic, i.e. they can be valued high or low depending on the situation and the accountant's propensity for persuasion. Established practices for these items would make organizational valuations a lot more stringent and we assume that it would be possible to reach such a point. Thus it is natural to look for comprehensive valuation models for the total intellectual capital that comprises the organizations value creation, infrastructure, products, goodwill, protected immaterial assets, clients and markets.

The steering instruments - the guiding principles of the company

The most significant component in our view of the valuation model is the *success factors*, a common denominator expressing the values that serve as guidelines within the organization. These are the most effective tools in the strategic work of the management and they must be reflected in business ideas, strategies and policies. They resemble corporate values and can easily be identical. They are the hub that everything is connected to in the organization. The success factors can be sifted out and confirmed once the "soft" indicators have been measured and the "hard" key figures defined and calculated.

Key figures and indicators are used as steering instruments for the organization -compass, wind direction, wind-force, currents, wave height etc. to compare key figures with a course set out to sea. Established key figures are used in accordance with accepted models which will not be examined further here. We will instead discuss the possibilities for constructing specific key figures for every organization depending on their success factors.

To further develop our sailing metaphor, we could say that the more accurate the instruments used to measure wind - force, direction and change- the better our choice of "course" and "sails" will be when we learn to know the boat and the qualities of the crew under various conditions. The qualities of the crew can be compared to the indicators used to measure the "soft" indicator's status prior to, and after, competence development efforts that ensure that direction and progress correspond to the vision and goals of management, as well as the success factors.

Cost or investment?

Competence development costs money. If we are to motivate competence developing efforts, then the economic effects must be established. The intention is that investments made in developing staff competence will generate added economic value in the form of increased efficiency and productivity. The results must be measured in some way. If we develop a certain competence, we must find a means by which we evaluate its effects on the organization based on sound indicators.

By monitoring success factors, measuring the staff's present competence and tailoring a competence development program based on the gap between present and desired competence, and then measuring again, we can observe any significant connection between cause and effect, if the competence development efforts have been successful. A cyclical repetition of the process, and a careful analysis of success factors, key figures and indicators, offers plenty of opportunity to "prove that the "soft" values can become hardware. The working methodology of the cycle stems from quality work, where method, consistency and feedback are the cornerstones that ensure optimum results.

Unfortunately, the stock exchange still "discriminates" those companies that invest in competence development. Such efforts do result in lower profits in the short run, but are necessary if we are to remain competitive over time. If companies can demonstrate the economic effects of competence development, their ability to present the effort as an investment rather than as a cost will increase. One complicating factor however, is that good accounting practices place limits on how investments in future competitiveness are entered in the books (see footnote). The internal consequence for a company may then be that other measures whose costs can be calculated will be given precedence. The implication is that, even if performed correctly, the wrong things are measured. And if the traditional experience " we only do what we can measure" is applied then more damage could be done.

Measuring is not enough

Measuring human behavior and its changes over time cannot be reduced to measuring a set of indicators. The question is what to do with these indicators. There is a difference between gathering facts and evaluating the effects of competence development. Gathering facts about how many IT-users the company has, or how much money has been spent on competence development does not provide answers as to what is achieved in the organization. The interesting object of study is whether the staff's behavior prior to, and after, competence developing efforts, has been altered in the direction of more effective performance. The bottom line is that the company that invests in its employees makes more money.

Another point to consider is the fact that human development is not linear, i.e. A does not always lead to B. From a general point of view we could say that human conduct shows certain recurrent behavioral patterns under given circumstances. Conformity can be found in our behavior despite our free choice of

action. We are predictable only up to a certain point. Simpler, more stimulus - response related behavior is inherently more linear, while more complex problem solving processes are characterized by an integration and collaboration between the different functional areas of the brain. In the latter case, to define the causal chain of events, and its structure, would be an impossible task since the very function by definition involves several process levels. We will come back to this later.

Consequently, we can say that the more complicated the task to be measured, the more difficult it is to keep track of the causes. To measure the commission related work performance on an assembly line is easier than ascertaining how much added value a consultant has contributed to a company's internal renewal. In the latter case there are many "soft" parameters that influence the end result, which are difficult to measure.

Can all companies be valued according to the same principles?

It is important to elucidate the difference in intellectual capital between knowledge based companies and product oriented industrial companies. A comprehensive and commonly recognized definition of a company's intellectual capital is the gap between its book value and its market value. Companies in the process and manufacturing industry often have significant tangible assets which are reflected in the balance sheet, making the difference between book value and market value small. Professional service providers, on the other hand, have few fixed assets resulting in a wider gap between book value and market value.. The gap between book value and market value can thereby become smaller or even negative for the heavy industry. The result in terms of financial value, is that industrial companies seem to lack hidden assets (assets that are not accounted for in the balance sheet), while professional service providers can have significant hidden assets that are dependent on relatively small material assets. This view leads to an unfounded description of reality, which in turn does not contribute to an increased understanding of corporate intellectual capital.

Current accounting principles do not take into account any of the extremes. The primary object must be to bring out the hidden assets in professional service providers, however, capital intensive industrial companies must also be ready to account for the intellectual assets that are embedded in manufacturing processes, logistic systems and markets. It is ridiculous to assume that capital intensive organizations have lower value creation per employee compared to professional service providers simply because they have substantial fixed assets. Their intellectual assets must of course be accounted for in a way that corresponds to the real value. Value creating is equally important to all companies, regardless of the line of business they are working in.

The currency basket

In order to visualize the context and the processes between the different types of capital ("currencies"), success factors, key figures, indicators and the balance sheet, we have designed a model that we have named "the currency basket". It reflects part of the capital in the balance sheet. On the other side are the corresponding debts etc. along with investments in the development of competence and products, as well as equity generated by the creation of value within the organization. Somewhat simplified we might say that the greater the effects of investments in competence, the greater the intellectual capital that is created, which in turn benefits the growth of equity.