

# NET VALUE ADDED MONETARY MODEL FOR EVALUATING HUMAN CAPITAL

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## Abstract

Man's work (human capital, employees) is an important element of the business process, however its value is not disclosed on the assets side of the classical balance sheet. In order to show human capital among assets one has to evaluate it. Evaluation can be made in monetary or non-monetary terms. Non-monetary models for evaluating human capital include organisational and behavioural variables. These variables are not expressed in monetary terms, however, based on changes in their quality, one can assume the increased or decreased value of human capital within the company. The value of non-monetary models should not be underestimated, however monetary models are of greater importance. This paper presents an original monetary model for evaluating human capital – a Net Value Added Model which is a result of several years of study in this field. The model is designed to calculate the value of a company's employees for their owners and to evaluate human capital as a whole. In this model, employees are considered to be the most important element of a business process; therefore their placing to the financial statements is essential.

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**Keywords:** Human capital (employees), intellectual capital, models of human capital evaluation, value added, human resource accounting

## Introduction

A company is usually founded by individuals striving to achieve their own or broader goals. Goal achievement related to a company's operations is called business or a business process. There are four basic elements required for a business process, namely means of production, raw materials, services and human capital (human potential, employees).

Human capital includes the employees' accumulated qualifications and competencies and also their motivation to use these (Schultz, 1961; Becker, 1964).

Several authors consider the importance of human capital (Snell et al., 1996; Wright et al., 2001; Chadwick and Dabu, 2009). Gamerschlag states (2013, 327):

“Against the background of human capital theories and the resource-based view of the firm, human capital must be regarded as a central factor behind organizations’ competitiveness.”

However, apart from its role as a means of production, products and services, its value is not disclosed on the assets side of the classical balance sheet.

Are there any solid grounds for such consideration of human capital? Does such consideration of human capital result from underestimating the meaning of this element of the business process? And finally, is not human capital a factor that has a crucial influence on successful business operations?

Such treatment of human capital stems from the belief that employees are not company assets. According to the classical model, an element can be treated as an asset only when:

- a) there is a possibility that the presence of this element in a business process is associated with economic benefits, and
- b) the (purchase) value of this asset can be measured reliably.

As mentioned above, all four basic elements are crucial for a company’s operations. This further means that their presence in a business process is associated with the achievement of economic benefits. Therefore, the first requirement does need to be elaborated further. This research is more directed at the search of answers associated with the second requirement presented above.

This text pleads for Human Resource Accounting (Accounting for People) Approach which “can be defined as the process of identifying, measuring and communicating information about human resources to decision makers” (Flamholtz, 1974, 44). An appropriate solution of the human capital evaluation issue is essential for establishing this accounting approach.

Further on, the relationship between Human Resource Accounting Approach and Intellectual Accounting Approach is presented and the need for human capital evaluation is established. This is followed by the presentation of the originally designed monetary model of human capital evaluation.

### **Relationship between Human Resource Accounting Approach and Intellectual Capital Approach**

How to define the relationship between the Human Resource Accounting Approach and the Intellectual Capital Approach?

Intellectual capital seems to be a very popular topic in professional circles. Some questions have agitated both theoreticians and practitioners for more than two decades and many papers have been published on this topic recently. However, although there are numerous fruitful discussions on the topic, some questions related to the concept of intellectual still remain open.

The following may be questioned:

*1. What are the elements of intellectual capital?*

The literature gives various definitions of intellectual capital in light of its elements. Stewart (1997, 253), for example, defines it as the sum of human capital and structural capital. Edvinsson and Sullivan (1996, 358-359), and Edvinsson and Malone (1997, 11) define it in the same manner. Petrash (1996, 366) defines it as the sum of human capital, relational capital and structural capital. Brooking (1996, 13) defines intellectual capital as the sum of human capital, relational capital, structural capital, and intellectual property rights. Chen et al. (2004, 202) define intellectual capital as the sum of human, structural, innovation, and customer capital.

Apparently, there is no single definition of the elements of intellectual capital. In addition, the literature on intellectual capital lacks answers to some other important questions. Therefore, the question is: are the elements of intellectual capital the same for all companies? If the answer is negative, it can be questioned what factors influence different elements.

*2. How should the value of each element be defined?*

There are several studies on evaluating the elements of intellectual capital. It should be emphasized that in all cases the non-monetary approach of valuation is employed. In accordance with the accounting standards intangible assets are only those that meet the criteria for their recognition in financial statements and are as such expressed in monetary terms (Jerman et al., 2010).

Chen et al. (2004), for example, designed a measurement model and a qualitative index of intellectual capital. Ordóñez de Pablos (2004) defines the value of structural capital as knowledge value embedded in organisational processes, structures, technologies, policies, and culture, etc.

There are also other approaches for evaluating intellectual capital. Liebowitz and Suen (2000), for example, discuss some known measurement parameters of intellectual capital and their limitations. Further, Guthrie (2001) presents achievements in the area of measuring and reporting intellectual capital, and suggests some new areas of further investigations. M'Pherson and Pike (2001) present an approach for measuring intellectual capital in hotel organisations and think about the possibilities of enhancing the value in it. Chen (2003) points out that there have been many different

schemes presented with regard to measuring intellectual capital in recent years. Rodgers (2003) tries to classify the elements of intellectual capital in order to present them with other items in classic financial statements. Andriessen (2004) tries to establish the reasons for evaluating or measuring intellectual capital and to suggest reliable methods.

The above-mentioned trials of evaluating intellectual capital could be a good ground for further investigation in this area, although the reliability of such results is not easy to test in practice. However, the designed methods can underestimate the value of an employee or group of employees within a company.

Of course, there are also other opinions. Andriessen (2001, 205), for example, states:

“...some practitioners have the tendency to treat intangibles the same way we treat tangible assets, by trying to force them into the double-entry bookkeeping system. They forget that the very nature of intangibles contradicts the ground philosophy of this system.”

Based on the above mentioned, it is obvious that Andriessen is of the opinion that it makes no sense to evaluate some elements of intellectual capital, which further means that it is not reasonable to evaluate all intellectual capital. The most important reason for such a conviction seems to lie in the fact that such evaluation is very demanding and is a highly professional task to tackle. The question is: should the research be ceased only because the goal cannot be easily reached? However, Dumay and Rooney (2011, 352) conclude that it is possible to effectively implement intellectual capital practices without using concrete intellectual capital measures.

### *3. What are the relations among the elements?*

What are the relations among individual elements and how to define them? Some authors are of the opinion that the difference between a company's market and book value equals its intellectual capital value. Pike et al. (2001) are of the opinion that all the resources of a company combine and interact with each other. They argue that the equation: market value = book value + intellectual capital value is incorrect because the variables are not separable as required by the equation.

It is obvious that there is no linear relationship between the elements of intellectual capital. A low value of any element of intellectual capital lowers the value of other elements, since it jeopardizes the function of an organisation as a unit (Milost, 2007b, 23). However, the authors do not provide any alternative suggestion to explain the nature of the relations among the elements of intellectual capital, and whether these relations are the same in all companies. Moreover, they do not question whether all

elements are equally important for a company, and if not, what element is the most important. There have been some trials to answer the above questions, but the reliability of the results is difficult to test in practice. Chen et al. (2004), for example, find a remarkable relationship between the intellectual capital elements. Obviously, there are still some questions that lack appropriate answers in the area of relations among the elements of intellectual capital.

There are also other opinions, for example, Andriessen (2001, 207) states:

“It is always a combination of intangible assets that makes a company unique and successful. And this is where the classification schemes of intellectual capital fail. By separating human capital from structural capital, customer capital from organisational capital, innovation capital from process capital, we lose track of the correlation and synergy between the categories. It is the synergy between intangibles that creates uniqueness and wealth, not the individual assets.”

Apparently, Andriessen believes that intellectual capital should be treated as a unit.

However, Dumay (2012, 4) suggests that “managers should strive to better understand the possible causal relationships between their people, processes and stakeholders (human, structural and relational capital) rather than adopting someone else’s mousetrap”. This is also a suggestion of “dynamic” approach (Meritum 2002) which assumes that none of the intellectual capital components alone are sufficient for successful performance and that they need to be combined to generate value. Therefore, intellectual capital becomes a phenomenon of interactions, transformations and complementarities which cannot be understood merely by focusing on resources, but also on processes, rules, activities and relations (Giuliani 2013, 129). This dynamic approach investigates the relations between intellectual capital components and the relations among intellectual capital and financial performance.

#### *4. How does the value of intellectual capital affect a company’s book value?*

A company’s book value is the value of its shareholders’ equity, while the market value of a company equals the number of shares times the price per share. As the market value of a successful company may exceed its book value by several times, there is a gap between the two.

Professional circles are convinced that the growing gap between book and market value must be bridged. Upton (2001, 60) states:

“If accountants put all the assets and liabilities into financial statements, and they measured all those assets and liabilities in the right amounts, the shareholders’ equity would equal market capitalization.”

The above mentioned statement confirms the fact that a company's market value may be the result of numerous factors that are not necessarily linked with its successful business operations. Examples of these factors are: monetary policy (interest rate), tax policy (tax on profits), and similar.

The value of intellectual capital does not affect a company's book value. The reason for this lies in the fact that the value of intellectual capital is not disclosed. The above-mentioned methods of valuating intellectual capital are in fact measuring methods. Measuring gives no real values of individual elements of intellectual capital and therefore no real value of the total intellectual capital in a company. Is it, therefore, the intellectual capital accounting just a management fashion? (see Fincham and Roslender, 2003).

##### *5. What next?*

Based on the above, it is obvious that the existing concept of intellectual capital seems to be related to four open questions or weaknesses. There is no common standpoint among professionals in this field as to what the elements of intellectual capital are, how to evaluate them, and what the relationships among them are. Furthermore, since the value of the intellectual capital of a company is not disclosed (which is the fourth weakness), it is logical that it cannot affect the book value of a company. Roslender and Fincham (2001, 390) summarise the position: "...if we are to be successful in accounting for intellectual capital, we should not expect too much from the models of accounting that are most familiar to us".

The above mentioned weaknesses of the concept of intellectual capital can be overcome by:

- a) replacing the term "intellectual capital" with the term "employees";
- b) evaluating the employees in financial terms.

Replacing the term "intellectual capital" with the term "employees" is based on the assumption that not only human capital, but also relational capital and structural capital are the result of the employees' work. An employee's departure from a company also reduces the value of the other elements of intellectual capital. An employee who leaves a company can "steal" the buyers, suppliers and business secrets of the company. Additionally, the departure of an employee may jeopardize the organisational structure of a company (its function and further development).

This definition of the concept of employees may eliminate the first and the third weaknesses of the concept of intellectual capital.

Therefore, as discussed above, there are only two remaining weaknesses of the concept of intellectual capital, namely the problem of valuating its elements and the influence of their value on a company's book value. Replacing the term "intellectual capital" with the term "employees"

gives an opportunity to eliminate these weaknesses by evaluating a company's employees in financial terms.

Why would knowing the value of human capital be important? Is this associated with acquiring expensive yet useless accounting data, or is there more?

Knowing the value of human capital plays an important role in ensuring:

- a) Real accounting statements – It is well known that book values do not correspond to market values. In such conditions the accounting statements does not offer accurate information on what is going on in the company and eventually such inappropriate accounting information obstructs quality decision-making about the future.
- b) Appropriate handling of human capital – Knowing the value of goods plays a crucial role in handling them, as well as finding out how successful such handling was. Human capital is no exception to this (Milost, 2007a, 125).

Findings on the value of human capital are not new. In fact, its value is well recognized by pre-classical economists who treat man as an element and source of the national treasure. Over time, this knowledge underwent the process of maturation; nowadays, however, human capital finds its position in financial statements only exceptionally.

Several authors are aware of the complexity of the human capital evaluation issue. Kieso and Weygandt state (1974, 65):

“Should accountants value employees for balance sheet and also for income statement purposes? Certainly skilled employees are an important asset, but the problems of determining value and measuring objectively have not yet been solved. Consequently, human resources are not recorded; perhaps when measurement techniques become more sophisticated and accepted, such information will be presented, if only in supplemental form”.

Lev and Schwartz (2001, 73) establish that systematic research on the measurement and valuation of human resource intangibles is extremely lean.

The results obtained in this area by Stewart (1997), Edvinsson and Malone (1997), and Sveiby (1997) are presented by Theeke (2005, 48):

“I think it would be safe to conclude that the failure to adopt is the result of the method's failure to provide an acceptable measurement technique. Together, none of the efforts of this group has resulted in an accepted method for accounting for HR”.

Cascio (2000, 5) believes that human assets approaches are not sufficient because they are focused only on investments in human capital and ignore outputs produced by these resources.

According to several authors, human capital evaluation is substantially more subjective than tangible assets evaluation (Roslender and

Dyson, 1992; Mayo, 2005; Verma and Dewe, 2008; Roslender, 2009; Guthrie and Murthy, 2009). Theeke questions the feasibility of implementing human capital valuation approach. He argues (2005, 50):

“Furthermore, it did not seem (and I still believe it is not) possible for one to value the human resources ...”

As a new direction the author proposes a three potential liability approaches, namely:

- a) the demand deposit approach;
- b) the lease capitalization approach; and
- c) the contingent liability approach (2005, 50-57).

The idea is further developed in one of his later works (Theeke and Mitchell 2008) and is also discussed by Giuliani (2013, 127-144).

Human capital evaluation is a very complex issue. However, the author of this paper does not agree with the authors who argue that it is impossible to solve. For this purpose, an originally designed model of human capital evaluation is presented.

### **Models of Human Capital Evaluation**

Human capital may be disclosed among the assets on a balance sheet only if it is expressed in value terms. In order to disclose human capital among balance sheet items, one must find a proper method for measuring its value. Several non-monetary monetary models are developed for this purpose.

Non-monetary models for evaluating human capital include organizational and behavioral variables. These variables are not expressed in monetary terms, however, based on changes in their quality, one can assume the increased or decreased value of human capital within the company.

Among the non-monetary models, the most significant are the Michigan Model (Likert et al. 1969, 617-632), Flamholtz Model (Flamholtz, 1972, 668-678) and Ogan Model (Ogan, 1976, 195-217). The first two models are purely non-monetary, whilst the third one is combined, since it includes both monetary and non-monetary methods of evaluation.

The value of non-monetary models should not be underestimated, however monetary models are of greater importance. So far, a number of monetary models for evaluating human capital have been designed, which reflects the importance of this issue. However, there are vast differences in the elaborations of such models.

Among monetary models of human capital evaluation the most significant are the Unpurchased Goodwill Method (Hermanson, 1964), the Opportunity Costs Model (Hekimian and Jones, 1967, 105-113), the Discounted Wages and Salaries Model (Lev and Schwartz, 1971, 103-112) and the Replacement Costs Model (Flamholtz, 1973, 8-16).

## **Net Value Added Model**

### *Model Design*

A company's business operations have a private and social dimension. The private dimension of a company's business operations relates to achieving economic benefits for owners, which are reflected in a company's business performance and its pertinent market value growth.

However, a company is not only a means of achieving economic benefits for its owners but also has an important social role. It provides salaries for employees, it pays taxes to the state and interest to creditors.

The purpose of the Net Value Added Model is to calculate the value of a company's employees for their owners. Therefore, the social dimension of business operations is not taken into account. The private dimension of a company's business operations is based on the economic concept of value.

According to the economic concept of value, the value of particular goods depends on the present and future benefits associated with these goods. This also applies to human capital. Therefore, the value of human capital depends on the present value of its expected future services. This economic benefit for owners is related to the concepts of net profit or net return on equity and value added.

Profit is the positive difference between revenue and expenses in an accounting period. Net profit is the profit minus taxes. Net return on equity is the relationship between company's net profit and its capital.

The second measure of economic benefit is value added. A company's business processes are directed towards business results (products and services). There are four basic elements required for a business process, namely means of production, raw materials, services and employees. However, there is a significant difference between employees and the other three relevant elements: means of production, raw materials and services which just transfer their value on products and services. Employees are therefore the only element which adds value to products and services. The amount of value added therefore depends particularly on employee value and investments in them.

Value added could be defined as an increase of market value of products and services resulting from quality growth. This value is thus calculated by reducing the sales value of business results for the purchase value of the resources used. According to the Accounting Standards Steering Committee (ASSC), value added is the most convenient means that can be used to understand the net profit of a company as well as it represents its source (ASSC, 1975, 4). Sufficient value added is a prerequisite for making profit and net profit. Net profit is achieved only when all participants in creating value added are paid off: the state (taxes), employees (salaries) and creditors (interests).

The model is intended to evaluate human capital as a whole, i.e. all employees within a company. The basis for calculating the value of a company's employees is the part of value added which belongs to owners and is termed as net value added. The model is thus called Net Value Added Model.

#### *Methodology for Calculating Employee Value of a Company*

The calculation of employees' value consists of two phases. The first phase is aimed at establishing primary (uncorrected) employee value. The basis for calculation is the part of value added that belongs to owners. The second phase of the calculation is aimed at correcting the established employee value. The correction is accomplished by using the business performance ratio based on the ratio between the value of net return on equity in the company and its value in national economy over the last three years. In the following section, the phases of employee value calculation are presented.

#### *Establishing Primary Employee value*

To establish primary employee value, the concept of value added (in its wider and narrower sense) should be defined in more details.

Value added, in its wider sense, refers to the total value added in a company. This means that value added is not defined in terms of subjects involved in its creation and distribution.

Value added, in its narrower sense, refers to the part of value added that belongs to owners. It is termed net value added. A part of net value added belongs to owners indirectly (belongs to the company) while another part belongs to them directly. Net value added is thus the part of value added that belongs to:

- a) company,
- b) owners and
- c) supervisory board members and employees.

A part of net value added that belongs to the company is a part of net profit for reserves and undistributed net profit.

A part of net value added that belongs to owners is the part for dividends pertaining to them.

A part of net value added that belongs to supervisory board members and employees does not include the costs allocated to them, it refers to remunerations for supervisory board members and employees which are derived from net profit. It usually refers to a minor part of net value added.

Net value added is therefore defined as value added reduced by employees', creditors' and state's shares. It includes:

- a) labour costs,
- b) interest payable (interest costs) and
- c) profit tax.

The assessment of net value added enables us to calculate primary employee value. Net value added is referred to as net return related to a particular investment. Therefore, it is important to establish the amount of assets needed to achieve net return in the amount of net value added.

The required amount of these assets is calculated by dividing net value added by the interest rate which reflects owners' expectations, for example costs of capital, defined as the expected normal return rate belonging to owners.

#### *Correction of Primary Employee Value*

The basis for the calculation of primary employee value is the part of value added that belongs to owners. The first phase of calculation is aimed at establishing primary value of employees while the second phase is aimed at correcting it, using the business performance ratio which is defined as the ratio between net return on equity in the company and in the national economy over the last three years (numerator) and the sum of the number of years used (denominator). The aforementioned ratio of the last year is then multiplied by a factor of 3, the ratio of two years ago by a factor of 2, and the ratio of three years ago by a factor of 1. The sum of the factors (3 + 2 +1) equals 6. Accordingly, the business performance ratio is calculated as follows:

$$\text{Business performance ratio} = \frac{3 \frac{\text{REC0}}{\text{REE0}} + 2 \frac{\text{REC1}}{\text{REE1}} + \frac{\text{REC2}}{\text{REE2}}}{6}$$

where REC0 is net return on equity in the company in the last year, REE0 is net return on equity in the national economy in the last year, REC1 is net return on equity in the company two years ago and REE1 is net return on equity in the national economy two years ago. The remaining two abbreviations are defined using the same logic.

The aforementioned approach enables to consider company business performance over a longer period of time and not only over the last year; when calculating employees' value, the period selection is a matter of subjective judgment, however, a three-years period seems to be suitable. The business life of a company is rather intensive, and in light of this, a three-year period seems to be sufficiently long. In addition, the overall

performance of a company during the last year is accentuated more than the performance of previous years.

*Example of Employee Value Calculation*

The data (in monetary units) including company value added, labour costs, assets value, liabilities, equity and profit, annual interests rate, annual costs of capital, profit tax rate, net returns on equity in the company in last three years and net returns on equity in the national economy in last three years are as follows:

a) value added	34,000
b) labour costs	20,700
c) assets	100,000
d) liabilities	40,000
e) equity (capital)	60,000
f) profit	4,500
g) annual interests rate	6%
h) annual costs of capital	10%
i) profit tax rate	20%
j) net return on equity in the company in last year	6%
k) net return on equity in the national economy in last year	5%
l) net return on equity in the company two years ago	3%
m) net return on equity in national economy two years ago	3%
n) net return on equity in the company three years ago	2%
o) net return on equity in the national economy three years ago	4%

*Calculation of Primary Employee Value*

a) value added	34,000
b) labour costs	20,700
c) interest paid (6% of 40,000)	2,400
d) profit tax (20% of 4,500)	900
e) net value added	10,000

$$\text{Primary employee value} = \frac{\text{net value added} \quad 10,000}{\text{annual costs of capital} \quad 0.10} = 100,000 \text{ monetary units}$$

*Correction of Primary Employee Value*

$$\text{Business performance ratio} = \frac{\frac{\text{REC0}}{3} + \frac{\text{REC1}}{2} + \frac{\text{REC2}}{3}}{\frac{\text{REE0}}{5} + \frac{\text{REE1}}{3} + \frac{\text{REE2}}{4}} = \frac{\frac{6}{3} + \frac{3}{2} + \frac{2}{3}}{\frac{6}{5} + \frac{3}{3} + \frac{4}{4}} = \frac{6}{6} = 1$$

$$= \frac{3.60 + 2.00 + 0.50}{6} = 1.017$$

### *Calculation of Employee Value*

Employee value = primary employee value x business performance ratio  
= 100,000 x 1.017 = 101,700 monetary units

The Net Value Added Model aims to finding answers to questions associated with human capital evaluation which is very significant and professionally demanding issue. Currently, this model is in the phase of practical evaluation.

### **Conclusion**

Human capital is economic good and its value should be known. Therefore, it is crucial to know the value of human capital to be able to provide more realistic company financial statements and to manage human resources efficiently. For this purpose an appropriate methodological framework for evaluating human capital is needed, i.e. estimating the value of a company's human capital.

There are two types of models for human capital evaluation: monetary and non-monetary models. Non-monetary models are not appropriate for disclosing human capital among the assets on a balance sheet and most popular monetary models are not appropriate for general use – they can only be used in limited cases.

For this reason, the original model for human capital evaluation named Net Value Added Model is developed. This could be an important step towards developing a general model for human capital evaluation.

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