

Business Performance Analysis via VAIC™

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Abstract

The central theme of the paper is the knowledge potential issues in a context of transformation for selected CEE country. The choice of this theme is motivated by the importance of increasing divergence among net substantive value and market value of enterprises during last decades. The gap is fulfilled by intellectual capital and the crucial task is how to measure its value creation. We defined suitable model based on non-overlapping data for period 1993 – 2005. Particularly, the aim of this paper is to provide business performance analysis of random sample of companies via Value Added Intellectual Coefficient - VAIC™.

Keywords: VAIC™, Business Performance, Value Creation, Human Capital, Structural Capital

JEL Classification: C22, D46, L25

1. Introduction

On the present the definition of the value creation composition changed markedly. The value based on neoclassical Marshall's rules sufficiently does not account for value in exchange as well as the use value. These two value categories form core of the matter of actual conceptions of value (see IVS, EVS, BVS, IFSR). Historical paradigm based on costs was broke down with repeating stock bubbles. These volatilities on stock markets spawn increasing divergence among net substantive value and market value of enterprises during last decades. Nowadays, the gap is fulfilled by intellectual capital or differently entitled intangibles.

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Terminology for this field still does not exactly clear and wide spread of concepts is used (Kaufmann, L. and Y. Schneider, 2004). The crucial issue is how to measure and to manage its value creation, hence how to measure the value creation outgoing from knowledge based assets there intellectual capital brings to accounting sheets.

2. Literature Review

Measuring of knowledge is relatively young discipline. Since 80th there have been exists several model suitable for this activity. But not all of them are suitable for extensive, wide analysis. The most important models and techniques have mentioned Mladkova (Mladkova, 2004). For knowledge measurement can be used typical tool of financial analysis – spider graph. Another and more interesting conception is Balanced Scorecard (Caplan, Norton 1992). But this model is too detailed for extensive analysis. The newer is the Scandia Navigator (Skandia 1998) which is based on the same conception such as balanced scorecard. One of the famous author in this field become in 2001 with Value Chain Scorecard (Baruch Lev, 2001).

This model is based on economic processes divided into three categories – research, implementation and business exploitation. The next interesting conception is Total Value Creation (Canadian Institute of Chartered Accountants) which is similar to Accounting for Future (Nash 2000) conception. One of the typical techniques is Tobin q model, which is based on the difference between the market and the book value of stocks. There are also several conceptions of accounting for intellectual capital. The aim of this paper is to provide business performance analysis of random sample of enterprises via Value Added Intellectual Coefficient - VAICTM. This concept is modern resource for measure of business efficiency and expresses the value creation of an enterprise. The main benefit of VAICTM is an expansion of traditional measure tools ground on simple audited information. A conception of the index consists of additive relation between human capital efficiency and structural capital efficiency whereas both of these variables are calculated though specifically defined value added. The high value of coefficient equals the high-level of value creation accordingly high-level of intellectual capital. Validation of stated hypothesis is carried out by means of simple statistics. Sample data set involved statements of corporate bodies registered to trade register in the Czech Republic.

3. Hypothesis Formulation

In accordance with the aim of this paper and requirements of present economics practice we stated the fundamental null hypothesis:

H: Value creation of randomly selected enterprises has increasing tendency.

3.1 Data

General population of analyzed data is geographically limited by the NUTS 0, NUTS 1 – Czech Republic. The primary research on random sample of

enterprises was carried out. Fundamental resources were accounting statement of enterprises as long as possible time series. From reasonable data were selected 15 enterprises with moderate statements in period since 1993 to 2005.

3.2 Model Identification

Methodology used for model articulation involved basic scientific analysis, comparison and applied statistics. Analyses were applied in theoretical literature research and method explication. In addition, results of applied model were analyzed. Comparison was applied also at literature research and empirical research findings.

On the bottom of literature searching the suitable method was chosen for model articulation. Hence, the subject of this article is analysis via Value Added Intangible Coefficient – hereinafter VAICTM. The author and trademark holder for this technique is Dr. Ante Pulic. Pulic research work is focused on methodology of measure tools and management of intellectual capital in a long run. Research papers of the founder of this technique do not exist in many cases. In accordance, our model articulation was based primarily on Pulic (Pulic; 2004, 2005a, 2005b).

Although extensity of intellectual capital is very large Pulic (Pulic, 2005a) consider composition of intellectual capital from two parts – human capital and structural capital (c.f. Balanced Scorecard). According to this view, all expenditures for workforce are incorporated into human capital. Hence, human capital in VAICTM principle shows the value of knowledge. Employees are considered as an investment and not like costs any more (Pulic, 2005a).

3.3 Principle of VAICTM

VAICTM (Pulic, 2005b) is suitable tool for measuring and managing of value creation. This is a part of Knowledge Management as knowledge economy management system. Nowadays, the indicators based on traditional variables such as revenues, cash flow, profit, market share f.i. ROE, ROI, ROA, ROCE, FROCE, DCF, CFROI etc. do not provide acceptable information for internal and external stakeholders about increase or decrease value of their property. This principle was definitely changed during the beginning of 90th with utilization of profit excess approaches f.i. EVA and MVA. As Pulic (Pulic 2005a, 2005b) mentioned the value is created only if business generate more than it has invested within opportunity costs and the cost of equity.

The value gap between market and substantive value make intellectual capital. Many authors reflected this situation and use different names for this property f.i. intangible assets, intangibles, intellectual property, intellectual capital, intellectual assets etc. (Kaufmann, L. and Y. Schneider, 2004). Huge task for management on present is how to measure this valuation gap. VAICTM provides simply tool. Positive implication of this technique is that for calculation are used accounting data. On the other side it brings all disadvantages of accounting system.

In modern theory the business activity is more than ever before based on intangible form of value creation (Pulic, 2005a). VAICTM is based on value added which it makes unique since techniques mentioned above. Pulic principle of VAICTM involved partial steps of computation (Pulic; 2005a 2005b):

Value added in general explanation is articulated as difference between total output and input. Where VA = value added of the company, OUT = total sales, IN = cost of bought in materials, components and services.

$$VA = OUT - IN \quad (1)$$

In this general way is the equation too strange for achieving of precise results. We must to adjust this equation for calculation based on company accounts. Where VA = value added, OP = operating profit, EC = employee costs, D = depreciation,

$$VA = OP + EC + D + A \quad (2)$$

In this way, value added shows ability of an enterprise to create value. The definitely new conception is that employee costs are not the costs in accounting way but a value generating assets.

Efficiency of human capital Pulic (Pulic, 2005a) computed as a quotient of value added per spending on employees. Where HCE = efficiency of human capital, VA = value added, HC = total salaries and wage duties.

$$HCE = \frac{VA}{HC} \quad (3)$$

The second ingredient of intellectual capital, structural capital can be computed as variance of value added and the first ingredient, human capital. Where SC = structural capital, VA = value added, HC = total salary and wage duties.

$$SC = VA - HC \quad (4)$$

Structural capital efficiency is computed as quotient of structural capital and value added. Where SCE = structural capital efficiency, SC = structural capital, VA = value added.

$$SCE = \frac{SC}{VA} \quad (5)$$

Total quantity, Intellectual capital Efficiency is computed as a sum of human capital efficiency coefficient and structural capital efficiency coefficient. Where ICE = intellectual capital efficiency, HCE = human capital efficiency, SCE = structural capital efficiency.

$$ICE = HCE + SCE \quad (6)$$

Indicator of capital employed efficiency brings rate of value added and book value. Where CEE = capital employed efficiency coefficient, VA = value added, CE = book value of the net assets for a company.

$$CEE = \frac{VA}{CE} \quad (7)$$

Overall value creation efficiency - combines and sum up the three rudimental indicators mentioned above. Where VAICTM = Value added intangible

coefficient, ICE = intellectual capital coefficient, CEE = capital employed efficiency coefficient

$$VAIC^{TM} = ICE + CEE \quad (8)$$

These partial indicators measure investment efficiency both to tangible and knowledge resources. The higher value of coefficient indicates higher enterprise value creation thus higher intellectual capital efficiency.

4. Results

For the results of applied model see table 1 hereinafter. Fifteen randomly selected enterprises were observed since 1993 to 2005. In all years the mean achieved value greater than one. It means that sample of enterprises creates value.

Therefore is interesting, that the mean value of VAICTM is lower since 2002. This trend is in contradiction with the Czech Republic macroeconomic tendency.

Table 1: VAICTM Analysis

Years	Mean	Median	Variance	St.dev.	Min	Max	95 % Conf. Int.
1993	1,99	1,96	0,55	0,74	0,91	4,10	0,38
1994	1,92	1,96	0,57	0,76	0,66	3,25	0,38
1995	2,43	2,29	0,96	0,98	0,83	4,25	0,50
1996	2,29	2,24	1,36	1,17	0,83	4,54	0,59
1997	2,63	2,03	2,06	1,43	0,80	5,13	0,73
1998	3,24	2,48	3,99	2,00	0,85	7,52	1,01
1999	3,52	2,12	5,03	2,24	0,85	8,72	1,13
2000	1,80	1,79	0,40	0,63	0,80	3,14	0,32
2001	2,19	2,10	0,96	0,98	0,80	4,36	0,50
2002	2,08	1,97	1,61	1,27	0,55	4,88	0,64
2003	1,84	1,95	0,54	0,74	0,57	3,10	0,37
2004	1,94	1,87	0,57	0,76	0,78	3,19	0,38
2005	1,62	1,68	0,30	0,55	0,78	2,52	0,28

Source: Author

This trend is caused by types of selected enterprises. Long run time series express typical enterprises founded during transformation period in the beginning of 90th. After 2000 these enterprises already are no match for knowledge economy advancement. VAICTM also indicates the critical situation in the Czech Republic which in innovation process falls short of EU average.

Deficiencies of VAICTM can be characterized especially by focus on accounting data. If the book value is used for capital employed coefficient calculation (see figure 7), it completely disclaims basic thoughts of knowledge economy! Other discrepancies drive from local accountancy rules. When is the value added computed (see figure 1), it is impossible to extract depreciation and

amortization in separately from Czech balance sheet and income statement. Similar problem is in figure 2 and 3. When we compute value added (see figure 2), the employee costs should be used. If we compute efficiency of human capital (see figure 3), we should use total salary and wage duties. But the second is only particular item in income statement and it is optional. From observed sample of companies only one had booked total salary and wage duties separately from general employee costs. These discrepancies markedly distorted predicative potentiality of VAICTM. Operation profit (see figure 2) is also different than IFRS.

According to stated hypotheses we carried out the validation using descriptive statistics of VAICTM. In fine, we evaluate stated assumption as unconfirmed. In a long run value creation of selected enterprises in the Czech Republic has decreasing tendency.

5. Conclusions and Future Research

In conclusion, we should valorized contribution of processed analysis for economics practice. On the base of VAICTM we have to recommend to management of Czech enterprises to take considerable attention on value creation measurement. But, and it is more important, enterprises should focus their activity on new innovation implementing process therefore on the goods and services with higher value added.

The total standard deviation of random sample is 1.32 and confidence is 0.19. In accordance with VAICTM principle the next steps in our research in progress is particularly concentrated as following:

1. Enlargement of statistic sample and group separation as per branches; consequentially VAICTM analysis for branches and mutual comparison.
2. VAICTM analysis on national level and comparison with other CEE countries

6. References

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