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THE VALUATION OF HUMAN CAPITAL THE CASE STUDY OF COMPANY LISTED ON THE WARSAW STOCK EXCHANGE

Abstract:

Nowadays, the valuation of human capital in listed companies is not only a choice within the framework <https://www.ikea.com/gb/en/products/wardrobes/fitted-wardrobes/> of Human Resource strategies, but a business necessity. The aim of this paper is to analyse some aspects of valuation of human capital in energy company listed on GPW (The Warsaw Stock Exchange). Firstly the evaluation of the literature related to the valuation of human capital will be presented and this will be followed by empirical analysis of energy companies listed on GPW. The paper it trying to identify what are the needs in the area of valuation of human capital in management processes and what method of valuation of human capital companies use.

Keywords:

valuation of human capital, human resources management, listed companies

JEL Classification: J24, M12, M42

Introduction

Measurement of human capital is a tool that supports the valuation of companies, especially in situations where the assessment of the company's material value does not provide all essential information, as well as when it is necessary to treat the assets of the company as material and intangible. That is why today firms, especially listed companies, look more and more into information such as the value of the human capital.

This paper aim to present results of comparative analysis of the valuation methods of human capital used in company from the energy sector listed on the Warsaw Stock Exchange. The study applies the multiple case study method to find answers to the following research questions:

- what is the awareness of the needs to assess the value human capital among companies,
- what ratios should be used for human capital valuation by companies from energy sector,
- what is the effectiveness of human capital valuation ratios developed by the authors of this research when used in energy sector,
- what is the possibility of extrapolation of the methodology used in this research into other sectors.

1. Theoretical Background

The theory of human capital is one of the fundamentals of explaining phenomena and processes related to the use of labor resources in the economy. The principles of this theory were established in the 1960s by T.W. Schultz and further developed by J. Mincer and G. Becker (Jarecki, Kunasz, Mazur-Wierzbicka, Zwiech, 2010). As stressed by Choudhury and Mishra (2010) human capital is the employees' ability to do things that ultimately will lead the company to work efficiently and succeed on the market.

Lucas, (1988) as well as Romer (1986; 1990) emphasizes that human capital is seen as one of the key factors behind economic growth. In addition Sveiby (1997) as well as Ahonen (2009) argues that the competence of human is the primary element of intangible assets, which also include internal and external structures of the firm. Lev and Schwartz (1971) suggested that the value of an employee is the present worth of their remaining earnings from employment. Flamholtz (1974), Morse (1973), Friedman and Lev (1974), Lau and Lau (1978) developed a stochastic valuation model to measure system dynamics and estimate expected service life. In addition

Steffy and Maurer (1988) as well as Demartini and Paoloni (2011) suggested the replacement cost method, where costs incurred by recruiting, selecting, compensating, and training employees reflect the expected value of successful job performance.

Human capital is the firm's most important asset because it is the source of creativity and, therefore innovation, change, and improvement (Carson et al., 2004)

OECD (2001: 18) define human capital as 'the knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social and economic well-being.' Human capital encompasses inseparable integration of a human individual, his/her skills, knowledge, experience, ideas rendered in the form of services in the enterprise. At the same time, the company is not the owner of human capital, however it can lease it on special terms (Brilman, 2002). According to Nalbantian et al (2004) human capital is the pool of accumulated knowledge, skills, experience, creativity and other relevant attributes of the workforce. Most of authors agree that the human capital can be defined as the value of the knowledge and talent which is embodied in people who make up the organization, representing its know-how, the capacities, the knowledge, talent, competence, attitude, intellectual ability, creativity, and others (Bontis & Fitz-enz, 2002; Davenport, Pmsak, & Wilson, 2003; Edmonson, 1999; Edvinsson & Malone, 1997; LA.D.E.-Cl.C, 2003; Kaplan & Norton, 1999; Roos et al., 1997). Baron and Armstrong (2008) emphasis that, the essence of human capital management is associated with obtaining, analysing and reporting data which informs the direction of value- that people add to management strategic, investment and operational decisions at corporate level and at the level of front-line management.

Human capital management is sometimes defined more broadly without the emphasis on measurement. Chatzkel (2004) define human capital management as an integrated effort to manage and develop human abilities to accomplish much higher levels of performance. On the other hand Kearns (2005) suggests that human capital management should be looked at as the entire development of human potential within the company and expressed as organizational value. Pablos (2002) points put that the value of human capital is the sum of the value of investments in employee training and development of competences.

OECD (2001) identifies four main contexts for human capital development:

- Learning, within family and early childcare settings.
- Formal education and training including early childhood, school-based compulsory education, post-compulsory vocational or general education, tertiary education, public labour market training, adult education, etc.

- Workplace training as well as informed learning at work through specific activities such as research and innovation or participation in various professional networks.
- Informal learning “on-the-job” and in daily living and civic participation.

The practice of reporting the measurement of human capital has evolved considerably in recent years thanks to the works Chaminade, Catusus, Johanson, Henningsson (Ahonen, 2009). In their work they developed measurement of intangible assets (Edvinsson and Malone, 1997; Stewart, 1997). Baron and Armstrong (2008) distinguish four basic goals of human capital management:

- determining the impact of people on the enterprise and their share in creating shareholder value;
- presenting personal practices as profitable initiatives, eg. in terms of return on investment (ROI);
- providing guidelines regarding the creation of future human resource strategies and company strategies;
- providing diagnostic (current) and predicted (future) data as the basis for shaping strategies and practices that aim to increase the effectiveness of people management in the enterprise.

Marr (2003) identified five main reasons why firms measure and report their intellectual capital:

- To help organisations with strategy formulation.
- To help assess strategy execution.
- To assist in strategic development, diversification and expansion decisions.
- As a basis for employee compensation.
- To communicate with external stakeholders.

2. Research Methodology

The aims and objectives of this research is to investigate how the human capital is valued by companies listed on the Warsaw Stock Exchange. The research methodology include the literature review and empirical analysis of the information disclosed by listed companies. The starting point of this research was the

identification of the gap of the human capital valuation methods used among the energy companies listed the Warsaw Stock Exchange. The preliminary findings showed that energy companies use only basic economic and financial ratios, which do not account for the human factor in the valuation process. In addition there is no indication how the value of human capital impact on the share prices and on the market position of the company. Finally there is no knowledge how useful the information of human capital value would be useful for board of directors.

The adopted research strategy allowed to investigate the current stated of human capital valuation awareness and can lead to the development of good practices for companies.

The conducted research is a pilot research and qualitative approach has been used through content analysis of annual reports and companies' websites. The companies included in this research have to meet two criteria: belong to WIG-20 and at the same time also be a part of WIG-energy. The WIG 20 index has been calculated since 16th April, 1994. It is based on the value of shares of twenty largest and most liquid companies listed on the Main Market of the Warsaw Stock Exchange. WIG 20 is a price-weighted index, The value of the index is generated by adding the prices of each of the shares in the index and dividing them by the total number of shares. The dividends are not taken into account into this index. No more than five companies from one sector may be included in the WIG 20 index. WIG-energy is a sub-sector index and its portfolio includes WIG companies that belong to the 'energy' sector (see: www.gpw.pl). WIG-energy index base date is December 31, 2009. It is an income-based index and thus when it is calculated it accounts for both prices of underlying shares and dividend and pre-emptive rights (see: www.gpw.pl).

During the research process the new questions arise and new research approaches has been created or old adopted to the new needs. In addition data collection included aspect of joint participation, the inductive bottom-up analysis and the interpretation of the collected data. The research tool included a detailed description of multiple case study, followed by the validation of information accuracy to increase the relevance of the test results. The case study approach has been based upon the proposal of Yin (2015). This method allows to gather information from numerous sources such as: stock market reports, companies' websites (investors relations part), board of directors reports, and external publications of companies as well as articles in the industry press. Furthermore knowledge about companies' has been enhanced by looking at rankings, rewards, industry institutions releases, etc. Multiple case study approach increase external validity and help avoid observer biases. Moreover, multi-case study adds confidence to findings. By looking at a range of similar and contrasting cases, we can understand a single-case finding, grounding it by specifying how and where and, if possible, why it behaves as it does (Miles & Huberman, 1994).

The developed concept of human capital valuation combines proposed quantitative valuation with qualitative research. It consists of a three-stage testing process: data collection, measurements of the value of human capital and analysis of results. For each of the above stages, the Polish and international valuation instruments used in practice were assigned and compared with proposals for solutions that can contribute to the theory of the human capital management. Among many tools selected were those that are universal and can be used in the valuation of Polish listed companies. On this basis, specific measures were proposed. Both quantitative and qualitative methods were taken into account. The measures were adjusted to the specifics of the Polish economy and the valuation based both on external sources and internal sources of information. A number of measures have been identified for specific industries, which allow to extend the concept for individual valuations. Decisions which additional ratio to calculate has been made on the basis of the original universal solution analysis and measures obtained in this way (Stuss 2014; Stuss 2015)

The companies for this research have been carefully selected, so that it would be possible to apply both a literal replication (where results confirm one another), as well as theoretical replication (where results differ, but for predictable reasons). This assumptions made it possible to conduct the collection of thoughtful and complete data as they originate from numerous sources and make triangulation possible. The amount of diagnosed case study repetition is discretionary and does not constitute any rule. The selection of cases was performed upon the basis of the subjective assessment of the companies in the aspect of similarity and competitiveness.

The validation of the accuracy of information (approach proposed by Creswell, 2013) consisted of a number of stages. At the beginning, the data for analysis were prepared by ordering the data from the selected case studies, and afterwards dividing them, depending on the source of information. The second step was to review all results to acquire general information and reflect upon the common meaning of individual information. This has been followed by detailed analysis, which had been preceded by explaining the information obtained in the context of previously posed research questions and the presentation of individual case studies. The above-mentioned procedure increased the accuracy of results because it combined information from various sources, and leads to allocation of data to specific categories in the human resources management. The obtained results have a flexible structure with an emphasis on individual interpretations of cases of the human capital valuation in in the selected listed companies (Stuss, 2014; Stuss, 2015).

The last stage of the analysis of data was the interpretation of the results. The adoption of the above-mentioned methodology made it possible to create a set of recommended good practices for the future valuation of human capital for listed companies.

This research concentrates only on one selected company belonging to WIG-20 as a wider research of Energy sector (all the twenty companies) are part of currently carried parallel work in progress that will form a monography.

Table 1 presents three year comparison of human capital valuation.

Table 1: The valuation of human capital in first listed company

RATIO/FACTOR	YEAR 1	YEAR 2	YEAR 3	CONCLUSION
THE COMPANY EFFICIENCY				
sales profitability ratio	0,078177415	0,092246125	-0,04050184	- the company recorded a fall, which was mainly the result of the acquisition of the brown coal mine and the related costs - in addition, there was a drop in electricity sales by PLN 490 million.
profitability of assets ratio	0,043828143	0,050205434	-0,01735082	
asset productivity index	0,560624099	0,544255204	0,428395916	- descending rate - however, the company maintains financial stability
financial liquidity indicator	1,735660838	2,030337733	1,986898369	- the company is able to settle its current liabilities. - financial liquidity in the upper limits of the standard
brand recognition and customer loyalty	- conducts numerous sponsorship projects and engages in cultural programs, thus building brand recognition - more than 1,900 customers participated in the customer satisfaction survey - The Customer Satisfaction Index was similar to the result in the previous survey and amounted to 67.83			
the ratio of income from human capital	917,98 tys. zł	979,56 tys. zł	1011,75 tys. zł	one employee was able to "produce" in the first year 918 thousand. revenue, and in the next more than PLN 1 million
THE COMPANY SOCIAL RESPONSIBILITY				
- data on higher ethical standards - employee loyalty rate - number of employees who managed to implement career paths - data on the treatment of employees	As part of the survey, group and individual interviews were conducted and the questionnaires were distributed in an electronic or paper version. The study covered all employees. Satisfaction from work was at the level of 3.7 on a scale from 1 to 5. The atmosphere and working conditions were considered the main advantages of work in companies. As the main weakness, the remuneration system was indicated (it does not apply to the amount of remuneration). The study also shows that 85 percent. employees identify themselves with the company or organizational unit in which they work.			
code of business	<ul style="list-style-type: none"> • code of ethics • high annual positions in the responsible business rankings 		the solutions used are similar to those on the background	
THE CUSTOMER CLIENTS				
- data on customer feedback and insights - customer satisfaction measure	for the first time joined the group of companies that received the highest customer rating in the "Customer Friendly Company" research and certification program. She received high marks in the following categories: customer satisfaction with service quality and satisfaction of their expectations and needs. The certification process also took into account the assessment of customer loyalty and trust in the brand.			

DEMOGRAPHIC DATA				
number of employees	9968	10061	14957	the number of employees increased significantly as a result of the acquisition of the mine
the age of employees				lack of information
the number of women	2418	2380	2260	stosunek zatrudnienia kobiet do mężczyzn jest na stałym poziomie 1:3
the number of men	7550	7361	7474	
level of education				lack of information
DEVELOPMENT OF EMPLOYEES				
number of trainings	1454,23	6042,37	5342,41	high number of training hours per employee in total
data on training effectiveness assessment tools, expenditure on external training and internal training, frequency of training evaluation	trainings developing employees' skills are tailored to the specifics of each company's operations.			the lack of using training effectiveness assessment tools, unfortunately, quite a common approach, both internal and external trainings are not evaluated from the point of view of efficiency.
functioning of the Talent Management concept				
THE OPINION OF EMPLOYEES				
leadership research				lack of information on employee moods, leadership, employee evaluation system, their involvement, organizational culture and attitudes
employee evaluation system				
HUMAN RESOURCE MANAGEMENT				
operating costs per one	839,4189406	869,4771891	883,3829875	growing rate - the employee's share in operating costs is growing
profit per one employee	71,76605136	90,36099791	-40,97780974	in the first two years we observe an increase, while in the last minus, this is due to the takeover of the mine
average salary - average monthly salary	103954,1533	94311,89743	101652,8662	relatively constant over time
numerical data on recruitment and dismissals	335	1443	449	a significant increase in redundancies - this was caused by the restructuring and transfer of employees to daughter companies
recruitment				
dismissals	461	1765	700	
data on health and safety at work				lack of information
number of accidents at work	64	74	48	it is difficult to analyze such a small period, but the drop may indicate an increase and effectiveness of OSH standards used in the company
sickness absence				lack of information
data from the employees' opinions collected at the time of leaving work				lack of information

MEASUREMENT OF HUMAN CAPITAL				
economic value added of human capital	-32188,10	-3950,89	-142630,67	human capital brings losses, does not work on itself. overstaffing in relation to the company's needs
value-added of human capital	207 500,10	214 115,00	256 941,75	the profitability of one employee is around 207 thousand. PLN and in the subsequent years is growing by 7 thousand PLN, and by 42 thousand PLN
profitability of human capital investments	2,00	2,00	2,00	from each invested unit in human capital, the company receives approx. PLN 2,000
profitability of labor costs	0,69	0,96	-0,40	the profitability of labor costs increased, however, due to the takeover, dropped drastically, labor costs over these three years are relatively stable
profitability of human capital	-0,05	0,30	-1,02	the real value of one employee, as a component of human capital, is small
indicator of total labor costs to income	11%	10%	10%	the size is constant - it is about 10%, the dynamics of employment does not affect the costs of maintaining human capital

Source: Own work

Conclusion and Discussion

This aim of this research was to assess human capital valuation methods in energy sector companies listed on the Warsaw Stock Exchange. The investigation led to the following conclusions:

- Company invests in the value of human capital, mainly via training, Talent Management and employment diversification. The overall value added of human capital is increasing. Unfortunately, firm does not examine the change of the level of human capital at all. Companies are aware of the value of human capital what is shown in firms reports under Human Resource disclosures by presenting the numbers of awards received and raising standards. Employees may therefore have greater motivation to work, because they are considered by the managers as a valuable asset.
- The research shown that despite the lack of existence of regulated and formalized methods of human capital valuation the company intuitively make indirect valuations however only using the qualitative approach and only when making strategic decisions.
- Diagnostic tests allowed to verify the proposed research tool. The general assumptions adopted - the three-stage process of testing human capital valuation- proved to be sound. However, when selecting specific measures it should be recognized that the future list of measures will be supplemented by tools specific for particular sectors, as it needs to reflect specifics of the sector/ industry.

- Further research will be carried out firstly in listed companies in the same industry, in order to be able to compare the values of individual ratio. But we suggest that in the future the discussion should take place where additional aspect of human capital should be included such as: risk management related to human capital, human capital as a source of sustainable competitive advantage and human capital for optimum performance.

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