

MEASUREMENT AND ANALYSIS OF THE EFFICIENCY OF HUMAN CAPITAL IN A SMALL ENTERPRISE IN POLAND

ANNA BAGIEŃSKA¹

Abstract

Human capital plays an important role in the development of every company. Big enterprises have a Human Resources Department which conducts analyses and measurements of human capital. In Poland over 90% of the total number of companies is made up of small and middle-size enterprises. The aim of the research is to determine reasons why small Polish companies take an interest in the measurement and analysis of human capital as well as to discover the causes of their limited use of human capital measurement. The results confirmed that limited measurement and analysis of human capital efficiency in small companies results from the lack of additional information; apart from this it results from the binding legal regulations as well as the lack of employees who possess the knowledge necessary for conducting such analyses. Despite barriers and difficulties in human capital measurement, small companies appreciate employees and their qualification, not treating them only as a necessary cost of their doing business.

JEL classification: L21, M21, M12

Keywords: Human Capital, Efficiency, Return on Investment, Productivity, Small Enterprise

Received: 13.05.2015

Accepted: 9.08.2015

¹ Białystok University of Technology, a.bagienska@pb.edu.pl.

INTRODUCTION

Human resources of an enterprise are also called the human capital of an organization. In the literature the human capital of an organisation is described as persons permanently bound with the company and its mission, being able to cooperate, having creative attitudes and qualifications. Human capital is the driving force of a company (Sajkiewicz, 2002, p. 17). A. Poczowski defines it as a whole of specific characteristics and properties embodied in employees, which has a definite value and which constitutes a source of future income both for an employee and for the organisation using this capital on given conditions (Poczowski, 2003, p. 45). The notion of human capital comprises knowledge, skills, abilities to develop and innovativeness possessed by the employees of an organisation (Baron). Some authors use the term human capital instead of investments in the employee, indirectly assuming that an employee with human capital constitutes some value for the unit (Campbell, Coff & Kryscynsky, 2012). Human capital is the main element of the intellectual capital of a company.

In the present paper the term human capital of an enterprise is defined as knowledge, education and creativity of employees, which in the process of accumulation increases its value for the organization and contributes to the improvement of its economic and social condition as well as to the image and value of the enterprise. The process of accumulation of human capital in an enterprise consists in planned investments in employees (in acquiring them as well as keeping and ensuring their development) and in gaining professional experience. Describing employees as capital results from the essence of the notion of capital. M. Dobija emphasizes that capital is the ability to do work (by using material assets, employees and non-material assets). Management leads to increase of the initial capital of an enterprise (Dobija, 2012). The measurement of human capital is an exceptionally difficult task, but as stated by L. Edvinsson, it is “better to measure approximately what is significant than to measure accurately what is insignificant” (after Ściborska, 2010). It is stated more and more frequently that human capital is the most valuable asset of an enterprise, determining its economic and social condition. The discussions and experiments have lead practitioners to consider human capital as a potential profit leverage (Kościńska, 2003). Employees are often described as assets or human capital, but they

tend to be treated as costs, because there is no credible system of human capital measurement and reporting. (Mayo, 2001). However, as stressed by E. Flamoltz, it is not people themselves who are human assets in an enterprise, but the expenditures, which are capitalized in them (after Dobija, 2003, p. 124).

The results of the research on the influence of the human capital on the financial results of the enterprise by means of the human capital index, which shows the relation between efficiency of human capital of an enterprise and return on equity (for owners), led to the conclusion that the better results of human capital management are the higher market value the enterprise reaches. According to the research, providing the improvement of human capital management, one can expect an over 20% increase of the market value of an enterprise (Marcinkowska, 2004).

Employees create value for the enterprise by using their own intellectual capital and effort at the work place. The human capital resources are heterogeneous, so the results of using them become less predictable in comparison with the material assets. However, expenditure on human capital gives higher profits in a long period under given circumstances. The studies show that the set of information used by investors to evaluate the capital of an enterprise is related to the information on human capital. Therefore, both estimating the investments in human capital and revealing them are economically important (Wyatt & Frick, 2010). Moreover, researchers draw attention to the fact that using technology also depends on qualifications of human resources, especially in certain sectors (Gomez & Vargas, 2012). It is not possible for companies to use only material assets.

There are no direct methods relating human capital expenditure with financial results of an enterprise. It results from several factors: firstly, human capital expenditure creates costs which decrease the financial result; secondly, the effects of human capital expenditure, for example that laid on training and work condition improvement, are observed after a given period of time after it was made. Therefore, entrepreneurs still treat such expenditure in terms of costs, not investments which will bring profits. Thirdly, other factors, such as market changes, on the assortment structure, sales markets, selling prices, etc. which have a big impact on the company's results do not ensure proper determination of the cause of either failure or success (Bagieńska, 2014).

In the modern economy human capital is the basic resource, directly influencing production and financial results of the enterprise. The human capital coefficients based on the data from financial reports do not reflect the proper analysis of changes in return on investment and human capital productivity. Enterprises which would like to properly use and develop the human capital of an enterprise should collect additional, more detailed financial information and much additional information regarding their employees, i.e. actions connected with recruiting, retaining and developing them.

In economics, the term efficiency is used for describing the results of an organisation. Efficiency is one of the issues which are commonly used in the description of management processes by entities which operate in the market economy. In the theory of economics efficiency is defined as aiming at the highest effectiveness or saving of resources. Efficiency is understood as a mathematical relation of expenditure to obtained results (traditional approach), as possibly the most efficient allocation of available resources (resource approach) and also as a general evaluation of the activity of an organisation, including all elements influencing the efficiency of its activity (strategic-organisational approach) (Skrzypek, 2012). The economic dimension of efficiency depends on the creation of an optimal and rational structure of activities and costs in the process of added value creation.

In the literature, the multidimensional character of efficiency is emphasized: due to its nature, various criteria have to be adopted in the process of evaluation (Matwiejczuk, 2000). The interpretation of efficiency limited to the triad ‘aims – results – expenditure’ results in the determination of the following criteria of efficiency evaluation (Matwiejczuk, 2000):

- 1) the criterion of purposefulness and usefulness of the result, depicting the relation of the set objectives and the obtained results,
- 2) the criterion of expenditure efficiency, regarding the results-expenditure relation,
- 3) the criterion of the evaluation of purpose attainability and appropriateness of the means choice, referring to objectives/expenditure relation.

Apart from the degree of realisation of the principle of economical production (results/expenditure relation), the assessment of efficiency should also comprise the evaluation of the obtained results and the incurred expenditures in terms of purposefulness of activity (Tarka, 2010).

The analysis of human capital efficiency consists in evaluating whether conducted human capital development activities contribute to achieving the aims or to the improvement of given results: for instance, reducing workers’ absences and rotation, increasing the efficiency of work and productivity, etc. (Bagieńska 2014). The analysis of human capital efficiency in a given organisation also consists in the evaluation of the human resources efficiency necessary for the realization of given processes conducted in the company. The basic criterion of efficiency is the comparison of the results with the aims set by the organisation (Skrzypek & Hofman, 2010, p. 28).

At the level of the whole organisation, the evaluation of efficiency informs us about the ability of the organisation to generate profits from the possessed resources in order to ensure future liquidity. It is the resultant of time, labour efficiency and the cost-intensity of processes. The analysis of synthetic, general indexes of the organisation’s efficiency involves referring to the sources of the creation of efficiency at the level of processes, i.e. at the level of the creation of the value chain. In turn, the efficiency at this level is closely related to the efficiency obtained at the level of a work position (Moczyłowska, 2013).

In the literature many methods of measuring of human capital and human capital related processes are proposed. In Becker et al., (2001) fifty-three human resource efficiency indicators are defined. In another study, Abeysekera and Guthrie (2004) define HC with twenty five indicators. Bontis, Keow, and Richardson (2000) listed twenty indicators for HC. Too many indicators sometimes make things complicated and redundant and possibly it is better grouped into a number of main indicators. The present research summarizes indicators in Bontis et al., (2000) into four main indicators which are:

- 1) Creating Results by Using Knowledge,
- 2) Employee’ Skill Index,
- 3) Sharing and Reporting Knowledge.

Various methods are used for grouping indicators. One of them is to use the analytic hierarchy process (Abdullah, 2013).

A. Karmańska developed a model of economic quality of human capital (the KL-ARK model). On the basis of the data available in the accounting information system, this model aims at diagnosing the economic quality of human resources. The KL-ARK model determines financial reporting categories which identify human resource

synergic artefacts from the perspective of processes and activities (Karmańska, 2014). As shown by Karmańska, the implementation of the model allows for evaluating the role of human capital in achieving the financial results of an enterprise. To a great extent, the use of the full version of that part of the model depends on the possibility of obtaining proper source data from the notes provided in a different, far from standardized, form (Karmańska & Bareja, 2015).

The measurement and analysis of human capital efficiency in a small enterprise, which does not do full financial reporting, should begin with collecting information necessary for the evaluation of the processes carried out in the area of human capital, defining the objectives and planning the ways of measuring the efficiency of carrying out the aims and processes.

In order to measure the human capital of an organisation, it is proposed to collect and use the following sets of information (Bagieńska, 2014a):

1) data regarding the employment structure, including education and work experience because they allow for evaluating the quality of human capital of an enterprise,

2) quantitative data related to the cost of current employment, including the structure of benefits costs, because they determine the expenditure on maintaining human capital of an enterprise,

3) quantitative-qualitative data on the policy of the development of employees; training costs in amounts, as a percentage of labour costs, in hours as well as the information on the range and subject of the programs,

4) evaluation measurements of the human capital of an organisation, such as productivity or profitability.

The aim is to determine the reasons for the interest in the measurement and analysis of human capital as well as to reveal the causes of limited use of measurements of human capital by small Polish enterprises. Special attention will be paid to measurements of efficiency of human capital used in an enterprise.

The research thesis is: Limited measurement and analysis of human capital efficiency in a small enterprise results from the lack of additional information, exceeding that resulting from the legal regulation in place, and the lack of employees who possess the knowledge necessary to conduct such analyses.

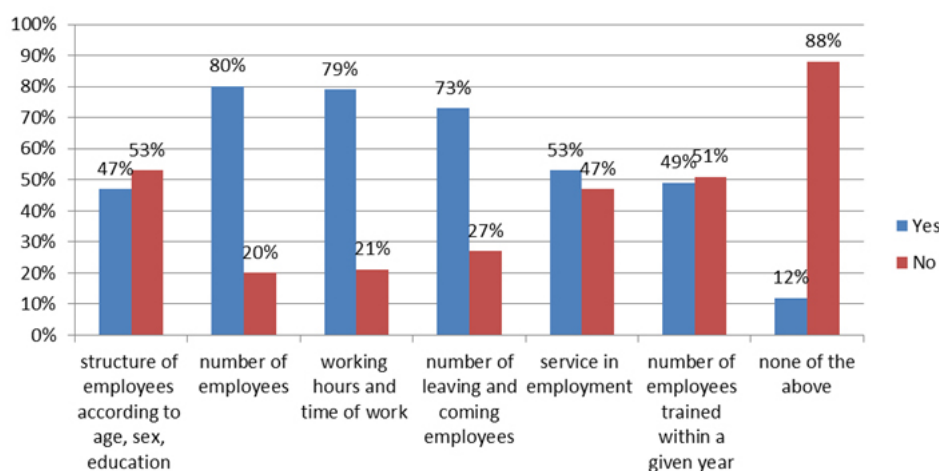
The research method: analysis of literature and research of the Polish Agency for Enterprise Development, in-depth interviews in a group of owners, HR workers, and chief accountants working in the sector of small enterprises.

INFORMATION AND MEASUREMENTS OF HUMAN CAPITAL USED IN POLISH ENTERPRISES

All enterprises conducting economic activity and obliged to keep full accounting records have to collect data regarding labour costs. The operating entities which employ more than 9 persons are obliged by the Central Statistical Office in Poland to prepare many reports and statements. The information on employment costs and average employment are included in the following reports: F-01, Z-03, Z-06, Z-12. In each enterprise one collects basic data on remuneration, its components and average employment.

In 2013 the Polish Agency for Enterprise Development in cooperation with Warsaw School of Economics

Figure 1: Are the following human capital data collected in your organisation? (N=600 enterprises)



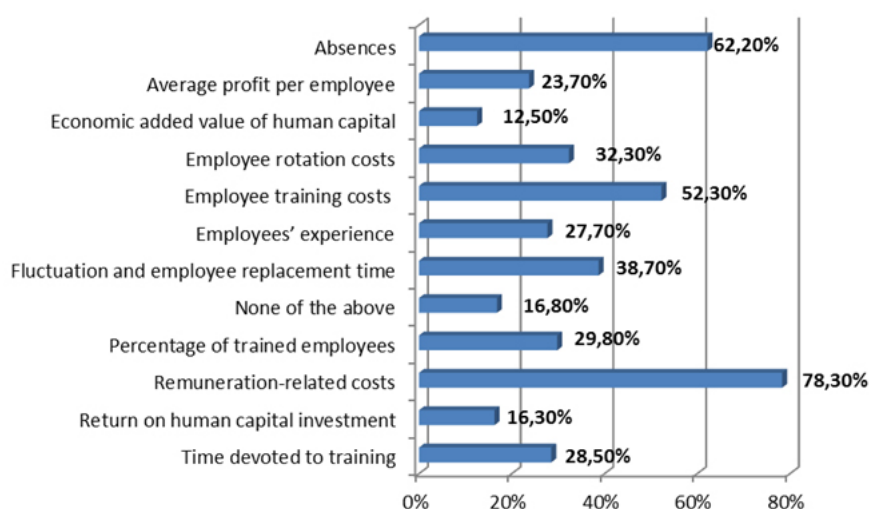
Source: Based on Trojanowska, M. (2015, March). *Potrzeby informacyjne przedsiębiorstw i stosowane narzędzia pomiaru kapitału ludzkiego – wnioski z badań*, paper presented at the conference „Konferencja konsultacyjna projektu: Kapitał ludzki w tworzeniu wartości przedsiębiorstwa”, Warszawa

conducted research in a group of 600 enterprises of various size, operating in different sectors. Only 8% of big enterprises took part in the research. The remaining group is constituted by micro (30%), small (37%) and middle enterprises (25%). The research shows that the highest percentage of the analyzed enterprises collects data on the number of employees (80%), working hours and time of work (79%), the number of new hires and those leaving the company (73%), service in employment (53%), the number of employees trained within a given year (49%), and the structure of employees according to age, sex, education (47%) (Fig. 1.).

It is surprising that 52% of the researched enterprises do not have such basic data as the age structure according to metrical data and as many as 47% – according to service in employment (Fig.1).

The researched companies which measure human capital tend to measure the costs related to remuneration (78%), absences (62%), employee training (52%) and the costs related to employee rotation (32%). Only 12% of enterprises calculate the economic added value per employee, and 16% calculate the return on human capital investment (Trojanowska, 2015) (Fig. 2)

Figure 2: Are the following human capital measurements calculated and used in your organisation? (N=600 enterprises)



Source: Based on Trojanowska, M. (2015, March). *Potrzeby informacyjne przedsiębiorstw i stosowane narzędzia pomiaru kapitału ludzkiego – wnioski z badań, paper presented at the conference „Konferencja konsultacyjna projektu: Kapitał ludzki w tworzeniu wartości przedsiębiorstwa”, Warszawa*

BARRIERS AND POSSIBILITIES OF AN ANALYSIS OF EFFICIENCY OF HUMAN CAPITAL IN A SMALL ENTERPRISE

In 2014 in-depth interviews were conducted in a group of owners, chief accountants and managers of five enterprises. Purposive sampling was applied to select five small enterprises (up to 49 employees) from the group interested in human capital measurement. (The entrepreneurs took part in a meeting called The Tool of Human Capital Measurement, the aim of which was to spread information on human capital measurement). They operate in the following sectors: construction, training, media services, production and transportation. These enterprises do not conduct the measurement and analysis of human capital, but it note the need of conducting them.

The aim of the interviews was to determine why these companies are interested in human capital measurement and the possibilities and barriers of using the proposed measurements.

The interviewees listed the following causes for their interest in the measurement and analysis of human capital:

- 1) the increase of the owners' (management's) awareness that the lack of qualified personnel affects being competitive and being capable of long-lasting development,
- 2) the need to measure human capital in an enterprise is related to the realization of the enterprise strategy, in which the importance of human resources is stressed,
- 3) the perception of human capital as the most valuable and most important element of its functioning.

“People, their competences, knowledge and skills determine the position of a company. A high level of human capital makes the enterprise have a high standard, prestige, reputation and the capital becomes a source of its competitive advantage”.

Moreover the following advantages of the human capital measurement were noted:

- 1) the possibility of taking quicker and more effective management decisions in the HR area,
- 2) the improvement of efficiency of the operation of an enterprise,
- 3) better control of personnel costs, which will allow for efficient use of employees’ potential, which will be reflected in the increase of the enterprise value and competitiveness,
- 4) improving the level of services, better adjusting to changes on the market, maintaining the reputation, as well as introducing new technological and qualitative solutions.
- 5) better control of labour costs and return on human capital investment,
- 6) the evaluation of efficiency of activities done within the framework of human resource management (especially in the sphere of motivation to work) and efficiency of the tools,
- 7) help in taking important decisions in the sphere of employment in the enterprise and proper creation of personnel policy in the company.

INFORMATION ON HUMAN CAPITAL OF AN ENTERPRISE

The owners and management agree that the measurement and analysis of human capital *generates profits* for the company. However, they do not conduct such analyses. The question arises as to whether the information which they collect is sufficient for evaluating human capital in an enterprise.

The measurement of elements related to human capital conducted by the analysed companies is not extensive, which is conditioned by the small number of employees involved. The researched companies (owners) tend to mention the general labour costs, the number of employees and absences. Only manufacturing companies measure the efficiency of production employee work. The researched companies had received EU training subsidies, but they did not measure their efficiency.

Only the company offering training services measures – apart from the labour costs – employee training costs, education, qualifications, and experience,

the results obtained in the process of evaluation of possessed competences.

In the other enterprises, it was declared that such data is not collected in a standardized way. The employee responsible for human resources is in possession of information on employees’ education and qualifications. With such a size of employment, managers emphasized that they have “very good knowledge of the level of human capital in the enterprise”. The development of the company is accompanied by the increase of the collected data. Collecting more information on human also results from the fact that bigger companies have HR departments.

THE SCOPE OF THE CONDUCTED MEASUREMENT AND ANALYSIS

Despite noticing the advantages of the analysis of human capital, in the researched enterprises the analysis of human capital measurements was not conducted. In the further part of the research, a set of human capital measurements proposed in literature was presented and respondents were asked about the possibility of the implementation in their company. The measurements were divided into four groups, presented below:

- 1) **condition:** the size and qualitative-quantitative structure of employment,
- 2) **expenditure:** financial expenditure on human capital and its structure,
- 3) **development:** qualitative-quantitative information on investments in the development of human capital,
- 4) **effect:** measurements of efficiency of the use and development of human capital.

The first group of measurements concerning the size and qualitative-quantitative structure of employment (education, service in employment), which shows the current state of enterprise human capital, according to respondents, does not play an important role in the evaluation of human capital. The information is important, it is not difficult to collect, but it is not the most important data in a small company, in which the owner knows the employees.

The second set of measurements regarding financial expenditure arose more interest. The proposed indicators comprise the following:

- 1) the share of labor costs in total costs,
- 2) annual labor costs per employee,
- 3) the structure of labor costs,
- 4) overall costs per employee,

- 5) average annual employee remuneration in relation to average remuneration in the economy,
- 6) average cost of acquiring an employee,
- 7) average cost of an employee's replacement.

According to respondents, measurements related to labor costs are very important in the activity of an enterprise. The owner very often evaluates these costs. The evaluation of remuneration is also conducted. The costs of compulsory social security is also an important cost in a small company. All basic cost data is collected, however their evaluation is not systematic. Entrepreneurs do not measure the cost of employing and replacing a worker, so they are not able to estimate it.

Another group, qualitative and quantitative information on the investment in the human capital development, to a great extent is composed of information regarding the number of trained employees, training hours, training costs, and the evaluation of usefulness of trainings. Only to a small extent did the researched entrepreneurs develop their employees' soft skills. They mostly financed so-called hard-skills training, necessary for work, for example, operating a forklift. The cost of the training was not high because they tried to use subsidies.

The last group – measurements of efficiency of the use and development of human capital, composed the following measurements:

- 1) human capital return on investment (HC ROI),
- 2) human capital productivity,
- 3) human capital revenue,
- 4) average profit per employee,
- 5) average income per employee,
- 6) return on labour costs,
- 7) added value per employee.

The human capital return on investment (HC ROI) coefficient was proposed by Fitz-enz (Fitz-enz, 2001). In the coefficient the achieved return on investment is calculated as the difference between revenues and costs (but after the exclusion of labour costs) to the involved human capital measured with the costs method as a total of all labour costs.

In order to evaluate the efficiency of using human capital, it is necessary to use information on labour costs from the profit and loss account. The human capital productivity coefficient informs us how many zlotys of all revenue are generated by human capital measured by personnel costs. On its basis it is possible to evaluate how many times revenues exceed personnel costs or

which percentage of revenues is constituted by costs (Wędzki, 2009).

The measurement of effectiveness in value terms is based on revenues from sales. The coefficient of labour efficiency in value terms informs us how many zlotys of revenue there are per employee. It is a synthetic measure of efficiency of HR management in an enterprise. In the literature this coefficient is called the Human Capital Revenue coefficient (Czajka, 2011).

Human capital revenue is too general to evaluate productivity of human capital, in part because it does not take into account the influence of other factors. It only informs us about the increase or decrease of revenues per employee. Average profit or average income per employee also informs us about the increase or decrease of profit/income per employee. More advanced indicators are return on labour costs and added value per employee. Labour costs comprising payroll, social security and other benefits have an influence on financial results of companies. The share of labour costs in general operational costs depends not only on the kind of activity, but also on the level of salaries paid in a given company. Labour efficiency is one of the main components of evaluation of a company and it can be used to analyse resources at the disposal of an enterprise.

Expenditures connected with the maintenance and development of human capital are called investments. The profitability of investment in human capital is becoming one of the most important coefficients which an organisation should analyse (Fitz-enz, 2001).

Profitability means having a surplus of revenues over costs, connected with undertaking a given activity. The measure of profitability achieved by a company is the relation of gained profits to involved capitals or to the effects of the used production factors (Leszczyński & Skowronek-Mielczarek, 2004).

According to respondents, the measurements may help to evaluate the effects of the conducted activity in the sphere of human capital, but up to now they have not been used. The main barrier is the lack of employee knowledge on this subject and the lack of noticeable advantages resulting from calculating the measurements. Only to a small extent do the entrepreneurs take decisions based on other measurements of activity, for example, the measurements of liquidity and return on assets. Therefore, they do not see the relation between the measurement analysis and their activity.

CONCLUSIONS

More and more enterprises are aware that the lack of qualified personnel affects competitiveness and the possibility of long-term development. In the planned strategy of an enterprise they assume that the investment in human capital is the source of the company value. Employees create the value by using their own intellectual capital, abilities and efforts. Capital, as stated by Dobija (Dobija, 2012) is the ability to do work. Properly used by owners, it multiplies its value and the value for an organisation.

Legal conditions of accountancy impose the obligation of collecting information on costs related to human capital, such as costs of remuneration and other benefits. The information on employment and cost of employment are also required by the Central Statistical Office in Poland. The research conducted in a group of mainly small and middle-size companies by Polish Agency for Enterprise Development shows that enterprises tend to collect basic data, like the number of employees according to working hours, the number of new hires and of those leaving the company. Only half of respondents collect information regarding education, structure according to age and sex, or service in employment. In small and middle-size company, the measurement of human capital mostly concerns the cost of remuneration, absences, cost of trainings and costs of employee rotation.

On the basis of the results of the interviews conducted in the group of owners, managers and accountants of small companies, it can be concluded that they understand the importance of collecting additional data concerning human capital. Due to the size of the company, the data is not collected in a standardized way. However, the management “knows the potential of their employees”. Such an approach is not appropriate. Collecting various quantitative and qualitative data will allow for better control and use of the potential of human capital.

Up to now the researched companies have not measured human capital, but they are interested in such a measurement. They perceive human capital as a source of competitive advantage and the most valuable element of doing business. They list many positive aspects of human capital measurement: better control of personnel costs, effective use of employee potential, and improvement of efficiency of the enterprise activity.

The standardized questionnaires used for conducting the interviews contained questions concerning four groups of measurements of human capital in an enterprise. Respondents fully agreed that it is possible to calculate the measurements. At the moment of the research not all information had been collected, but acquiring the needed data is not a difficult task. Planning work in the accountancy department will facilitate collecting it in the future. The measurements of efficiency of human capital use and development turned out to be the most controversial. Entrepreneurs and accountants have not yet calculated them. The lack of an official HR unit results in a situation in which one person is responsible for accounting and human resources. There are no employees who would deal only with human capital issues. Return on human capital investment is not calculated, although it is one of the most important measurements of human resource policy. There are also no analyses of profitability of an enterprise in comparison with other measurements of human capital effectiveness. The decisions regarding employees are taken by the owner without using additional measurements, only on the basis of the possessed information and conversations with employees.

Being aware of the advantages and the employee’s role in a small enterprise is a great success. The main barriers of using measurements result from the lack of employee knowledge of methods and measurements of human capital as well as the lack of noticeable advantages from calculating them. The most important conclusion which can be drawn from the research is that despite barriers and difficulties in human capital measurements, small companies also appreciate employees and their qualifications, which means that they do not perceive them only as a cost of doing business.

REFERENCES

- Abdullah, L., Jaafar, S., Taib I., (2013). Ranking of Human Capital Indicators Using Analytic Hierarchy Process, *Procedia – Social and Behavioral Sciences*, No 107, p. 22-28.
- Abeyssekera, I, Guthrie, J. (2004). Human Capital Reporting in Developing Nations. *The British Accounting Review*, 36(3), p. 251-268.
- Bagieńska, A., (2014). Human Capital Financial Results- Research on the Best Employer in Poland. *Financial Internet Quarterly e-Finanse*, 10(3), p. 40-51.
- Bagieńska, A. (2014a). Raport roczny jako narzędzie pozyskania informacji o kapitale ludzkim przedsiębiorstwa - wyniki badań spółek z Respect Index GWP S. A.. *Przegląd Organizacji*, No 3, p. 10-17.
- Baron, A. (2013). *Corporate Responsibility in a Global World: Marrying Investment in Human Capital with Focus on Costs*. Retrieved from: www.qfineance.com/business [05.02.2013].
- Becker, B.E., Huselid, M.A., Ulrich, D. (2001). *The HR Scorecard*. Massachusetts: Harvard Business School Press.
- Bontis, N., Keow, W.C.C., Richardson, S. (2000) Intellectual Capital and Business Performance in Malaysian Industries. *Journal of Intellectual Capital*, No 1, p. 85-100.
- Campbell, B.A., Coff, R., Kruscynski, D. (2012). Rethinking Sustained Competitive Advantage from Human Capital. *Academy of Management Review*, 37, p. 376-395.
- Czajka, Z. (2011). *Gospodarowanie kapitałem ludzkim*. Białystok: Uniwersytet w Białymstoku.
- Dobija, D. (2003). *Pomiar i sprawozdawczość kapitału intelektualnego przedsiębiorstwa*. Warszawa: Wyd. WSPiZ.
- Dobija, M. (2012). *Alternatywny program badań kapitału ludzkiego*. Nierówności Społeczne a Wzrost Gospodarczy, No 24, p. 248-267.
- Fitz-enz, J. (2001). *Rentowność inwestycji w kapitał ludzki*. Kraków: Oficyna Ekonomiczna.
- Gomez, J., Vargas, P. (2012). Intangible Resources and Technology Adoption in Manufacturing Firms. *Research Policy*, No 41.
- Jarugowa, A., Fijałkowska, J. (2003). *Rachunkowość i zarządzanie kapitałem intelektualnym*. Gdańsk: ODDK.
- Karmańska, A. (2014). *Evaluation of Human Capital Economic Quality on the Basis of Financial Categories. KL-ARK model*. Management, Knowledge and Learning (MakeLearn) International Conference 2014. Human Capital without Borders: Knowledge and Learning for Quality of Life, Portorož, Slovenia, Conference Proceedings. <http://www.toknowpress.net/ISBN/978-961-6914-09-3/papers/ML14-574.pdf>.
- Karmańska, A., Bareja, K. (2015). *Economic Quality of Human Capital in Companies Listed on the Stock Exchange. Verification of KL-ARK model*. Management, Knowledge and Learning (MakeLearn & TIIM) Joint International Conference 2015. Bari, Italy, Conference Proceedings. Retrieved from: <http://www.toknowpress.net/ISBN/978-961-6914-13-0/papers/ML15-061.pdf>.
- Kozińska, A. M. (2003). *Wartość przedsiębiorstwa a kapitał ludzki*. In Dobija D. (Ed.), *Pomiar i rozwój kapitału ludzkiego przedsiębiorstwa* (pp. 29). Warszawa: Polska Fundacja Promocji Kadr.
- Lajili, K., Zeghal, D. (2006). Market Performance Impacts of Human Capital Disclosures. *Journal of Accounting and Public Policy*, No 25.
- Leszczyński, Z., Skowronek-Mielczarek, A. (2004). *Analiza ekonomiczno-finansowa spółki*, Warszawa: PWE.
- Marcinkowska, M. (2004). *Roczny raport z działań i wyników przedsiębiorstwa*. Kraków: Oficyna Ekonomiczna.
- Matwiejczuk, R. (2000). Efektywność - próba interpretacji. *Przegląd Organizacji*, No 11.
- Mayo, A. (2001). *The Human Value of the Enterprise: Valuing People as Assets-Monitoring., Measuring, Managing*, Naperville, Nicholas Brealey.
- Moczyłowska, M.J. (2013). *Efektywność zarządzania kapitałem ludzkim jako element efektywności organizacyjnej*. In: M. Cisek, A. Marciuniuk-Kluska (Ed.) *Efektywność organizacji* (pp.183-192). Warszawa: Wydawnictwo STUDIO EMKA.
- Pocztowski, A. (2003). *Zarządzanie zasobami ludzkimi : strategie, procesy, metody*. Warszawa: Polskie Wydawnictwo Ekonomiczne.
- Skrzypek, E. (2012). Efektywność ekonomiczna jako ważny czynnik sukcesu organizacji. In *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu*, Issue: 262 (pp. 313-325). Retrieved from: www.ceeol.com.
- Sajkiewicz, A. (2002). *Jakość zasobów pracy : kultura, kompetencje, konkurencyjność: praca zbiorowa*. Warszawa: Poltext.
- Ściborska, I., Bartowiak, K. (2010). *Praktyczne wykorzystanie metody pomiaru oddziaływania kapitału ludzkiego na procesy*. ZN Akademii Podlaskiej, No 85.
- Tarka, P. (2010). Wyznaczniki efektywności działalności gospodarczej. *Ekonomika i Organizacja Przedsiębiorstwa*, No 6.
- Trojanowska, M. (2015). *Potrzeby informacyjne przedsiębiorstw i stosowane narzędzia pomiaru kapitału ludzkiego – wnioski z badań*. Paper presented at Konferencja konsultacyjna projektu Kapitał ludzki w tworzeniu wartości przedsiębiorstwa, Warszawa, Polska.
- Wędzki, D. (2009). *Analiza wskaźnikowa sprawozdania finansowego, t. 2. Wskaźniki finansowe*, Krakow: Wolter Kluwer Business.
- Wyatt, A., Frick, H. (2010). Accounting for Investment in Human Capital: A Review. *Australian Accounting Review*, No. 54, Vol. 20, Issue 3.