

## ECONOMIC QUALITY OF HUMAN CAPITAL IN COMPANIES LISTED ON THE STOCK EXCHANGE. VERIFICATION OF KL-ARK MODEL

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### **Abstract:**

Holistic approach to human capital means that people play important role in business led in a way that allows to achieve sustainability and social responsibility. In these circumstances the need to evaluate economic quality of human capital is attempted to be met in the model titled *KL-ARK – evaluation of economic quality of human capital based on financial data available in accounting*. Model created by A.Karmańska was presented and discussed during MakeLearn Conference 2014, Portorož, Slovenia. Now, we share the results of an empirical research – the first phase. Firstly, we show features of human capital's economic quality of companies included in WIG30 which is an index of the largest companies on the Warsaw Stock Exchange. Secondly, attention is paid to the applicability of the model in microeconomics (e.g. for controlling) and in macroeconomics (e.g. research on sectors, industries, trends of changes in human capital's economic quality across the whole economy). Thirdly, we set out remarks about applicability of the model, which may be relevant for its implementation on a large scale. Fourthly, in order to indicate model's usefulness and its low costs, we worked out a concise instruction how to use the model and report on it. KL-ARK model is a new concept. We set a target that it is built in parts. Our remarks are intended to be a platform for researchers to express their opinions on the development of tools useful for the appraisal of human capital in an entity. We hope the model can be discussed as such.

*Keywords: human capital, economic quality, financial statements, stock exchange, accounting, model*

## **1. BACKGROUND FOR RESEARCH**

The research was carried out for several reasons.

First, there is recognized increase in the significance of sustainable development concept and corporate social responsibility concept which is the derivative of the former. So attention should be paid to the need for finding useful solutions to provide information for implementation and monitoring of both concepts and many measures of performance.

Second, social responsibility results in growing importance of intangible resources, those already reported in financial statements as well as those that are reported only indirectly or those that are not reported at all. Resources such as talented employees, consumer loyalty, organizational culture or brand are not reported. Immeasurable nature of those resources (or even measurable but still disputable) results in looking for solutions standardized on global scale but parallel to financial statements. These solutions would allow external stakeholders to get information they need. Moreover such information would be relevant, comparable and, to some extent, supplementary to financial information.

Third, the meaning and nature of management accounting are changing as the company holds substantial intangible resources and it is developing in a sustainable and socially responsible way. This happens due to the lack of the possibility to cover all aspects of the activity of an entity by data provided in financial accounting. So development of target accounts becomes crucial as they cover those aspects of the activity which are not reported in financial statements. That's why management reporting plays important role in modern enterprises. Managers are still becoming more aware of the need for preparation of internal reports on decision-making problems.

Fourth, according to a common view, management is effective and efficient if an object of management (i.e. item, field, process) is measured and monitored. Some measures (absolute, relative, financial and nonfinancial) or indices (of intensity, structure or dynamics) can help to meet that condition. Measures of performance connect activities to expected operational goals. As they are accepted as a part of an incentive system they also bring some benefits. Moreover they constitute main component of management reporting and they are helpful in expressing an opinion in decision-making process.

Generally, the need arose to take a closer look at the issue of the quality of human resources used in enterprises. That need was an incentive to create a tool called the KL-ARK model allowing to measure that quality. Applicability of the model was intended to be examined in the segment of companies listed on the Warsaw Stock Exchange and included in the WIG-30 index. These companies are successful and moreover they represent a variety of branches of economy which is another advantage of the research.

## **2. ACCOUNTING TEXTS ON HUMAN RESOURCES**

Nowadays human resource accounting is a part of intellectual capital accounting. Former, as an area of research, started to develop in the sixties of the twentieth century, latter in the eighties. Hermanson (1964) was one of the first researchers who regarded people as assets. He suggested wider definition of assets as resources not only owned by an entity but rather resources operating within the entity. In order to report on people in financial statements he proposed two alternative methods to value assets: unpurchased goodwill method and adjusted present value method. His novel proposal encouraged other researchers to investigate the possibility to assign assets status to human resources in financial reports.

Brummet, Flamholtz and Pyle (1968, pp. 217-224) were the first researchers who tried to apply human resource accounting in practice. They tried to apply it in R.G. Bary Corporation. On the organizational level the first organization that dealt with human resource accounting was American Accounting Association. In the seventies, it established a committee with an objective of reporting on the development of that area of accounting.

Efforts to find a way to implement human resource accounting in practice are still investigated. No proposal was widely accepted. Today human resource accounting is still explored though intellectual

capital accounting is much more common subject in accounting texts. Human capital, together with structural capital and relational capital comprise intellectual capital. So, many ideas concerning human resources are the part of more general ideas relating to intellectual capital. Researchers such as Sveiby, Ross, Stewart, Edvinsson, Stenfelt, Malone are well known in that field.

In the early eighties a notion of intellectual capital emerges. At the same time it becomes obvious that the gap between book value and the market value is wide and deepens. Researchers and practitioners start to look for solutions how to face with a problem. Initiatives of the nineties such as Celemi's Tango, Scandia value scheme, Scandia navigator, the intangible asset monitor, the balance scorecard, the value platform serve as examples. According to Petty and Guthrie (2000, p. 155) this stage of intellectual capital research helped to develop a framework of intellectual capital. Many academics and practitioners try to make an invisible intellectual capital visible in enterprises' reports. Among many efforts one was surely succeeded. This stage raised awareness of the role that intellectual capital plays in a contemporary economy.

During the next stage of intellectual capital development, researchers start to make efforts to measure, manage and report intellectual capital. Many classifications and definitions emerge (Petty, Guthrie, 2000, p. 156). An impact of intellectual capital on financial performance and value creation becomes an important area of investigation (Dumay, Garanina, 2013, p. 11). Moreover the idea of mandatory disclosures of intellectual capital for listed companies gains in popularity. Finally integrated reporting becomes an area of a particular interest.

In 2012 Guthrie *et al.* (2012, p. 76) argues that a third stage of intellectual capital research is emerging. Efforts are put into critical examination of intellectual capital in practice. The problem how to use intellectual capital in managing an organization and how it can impact on an enterprise is investigated.

The fact that the third stage is recognized doesn't mean that a common solution how to measure and report on intellectual capital is worked out. There is still a space for new ideas.

### 3. The KL-ARK model

Value creation, which is a measure of economic success of a company, means that resources and competences – especially human resources – should be integrated in line with mission and strategy of that enterprise. Taking into account that:

- financial statements don't deal with measurement of human capital,
- financial reports show results of the use of human capital in an enterprise,
- human resources can play a crucial role in value chain so they can impact on market value of a company

The scientific question is expressed as follows: Is it possible to evaluate those resources in a way that allows to measure their influence on the above mentioned areas?

This question led to an idea to measure economic quality of human resources in enterprises. The idea is still developed though it has its official form called by its author, A. Karmańska, the KL-ARK model. The model was presented on an international forum for the first time on MakeLearn Conference 2014: Evaluation of human capital economic quality on the basis of financial categories. KL-ARK model (Karmańska, 2014, pp. 477-484). The model is intended to meet the idea of integrated reporting which is a form of communication under sustainable development, so the model can become a part of that idea.

The KL-ARK model requires that measurement of economic quality of human resources is performed:

- a) by indices of flexibility of human resources' artefacts and attributes (i.e. direct financial method)
- b) by measuring the strength of correlation which indicates relation between attributes of human resources and their artefacts (i.e. indirect statistical method).

The paper attempts to share the results of empirical verification of the direct financial method of the model.

#### **4. AIMS OF EMPIRICAL TEST**

Research on the KL-ARK model will be carried out in stages. In fact the concept is new, build in phases but according to a vision of its construction. The work on the model is quite similar to the work in a lab (but the laboratory has economic features). That's why it appears to be enjoyable. A result of the research is not predictable just intuitively expected to be positive. Therefore it seems to be reasonable to test components of the concept in order to find out their weaknesses and limitations. In this phase of the research (Phase I – 2014) the KL-ARK model is attempted to be applied in its present shape. Depending on the results of the test the model can be further developed in a way that will allow its components to serve management accountants or even other users outside an enterprise.

The aim of the research is therefore to test:

- 1) whether the KL-ARK model can be used as a measure of economic quality of human capital in an enterprise, whether it has features that allow it to be implemented or perhaps it is purely theoretical concept,
- 2) whether mandatory financial statements contain information necessary to apply that model,
- 3) whether the KL-ARK model application involves any restrictions or requires further elements.

#### **5. RESEARCH METHOD**

Method adopted in the research is an empirical verification of the applicability of a new conceptual tool in a manner appropriate to the assumptions made while creating the tool. In order to achieve that goal:

- 1) tool manual was prepared; the manual aims to provide one clear meaning of the selected data used in the model,
- 2) appropriate spreadsheets were designed,
- 3) financial statements (as at 2012 and 2013) of 30 biggest companies (listed on the Warsaw Stock Exchange and included in the WIG 30 index) were collected,
- 4) the calculations were performed and the results obtained were initially evaluated.

Before verification took place we studied texts on accounting in order to be sure that the KL-ARK model can be regarded as a stage in the development of human resource accounting. These studies have fulfilled that task. They reinforced authors' belief that conceptual works as well as research are needed in this area.

#### **6. INITIAL APPLICATION OF THE KL-ARK MODEL FOR THE BIGGEST COMPANIES LISTED ON THE WARSAW STOCK EXCHANGE – CONCEPTUAL AND TECHNICAL ASPECTS**

Special care was required to collect empirical data that are disclosed in extensive mandatory financial statements of listed companies. Careful reviewing of hundreds of pages led us to the conclusion that comparability – despite those reports are standardized – is far from achieving. Several tests led to that conclusion. Some of them are listed below.

First, some companies don't disclose interests paid for borrowed assets. Interests are important component of calculations that must be performed in the model.

Second, liabilities in banks and insurance agencies are not divided into current debt and long term debt. The model requires such data but reports of those companies preclude the routine use of data.

Third, the case of deferrals seems to be similar, as financial institutions disclose them in another manner than companies from other branches.

Fourth, even within one single sector of economy (banking) reporting practices vary greatly. Other doubts relate to the display of liabilities arising from issued debt securities. These seemingly small things are very important and shouldn't be left unresolved. Then the way of resolving such minor nuisances impacts on accuracy of model application. Particularly the problem arises as far as banks and insurance agencies are concerned.

Fifth, data disclosed in many financial statements were adjusted. For example a company disclosed

different figures for 2012 in 2012 report and 2013 report (as 2013 report relates to 2013 but also includes data for 2012). The reason for that practice is the changes in accounting policy during the year (here: 2013). Data used in model's calculations should be recent, comparable, which means, adjusted.

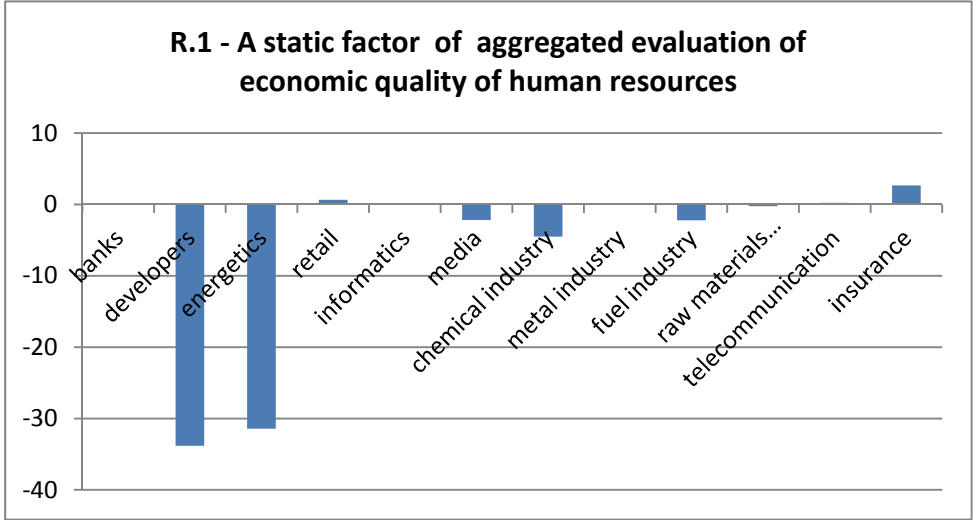
Sixth, sometimes income tax is added to net income instead of being subtracted from income before tax. Then in order to avoid a mistake, selection of data should be done carefully. As a consequence of that situation the effective tax rate is negative though income tax is not. It should be taken into account while interpreting results.

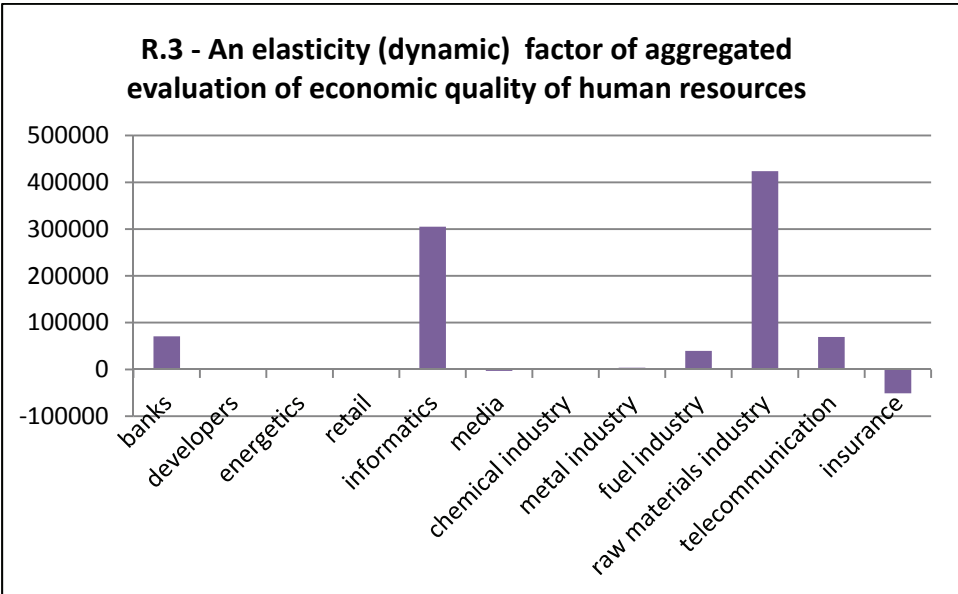
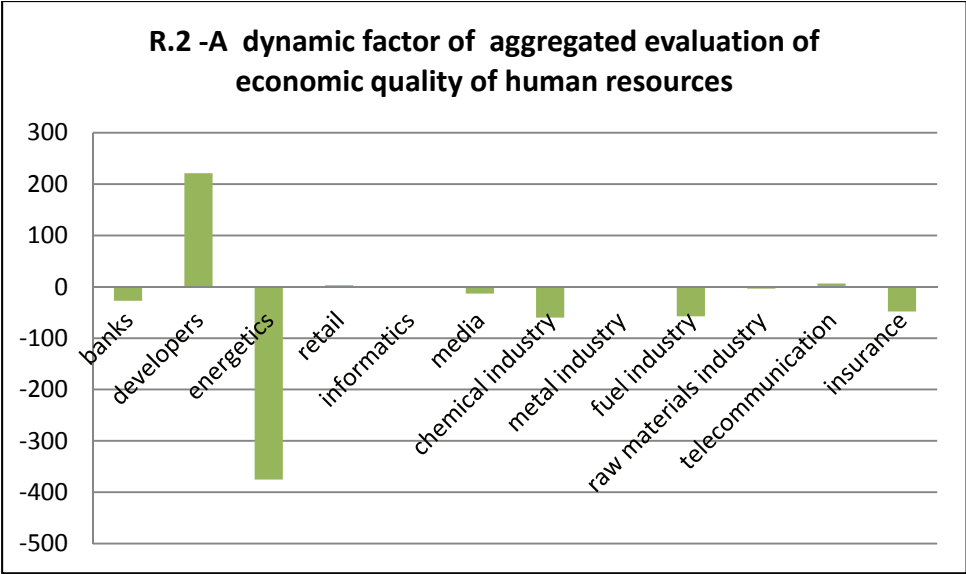
Seventh, it happens – as in our case – that reporting practice of a company can differ from common practices of other entities. Use of the KL-ARK model for such company, in a way as for other companies, seems unfeasible or too difficult. If it is impossible to identify important component of the model it's advised to exclude that company from the test. Its financial statement should be regarded as far from standard one.

Summing up, source data for companies included in WIG 30 index were gathered and calculations were performed. Despite standardization is under way, we noted that financial data are displayed in different manner. It makes data collection for the KL-ARK model difficult. That model, as well as similar models, are useful not only for managerial purposes but also for microeconomic and macroeconomic analysis. Taking only one enterprise into account the model results show trends and threads. So the model's managerial usefulness is obvious. But it can be useful for competitors too. They can get information about the quality of human resources and the cost of that resources. The model seems useful for macroeconomic analysis. Companies grouped in different manner can be compared. We can find out economic quality of human resources engaged in companies from particular branch, sector or companies of a given size. Even stakeholders outside business could select their criteria and use the model to develop macroeconomic policy in vocational education.

In order to visualize the KL-ARK model same results of calculations are shown below.

**Figure 1:** Average level of indices calculated for companies included in WIG 30 index by sectors





Source: adopted from general purpose financial statements of 2012 and 2013 (downloaded from websites of companies).

**7. INITIAL STAGE OF THE USE OF THE KL-ARK MODEL FOR LISTED COMPANIES INCLUDED IN WIG 30 – MICROECONOMICAL AND MACROECONOMICAL ASPECTS**

A hard work was needed to prepare analysis. It gives general view of economic quality of human resources in Polish listed companies included in WIG 30 index. However data collected for longer time span would give dynamic picture. General view is as follows.

In 2013, companies included in WIG 30 index had various economic quality of human resources.

Macroeconomic perspective of the test reveals that economic quality of human resources (displayed in tables and diagrams) can be regarded as benchmark for other companies, even those not listed on the stock exchange but operating in exactly the same or similar areas, branches, etc.

Macroeconomic perspective of the test also shows that results are particularly useful for sector analysis. It illustrates not only structure of sectors but above all the quality of human resources of companies in a given sector. Enterprises from two sectors: retail and telecommunication have positive indices of economic quality of human resources. That's a good result. Positive indices mean that

efforts to recruit, retain and develop employees bring benefits. They lead to value added creation and impact on stock prices. It could be interesting to measure the strength of correlation between three positive indices and market value of a given company from a particular sector. Such test would be interesting and useful for each company having three positive indices (it will be perfect if indices are positive in longer time span). That would show market vulnerability to skills of workers.

In contrast, two other sectors (media and insurance) have negative indices. The explanation is easy. They result from poor competency-based management. Moreover amounts of indices, which are significant, suggest that conclusions should be drawn with care. In this case analysis of correlation would be particularly useful.

It seems that even though the KL-ARK model requires careful calculations, it can provide interesting results, more comprehensive than presented. So standard interpretation of indices can be widened in more complex analysis.

## **8. CONCLUSIONS**

Conducted analysis and calculations allowed to come to conclusion about the KL-ARK model as a tool intended to be useful in evaluating economic quality of human resources of a company.

Answers to research questions, which have been verified, are as follows.

### **8.1. Is the KL-ARK model useful for measuring economic quality of human resources in an enterprise or is it only a theoretical concept?**

The KL-ARK model, at its present stage, seems conceptually consistent. Its recently developed part, comprising three indices, can be used to evaluate quality of human resources in enterprises providing general purpose financial statements. But two restraints should be taken into account, they are as follows.

The use of the full version of that part of the model depends highly on the possibility of obtaining proper source data from notes provided in different, far from standardized, form.

Empirical verification of the applicability of the KL-ARK model shows that it can be used in full version only for internal, controlling purposes. Then it is a tool of human resources management. Internal controlling assessment should be linked with time factor and learning curve. The KL-ARK model would possibly provide interesting insights if database were expanded. Then long term trends could be followed up. It could also help to assess employment policy or even its development. The next stage of the research will deal with these issues.

### **8.2. Is mandatory financial statement sufficient source information for the model application?**

At the moment, full version of tested part of the model allows to assess economic quality of people under the process approach to managing. General purpose financial statement is not the best source of data to manage human resources. Appraisal of the quality of human resources engaged in operational, investment and innovation processes is impossible. However such appraisal could be an incentive for workers. Moreover it would be useful in effective allocation of skills to the company's goals. In order to achieve these features of the model it was simplified to KL-ARK-bis model. It allows to get a general view of a company or group of companies and to prepare comparable analysis based only on external data.

### **8.3. Are there any suggestions or limitations to apply the KL-ARK model?**

Preliminary work is necessary for the application of the KL-ARK model. It requires to prepare database, to understand calculation formulas and to interpret results. Lack of full standardization of reporting practices makes preparation of database difficult, the more companies taken into account, the more difficult task. If an analyst got data directly from company's financial accounting database it would be the best way to apply the model. As far as it is impossible, a common use of XBRL, a global

standard for exchanging business information, is expected to be perfectly suited to the model application. The researchers went through thousands of pages of data provided in financial statements to find information that is relevant and in line with the intention of the KL-ARK model. So the main problem is that data should be truly original not processed or provided for other purposes. As it is impossible to obtain complete source data the other way to apply the KL-ARK model is to establish mandatory format of reported data (particularly for listed companies). Accounting standard setters try to prepare such standard so we can expect that above mentioned difficulty can be soon overcome.

In spite of work overload (source data preparation, professional selection of data requiring advanced knowledge in accounting) it seems that benefits of the model application (even in its simplified version) can draw attention of managers. In the future we intend to expand application of the model. To achieve that we are going to test the model in a case study.

Experience gained allows us to set a standard how to apply the KL-ARK model in practice. The standard would cover all necessary steps:

- 1) collection of data,
- 2) calculations,
- 3) disclosure of results for microeconomic and macroeconomic purposes.

Building IT solution supporting the use of the KL-ARK model in an enterprise seems to be a challenge. As it could be created by connecting several source data, by using data warehouse, by applying computer aided design, it seems neither expensive nor conceptually difficult.

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