Evaluation and Management of Intellectual Capital at Pardubice Airport: Case Study

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Abstract

The issue of intellectual capital was gaining importance during last few years. This trend is particularly evident from the perspective of individual companies that are trying to purposefully manage one of the most valuable resource of the company – human resources. Actual trends of scientific research that are related to intellectual capital are focused on finding the connections between the various entities and processes that have an impact on the efficiency of the management components of intellectual capital. A possible way for determine the level of intellectual capital is from the view of the employees, specifically in terms of evaluation processes by employees that are relevant in the line of intellectual capital. The above definition is also associated with the main objective of the paper, i.e. to demonstrate the outcomes of research through the case study - questionnaire survey among employees of the airport in Pardubice. Detected outcomes will be subsequently expressed through descriptive characteristics that will provide a sufficient degree of erudition for conclusions of case study. The paper is based on current scientific research of the intellectual capital – the theoretical definition of solved problems that will be confronted with the outcomes of the research. The main benefit of the paper can be seen in the expansion of existing methods for assessing the level of the intellectual capital, namely through the case study.

Keywords: Intellectual Capital; Intangible Assets; Employees; Pardubice Airport.

1. Introduction

Intellectual capital as a scientific subdiscipline has gained importance in last few years. That's not only from the view of society when there are topics getting into the fore of interest, that are directly influencing the level of intellectual capital, basically its components – the gender issue or the impacts on the process of investment in education, but mainly from the view of individual economic subjects. The current market environment is forcing companies to constantly face new challenges that were not so essential for ensuring overall growth a few years ago. New social constructs affect each individual and it is therefore necessary to respect the trends and that's in effort to increase efficiency in the management of human resources, which have a direct impact on the individual components of intellectual capital in the company and all that in order to ensure its sustainable development.

There are currently numbers of options to evaluate the controlling of human potential. Over the last decades, when this issue came to the fore, there were established several ways in the area of controlling the human resources – managing entries about employees, internal remuneration schemes, communications policy, headhunting etc. These measures are only partial instruments by which the company affects the overall level of intellectual capital. In order to ensure an effective management of the intangible assets that create differences between the financial balance sheet of the company and its real value. It is necessary to pay attention to the areas affecting human resources in several aspects - organizational knowledge, customer satisfaction, employee morale, etc., that are absolutely crucial in the

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process of increasing the efficiency of the management of components of intellectual capital. The area of intellectual capital can be considered one of the major phenomena that is involved in changing the nature of behavior of the companies in the modern 21st century, i.e. the transmission from traditional enterprises focused on their core business to the companies that are guarantors of the process so-called "making a new character of business" - enterprises that effectively manage their own value and that's not only on the basis of balance sheet indicators. Approach of control the company value is then perceived positively from the perspective of people who manage the enterprise, work in it, and from the perspective of investors as well. To get an idea of the current state in the field of intellectual capital and in an effort to follow the application of possible measures to ensure increasing of efficiency of individual components of intellectual capital, it can be achieved by measuring the business value from the perspective of the employees. Employees are one of the key actors which perceive the value of the company. On the basis of this determination it is therefore necessary for the evaluation based on which there should be subsequently adopted certain measures for increasing the efficiency of the management of components of intellectual capital, not to devoid viewpoint from employees themselves.
With the above definition is associated the main objective of the paper - to provide a new perspective on possible evaluation of intellectual capital, i.e. the case study concretely. The case study demonstrates outputs from questionnaire survey among employees based on which there should be accepted some measures for guarantee the sustained growth and efficiency in the management of market value.

2. Materials and Methods

Schultz (1961) defined a human individual as a one of the forms of productive capital that is an important part of wealth of nation states. Initially the demarcation met with criticism from society, namely from mentioned definition when it wasn't morally possible to understand a human individual as a capital component. An importance of intellectual capital as a tool to ensure sustained growth in connection with its social significance has already been mentioned in the work of S. Coleman (1988). He claims that building a trust and loyalty between the members of a certain group is an absolutely crucial for achieving the objective of a whole society in any field. In the area of business we can see the importance of his ideas in thesis where he claims that accumulative social avail is not beneficial only for rationally behaving individuals but also for other members (employees) of business who are being subsequently affected by these individuals. The term "added value of the company" as a tool for ensuring the stability and growth is an area that stands in the center of interest of many scientific works, for example: Berry (1996), Herling (2000), Zapata (2001), Bowman and Ambrosini (2010) and Hughes (2010). Machinery, real estates, automated systems (in general terms we are talking about items of tangible materials) were considered as these tools within the very development of the company same as market subjects. During the past few decades the intangible capital, however, established as a tool that defines the value of the company basically as a tool that has the most share in the added value. The intangible capital can be collectively marked as an intellectual capital. Edvinsson and Malone (1997) interested in their works in exploration intangible elements that influence the value of the company. They also defined the levels of intellectual capital, i.e. division into human, structural, customer etc. We can categorize also works as Stewart (1997), Bontis (1999) or Zéghal and Maaloul (2010) between the other significant works that are dealing with exploring the intangible elements that affects the value of the company. As a modern definition of intellectual capital we can mark the demarcation that was used by Stewart (1991): by intellectual capital we understand everything what are the employees of the company and other parties operating in the company convinced that it brings a competitive advantage against the other companies in a given market.
The determining how to evaluate the intellectual capital, basically to determine how the components of intellectual capital influence the added value of the company, is a current challenge in the area of research of intellectual capital. One of the methods to determine this is for example the Global Business Network (GBN) from the author called Peirre Wack. It was popularized in the writing of Peter Schwartz (1991). The main aim of this model is to create a script of options from which the best will be chosen subsequently. Sveiby (1997) as the first author defined a model that was initially intended for measuring the level of intellectual capital in companies – specifically, it was a model called "Intangible Assets Monitor" (IAM). Kaplan and Norton (1992, 1996a, 1996b) works in their paper with a model "Balanced Scorecard" that can be considered to some extent as a model that serves for a description of significance of the intellectual capital. However the initial purpose of this model lies in the determination of effectiveness of implemented company strategy. Edvinsson (Edvinsson and Malone, 1997) is described as the

architect of so called model "Skandia Navigator". This model consists in providing a comprehensive view of performance and achieving the company objectives with regard to the importance of intangible assets and that is from the five different perspectives – Financial focus, Customer focus, Human focus, Process focus, Renewal and development focus.

2.1. Analysis methodologies of intellectual capital at the airport in Pardubice

In order to be applied a model for ensuring the effective and targeted control of the components of intellectual capital within any company it is necessary to primarily undergo such a business for analysis that brings results based on which it's possible to decide in which intensions should be the control of components of intellectual capital itself realized.

Due to the size of the airport in Pardubice and with taking in mind the number of employees it was decided to use the questionnaire survey option as a tool to perform analysis to determine the status of the proceedings the components of intellectual capital. In an effort to ensure coherence between the made investigation and the theoretical demarcation, the questions of questionnaire survey were defined into three basic groups – intellectual capital, i.e. human capital, organizational capital and customer capital.

A questionnaire survey was attended by whole staff of the airport in Pardubice, i.e. 41 employees who answered 15 questions by written questionnaire (see Apendix A). The questionnaires themselves were personally handed to the staff on 17th February 2015 and they had two weeks to fill them in, it means that the questionnaires were collected back from the staff on 3rd March 2015. Structure of people that are employed in the airport in Pardubice is represented in the terms of education by levels of secondary education completed with an apprenticeship certificate to the master degree. Employees are operating in several areas in the airport in Pardubice: an airport management, a performance of the work of a technician, firemen, handling staff, accountants, cleaners. All offered answers to the questionnaire were closed with the fact that the obtained data have a character of categorized variables, namely it was the original data.

Based on the above characteristics of the questionnaire survey it was subsequently possible to determine the following:

- The average value of individual monitored categories, basically of the individual questions in given categories, and in an effort to determine the level of employee satisfaction in certain areas (human capital.
- The variability of the data obtained through the ordinal scattering DORVAR in relation to determine the level of compliance in the perception of satisfaction, especially therefore to determine the level of compliance in knowledge of processes related to the development of the intellectual capital.

The average rating on particular issues in human capital[2] category was determined based on a calculation that respected the offered reply options to which were subsequently assigned the scales according to the following relationship: definitely yes – 4, more likely yes – 3, more likely not – 2, definitely not – 1. The final average rating was determined based on the following formula:

$$AR = \frac{4 \cdot DY + 3 \cdot MY + 2 \cdot MN + 1 \cdot DN}{NoR} \tag{1}$$

The value in the interval 1, 5 is the result of average rating with the fact that the higher the average value is, the more can be the monitored area of research considered as well-managed, minimally from the view of rating made by respondents, i. e. employees of the airport in Pardubice (NoR – the number of respondents) .

[2] It was pointless to realize the calculation for organizational and customer capital category and that's because in these two areas it's not that relevant to monitor the level of satisfaction as it is to monitor the degree of uniformity in responses to single questions.

The degree of variability of obtained data was determined by a formula for calculating the discrete ordinal variance (the ordinal dispersion DORVAR), basically it was determined by converting its value in the interval from 0 to 1 when the so called normalized ordinal dispersion is intended:

$$dor\,\mathrm{var} = 2\sum_{i=1}^{K} P_i(1-P_i) \tag{2}$$

$$norm.dor\,\mathrm{var} = \frac{2 \cdot dor\,\mathrm{var}}{(K-1)}; norm.dor\,\mathrm{var} \in \langle 0;1 \rangle \tag{3}$$

The value in the interval 0, 1 is the result of normalized dispersion. Generally, relation holds true that the more there is a result closer to value of 0, the more there is the very variability in the monitored group lower. It means that there is a higher degree of consensus in the responses to the question within the group of respondents. In general it can be claimed that the lower the value of the monitored indicator is, the more the reviews of this area can be considered as very revealing. If this result, i.e. the result close to the value of 0, reflects a question that is connected also with a high average rating (in the case of query of satisfaction with specific area or process) then this area can be considered as very well-managed. It means that the value of human capital in this sector maximizes the added value of monitored company from the view of intellectual capital.

In an effort to demonstrate the results of concrete chosen questions of made questionnaire investigation there was determined the average value of normalized ordinal variance for each category (human, organizational, customer capital). Subsequently, there were selected and specifically commented those outputs that fall below the calculated limit of the diameter in terms of the value of normalized ordinal variance, i.e. those outcomes for which there was detected the highest degree of uniformity of obtained responses from the side of respondents in terms of made investigation. In the area of organizational and customer capital the respondents could choose from five different answers – besides the definitely yes option, more likely yes, more likely not, definitely not, there was also I don't know option. The I don't know answer was included in the questionnaire especially in relation to the structure of work positions when not all of the employees have to keep track of activities that were analyzed in some areas of investigation. From this reason there is not the number of respondents who replied to any question with the answer "I don't know" counted to the indicator of the variability data file.

3. Results and Discussion

Table 1. Analysis of the human capital in the airport in Pardubice

Number of question	Definitely yes	More likely yes	More likely not	Definitely not	Average rating	DORVAR	Normalized DORVAR
1.	2	13	18	8	2.220	0.871	0.581
2.	4	12	19	6	2.341	0.902	0.601
3.	13	27	1	0	3.293	0.481	0.320
4.	20	21	0	0	3.488	0.500	0.333
5.	7	21	10	3	2.780	0.852	0.568

Source: authors

Based on the outputs from the table no. 1 it is obvious that the highest level of variability according to the statistical indicator DORVAR was demonstrated in the output at question no. 3 and question no. 4 which as the only ones reached the lower coefficient of normalized DORVAR than the average of all values, i.e. 0.481. Both of the above mentioned questions watched the level of satisfaction with providing regular training and educational courses, basically the satisfaction with the offer of these educational courses itself from the side of the employer. Both mentioned questioned also reached the highest average rating in relation to the other questions of research of human capital.

Nevertheless the indicators of variability were lower at question no. 3 with the fact that the average rating is lower, i.e. worse than at question no. 4. These achieved outputs of made analysis of human capital can be clearly glorified, especially with regard to the possibilities of answers that the individual respondents could choose within the made research. It is clear that in case if the coefficient of weight at answers "Definitely yes" and "More likely yes" would be set up with the bigger difference in the relation to answers "More likely not" and "Definitely not" then the outcome could be different. The variability of the proposed method to evaluate human capital leaves space for the application of experiences of business management in the area of determination the weights of monitored criteria that will respect the actual strategy of the business. Generally speaking, the unification of the variability level indicator (value close to zero) and average weight rating (value close to 5 at questions assessing the satisfaction) can be considered as a trend that reflects a proper setting of such a process.
In this case the monitoring of the degree of correlation between the indicators excludes itself in terms of statistical definition of the DORVAR indicator and mainly from the view when the DORVAR indicator may exhibit a very low value, i.e. high conformity in the context of respondents' answers, which can be considered as positive, however, the average rating will be very close to the value of 1, which of course can't be considered as positive. In this case we can talk about a situation when it's totally right to take certain actions from the side of company management in an effort to change the process or area that was evaluated like that. The mentioned result also clearly declares that it will be certainly needed to apply targeted and especially permanent plan to achieve a change in this area.

Table 2. Analysis of the organizational capital in the airport in Pardubice

Number of question	Definitely yes	More likely yes	More likely not	Definitely not	I don't know	DORVAR	Normalized DORVAR
6.	35	5	0	0	1	0.219	0.146
7.	11	26	0	0	4	0.418	0.460
8.	2	0	0	35	4	0.307	0.205
9.	35	0	0	2	4	0.307	0.205
10.	10	0	18	10	3	1.163	0.776

Source: authors

The output of table no. 2 is concerned with the issue of the management of organizational capital in the airport in Pardubice, specifically it monitors the rating of this area from the view of staff in five defined levels. In respect of organizational capital there was defined (based on the obtained data) the indicator called DORVAR, respectively normalized DORVAR, as the indicator of variability of the file. On the basis of the calculated average of the normalized variability of the file,[3] i.e. 0.358, there was again marked those areas that fall below the average limit as the areas that are evaluated with the greatest consensus in the offered responses from the view of the employees. In organizational capital there wasn't monitored the indicator of an average satisfaction/discontent rating as it was in the area of human capital and especially because of the nature of the questions that were defined for the area (see annex A). It is not possible to obtain information about satisfaction with the management of activities in this area from the nature of these questions. The aim of the research in this field was to determine into which level there are the employees associated with the processes that ensure the operation of the airport in Pardubice.

The lowest value of variability was reached in answers to questions no. 6 and no. 8, respectively to no. 9.Based on the outcomes that evaluate the area of question no. 6 it can be stated that the employees are well aware that in the airport in Pardubice works a unified system of controlling the activities, which is surely positive, minimally from the viewpoint of detection that employees have an overview of the internal adjustment and overall policies of the organization of activities in the airport in Pardubice. The output of variability indicator was too low also at question no. 8, respectively at no. 9, that analyzed the same area but from different angles. It's appropriate to include these

[3] The numbers of respondents from the category of answers „I don't know" weren't calculated into the variability indicator of data file and that's for ensuring the revealing values of the DORVAR indicator, when it's not possible to include the answer „I don't know" in this range with regard of the scale of the offered answers.

questions to the questionnaire survey and especially because of verifying the presumption of relevance of the obtained data from individual respondents. Logically, one respondent shouldn't answer the questions differently when they are monitoring the same area. From the table it's evident that in terms of made research of each area we can consider the outcomes as very relevant, mainly from the view of the identical variability indicator of data file at questions no. 8 and no. 9.

Table 3. Analysis of the customer capital in the airport in Pardubice

Number of question	Definitely yes	More likely yes	More likely not	Definitely not	I don't know	DORVAR	Normalized DORVAR
11.	0	12	25	0	4	0.438	0.292
12.	0	3	21	5	12	0.471	0.314
13.	0	0	30	3	8	0.165	0.110
14.	14	14	6	4	3	1.042	0.694
15.	0	15	21	3	2	0.615	0.410

Source: authors

The output of table no. 3, which provides information about the management of customer capital as one of the components of intellectual capital, is processed according to the same procedure as the output of the organizational capital, i.e. without the indicator of an average value of satisfaction/discontent of the staff. The view when employees evaluate the relationship between the company and customers is very interesting and the outcomes can certainly be regarded as relevant in the matter of deciding whether to accept some possible measures for improving the relationship with customers. Also in this area of questioning it was possible for staff to answer "I don't know" to questions, which they are not able to objectively evaluate in respect of their employment status.
The actual results of the normalized indicator of variability in the data file again demonstrate the three areas of human capital management that fall below average of normalized indicator DORVAR, i.e. 0.364. The lowest variability was reached at the outcome of question no. 13. It means that the most respondents has same or very similar opinion. Because of that it is appropriate for the company management of the airport in Pardubice to make some precautions that will lead to improvement of perception of this activity from the view of staff. On the other hand it's therefore necessary to apply new measures that will ensure the improvement of relationship with customers from the perspective of getting feedback. This fact is glorified in relation to the other outcomes that have relatively low variability, i.e. outcomes of questions no. 11 and no. 12, where there is again a negative perception of other areas of controlling the relationship with customers from the side of employees.

Based on the above analysis and evaluation of outcomes of the questionnaire survey with using defined methods, it can be clearly confirmed that obtained data can be considered as relevant. The measures that should be suggested and applied accordingly by the management of the airport in Pardubice should surely ensure an increase of the added value. It is obvious that the reviews of the intellectual capital from the view of employees have a certainly predictive value of an actual state in this area. The analysis of the intellectual capital through the questionnaire survey between staff is one of the possibilities that guarantee the obtaining of relevant information about the actual state of company value from the perspective of intangible assets. The value of the method in the evaluation of intellectual capital is certainly increased by the fact that employees perceive the importance of their role within the company, where an employer is interested in obtaining information of the management of the activities of one of the key areas, i.e. intangible resources just from the view of staff.

4. Conclusion

The contribution dealt with one of the very actual topics of current market environment – the issue of intellectual capital. This sub-discipline of management was getting to the fore of interest over the past few decades, especially in recent years there has been dedicated an increasing interest to the field of intangible assets as the intellectual capital is often being called. This trend is particularly evident from the perspective of the increasing number of scientific papers that have started to deal with the issue, especially works that defined the area of intellectual capital as an area that has a crucial impact on increasing the market value of the company.

Within the theoretical definition of solved area there are several models whose application gives some insight into how the company is doing from the view of controlling the files of intellectual capital, but on the other hand, question still remains how to get the information needed for the application of the models. Of course there remains the fact that the area of intangible resources (unlike resources that can be quantified and expressed in an accounting) brings with itself some difficulties that consist precisely in an effort to objectively express the parameters affecting the value of the company from the perspective of intangible resources. This handicap is even more serious from the perspective of the existence and influence of societal phenomena that have a clear impact on the individual components of intellectual capital (gender issues, access to education etc.).

The contribution dealt with the evaluation of process of controlling the components of intellectual capital with using the case study demonstrated in conditions of the airport in Pardubice. Specifically, it was the use of questionnaire survey through which the current status of the three basic components of intellectual capital was evaluated, i.e. human, organizational and customer capital. The selected procedure certainly brings a new perspective to the evaluation of the company and that's from the view of the very source of information, i.e. from the view of employees of the airport in Pardubice. By this way you can perceive the increased objectivity of outcomes from the perspective of societal phenomena that have an impact on the development of the intangible components of the company Employees are affected by these influences (gender etc.) within their role in society. For this reason, their conclusions that lead to the evaluation of intellectual capital are considered as beneficial.

Based on the outcomes of demonstrated case study which used the perspective of the employees for the evaluation of intellectual capital by using defined methods, it can be determined that the procedure can be considered as relevant in given area. The chosen procedure of evaluation the acquired data is not rigid, it means that it leaves some space for its modification, especially in terms of setting the coefficients of weights within the evaluation of satisfaction/discontent in the area of human capital based on the previous experiences, the structure of job positions, staff, etc. The mentioned conclusions can be considered relevant and certainly beneficial in the process of applying concrete measures in order to increase the overall level of intellectual capital or value of the company.

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Apendix A. The Questionnaire

1. Is there a direct communication between you and your boss taking place?
2. Do you have enough information from your boss?
3. Does your employer ensure you any regular training and educational courses in the field?
4. Are the training and educational courses organized by employer useful and understandable for you?
5. Is there arising any language barrier between staff and customers at the working place?
6. Are the activities at your working place performed in accordance with documented procedures?
7. Do you have access to the company information and databases?
8. Are the documents and information backed up electronically?
9. Are the documents and information backed up in a paper form?
10. Is the printing of documents and information that are needed for the airport in Pardubice to work properly taking place in one department?
11. Does the company host any promotions in order to reach out to potential customers or suppliers?
12. Is the company trying to maintain contact with current customers and suppliers?
13. Is the company getting any feedback from customers or suppliers?
14. Do the customers have an opportunity to express their opinions and comments for example on websites of the airport in Pardubice?
15. Do you think that the airport in Pardubice has a sufficient advertisement on the market?

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