THE POTENTIALS OF THE USE OF INSTRUMENTS FOR THE ASSESSING OF THE BUSINESS ENVIRONMENT IN THE COMPANIES OF THE RAILWAYS SECTOR

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Abstract. While assessing the business environment in the sector of transport, large corporations often meet the issue of the application of particular instruments for the assessing of the business environment to the companies of the transport sector. Aiming at adapting the methods of competitive intelligence the business faces the problems of applying to specialists who are competent in the sphere of use of these methods as well as the particular instruments for the assessing of information in the companies of the transport sector. Due to the fact that business usually treats scientific investigative or scientific applied methods only as theoretical, further use of modern instruments for the assessing of the business environment becomes difficult. However, it is necessary to note that scientists from the USA are considered to be the most progressive in the field of using methods of competitive intelligence as are Russian scientists, who have published a significant body of work connected with this issue. Since the experience of former employees of American secret services is considered to be the origin of the methods of competitive intelligence, American business became its pioneer user.

Keywords: instruments for assessing the business environment, competitive intelligence, strategic places, collecting of information and its analysis, SLM, SLM3, TOWS.

JEL classification: F23, F02, P21.

1. Introduction

While assessing the business environment the problem of the obtaining and the analysis of information can be met. A great variety of methods and instruments of analysis can be used for this purpose. Various authors maintain that the significant experience of using a variety of methods of assessment and control shows that in order to obtain the goals well-known methods of competitive intelligence should be selected. For the analysis of goals it is purposeful to use such techniques of creative process as "brainstorm", "systemic structural organization" and also methodology GOPP, which is polarized towards the goals of a project (Gaidelys, Dailydka 2013).

For certain operations the following methods of the controlling of the projects portfolio are offered: simulation, analysis of sources, redistribution of sources, net planning and control, monitoring, planning and control over expenditure, methods of control over risks, methods of control of quality, methods of control of conflicts, methods of control over changes, methods of control of contracts and others (Zvi 1976).

The aforementioned methods should be also improved through the realization of the most useful elements of modern management systems and the method of control STAGE-GATE (Gaidelys 2011).

Other authors offer the use of adaptive methods of competitive intelligence, which could provide the optimum of the set tasks realization (Jeremiah 1998).

According to other authors, the system of the control of information, which is used for the assessment of the competitive environment of railways companies, was created due to the Internet as a key element of the system. This system is especially convenient for the railways companies which work with IT technologies. Due to this, methods of assessment of a business environment are usually placed in the company's or organization's intranet (internal net). This system of control of information possesses particular infor-

mation about competitors and markets. Comparable profiles of competitors, which contain information about production and provided services, strengths and weaknesses, priorities in the markets, pathways and tactics of sale, are precisely the very information which could be used by a client in order to plan competitive scenarios. The main advantage of this system is that it can be effectively used by consumers but only in the case when they are able to search the information of the system and use it. Consequently the main consumers can take the decisions more swiftly and the time of the members of the group who perform an assessment of the business environment is used more efficiently and economically (Christopher 1993).

According to other authors, the security of a company or organization also plays quite an important role because a significant part of the information is confidential and accredited employees acquire access to the information only if they are allowed by the group performing an assessment of the business environment and have grounds on necessity of obtaining the required information. The group which performs an assessment of the business environment give out passwords and decides who is allowed to gain access to such information and whose access is restricted. To make the matter simpler the list of the persons, who have access to the system's "Knowledge house", is the same as the list of employees who get analytical material, which is called "The news for you". This means that those persons who have access to the system's "Knowledge house", also periodically get analysis of the news from the group performing the assessment of the business environment (Gaidelys 2010).

So, with reference to the above-mentioned description of the system's "Knowledge house" information, the aim of this system is to collect and analyze information about the business environment using the available instruments for the purpose of timely reaction to changes in the business environment. Therefore, the aim of the article is to assess the potentials of using instruments described above for the assessment of the business environment in general terms (Gaidelys 2011).

For this purpose the following instruments for the analysis of the business environment should be used: DSS – Decision Support Systems, EIS – Executive Information Systems, OLAP – On-Line Analytical Processing, DWS – Data Warehouse systems, DMS – Data Mining systems, TOWS – Threats, Opportunities, Weaknesses, Strengths, ACH – Analysis of Competing Hypothesis, SPI – Service Performance Insight, SLM – Service Lifecycle Management, SLM3 – Service Lifecycle Management Maturity Model (Nakajima 2006).

2. Instruments for assessment of business environment

To assess the business environment other authors suggest using the following the methods and instruments which are detailed and described below:

- DSS – Decision Support Systems;
- EIS – Executive Information Systems;
- OLAP – On-Line Analytical Processing;
- DWS – Data Warehouse systems;
- DMS – Data mining system;
- TOWS – Threats, opportunities, weaknesses, strengths;
- ACH – Analysis of competing hypothesis;
- SPI – Service Performance Insight, new (2012) SLM3 – Service Lifecycle Management Maturity Model;
- SLM – Service Lifecycle Management;

According to other authors, the tool TOWS (threats, opportunities, weaknesses, strengths) can be applied to assess business environment to analyze external environment as opposed to the SWOT analysis, when the company's threats, opportunities, weaknesses and strengths are assessed externally but not internally (as is done when using a SWOT analysis) i.e. a TOWS analysis emphasizes the external environment while a SWOT analysis is mostly concentrated on the company's available internal sources and resources. Using jointly the SWOT and TOWS analyses enables one to create a clearer picture of possible strategic directions (a reminder that "strategy" answers the question of how you will "win" in business). These types of analysis help to ask questions as well as answer them. The main questions are as follows (Davis 2012):

- How well do you use available strengths?
- How well do you diminish the influence of available weaknesses?
- How well do you use available opportunities?
- How well do you manage external threats?

This will enable you to select the most suitable strategy from the ones presented, i.e.:

- "Maxi-Maxi" strategy: how possibly to use strengths in order to use opportunities?
- "Maxi-Mini" strategy: how possibly to use strengths in order to avoid real and potential threats?
- "Mini-Maxi" strategy: how possibly to use opportunities, which would help to diminish the influence of weaknesses?
- "Mini-Mini" strategy: how possibly to diminish the influence of weaknesses and thereby to avoid external threats?

The above-mentioned method is in three steps:

The first step. Perform a traditional SWOT analysis, which would help to realize your internal strengths and weaknesses as well as external opportunities and threats. And believe that it is the most difficult part (Richard 1978).

The second step. With reference to external opportunities and threats, identify all possible strategic choices. Also answer the four questions which were presented above (Cigar 1992).

The third step. Assess the identified choices and find which of them will bring the greatest benefit and also which of them are mostly related to the vision the company's aims at and the mission the company has (Daniel 1988).

The next step is connected with the TOWS matrix, which is oriented to externals and helps to define all the possible ways you will select from. You just have to unite the external opportunities and threats with internal strengths and weaknesses (Jervis 1976).

- SPI (service performance insight), SLM (Service Lifecycle Management) and SLM3 (Service Lifecycle Management Maturity Model) are used together and help module PSO (professional services organization), which aims at getting maximum benefit from provided services (Johnson 1992).

PSI and SLM3 tools are divided into five stages. They are:

- Innovations or renovations. The defining of the demands of potential clients, analysis of the market and its financial possibilities while doing scientific research;
- Characterizing. The defining of general requirements for the characterizing of clients and grouping while assessing measures and processes;
- Development. The creating of the products for improvements in services according to the clients' demands on the grounds of best practice, coordinated methods, the backgrounds of samples and instrument tests;
- The origin of initiatives. The creating of the test of beta behavior on the grounds of collected materials on sales, marketing and delivery, the opinions of the specialists in the selling of the services provided by trains while performing sales and marketing campaigns which are presented with qualitative assessment;
- Optimizing. To perform an assessment of benefit, collect responses from sales subdivisions, PSO and clients in order to define the spheres which need improving. To sug-

gest making changes in services through the stage of innovations.

As the next stage, the analysis of potential benefit on the grounds of SPI and SLM3 models is performed (the Table 1), (Kokubu, Nakajima 2004).

Table 1. The process of analysis of potential benefit

Phase	The results of the phases	Benefit
Innovations or renovations	To assess the demands of the market. In the case of business simulation. Ratification of sponsoring.	The services are sold easier. The cycles of sales are shorter. The projects become fast-moving and more interactive.
Characterizing	To make plans for setting up the projects to create services involving the teams which work in marketing, sales and services.	The sources and expenditures are planned, the incomes are forecasted. The architecture of providing services is defined. The portfolio of services is clearer.
Development	To develop sets of services which include tools, samples and others. To define the plans and results of sales and marketing. To realize the contracts.	Corresponding to the model of global services. Reassessment of the projects, methods, tools and intellectual possessions (IP). The expenses of delivery decrease. The use and equity increase.
The origin of initiatives	An assessment of the work of employees performing in sales and services. The portfolio of services.	Effective sales and marketing. Possible assistance from satisfied clients.
Optimizing	An assessment of results. The lessons which have been learned. The plan to improve services.	More possibilities of extra expenses. The better quality of servicing clients and faster dividends. The better assessment of demands of potential clients.

The essentials of implementation of the instruments SPI, SLM and SLM3 for the successful development of the company. Having implemented the above-mentioned tools employees realize their functions and tasks better, initiatives are contributed into the process of the creating of general suc-

cess and work as a catalyst of general transformation of the services provided by the company (Hofferberth 2012).

Therefore, with reference to the goals set by the Lithuanian railways corporation, the SPI model has been adapted to meet the company's requirements and achieve the goals and as a final result the adapted model of maturity of the life cycle of services SLM3 has been created (Isenberg 1988).

To sum up, in the final part of the stage the model of control of realization of the strategy and the logical model, which presents the detailed description of the control of realization of the strategy, are created (Ministry of Economy, Trade and Industry, Japan 2005).

Other authors maintain that the information system's "Knowledge house" must be placed in the railways corporation's net intranet (Fig. 1) (Zvi 1976).

In our opinion the competitive intelligence instruments which we suggest to use in railways companies is new not only in Europe but in the world as well.

3. Potentials of using IT systems and Analysis of Competing Hypotheses (ACH)

DWS, DMS, DSS and OLAP are subsidiary and recommended tools for the processing of quantitative information which will be employed for work with information sources while using IT technologies.

DMS (Data Mining Systems) enable one to analyze and perform the sectional analysis of indices, links and dependencies and also present qualitative conclusions to take appropriate decisions towards the possible influence of economic, political and juridical, technological and other factors, using large amounts of information, collected throughout the researches on the economic, political and juridical, technological, social, geographical and competitive factors (Rensli 1996).

DWS (Data Warehouse systems) enable one to model and analyze information of micro and macro levels, present qualitative conclusions to take appropriate decisions towards the possible influence of economic, political and juridical, technological and other factors, using large amounts of information, collected throughout the researches on the economic, political and juridical, technological, social, geographical and competitive factors (Roberts 1995).

The information of a secret database is used, which with the help of the special IT tools DWS and DMS, performs an assessment of information.
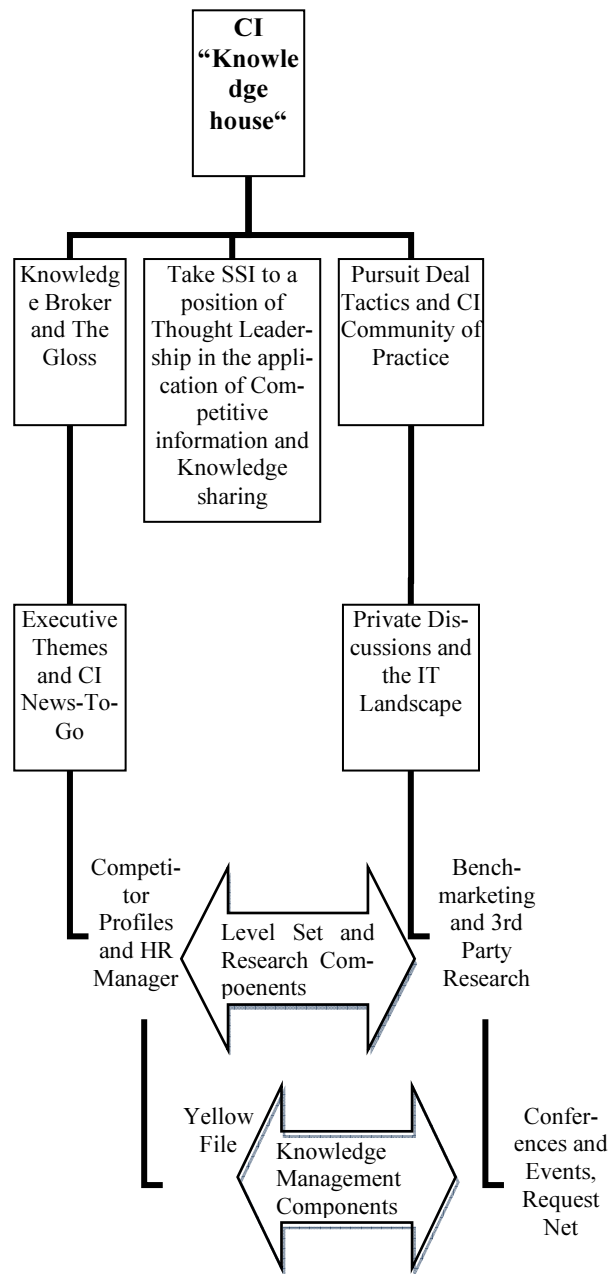

Fig. 1. The information system's "Knowledge house" placed in the net Intranet (Zvi 1976)

The computer-based systems DSS (Decision Support Systems) enable the modeling and analyzing of a vast array of information of micro and macro levels, present qualitative conclusions to take appropriate decisions towards the possible influence of economic, political and juridical, technological and other factors, using large amounts of information, collected throughout the researches on the economic, political and juridical, technological, social, geographical and competitive factors. DSS is a computer-based information system, which supports business or the taking of organizational decisions.

DSS optimize the levels of control, work and planning in the organization (usually of middle

and top management) and help to take the decisions which might be changed quickly and which makes it difficult to identify them in advance (problems of non-structural and half-structural decisions) (Rozekranc 1998). The systems of the supporting of decisions can be completely computerized, however while doing the tasks set by the client, human interference is necessary as well. The essential characteristics of DSS are as follows:

– DSS is not structured enough and solves non-specific problems that higher level management usually encounters.

– DSS unites the models and methods of analysis which are used with traditional functions of approach and the searching for information.

– DSS emphasizes the attributes which are used to process non-digital information provided by people in an interactive mode.

DSS accentuates the flexibility and capability of adapting to the mutability of the environment and suggests the method of taking decisions. OLAP (On-Line Analytical Processing) enables one to analyze and perform the sectional analysis of indices, links and dependencies and also present qualitative conclusions to take appropriate decisions towards the possible influence of economic, political and juridical, technological and other factors, using large amounts of information, collected throughout the researches on the economic, political and juridical, technological, social, geographical and competitive factors.

The system assesses multi-dimensional analytical requests. OLAP is treated as a broad conception of an instrument of business intelligence, which connects the information of different databases, obtains data and prepares reports. EIS (Executive Information Systems) should be used as a supplementary tool, which structures the whole information in which the company's top management is interested in and presents it according to selected indices (Gaidelys 2011).

Other authors suggest using ACH (Analysis of competing hypothesis) as an extra tool. It would help to make an assessment of several competing hypotheses as optimal and fair as is possible and so to perform the most optimal assessment of competing environment and create the most appropriate economic model of the impact of the strategy to attract loads. The ACH tool enables the performing of a much more intense assessment of competing hypotheses which include (Gettys *et al.* 1980):

– Hypotheses. The first step in this process is to find all possible hypotheses. "Brainstorm" opportunities of different outlooks

are requested. The process does not stimulate the choosing of one "presumptive" hypothesis and an analyst must prove their right choice by the presenting of arguments. In this case a reduction of cognitive bias, when all possible hypotheses are considered to be competitive, remains (Transcript of Adm 1998);

– Significant symptoms. An analyst presents arguments and evidence (including premises and logical deduction) for and against every hypothesis (Fallesen *et al.* 1996);

– Diagnostics. Using a matrix an analyst assesses arguments against every hypothesis while trying to deny as many theories as possible. When arguments have stronger support of analyst "diagnosticity", than other available arguments, it means that it is useful while accounting relative probability in order to assess alternative hypotheses. This step is the most important as instead of the assessing of a single hypothesis all the evidence is assessed ("down work" matrix) and an analyst is encouraged to weigh up all the details of the evidence during the process of assessment and make sure that all possible arguments are collected against all possible hypotheses (Petkus *et al.* 2009);

– Improvement. An analyst reviews the conclusions, defines all the gaps and collects some additional arguments they need to deny most of the remaining hypotheses and so attempts to deny reasonably as many hypotheses as possible collecting extra evidence (Prescott, Miller 2004);

– Incompatibility. An analyst aims to assess tentative conclusions about the relative probability of a hypothesis. Less consistency means less probability. The least consistent hypotheses are eliminated. Although the matrix creates a final mathematical model for every hypothesis an analyst must decide themselves what final conclusion to draw. The result of ACH analysis cannot eliminate the decisions of the analysts.

– Responsiveness. An analyst draws conclusions of tests using an analysis of responsiveness which assesses how the conclusion can be undermined if the evidence or arguments are incorrect, deceptive or in the case of the use of different interpretations. The consistency of the most important evidence and important arguments is tested twice in order that it is ascertained that the conclusions, which are drawn on the grounds of

the method of "linchpins" analysis, are responsible (Palasek 2009);

– Conclusions and assessment. Finally an analyst foresees, takes the decision with reference to their conclusions, presents a summary of the alternatives which were analyzed, and gives the reasons why they were eliminated. An analyst also indicates the stages in the process which can act as an indicator for future analysis.

Use of this instrument enables one to see clearly the sequence of analysis and the reasons why one or another hypothesis was chosen, as well as the reason why other hypotheses were eliminated.

"Analysis of competing hypotheses, sometimes abbreviated as ACH, is a tool to aid judgment on important issues requiring careful weighing of alternative explanations or conclusions. It helps an analyst overcome, or at least minimize, some of the cognitive limitations that make prescient intelligence analysis so difficult to achieve.

ACH is an eight-step procedure grounded in basic insights from cognitive psychology, decision analysis, and the scientific method. It is a surprisingly effective, proven process that helps analysts to avoid common analytic pitfalls. Because of its thoroughness, it is particularly appropriate for controversial issues when analysts want to leave an audit trail to show what they considered and how they arrived at their judgment" (CIA 2014).

Step-by-Step Outline of Analysis of Competing Hypotheses:

– To find out all possible hypotheses. It is recommended that a team of analysts who have different manners of thinking are employed.

– To make an extensive list of evidence and arguments which would confirm or deny every hypothesis;

– To make the matrix of hypotheses, in which evidence would be presented from above to down. To analyze ("diagnose") evidence and arguments i.e. to find which elements are the most useful while deciding on the relative probability of hypotheses;

– It is recommended that the matrix is corrected. To reconsider the hypotheses, delete the evidence and arguments which fail to have achieved diagnostic importance;

– Tentative comparison of conclusions for relative probability of every hypothesis. The process attempts to deny the hypotheses but not prove them;

– To analyze how responsive the drawn conclusions are while criticizing every one of

them and presenting evidence to confirm them. To consider what consequences might follow the performed analysis if the evidence was not confirmed or was explained incorrectly or somehow differently;

– To present conclusions. To discuss the relative probabilities of all the hypotheses not only the most reliable one.

– To define guidelines for forthcoming assessments by changing the aspects of assessment.

"Careful consideration of this alternative hypothesis would have required evaluating India's motive, opportunity, and means for concealing its intention until it was too late for the US and others to intervene. It would also have required assessing the ability of US intelligence to see through Indian denial and deception if it were being employed. It is hard to imagine that this would not have elevated awareness of the possibility of successful Indian deception" (Davis 2012).

A principal lesson is this. Whenever an intelligence analyst is tempted to write the phrase "there is no evidence that ...," the analyst should ask this question: If this hypothesis is true, can I realistically expect to see evidence of it? In other words, if India were planning nuclear tests while deliberately concealing its intentions, could the analyst realistically expect to see evidence of test planning? The ACH procedure leads the analyst to identify and face these kinds of questions (Jervis 1976).

Once you have gained practice in applying analysis of competing hypotheses, it is quite possible to integrate the basic concepts of this procedure into your normal analytical thought process. In that case, the entire eight-step procedure may be unnecessary, except on highly controversial issues.

There is no guarantee that ACH or any other procedure will produce a correct answer. The result, after all, still depends on fallible intuitive judgment applied to incomplete and ambiguous information. Analysis of competing hypotheses does, however, guarantee an appropriate *process of analysis. This procedure leads you through a rational, systematic process that avoids some common analytical pitfalls. It increases the odds of getting the right answer, and it leaves an audit trail showing the evidence used in your analysis and how this evidence was interpreted. If others disagree with your judgment, the matrix can be used to highlight the precise area of disagreement. Subsequent discussion can then focus productively on the ultimate source of the differences.*

A common experience is that analysis of competing hypotheses attributes greater likelihood to alternative hypotheses than would conventional analysis. One becomes less confident of what one

thought one knew. In focusing more attention on alternative explanations, the procedure brings out the full uncertainty inherent in any situation that is poor in data but rich in possibilities. Although such uncertainty is frustrating, it may be an accurate reflection of the true situation. As Voltaire said, "Doubt is not a pleasant state, but certainty is a ridiculous one" (Rogers 1983).

The ACH procedure has the offsetting advantage of focusing attention on the few items of critical evidence that cause the uncertainty or which, if they were available, would alleviate it. This can guide future collection, research, and analysis to resolve the uncertainty and produce a more accurate judgment" (CIA 2014).

In our opinion ACH is very important when the head of railways companies should takes important decision and the analyst of railways companies have to choose one of the few hypotheses.

4. Conclusions

With reference to the information which is presented above, the following conclusions can be drawn:

- The instrument of analysis TOWS is recommended to be employed with SWOT instrument together aiming at getting maximum effect of using the tools. If the aforementioned instruments are used separately the maximum effect while assessing a competing business environment and potential threats fails to be achieved;
- The employment of some tools is divided according to the purpose and importance of information. EIS (Executive Information Systems) present such type of instrument, which aims at presenting the top executives of the client with processed and more specific knowledge which would help to find the right position in the processes which take place, and to take optimal decisions;
- The ACH instrument enables one to assess competing hypotheses much more deeply. So all possible and reliable hypotheses are assessed in order to confirm or deny the one that is the most optimal by elimination;
- The tools SPI, SLM and SLM3 are usually used together. Having implemented the aforementioned instruments employees realize their functions and tasks better, initiatives are contributed into the process of the creating of general success and work as a catalyst of general transformation of the services provided by the company;

- DWS, DMS, DSS and OLAP are subsidiary and recommended tools for the processing of the quantitative information which will be employed for work with information sources while using IT technologies;
- Analysis starts with a full set of alternative possibilities, rather than with a most likely alternative for which the analyst seeks confirmation. This ensures that alternative hypotheses receive equal treatment and a fair shake;
- Analysis identifies and emphasizes the few items of evidence or assumptions that have the greatest diagnostic value in judging the relative likelihood of the alternative hypotheses. In conventional intuitive analysis, the fact that key evidence may also be consistent with alternative hypotheses is rarely considered explicitly and often ignored;
- "Knowledge house" is one of operational modules/instruments the methods of competitive intelligence;
- "Knowledge house" is used by particular business railways corporations as an effective tool for assessing of business surroundings;
- Analysis of competing hypotheses involves seeking evidence to refute hypotheses. The most probable hypothesis is usually the one with the least evidence against it, not the one with the most evidence for it. Conventional analysis generally entails looking for evidence to confirm a favored hypothesis.

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