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ALGORITMUS ROZHODOVANIA PODNIKOVÉHO MANAGEMENTU S MOŽNOSTAMI RIEŠENIA KRÍZOVÝCH SITUÁCIÍ Z ÚČTOVNÝCH, FINANČNÝCH A EKONOMICKÝCH RIZÍK

ALGORITHM OF DECISION MAKING PROCESS BY CORPORATE MANAGEMENT AND WAYS OF RESOLVING CRISIS SITUATIONS CAUSED BY ACCOUNTING, FINANCIAL AND ECONOMIC RISKS

Vedecký príspevok publikuje formuláciu algoritmu a metód strategického rozhodovania podnikového TOP manažmentu s obmedzovaním a možnosťami riešenia krízových situácií vzniknutých z účtovných, finančných a ekonomických rizík. Algoritmus rieši jednotlivé štádiá životného cyklu podnikov a uvádza riziká, metódy ich analýzy, vyplývajúce tak z externých, ako i interných faktorov prostredia manažmentu. Cieľom je definovanie rizík a spôsobov ich eliminácie. Príspevok zahŕňa výsledky výskumu EP 7260 (Brno, 1998-2000), GA MSM 431100007 (Brno, 2000-2001) a EP - 12/2001-2003 (Brno, 2001-2002). Metodický postup sa opiera o metódy: analyticko-syntetickú, komparáciu, riadeného rozhovoru, metódy strategického rozhodovania, metódy krízového manažmentu a vybrané metódy účtovné, finančné a ekonomické analýzy. Vedecký príspevok nadväzuje na publikácie na konferenciách a vo vedeckých časopisoch FŠI ŽU Žilina (2000), SPU FEM Nitra (2000-2002), PEF ČZU Praha (2000-2001) a IAES (Vienna, 1999), (Montreal, 1999), South Carolina, 2000), Paris (2002). Výsledky výskumu boli overené vo vybraných podnikateľských subjektoch pri riešení krízových situácií, do ktorých sa tieto subjekty dostali nesprávnymi reakciami na zmeny v prostredí manažmentu.

The scientific paper presents an algorithm and methods of strategic decision making process by top management and ways of eliminating and resolving crisis situations caused by accounting, financial and economic risks. The algorithm deals with a business's lifetime stages and presents the risks, as well as the methods to analyse such risks, based on both external and internal factors of managerial environment. The aim is to define the risks and ways of eliminating them. The paper includes results of the EP 7260 (Brno, 1998-2000), GA MSM 431100007 (Brno 2000-2001)s and EP - 12/2001-2003 (Brno, 2001-2002) research projects. Methodology is based on analytical-synthetic methods, comparison, controlled interview, strategic decision making process, crisis management methods and selected methods of the accounting, financial and economic analysis. The paper also follows up the works published at conferences and in scientific journals FŠI ŽU Žilina (2000), SPU FEM Nitra (2000-2002), PEF ČZU Praha (2000-2001) and IAES (Vienna, 1999), (Montreal, 1999), South Carolina (2000), and Paris (2002). Results of the research have been verified on selected enterprises in the process of dealing with crisis situations which afflicted these enterprises owing to unsuitable reactions to changes in the managerial environment.

1. Introduction

Successful management of any business requires meeting various prerequisites. One such crucial prerequisite is a decision making process by the business's management, now being a much more demanding task than ever before. Currently, managerial environment finds itself in a very turbulent period involving oncoming effects of the globalisation process which is taking effect all over the world. This situation calls for an optimal combination to deal with individual aspects of this globalisation process and many other regional issues. With respect to this, what is more and more important is transformation management and crisis management.

Changes experienced in external business environment and the ability to accommodate demand many things of managers. First, it is the ability to prepare their businesses and staff to be able to cope with such changes, both in terms of mental strength and business organisation. Second, it is the ability to take an appropriate action. The changes might well concern business strategy, processes either in manufacturing or in information flow environment and many other things.

Transformation management is dealt with by many authors, both at general level and at the level of practical applications. Conclusions presented in this paper are in line with the publica-

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tions by Hron [5], Gozory [4], Šimo [13] and others. Drucker [2] states that no century in the history of mankind has ever seen so many radical changes as did the twentieth century. Drucker presents, in his publication *Management at the Time of Great Changes*, practical experience from business and concrete approaches which are available for us to cope with the given situations and learn practical lessons of them. Drdla and Rais [1] give advice important for successful management of a firm, as to for which changes to opt and how these changes should be scheduled. They also present some model situations for transformation management, methods of avoiding conflicts and ways of addressing possible problems. Conclusions made by many authors suggest that changes are speeding up, bringing many benefits to consumers, but large troubles to effective business management. The conclusions also suggest that only those businesses that are able to answer these changes adequately will survive.

As supported by our research, successful management of transformation process requires that various analyses be drawn, most of them being chiefly analyses of accounting, financial and economic information. What all these analyses have in common is the fundamental principles that are based on accounting and have major impact on other areas as well. The principles concerned include, in particular, chronological record of changes in accounting, systematic approach (either synthetic or analytical), double-entry records, documentary and replica principle, principle of caution, etc. Having traced how a company follows the above principles in practice, the economic and financial data, besides respecting the company's concrete management environment, give a true picture about the company's situation and the changes in its management process.

2. Objective and Methodology

The objective of this paper is to present the results of research projects EP 7260 (Brno, 1999–2000), GA MSM 431100007 (Brno, 1999–2000) and EP 12/2001-3 (Brno, 2001–2002) on crisis management and transformation management with respect to corporate management, including specification of feedback action, i.e. formulating benefits which might lead to better fulfillment of the company's long-term goals using accounting, financial and economic data.

This paper follows up our publication MANAG 2001, publications MZLU PEF Brno (1998–2001), ČZU PEF Praha (1998–2000) and, in particular, publications International Atlantic Economic Society Rome (1998), Vienna (2000), and Athens (2001). Research results prove how crucial for decision-making process of a company's management are marketing analyses, in particular. The paper also includes results of application of company and product lifetime analyses, analysis monitoring what customers demand of a product and assessing the degree of saturation of customers' needs. Other analytic approaches were applied as well, such as BCG and SPACE analyses, marketing research and market research analyses, algorithm of forming, implementing and modifying business strategies. Results of these approaches are presented,

too. Managerial decision making process is based on information systems with supporting programs in computer network and important analyses of accounting, financial and economical data.

Transformation and crisis management follow up an already developed methodology and its practical use in businesses under research. It is how business strategies are formed, implemented and modified and the need to clarify these strategies as a result of the turbulent managerial environment and other major influences.

A detailed analysis has been applied to a group of selected businesses. The results presented are for Bioveta (joint stock company) based in the town of Ivanovice na Hané, for Zemspol Studénka (joint stock company) and other businesses.

3. Results and Discussion

The EP 7260 research (Brno, 1997–2000) has developed the basic methodology consisting of the following partial steps:

- determine the current lifetime phase of the business concerned using the following scale: establishment, childhood, adulthood, decline, revival and crisis situation involving an overall threat to company;
- determine fundamental options for the business or its part to develop (decay) with respect of general strategic alternatives, i.e. stabilisation, expansion, reduction or combination;
- analyse crucial factors of managerial environment by means of applying the Ishikawa's cause-and-effect chart;
- carry out economic and financial analyses according to a standard known as the European Standard;
- based on the analysis, specify expected situations using a simulation model, developed by the author during research, to analyse output, its costs and profitability;
- specify business strategies for a new business or formulate changes in business strategies for already established businesses as well as spelling out methods to assess these strategies;
- implement new or modified strategies;
- consider the option to apply vertical integration processes;
- apply strategies involving the management process to control the required changes as a reply to managerial environment changes.

We gained much positive experience when verifying the above methodologies in practical operation of the selected business. Our experience helped us draw realistic conclusions in the process of responding to changes particularly of the external managerial environment. The strategic management decision-making process determines the space open to dealing with other decision-making processes, which control the processes on further stages.

The above methodology algorithm of formulating, implementing and modifying business strategies clearly shows that changes can concern all lifetime phases, as the actual lifetime of a business is not bound to follow a standard line and the homeostasis, i.e. a corresponding accord between the external and internal managerial environments, may be rapidly broken as a result of changes in managerial environment, and external managerial environment in particular.

We can split up the changes into two groups, in relation to causes and nature of changes, i.e. a change may just occur or be scheduled beforehand, i.e. planned and controlled. Changes of the first group come unexpectedly, i.e. without any plans. The research has come across many changes like that, occurring particularly in external factors. Most of those changes pose a threat. The following can be classified among them:

- a new, and unknown so far, potential competitor is introduced to the market, which results in a significant reduction of current sales;
- a market is lost, with the various causes being of either economic or political nature;
- conditions on financial and capital markets go worse significantly and therefore financial resources open to businesses get limited, plus some other factors.

Many surveyed businesses, and those operating particularly in agriculture, had found themselves in a crisis caused by the above factors and had to apply the methods of crisis management.

An approach capable of coping with the crisis can be divided into three basic phases:

- crisis degree analysis (1);
- setting up a crisis strategy, i.e. reducing or eliminating the degree of crisis (2);
- implementation of the crisis strategy (3).

The above approach was applied to deal with crisis at Zemspol Studénka, joint stock company. Crisis degree analysis (1) follows up the PEST and SWOT managerial environment analyses. Based on these methods, factors were specified which put the business under threat and can further do so, as they are probable to take effect, i.e. factors called *threat* with respect to external environment and *weaknesses* with respect to internal environment.

Setting up crisis strategies (2) follows up the crisis degree analysis by defining the effects which would take place if the given crisis factor occurred, i.e. defining kinds of practical economic impact on the business. Having drawn crisis probability analysis including possible impact, we obtain a thing we call crisis matrix, which gives crisis factors plus occurrence probability on lines and impact affected by the factors in columns. This method reveals four basic combinations:

- high degree of threat probability plus over-average to large economic impact (I);
- high degree of threat probability plus under-average to small impact (II);
- medium to low degree of threat probability plus large economic impact (III);
- medium to low degree of threat probability plus small economic impact (IV).

Crisis matrix is an outline for the management specifying possible ways of addressing the crises:

- situation I and III requires elimination of most critical issues by:
 - not doing the activity;
 - reducing and cancelling the activity eventually;

- formulating an alternative solution.
- situation II requires:
 - reducing the activity;
 - or trying to find an alternative solution to the problem.
- situation IV allows addressing the crisis through:
 - trying to find an alternative solution;
 - or addressing the crisis with common operating measures.

To deal with the crises, a crisis plan had been established which, being followed, contributed to regaining the balance between the external and internal managerial environments.

The other group of changes, i.e. planned changes, concerns both external and internal managerial environments. These changes can be described as gradual, long-term, large-scale and bringing major changes into the business activity proper, human resources, financing methods, market segment modification, market share modification and other things. Many authors deal with these changes. Moreover, some models have been developed, such as Levin's model of change, at the general level to address and solve such changes.

The research has revealed that both groups of changes are very important for a business to do well. The ability to respond to sudden, and often unpredictable, changes in external managerial environment is important in order to maintain the business's fundamental long-term functions and aims. Planning major changes is very important for a business to ensure its further development and prosperity in a respond to changes occurring particularly in external managerial environment.

It is crucial to monitor the key external and internal factors according to the business's current lifetime phase and answer these factors with suitable managerial tools. The above mentioned clearly shows that, in order to have effective transformation management, the business needs to have available a quality information system which is capable of monitoring the current managerial environment, analysing data and processes, and allowing specification of pre-requisites for possible changes to take place in external and internal managerial environments.

The research supports the assumption that results of analyses are significantly influenced by to what extent the accounting statements and accounting as such can give a true picture in terms of the factors below:

- *Accounting statements as such have some weaknesses* which are due to the fact that principle of reliability is preferred to the principle of data relevance for data users. These weaknesses of the balance sheet include the practice of using historical prices for accounting purposes. This means that the original input prices of assets are shown in the statements, disregarding any market value increase (apart from some exceptions such as financial investments). Assets depreciation is shown through amortisation (its value is often just a gross estimation of the expected usable life) and adjustments, respectively, but no possible price increase would appear in the balance. Therefore, such possible increase would be reflected in economic results no sooner than at the time of sale of the asset. Moreover, the balance sheet does not

show the liability value in case of property lease through financial leasing. After the leasing is over ownership rights to the property transfer to the lessee for a symbolic amount and this value is included in the lessee's assets, which, again, results in assets undervaluation. The analyst can draw correct conclusions only if he or she has access to data included in appendices to accounting statements. Another weakness with the balance sheet is that it shows the assets and resources as at the date of final accounts and often does not correspond with the development during the accounting period when significant fluctuation may occur. This can be adjusted only partially by means of averaging the input data or making internal analyses in shorter intervals.

- *Use of accounting methods* – such as write-off plan, strict obedience of some accounting principles – such as caution principle, are reflected in the formation of adjustments to assets (decisions whether to form adjustments, from which base, at what amount, how frequently the assets would be revaluated), in the (non)-formation of particularly other, non-tax reserves, and in strict accruals, etc. Drawing correct conclusions on financial situation of a business or achieving space comparability can only be successful if you know the accounting policies of individual accounting units. For instance, the caution principles get reflected in formation of adjustments to assets, methodology for reserve formation, etc. Therefore, accounting data should be interpreted with respect to how the given accounting unit constructed the data shown in the statements. There should be knowledge, for instance as far as short-term assets are concerned, of the methodology for formation of adjustments in receivables and inventories, because, with different degree of caution applied and identical assets, there are revealed different indicators of financial analysis (liquidity, assets, etc).

To achieve comparability of accounting units (or to make comparison to some standards), we can adjust accounting data in the following ways:

- Rid the indicators of different ways of forming adjustments by applying some other, better-constructed ratio indicator. For liquidity, the commonly used indicators, which compare short-term assets to short-term liabilities, could be replaced with an indicator showing the cash flow solvency (and constructed by indirect method). This indicator would be divided then by the difference between foreign short-term debts and financial resources (money and bank accounts). The information we would obtain is no longer distorted by different methodologies used for adjustment formation.
- Another option is to transform the balance sheet data into a financial balance sheet. Here, identical methodology for adjustment formation is used for the businesses under comparison (classification such as by time elapsed after maturity date, period of inventories turnover, etc). To adjust this, you have, of course, to know the applicable methodology (internal guidelines of the business).

These transformations should be applied to all data analysed, i.e. to balance sheet as well as profit and loss account. Two approaches can be employed:

1. *Approach of the English speaking countries* – it is useful to order the assets by liquidity (the ability to be changed into money) from the most liquid to the least liquid, which is to divide the assets into first class assets (cash, money on bank account, short-term marketable securities), second class assets (receivables), third class assets (inventories) and fourth class assets (fixed assets), respecting some rare exceptions such as easily realisable inventories or fixed assets. Resources for assets coverage must be analogically adjusted, with liabilities classified by date of maturity, from those with the shortest maturity to those with the longest maturity, respecting the rule that long-term assets should be financed from long-term resources. Data adjusted this way will be used to construct the ratio indicators of financial analysis. The profit and loss account must be transformed so that revenues from manufacturing and trade activities are coupled with corresponding costs, followed by revenues and costs related to financial and extraordinary activities. Profit (loss) results revealed are adjusted by income tax and, after distribution of profit to owners, we get the undistributed profit. Having adjusted the above things, it is easy to identify which activity (operational, financial or extraordinary) was a priority for the business and which were the changes in comparison to previous year, if any. Also, this information can well be used to construct the ratio indicators.
 2. *French approach* – we try to rid the final accounts of individual businesses of different accounting policies (formation of adjustments, long-term assets write-off, formation and drawing of reserves, etc). The accounting balance sheet is transformed to the economic balance sheet – all assets are given in gross values and the depreciation of assets by means write-off and adjustments is given in liabilities proper as a source of finance, as well as the reserves. The capital proper is divided into internal capital formed by the activity of the business (including the already mentioned amortisation and adjustments) and external capital (put in by the owners or other entities). To adjust the profit and loss account is a much more complex process and its clarification lies beyond the scope of this paper.
- Accounting statements users, however, quite often carry out methodologically correct *calculations using data that do not correspond to the reality*. This might be result of insufficient knowledge on the part of accountants, or the data were intentionally distorted, main accounting principles were broken and the management is trying to manipulate the data so that they show the results the management want them to (in relation to, for instance, a credit application, a wish to present better results than those achieved in fact). Sometimes, assets are recorded that bring no economic profit for the business, technical appreciation is replaced by adjustment and vice versa, the caution principle is not observed, expected usable life is incorrectly estimated, long-term liabilities are intentionally recorded as short-term ones in order to appear better in terms of liquidity indicators and vice versa. Also, the economic operations are carried out in such a way that the required results could be recorded in accounting (i.e. accepting a short-term credit only as at the balance sheet day).

Financial investments open up rather a significant space to manipulate the profit (loss) results. You can influence the profit (loss) data already in the phase of financial investment acquisition when the relevant fact for classification into either fixed or current assets is the purpose of acquisition at the time of purchase. In both cases, these assets are valued at purchase price since 1 January 2002, but the price is converted to actual value as at the date of final accounts (in defined cases). For long-term financial investments, the difference in relation to the purchase price is an increase or decrease in the capital proper. For marketable securities, however, this difference will show in the profit (loss). For short-term financial investments, which were valued strictly at historical prices until 31 December 2001, the accounting unit, selling the same securities purchased at different prices, had an option as to which price it would use to value the decrease and thus the unit was able to influence economic results through the sale. For inventories, the accounting unit has an option as to whether it includes, in line with applicable procedures, the credit interests into inventory prices or not, which also influences the recorded results. Moreover, the profit (loss) can be influenced by choice of method for valuing the decrease of inventories acquired for different unit prices. For record keeping reasons, it is practically impossible to value the decrease at actual purchase prices and that is why the accounting unit opts for the FIFO approach or the approach of weighted mean (constructed either continuously or periodically). In fact, the FIFO approach follows the physical flow of inventories. In comparison with actual prices, this approach results in overestimating the profit in the case of inflation environment, because higher revenues are coupled to lower operational costs. The weighted mean approach minimises the fluctuation of prices, but, on the other hand, costs are not coupled to the corresponding revenues accurately. As for inventories, there are often carried out operations which are to result in significantly influencing the profit (loss) of the accounting unit. It concerns, for instance, mutual (circular) transactions when two or more accounting units sell to each other and purchase back completely identical stock with a profit margin agreed in advance, which, of course, manipulates the accounting profit. Similarly, it is possible to evade the need to adjust the evaluation of unmarketable inventories by means of selling and buying back. A very important area is the off balance sheet financing that takes effect particularly when financial lease of assets is concerned. The majority of lessees have no long-term lease liability recorded in their respective balance sheets and record just the realised leasing payments and the actual amount of long-term resources. Foreign resources must be for analytical purposes increased by the amount of total payments (given in an appendix to reporting sheets). Moreover, such entity, because the balance sheet long-term assets are not recorded during the lease, may appear as a business with an outdated method of management and a high degree of wear and tear.

Another area vulnerable to “creative” (misleading) accounting is the long-term non-tangible assets (records and write-offs of installation expenses, goodwill, etc).

As shown by the research results, corporate accounting plays a significant role in providing important financial and economic

information, particularly when increasing risk is recognised in time, and enabling the management to deal with a crisis in its early stage. The things concerned chiefly include analysing the fundamental report sheets, i.e. the balance sheet, the profit (loss) account and the cash flow. The analysis gives clear picture of how important it is to observe all accounting principles. Our conclusions are in line with conclusion drawn by some other authors, such as Krupová [6] and Rezková [8].

The point of analysing should be to recognise possible threats or initial stages of a financial crisis. Persons taking part in such analysing process include not only the management and the internal inspection body, but also those external users who are within the business’s external interest groups.

Our research has identified major risks in the process of analysing accounting data. The risks include:

- weaknesses following on how reports are constructed, such as the difficulty with giving a true representation of things which are hard to quantify, disregard for fluctuation of an indicator during the year, application of historical prices without regarding input price increase (silent reserves), etc;
- problems with space comparability of data, or with comparing data to some standards, due to different methodologies for recording accounting transactions;
- credibility of recorded data, as they might be misleading because of intentional or unintentional distortion.

As shown by the research, unintentionally distorted data are usually a result of unprofessional work or insufficient qualification and can cause a lot of problems. Intentional manipulation put a business under several threats; some of them are identified in a short time, but the other can well take effect in the long term.

As shown in the analysis carried out, each enterprise trying to do well should, through analysing its accounting, identify any risks in sufficient advance and recognise early stages of possible financial or economical crisis.

4. Conclusion

The paper deals with the significance of accounting, financial and economic data for effective business management, and, in particular, for analysing crisis situations and proposing solutions. The paper presents the results of the GA MSM 431100007 and 12/EP/2001-2003 research projects, with respect to analyses of accounting, financial and economic data and use of these data in analysing crisis situations in businesses and formulating measures that might lead to eliminating and resolving such situations. The research proves that it is important to follow accounting principles, which have a direct impact on the quality of all financial and economic data. The methodology is based on managerial environment analysis, analysis of accounting, financial and economic data and strategic decision making. The conclusions have been verified on selected enterprises.

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