Improving quality of economic information systems to ensure competitive advantage for companies

Zvyšovanie kvality ekonomických informačných systémov pre zabezpečenie konkurenčnej výhody podnikov

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Abstract: A prosperous company with a goal to maintain competitiveness in a strong international environment should eliminate obsolete management methods and innovate the information system used in the company with the application of effective economic software. This paper deals with the current situation of economic software or Enterprise Resource Planning (ERP) in companies and opportunities and advantages of using software in the area of cost management. Economic gains in practice are also discussed in this contribution.

Key words: company, information, economic software, competitive advantage

Abstrakt: Prosperujúci podnik, v záujme udržania si kokurencieschopnosti v silnom medzinárodnom prostredí, musí opustiť nevyhovujúce metódy riadenia a inovovať svoj podnikový informačný systém aplikáciou efektívneho ekonomického softvéru. V článku analyzujeme súčasný stav implementácie ekonomického softvéru resp. systémov ERP v podnikoch, možnosti a výhody softvérového riešenia v oblasti riadenia nákladov a prínosy z aplikácie ekonomického softvéru v praxi.

Kľúčové slová: podnik, informácie, ekonomický softvér, konkurenčná výhoda

INTRODUCTION

Everyday task of the managers is to ensure competitive advantage for the company and to deal with decision-making and management. To realize correct decisions means to possess relevant information (Brealey, Myers 2000). Companies develop information systems, the task of which is to provide information about the activities in the firm. Nowadays these systems seem to be insufficient. Globalization processes interfere with the work of managers and pertinent information becomes the spotlight. Important role is played by the outside environment. After the EU accession, new opportunities for foreign market employment arise (Bielik 2000, Hennyeyová 2002). It evokes higher requirements for information security. The goal of this paper is to show the importance of quality economic information system implementation for ensuring competitive advantage for the company.

MATERIAL AND METHODS

To meet the goal of the paper, we used a survey method and also interviews with managers in selected companies, information system providers, developers of software companies.

We accomplished the current situation analysis on the market with information systems, where we focused on the conceptual framework analysis, its components, integrity and functional features, quality, opportunities for further development and reliability of systems and stability. After the comparison of economic softwares, our findings are summarized and presented in this paper.

RESULTS AND DISCUSSION

Nowadays, we cannot find a company where there is no computer with economic software. The level of automatic processing is different. There are companies where we can find managerial information system, however, we can find companies where only one part of the economic software is used. In most cases, the accounting software dominates. Managers realize that simple systems, which just store and record data, are not enough and that rapid access to the wanted information means competitive advantage. Automatization of information systems of the companies has been improving (Basl 2002). Software support is enforced to financial management and therefore economic software solution is penetrating into the environment of the company called Enterprise Resource Planning (ERP).

IDC survey results show that the majority of ERP information systems are implemented in the category of medium and large companies, which is documented in

Figure 1, where more than the half of the companies use foreign software packages.

ERP system suppliers declare, that these systems do not present just the company database, but represent the tool, which increases the total efficiency in the company, its growth and income. The results of the survey indicate, that only 48% of managers regard ERP system for competitive advantage, 27% of managers cannot judge, because of the short time period of ERP usage and 25% think that ERP has not brought competitive advantage what is shown on Figure 2.

In the process of economic information system analysis in the companies, we have focused on cost management as an important factor, which increases competitiveness. The essence of software solution is the data warehouse and defined methods of analysis. The database is created by the company information system. The software companies provide methods of analysis, where the user is able to modify and define his own analysis.

It is important for management and cost controlling that the economic software allows to record cost through several keys – identification data, which are recorded as well as with the data entry. Cost recording is done in details classification by elements of costs, which is defined by the user. Calculation of indirect costs could be done on several levels, because we want to show explicitly which cost influences which output. For example: machine repairs including the spare parts delivery will be calculated for products. Cost calculation does not have to be standardized, but the user can change it. Monitoring costing could be done in several ways. One of the classical solutions is to build in the task to identify the in-plant unit, order, output or cost allocation in account classification. The user fills the data directly in the phase of processing.

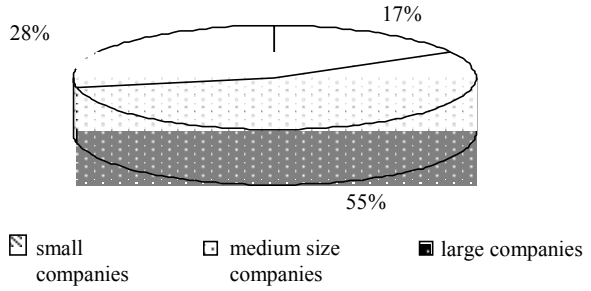
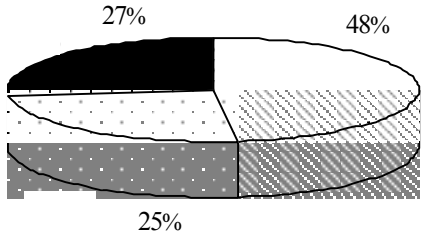


Figure 1. ERP implementation in companies



1 – ERP implementation brought competitive advantage

2 – It is not possible to evaluate competitive advantage of the ERP because of the time

3 – ERP implementation does not brought competitive advantage

Figure 2. Competitive advantage determination after ERP implementation

The software gives other opportunities, for example time dimension, combination of different levels (timing, organizational unit, output, order etc.). Report generation is not restricted for one level. The most common multidimensional analysis is:

1. In-plant cost analysis – allows comparing and analyzing costs in the same class within the departments with an alternative of cost selection and time period selection.
2. Costs development in time based on in-plant units and selected costs.
3. Costs comparison in the current year with previous years in detailed classification according to the selected time period (quarterly, monthly, in decade) with a possibility to complete the reports based on in-plant units and concrete selected costs.
4. Detailed analysis of costs in timeline within the in-plant unit with the signalization of deviation and further analysis.
5. Percentage analysis, which allows tackling the costs composition in percentages and trends – displaying current and previous time changes and the further development perspective.

Reports and presentations, which provide automated processing, are produced individually by the user through parameters (Kučera, Škorecová, Szovics 2003; Látečková 2000). Systems able to monitor costs ana-lysis we regard managerial information systems (MIS), which allow cost planning besides analysis. Cost planning in MIS comes from the assigned tasks of the user and the previous time analysis. During the phase of planning, the user is controlled by the program in a certain tolerance, which is needed. Signal lists, which assure the cost controlling during the year, are solved in a user friendly way. They provide absolute values, percentages or graphs. Cost monitoring in the process of production is possible to follow through individual orders. Based on the requirements of the user, anticipated costs are compiled, which represent the real status of inventory with fair prices, moreover the calculation is completed with indirect costs. The system traces costs for each order and allows to analyze deviations. In case of other form of production except order form, it is possible to trace all other real costs – costs of production from stock released notes, labor costs from pay records etc. In case of incomplete production, calculation could be made upon the planned and actual calculations. Essential is to record all costs in real time.

In spite of the latter advantages, as it is shown in Figure 2, just half of the users think that economic software creates competitive advantage. Reasons for this fact already come from the acquisition of the software:

1. Before the software purchase, managers should realize, whether they buy information system (IS) or information technology (IT), from which they expect change in their operation. It is important to answer the question, whether the processes should be automated or increase the productivity of labor of those processes, which without the IT could not be realized. Managers intuitively suspect what they need, but mostly they do not know how to formulate their requirements.
2. Economic software, ERP, MIS suppliers are able to describe their software, but in many cases they do not know how to define that their product is able to meet the requirements of customers.

Information systems and information technology development anticipate information evolvement ability of people. Information systems in companies present many processes, where the central position is devoted to hupeople. It is always important to emphasize for stakeholders what changes will be introduced and how they will be effected. For example, before we implement ERP system, it is required to inform people how the implementation will change the operation in the company, who will be involved and how his or her work will be affected.

The question of efficiency of the implemented ERP is substantial for the users. The anticipated gains are expected in two areas:

1. *Qualitative gains*, in general it is the difference between the gains acquired by using ERP system and costs of implementation and operation (Učeň 2001). It is crucial to plan, calculate and control the costs of ERP introduction during the operation of the system (in the phase of budget preparation of the project sometimes the costs of retraining of the employees is forgotten). The financial theory presents several methods of economic efficiency calculation. We selected some of them to illustrate the gains from the software implementation.

a) Average costs calculation during the year

$$R = O + iJ + V \tag{1}$$

where R represents the average costs of the alternative in a year, O is depreciation based on accounting standards, i stands for the interest coefficient (interest rate in %/100), which represents the minimum required rate of return from the information system, J is the cost of investment and V expresses other operating costs (total operating costs – depreciation).

b) Discounted cash flow methods

The calculation employs costs, which are present in different periods, it is necessary to discount them.

$$D = J + Vd - L \tag{2}$$

where D is discounted costs of the project, investment cost are denoted as J, Vd represents other operating costs (total operating costs – deprecitaion), and L is a discounted liquidating price of investment.

c) Average profitability

V_p is the average profitability of IS investment.

$$V_p = \frac{\sum_{n=1}^{n} Z_i}{n \times I_p} \tag{3}$$

where Z_i is the annual profit from the investment after taxes during the lifetime, I_p is the average value of the asset in residual price, n is the lifetime in years and i represents the individual years during the lifetime.

d) Payback period

$$I = \sum_{i=1}^{a} (Z_i + O_i) \tag{4}$$

where I is the price of the project, Z measures the annual profit after taxes in individual years, O equals to annual depreciation from the investment during the lifetime of the investment, i represents the individual years during the lifetime and a is the payback period.

The shorter is the payback period the better is the investment into the IS.

e) Net present value

The net present value is a direct application of the present value concept. Its computation requires the following steps: We choose the appropriate rate of discount i, compute the present value of the cash proceeds expected from the investment P_n, where n is the lifetime of the investment. Sum the present values of the proceeds minus the present value of the outlays K.

$$NPV = \sum P_n \frac{1}{(1+i)^n} - K \tag{5}$$

The recommended accept-or-reject criterion is to accept all independent investments whose net present value is bigger than or equal to zero and to reject all investments whose net present value is less than zero. With zero taxes, the net present value of the investment may be described as the maximum amount a firm could pay for the opportunity of making the investment without being financially worse off. With such a payment, the investor would be indifferent to undertaking or not undertaking the investment.

f) Internal rate of return

The internal rate of return method utilizes present value concepts. The procedure is to find a rate of discount that will make the present value of cash proceeds expected from an investment equal to the present value of cash outlays required by the investment.

$$\sum_{n=1}^{N} P_n \frac{1}{(1+i)^n} = K \tag{6}$$

Based on internal rate of return, those IS/IT projects are acceptable, which have a higher interest rate than the minimal required value of investment.

2. *Gains, which we cannot exactly quantify.* Rationalization of the databases, efficiency in production processes, efficiency in production factors, inventory improvement utilization, enhancing the quality of services for the customers, growth of the market share, more efficient decision making.

CONCLUSION

The reproduction process is characterized by information systems and technologies penetration. Economic information system implementation becomes a significant factor of successful development and sustainable market position retaining for companies. Economic software provides efficient information and secures competitive advantage in relation to domestic as well as foreign competitors.

We can expect, that in ten years companies will be interconnected with suppliers and customers. The rational approach of this process is, that managers revalue their approach to information and communication technologies, and they try to find the right place for ICT in operations in the companies including the gains. Quality economic IS is a reflection of reality, provides maximum information solution alternatives and it is technically and technologically established. Its primary goal is to ensure competitive advantage.

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