

UNIVERSITY OF ŽILINA



TRANSCOM 2011

9-th EUROPEAN CONFERENCE
OF YOUNG RESEARCH AND SCIENTIFIC WORKERS

PROCEEDINGS

SECTION 2

ECONOMICS AND MANAGEMENT

Part 1

ŽILINA June 27 - 29, 2011
SLOVAK REPUBLIC

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TRANSCOM 2011

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OF YOUNG RESEARCH AND SCIENTIFIC WORKERS

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Ing. Eugen Jurzyca

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&

Prof. Ing. Tatiana Čorejová, PhD.

Rector of the University of Žilina

SECTION 2

ECONOMICS AND MANAGEMENT

Part 1 (A - Mi)

ŽILINA June 27 - 29, 2011
SLOVAK REPUBLIC

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TRANSCOM 2011

9-th European conference of young research and scientific workers

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Slovak Pension System – the Present and the Future perspective

Oľga Blažeková, Danuše Guttenová,

University of Žilina, The Faculty of Operation and Economics of Transport and Communications,
Department of Quantitative Methods and Economic Informatics, Univerzitná 1, 01026 Žilina, Slovakia,
{olga.blazekova, danuse.guttenova}@fpedas.uniza.sk

Abstract. The aim of this article is to analyse the current social system and estimate impacts of its reform on the ability and possibility of the population to influence the amount of their pension in the future.

Keywords: demographic development, pension system, relation of education of Slovak women and their reproductive behavior.

1. Introduction

An ongoing reform of Slovak pension system has been carried out for several years now. Its aim is to decrease the dependency of the population on pensions paid off by Social Insurance Agency (SIA) and to motivate people to secure their pension by their own efforts. Some argue that the present social system is too generous, which is inevitably connected to high pension contributions, while others consider it unsympathetic because the amount of pension is determined by the contributions paid in the past. The discussion gradually converges to the conclusion that for ensuring prosperous economics it is imperative to lower the contributions as much as possible while setting the system in a way that ensures every retiree a minimal living standard. Everyone could increase their standard through their own lifelong savings.

The aim of this article is to analyse the current social system and estimate impacts of its reform on the ability and possibility of the population to influence the amount of their pension in the future.

2. Present social system

Nowadays, the payment of pensions is organized exclusively by a non-profit state institution named Social Insurance Agency (SIA). It works as a regular insurance company, which collects insurance (called contributions in this case) from its customers and pays them in case of an insurance claim.

Every year, SIA pays off in pensions about the same amount of money as it obtains from pension contributions. The very same service is nowadays offered by commercial insurance companies. In comparison to SIA, these companies use the collected money not only for pensions but also for their own profit, advertising and management. If the position of SIA is weakened by law and people are thus forced to purchase these services from commercial insurance companies, they will have to pay significantly more than they do now to maintain the same amount of pension. Contributions paid to SIA lower the tax base, while contributions paid to commercial insurance companies are subject to 19% tax. Limiting the services of SIA would thus bring profit to both commercial insurance companies and the state.

Every year, SIA pays off the same amount as it has collected. As a result, its functioning is unaffected by inflation. People “saving for their retirement” in SIA cannot expect any yields but at the same time, their “savings” are protected from inflation. Commercial bank products seldom offer interest that would be higher than inflation and, moreover, these interests are subject to income tax. Limiting the services of SIA would, besides bringing profit to the bank sector, bring

benefit to the state, which taxes people's money before it can be turned to savings and subsequently would tax the interests. Hence, it is obvious that the possibility of attaining a pension comparable to what is currently guaranteed by SIA would be severed significantly and a common person could completely lose the ability of securing an appropriate pension.

The current system of pensions paid off by SIA respects the merits and is sympathetic to some extent. People with incomes below average have their average personal pension point increased by 16% of the difference between the calculated value and the value 1 (which corresponds to the average wage). On the other hand, people who earn more than 125% of average have their average personal pension point decreased by 16% of the difference between the calculated value and the value 1.25. In a well balanced system, an average person pays SIA the same amount of money as they receive. An introduction of solidarity implies a systematic transfer of money from people who pay higher contributions to those who pay less. The mere threat of such transfer motivates people with high income to avoid the services of SIA or to optimize the payment of contributions. If the rich people are successful in bypassing SIA the amount of transferred money is decreased, as well as SIA's turnover.

3. The impact of demographic development on pension system

The advantages of SIA mentioned above (especially the protection from inflation) are possible only because the presently working population gathers the money for pensions of the retired people. The system of pensions paid off by SIA creates an intergeneration debt. When Prussia introduced the modern pension system in 1888 a group of retired people (about 3% of the population) was formed, which had never paid contributions but who received pension [2]. The increasing population of retirees continually increases the formal debt to the present contributors. This debt is used to pay off higher pensions than the retired people have earned during their lives.

We come to the basic paradox of the present pension system. The increasing amount of money from contributions together with the fact that SIA saves no money leads to the overly generous pensions. An equilibrium state, when the number of working and retired people would be invariant in time, would lead to fair pensions when every person receives, on average, the same amount of money as they contribute. If the number of contributors decreases, the pensions will be lower than would be fair. The problems of SIA in the payment of the pensions are not caused by the introduced solidarity or by the lack of it but by the heavy dependence on the demographic development of the society.

The fact that the amount of average pension is dependent on the demographic development together with the fact that the formulas for calculating the amount of pensions are based solely on the amount of previous incomes of the individual persons leads to economical unfairness. People who raised few children and invested their energy in their career receive higher pensions at the expense of those who invested their energy, time and money to raising a lot of children. Naturally, people devoted to career have higher average income and pensions than people who have a large family. For these reasons, SIA system involves transfer of money from people with lower income to people with higher income. This systematic injustice can only be corrected by including the objective contribution of one's children to the social system into the formulas for calculation of the pension.

[1] contains statistical data concerning the relation of education of Slovak women and their reproductive behavior. Women are divided into four categories according to their education level. For each category average fertility rate and maternal age is investigated. The author concludes that the completed fertility rate (CFR) heavily depends on education, but this quantity has not changed in the last 50 years within the individual categories. Demographic development of the society is significantly influenced by changes in the education structure of women. A fast rise in the fraction of university educated women in the population leads to the decrease of CFR and to the increase of maternal age. Another important factor influencing the demographic development

is an overall increase of the maternal age in all categories. This has led to the increase of average maternal age by 0.9 year in the first decade of 21st century. These changes will be even more significant, according to the [1], which finds that up to 50% of the 20 years old women are studying at a university. Impact of the education structure of women on the demographic development is shown in Table 1.

Education level					Overall CFR	Overall average age
School	Basic	High- with maturita	High-without maturita	University		
CFR	2,7	2,4	2	1,7		
Average age	26,6	25,8	29,1	31,2		
Cohort						
1961-1965	13,00%	31,10%	43,20%	12,30%	2,17	27,8
1971-1975	7,40%	31,50%	45,50%	15,40%	2,13	28,06
1980-1984	5,80%	18,90%	48,10%	27,20%	2,03	28

Table 1. Dependence of demographic development of the society on the education structure of women. Source data were obtained from [1]. Averaged data from 2005-2009 are used as average maternal age. Due to the change of education structure of women, CFR decreased to 2.03 children per women and the average maternal age has increased by 0.6 year in the last 10 years. In addition, the average maternal age has increased by 0.9 in the last decade regardless of education level.

Table 1 implies that women with highest income and university education have the least children. This fact is largely due to fact that 16% of university educated women are childless. High pensions of childless university educated population have to be paid for by the contributions of children of the parents with low income. This injustice is compensated by the fact that “the free education” is paid from the taxes of the population.

4. The future of pension system

Present pension system is based on the principle that two working persons with contributions of ca. 20% of their income pay for one pension of ca. 40% of the average wage. This system should work without problems as long as CFR is higher than 2.1 children per woman and the average maternal age does not change.

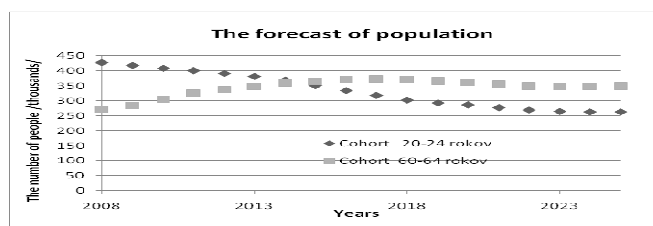


Fig. 1. The forecast of population.

Even a well balanced pension system has to face two basic problems. Due to the existence of economical cycles it has to deal with variable unemployment. SIA cannot react to variable outages of income by changing the amount of paid off pensions. From the macroeconomical point of view, stable pensions are a stabilising factor in the times of economical crisis, due to ensuring of purchasing power of a significant amount of the population [3].

A fluctuation in the demography of the population is even more serious issue. Due to the historical development, the most numerous group of today's Slovak population is 30-34 years old, with 472,000 members. The least numerous group, ca. 260,000, are 5-9 years old children. Because

the demography of the population repeats periodically with a period of the average maternal age, periods with excess, as well as insufficiency, of contributions occur.

Improving the health care leads to the increase of lifespan and the number of retirees. Gradual increase in the average maternal age leads to a decrease in the number of born children. Equilibrium can only be reached by increasing the age of retirement or decreasing the pension to average wage ratio.

5. Conclusion

SIA plays an essential role in the Slovak pension system by securing people their pensions and protecting them from inflation, with significantly lower costs compared to commercial sector. Although the present system is inspired by the merit system, where the amount of pensions is directly proportional to the amount of contributions paid in the past, there is a redistribution of money among different population groups, especially:

- from men to women, due to different life expectancy,
- from people who retire sooner or later than optimal to those who retire at optimum age,
- from people with more children to people with less children.

The last of the mentioned transfers is the consequence of intergeneration debt, i.e. current pensions are paid off from the resources of younger generations and the amount of current pensions depends on the ratio of the number of working people to the number of retirees. Formulas for calculating the amount of pensions disregard the number of payers brought about by the retiree to the system. This system of pensions is not sustainable if the average fertility rate is less than 2.1 children per woman. The biggest problems of the present pension system are caused by the unfavorable demographical development, which partially originates from the rapid increase of the level of education of women, who consequently have more difficulty in finding a partner and 16% of them remain childless.

Pension system reform, which does not change the calculation of pensions but instead limits the role of SIA in the system can reinforce economics in the short-run by reducing the amount of mandatory contributions to SIA and by increasing the capital resources on the commercial pension accounts, but will make it significantly more difficult for people to save enough resources for a pension that would be equivalent to the one currently guaranteed by SIA. Pension reform which limits SIA and forces people to use services of commercial institutions operating on financial market will increase the profits of these institutions in the first place and, if the legislative is not changed, will also increase the profits of the state thanks to the income tax.

On the other hand, worldwide globalization pressures the change of the current system. The existence of various pension systems in different countries may lead to migration of working population to countries with low taxes and contributions, while countries with a higher ratio of retirees to working population will not have enough resources for the payment of pensions. This situation can only be avoided if retirees accumulate resources from all around the world. These resources will power the payment of pensions from economically active parts of the world without regard to country frontiers and potential migration will have no effect on future pensions.

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Measuring the Efficiency of Passenger Transportation in the Slovak Republic – an Application of Data Envelopment Analysis

*Martin Bod'a, **Viera Roháčová

*Matej Bel University in Banská Bystrica, Faculty of Economics / Faculty of Natural Sciences,
Department of Quantitative Methods and Information Technology / Department of Mathematics,
Tajovského 10 / Tajovského 40, 975 90 / 974 01 Banská Bystrica, Slovakia, martin.boda@umb.sk

**Matej Bel University in Banská Bystrica, Faculty of Economics,
Department of Quantitative Methods and Information Technology,
Tajovského 10, 975 90 Banská Bystrica, Slovakia, viera.rohacova@umb.sk

Abstract. The paper presents data envelopment analysis (DEA) as one of the potential approaches to the measurement of efficiency in transportation and elaborates a procedure for the measurement of efficiency changes of the Slovak passenger transportation over time. An accent is laid upon the selection of reasonable inputs and outputs that determine the productivity of the passenger transportation system and upon the classification of inputs and outputs into discretionary and non-discretionary, into controllable and uncontrollable as well as the classification of outputs into desirable and undesirable. Founded on this distinguishment of inputs and outputs, a specially adjusted DEA optimization task is formulated. The results are beneficial for the evaluation of static and dynamic efficiency of the Slovak passenger transportation in the individual regions of the Slovak Republic. As a consequence, the paper highlights the importance and advantages of DEA in the efficiency evaluation of the transportation system.

Keywords: Passenger transportation, data envelopment analysis, non-discretionary variables, uncontrollable variables, undesirable outputs.

1. Introduction

The question of efficiency of transportation system is, without a doubt, a topical problem and has been in the centre of interest for several decades. Whereas transportation system belongs to the sector providing services to final consumers, it is very controversial to pronounce the resolute conclusions on its efficiency or inefficiency. These parts of the economy use a specific set of different inputs to produce specific types of outputs and the efficiency of this process is crucial for the trouble-free operation of the economy. In the words of Agarwal [1], “the transport sector plays a significant role in the overall development of nation’s economy and can be expressed as some barometer of economic activity”. The factors as economic situation, environmental and geographic conditions and ability of individual transportation subunits are the essential determinants of final utility value of transportation. In relation to specific quantitative inputs and outputs of transportation subunits, DEA is very likely to be used more and more in the transportation - engineering domain. “DEA has been becoming powerful decision – making tool that can be used by the transportation professionals and managers in effort to assess and consequently improve the efficiency of variety processes” (Ozbek et al. [5]).

DEA is a mathematical method based on principles of the theory of production and enables to measure the rate of efficiency of a production unit relative to the other production units considered and to assess how it utilizes available resources in the production of outputs. DEA has qualified as a legitimate method employed in economics for the evaluation of various sectors of the economy and found its application in the analysis of efficiency in the transport sector as well. Barnum [2] summarized over 60 studies carried out to analyze the efficiency of urban transport services in the period 1990 – 2008. Ozbek et al. [5] utilized DEA in the form of a basic output-oriented CCR

model in measuring the efficiency of the state departments of transportation in highway maintenance. Sampaio et al. [6] studied the efficiency of nineteen transport systems in European countries and Brazil by means of an output-oriented BCC DEA model. Barnum et al. [3] investigated the efficiency of the urban mass transportation system of Chicago and proposed for this purpose a two-stage DEA procedure. In the first stage the efficiency of the subunits was evaluated by a CCR model and in the second stage the first-stage CCR scores were adjusted by the method so as to include the influence of external environmental factors by the method of regression. Further research was done by Agarwal [1] who investigated disparities in technical and scale efficiencies of 29 state transport undertakings (STUs) in India. There also are studies focused on the efficiency of transport subunits in Slovakia, e. g. a study of Klieštík [4]. The author applied both the input and output-oriented CCR models to evaluate the efficiency of fifteen road transportation companies. Data set consisted of four inputs (number of buses, number of drivers, total assets and loans-to-assets ratio) and two outputs (number of kilometers driven and total sales). Using the Malmquist index the author extended the field of interest into the dynamic sphere of efficiency and evaluated the change of efficiency in the two subsequent periods. The questionable aspects of this analysis are the large number of inputs and outputs in comparison to the number of the units studied as well as the inclusion of the number of kilometers driven in the outputs since the valuation of this factor at a unit price (fuel and energy consumption per kilometer) represents for a transportation unit costs (inputs) rather than income (outputs).

2. Material

In measuring the efficiency of the transportation system of the Slovak Republic and quantifying its changes over time, it should be noted that it is prudent to evaluate the efficiency of different branches of transportation separately and that suitable representative subunits of the transportation system need be selected. The paper, therefore, concentrates upon the passenger transportation only. With respect to data available, the subunits that enter the efficiency evaluation are at the level of administrative units, which are the 8 regions of the Slovak Republic during the period of 2005 to 2009. The choice of subunits may be explained from the perspective of grouping atomic components (individual transportation services providers) of the transportation systems into larger and more compact wholes, and it may be interpreted as that the efficiency analysis is conducted in view to these “administratively coherent” groups of transportation services providers. Furthermore, in order to facilitate the analysis itself and to permit the efficiency evaluation over time, the data for each year and for each region were merged into one data set counting $5 \times 8 = 40$ observations on inputs and outputs. Since we presume that the conditions for the provision of transportation services have not changed over the selected period, in other words, that the data generating process of input and outputs have remained the same with the stable (yet unknown) parameters; the clustering of individual region-years into one data set allows a more precise evaluation of efficiency as well as to measure easily the changes of efficiency of individual regions over time.

The next table presents concrete selection of inputs and outputs with source of data for measuring efficiency of the passenger transportation.

	Variables	Measurement unit	Source
Inputs	Length of roads	Km	Statistical Office of the Slovak Republic (and its “regional statistics database” Regdat)
	Number of buses	Number	
Outputs	Performance in passenger-kilometers	Mil. passenger-km	
	Sales	Thousands €	
	Property damage	Thousands €	
	Number of accidents	Number	

Table 1 Variables considered and their source (The authors)

3. Methodology

All though it should hold that efficiency is attained with minimizing inputs and maximizing outputs; it is obvious that the inputs and the outputs considered are not of the equal nature. On the part of the inputs, the length of roads plays a specific role, as it is not desirable to depress it as an increase in the length or roads leads rather to a more dynamic increase in the intensity of transportation. Therefore, it is treated here as an uncontrollable input, whilst the number of buses is approached here as a classic input. As to the outputs, the passenger-kilometers and the sales are the indicators that must be maximized and are desirable as high as possible. On the other hand, the property damage and the number of accidents are undesirable outputs and need be treated obviously as non-discretionary. Based on this distinction, the optimization task of the output-oriented unweighted SBM model allowing for undesirable, uncontrollable and non-discretionary variables as specified afore is formulated in equation (1).

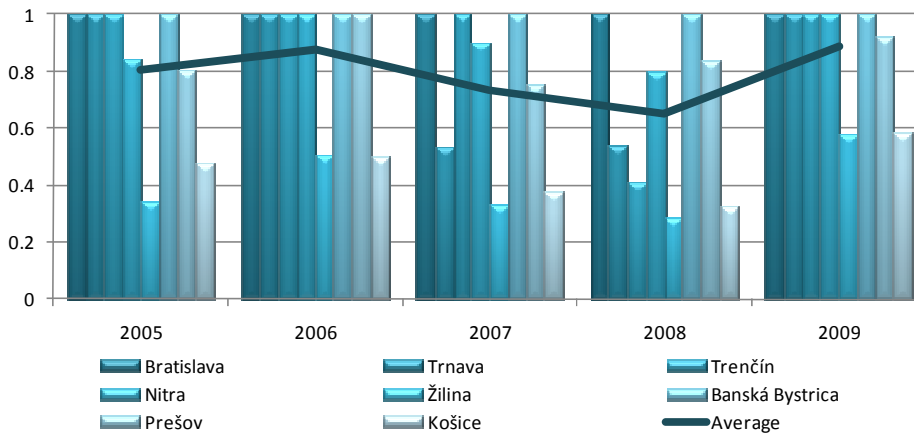
$$\rho = \left[1 + \frac{1}{2} \left(\frac{s_{1o}^g}{y_{1o}^g} + \frac{s_{2o}^g}{y_{2o}^g} \right) \right]^{-1} = \min_{s_{1o}^g, s_{2o}^g, \lambda} \quad \text{subject to}$$

$$\begin{aligned} t_1^U = x_{1o}^U - \mathbf{X}^U \boldsymbol{\lambda} &= \mathbf{0}, & \bar{s}^{gD} = \mathbf{Y}^{gD} \boldsymbol{\lambda} - \bar{y}_o^{gD} &\geq \mathbf{0} \\ t_2^C = x_{2o}^C - \mathbf{X}^C \boldsymbol{\lambda} &\geq \mathbf{0}, & \bar{s}^{bN} = \bar{y}_o^{bN} - \mathbf{Y}^{bN} \boldsymbol{\lambda} &\geq \mathbf{0} \\ \boldsymbol{\lambda} &\geq \mathbf{0}, & \mathbf{1}' \boldsymbol{\lambda} &= 1 \end{aligned} \quad (1)$$

Each region for each year is considered as an individual unit o for $(o = 1 \dots n)$, which implies that the total number of units is $n = 8 \times 5 = 40$ “year-units”. Each unit translates a number of buses x_{1o}^C and the respective length or roads x_{2o}^U into a different amount of desirable outputs \bar{y}_o^{gD} (the passenger-kilometers and the sales) and a different level of undesirable and non-discretionary outputs \bar{y}_o^{bN} (the property damage and the number of accidents). The value of ρ is the efficiency score of the unit o ; and it holds that $0 < \rho \leq 1$ and that a fully efficient unit is received a score of 1.

4. Results and discussion

The DEA model (1) was solved for each of the 40 “year-units” The results are submitted, for brevity, via the following graph only to present the calculated efficiency scores of each region and for each year and the average of efficiency scores through the years of 2005 – 2009.



Graph 1 The efficiency scores of the given regions (The authors)

As the output-oriented model was considered, the individual efficiency scores were derived from the values of potential slacks on the discretionary outputs. It follows from the optimization task in (1) that whilst certain uncontrollable inputs and non-discretionary outputs (i. e. variables that cannot be influenced in the process of their management) are taken into account, the optimization may result in slacks with respect to these variables. All though they are not projected in the

efficiency scores of individual regions, they may be interpreted as an indicator of weaknesses in the provision of passenger transportation serviced by the regions considered.

As follows from Graph 1, during the entire period of 2005 – 2009 the regions of Bratislava and Banská Bystrica exhibited the full technical efficiency. With the level of infrastructure represented by the length of roads, these regions were capable, with the buses at their disposal, of generating the maximum level of outcome and preserve fairly low accident frequency (documented by the zero slacks). A relatively high score of efficiency was attained over 2005 – 2009 the region of Nitra as well, its average efficiency score being 0.908. With the exception of the years of 2006 and 2009 of the full efficiency manifested, the chief obstacles to higher efficiency of this region rested in the ineffective utilization of buses, a relatively low level of sales and a rather adverse tendency in the occurrence of accidents. A similar trend can be ascribed to the region of Trnava (with the average efficiency score of 0.813) and to the region of Trenčín (with the average efficiency score of 0.882), mainly due to the comparatively low level of their sales. Contrariwise, the region of Prešov improved in term of relative efficiency, and in spite of a decrease in 2007, this region displayed efficiency over the period above the average level of efficiency. The least satisfactory trend is detectable in case of the regions of Žilina (with the average efficiency score of 0.406) and of Košice (with the average efficiency score of 0.451), the average score of both being under the total average level. The reasons for this state were comparable to the other regions, yet more decisive.

5. Conclusion

The goal of the paper was to evaluate the progression of efficiency of the passenger transportation system in the regions of the Slovak Republic via DEA. In reference to the specific character of required inputs and achieved outputs of administrative units of passenger transportation, an ad hoc adjusted DEA optimization task was formulated so as to enable the inclusion of uncontrollable, non-discretionary and undesirable variables. The results of the analysis identified two regions that maintained their full technical efficiency over the all years under advisement. The other regions showed inefficiency in various spheres. Overall, the average efficiency of the passenger transportation in the Slovak Republic oscillated over the years, whereas the highest average efficiency score was attained for 2009 with the lowest score standard deviation, which may be indicative a potential improvement as well as a lessening of differences in the provision of transportation by individual regions in the future. This paper was submitted under the UGA grant scheme of Matej Bel University in Banská Bystrica: Perspectives of practical applications of DEA models in measurement and evaluation of efficiency of enterprises.

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Comparative Analysis Data Concerning the Visual Control Importances' Assessment

*Stanisław Borkowski, *Krzysztof Knop

*Czestochowa University of Technology, Department of Management, Division of Production Engineering, Armii Krajowej 19B Street, 42-200 Czestochowa, Poland, bork@zim.pcz.pl

*Czestochowa University of Technology, Department of Management, Division of Production Engineering, Armii Krajowej 19B Street, 42-200 Czestochowa, Poland, kknop@poczta.fm

Abstract. Comparative analysis of research findings concerning the visual control importances' assessment of examined individual: automotive lighting company, was presented in the chapter. An importance of individual elements of the visual control in examined individual was made. Researches among production workers and superiors analysed company with utilization "BOST - Toyota management principles in questions" survey were done. Applying of basic statistical parameters for research findings's studying in the scope of visual control was presented.

Keywords: importance of visual control elements, BOST researches, statistic parameters

1. Introduction. Elements of visual control in production companies

Visual control (VC) is any communication device used in the work environment that tells us at a glance how work should be done and whether it is deviating from the standard. The visual aspect means being able to look at the process, a piece of equipment, inventory, or information or at a worker performing a job and immediately see the standard being used to perform the task and if there is a deviation from the standard. Visual control are means, devices, or mechanisms that were designed to manage or control operations (process) so as to meet the following purposes: make the problems, abnormalities, or deviation from standards visible to everyone and thus corrective action can be taken immediately, display the operating or progress status in a easy to see format, provide instruction, convey information, provide immediate feedback to people. Visual control (VC) has known in several other terms: visibility management, management by visibility, management by sight. The techniques used to create a visually control fall into a number of categories:

The workplace itself:	Visual information:	Visual production control:
<ul style="list-style-type: none"> • Signs • Marked floor areas/hatching • Direction of process flow shown on floor or wall • Shadow boards to visibly store items frequently needed • Identified equipment & locations – including files, processing status, etc 	<ul style="list-style-type: none"> • Process documentation • Procedures - can be in the form of a one-point-lesson (all you need to know on one page) or exemplars e.g. a form filled in showing the likely problem areas • Skill & training boards to indicate competence development needs across the team 	<ul style="list-style-type: none"> • Visual process indicators (Jobs in progress, productivity, output, lead time, etc) • Maximum work-in-progress levels show to prevent over-production • Production status boards • Kanban visual signals
Autonomation:	Visual performance measurement:	Visual safety management:
<ul style="list-style-type: none"> • The machinery automatically stops when there is a problem and attracts attention 	<ul style="list-style-type: none"> • Quality charts • Performance charts (dashboard metrics based on KPI's) • Status of the organisation 	<ul style="list-style-type: none"> • Safety warnings • Precaution information

Tab. 1. Techniques used in visual control [6].

Implementing VC in the plant would help the companies to exposing abnormalities, problems, deviations, waste, unevenness, and unreasonability to people, thus corrective actions can be taken immediately to: correct the problems, reduce manufacturing costs, reduce possible waste, shorten production lead time and thus keep the delivery due date, reduce inventory, ensure a safe and comfortable working environment, increase company's profit. With visual controls it can potentially create an atmosphere of production that is self-regulating and self-explanatory. Employees are happier because they understand clearly what is expected of them and managers/owners are happy because all employees remain on the same page. Customers are ultimately the beneficiaries of such efficiency when they consistently receive a high quality product [4,6,7].

2. Statistical treatment of results

Visual control is important in the production process. It allows for quick intervention at the time of production anomalies. Many factors influence the conducted skilfully visual control. According to the *BOST - Toyota management principles in questions* survey establish a six the most important instrument of visual control and formulation of the question: E7. What element in the most important one in the visual control process? Put 1, 2, 3, 4, 5, 6 (6 stands for the most important factor) [1,2,3].

CS		Cleanliness	UP		„Go and see” operations
EP		Flow	ME		Monitoring
TI		Signboard	GW		Graphic presentation of results

The above question was sent to 75 employees of a company producing headlights and lamps for cars from different divisions of organizations, where 59 people were production workers and 15 people were from management level.

There was made a statistical analysis of results concerning the question E7. Basic statistical parameters, such as: mean (\bar{x}), median (M_e), modal value (M_o), lower quartile (Q_1), upper quartile (Q_3), range (R), standard deviation (s), coefficient of variation (V_s), skewness (SK), kurtosis (KU) [5] were estimated. The results of statistical parameters estimation for the two groups of respondents: production workers (P) and superiors (K) are presented in Table 2.

Symbol	Factor's sign											
	CS-P	CS-K	EP-P	EP-K	TI-P	TI-K	UP-P	UP-K	ME-P	ME-K	GW-P	GW-K
n	59	15	59	15	59	15	59	15	59	15	59	15
x_{min}	1	1	1	1	1	2	1	1	1	1	1	1
x_{max}	6	6	6	5	6	6	6	6	6	6	6	6
x_{sr}	4,03	3,40	3,51	3,07	3,29	3,67	3,90	4,07	3,44	3,27	2,83	3,53
M_o	6	4	3	5	4	5	6	6	5	1	2	4
Q_1	2	2	3	2	2	2,5	2	2	2	1	2	2
M_e	5	4	3	3	3	3	4	4	4	3	2	4
Q_3	6	4	5	5	4	5	6	6	5	5	4	4,5
s	1,93	1,76	1,58	1,53	1,58	1,40	1,83	2,15	1,59	1,98	1,51	1,46
R	5	5	5	4	5	4	5	5	5	5	5	5
V_s	47,83	51,90	45,03	50,01	47,94	38,11	46,84	52,96	46,20	60,64	53,36	41,25
KU	-1,37	-0,99	-0,97	-1,53	-1,06	-1,55	-1,31	-1,46	-1,19	-1,50	-0,70	-0,98
SK	-0,47	0,10	0,05	0,28	0,13	0,15	-0,30	-0,54	-0,18	0,15	0,52	-0,16

Tab. 2. Basic statistical parameters data sets concerning the visual control importances' assessment. It concerns P and K.

Interpretation of estimated descriptive statistics for $n = 59$ responses of production workers and $m = 15$ responses of superiors:

- the arithmetic average of the data set concerning production workers’ responses (PP) achieves the highest value for the Cleanliness (CS) factor – this factor has been estimated by the employers as the best. The lowest average value has been indicated for the GW (Graphic presentation of results) factor – this factor has been acknowledged by workers as the least important. On the other hand, the UP („Go and see” operations) factor has been estimated as the highest average value as well as the most important element of the visual control while taking into consideration the management (K). In this group the EP (Flow) factor has been indicated as the least important,
- the highest average variety of production workers’ responses (PP), measured with the use of the standard deviation, has been assigned to the CS (Cleanliness) factor (the factor being indicated by the employers as the most important). The most similar results have been noted for the GW (Graphic presentation of results) factor. Among the management, the highest variety of results applies to the UP factor, the smallest variety applies to the TI (Signboard) factor. The average variety measured with the standard deviation amounts 1,67 for the PP group and 1,71 for the K group,
- the range, that means the difference between the highest and the lowest value in the data set, amounts 4 while taking into account factors EP-K and TI-K. In other cases the value amounts 5,
- The value of responses, that amounts 6, is the most frequent value in cases of the CS factor (it applies to PP) and the UP factor (it applies to PP and K) occurrence. On the other hand, the least frequent scale of importance amounts 2 for the GW factor (it applies to PP) and 1 for the ME factor (it applies to K),
- the variation coefficient, in regard to estimations of PP, achieves the highest value for the GW factor that suggests a significant range of opinions between employers. It admits the lowest value for the EP factor – in this case, the workers’ opinions are quite similar. While taking into consideration values of the K group, the V_s coefficient has achieved the highest value for the Monitoring (ME) factor, the lowest – for the TI factor (Information charts),
- the values of kurtosis indicators inform that all responses’ distributions in two research groups are more oblate than in case of the normal curve,
- the negative value of the skewness indicator for the following factors: CS-P, UP-P, UP-K, ME-P, GW-K means, that the responses’ distributions are asymmetrically left-sided. In the instance of other factors there can be noticed the positive asymmetry of the data distribution,
- the values of such statistical parameters as median, quarters, minimum/maximum have been presented in the box diagram in case to analyse the empiric distribution (Fig. 1).

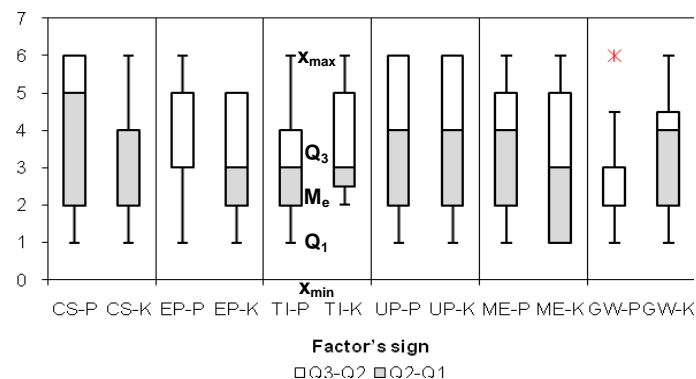


Fig. 1. Box-plot diagram.

There has been analysed the grade of responses’ similarity while taking into consideration the perception of separate factors of the visual control regarding two research groups. As a result of the research, it arises that production workers and the company’s management have similar understanding of the UP element importance. However, they contradict during the estimation of the GW factor.

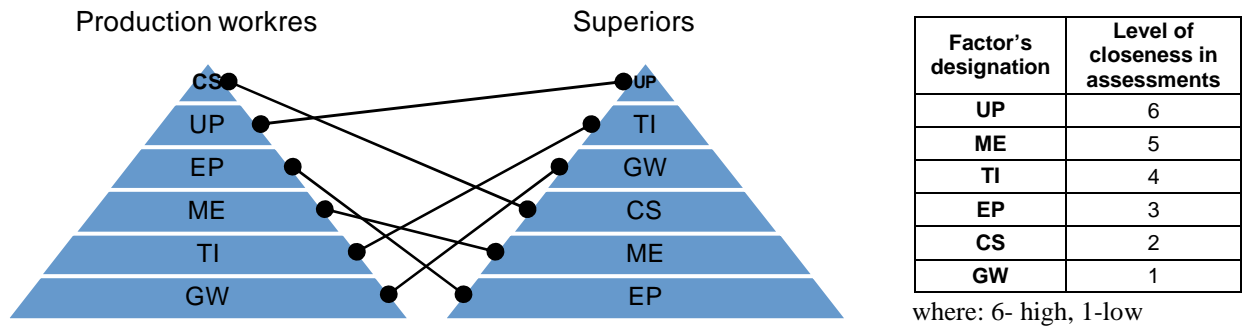


Fig. 2. Pyramid of validity.

3. Conclusion

Due to research, there was claimed that:

- the CS factor is perceived by employers as the most important element of the visual control. It is because, in the company there have been implemented and used the 5S principles that are connected with workplace organization. That is why the workers notice a significant role of this factor in the visual control. Still, the company’s management has indicated the UP factor as the most important element of the visual control. The managers are familiar with “*gemba gembutsu*” principles and they are realizing them as well. They spend a lot of time on the production hall. They actively participate in solving production problems. According to managers, the realization of visual controls during “*gemba*” allows to react onto every departure from standards and undertake effective improving activities very quickly,
- production workers have acknowledged the GW factor as the least important element of the visual control among others. It suggests that this element is the least visible and exposed by the company’s management. On the other hand, the management has acknowledged the EP factor as the least important in the visual control. In their opinion, other factors are more important in this control system,
- there can be noticed the similarity of results in the scope concerning perceiving importance of such factor of visual control as: UP, ME, TI, and difference of such factors as: EP, CS and GW.

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How (Much) We Can Boost Innovations?

Mgr. Milan Einsiedler

PhD Student, Pan European University, Faculty of Economy and Business, Tematínska 10, 851 05
Bratislava, Slovakia, milan.einsiedler@gmail.sk

Abstract. It is generally believed that innovations are the key to a sustainable economic recovery. We could hear many times that financing innovations is a threat to innovation performance during crisis. In the article, which is in line with my PhD thesis I am working on, I would like to show another factor, which influences innovations. The factor is (national) culture. Despite finance being crucial, innovations are far more complex and are influenced by a set of factors. Thus, to achieve high innovation performance on the national level requires far more effort than “just” allocating additional resources. In order to show the cultural influence, I used the cultural dimensions scores by Geert Hofstede and Summary Innovation Index 2010 to calculate correlations between the elements of culture and innovation performance.

Keywords: Innovation performance, venture capital, culture, cultural dimensions.

1. Introduction

Innovations became particularly popular when the ways out of the recent crisis started being discussed. The key international economic organizations came with their recommendations and boost of innovations is now widely recognized as a must on the way to sustainable recovery. OECD in its report on the economic crisis states that the only way to achieve sustainable and durable growth is „*investing in smart infrastructure, encouraging R&D, green investment, upgrading the skills workers, steering market actors towards innovation related investments, and accelerating activities for which barriers may have been too high otherwise*“ [1].

Starting with Joseph Schumpeter’s creative destruction process, the time of crisis can be understood as an opportunity. Example of companies such as Microsoft, Apple, Google and Nokia, which directly emerged from the past economic crises can be used as reference. As McKinsey states on its web page, „*Even- perhaps especially- in times of economic turbulence innovation remains the most important differentiator separating economic winners from also-runs*“ [2].

2. Funding Innovations – The key issue?

Financing innovation seems to be the critical issue during any crisis. Private companies finance their innovations from the current revenues and these usually decrease in such times. On the other hand, government can face decreased tax revenues and increased spending needs (caused by higher unemployment rate) or can have other priorities, such as fighting the social consequences of the crisis. Thus, it requires clear strategy and dedicated leaders in both private and public sector.

The following sources are the most important for financing innovations:

- Venture Capital
- Research and Development spending (Public and Private)

2.1. Venture Capital

Venture capital and loans from private sector were priorities of the EU before the crisis. The overall EU performance in this field improved and even caught up the leading country-the USA. The impact of the crisis on this source of funding was very strong. PricewaterhouseCoopers published significant annual fall in 2009 for the USA in both- the finance provided (by 37%) and in the number of projects (by 30%). This was the worst result since 1997. The European Private Equity and Venture Capital Association published even worse results for Europe. The annual fall was by 57% in EUR and by 17% in number of projects.

2.2. Research and Development

Innobarometer survey 2009 showed that 23% of European companies decreased their spending on innovations. The same survey indicates that the total amount spent on research and development by private companies decreased by 4,2%.

There will be a pressure on public spending in 2011 in the EU countries. Most of them had unsustainable spending in the previous years and 2011 shall be a year of fiscal consolidation. This can influence public research and development spending as well.

3. Culture – Culture and Innovation

From the above mentioned it could seem that innovations are at risk of lacking finance.

However, there is a factor that influences innovation performance in particular countries and does not depend on neither private, nor public spending. This factor is culture. At this point we need to distinguish between national (regional) culture and organizational culture. Organizational culture is something to be managed and shaped when we want to achieve truly innovative company. I will focus on national culture in this article. To what extent it influences innovation performance on the national level? Shall we manage national cultures as we do it with the organizational? Peter F. Drucker wrote in his book *Innovation and Entrepreneurship* already in 1986 that „*Indeed, there may be greater scope in the United States – and the developed societies generally – for social innovation in education, health care government, and politics than there is in business and economy. And again, entrepreneurship in society – and it is badly needed – requires above all application of the basic concepts, basic techné, of management to new problems and new opportunities.*“[3]

One of the methods how to characterize national cultures is the concept of cultural dimensions. It was introduced by the Dutch sociologist Geert Hofstede. He originally introduced 4 cultural dimensions by which it is possible to characterize national or regional culture and to compare each other. I will work just with these original 4 dimensions, as far as there are not enough data for the last, 5th one- long term orientation.

3.1. Cultural Dimensions Introduced

The first dimension is called Power Distance Index, PDI. This characteristic shows how unequally the power is distributed across society. When the value is small, people are less formal not only in their jobs, but in their personal lives as well. This dimension of culture could have some impact on innovations- the higher is the power distance, the less can people feel free to come with new ideas and improvement. However, we will investigate later.

Another dimension is Individualism, IDV. This, in contrast with collectivism, expresses how people in such a society rely on themselves. Good example is the USA with high individualism and East Asian cultures with high level of collectivism. Individualism could drive people to come with new, break-through ideas.

Masculinity, MAS. This index expresses distribution of roles in society. High masculinity index indicates that role of women in such a society is lower. Latin American countries are good example.

Finally the Uncertainty Avoidance Index, UAI shows how much the society and its members accepts risk taking. Coming with new (business-) idea is always risky. For example, venture capital, starting risk capital is in its very nature about taking some risk. Thus, it seems innovations require some level of risk taking.

3.2. Measuring Innovation Performance – Summary Innovation Index

Another issue is to measure innovations. European Union uses so called Summary Innovation Index, SII. It is complex and consists of criteria, which are divided in the following groups: enablers (includes human resources, finance, and support), firm activities (includes firm investments, linkages and entrepreneurship and intellectual assets) and outputs (includes innovators, economic effect). The problem is that it is calculated first of all for the European countries and couple of the others. There are no comparable data for the rest of the world.

4. Comparing with better ones

In order to look at the fact whether there is or how strong is the influence of culture (as expressed using the cultural dimensions), let us look at some of the countries. I chose Germany, Sweden, Slovakia and the United Kingdom and used data from www.gert-hofstede.com (Figure 1).

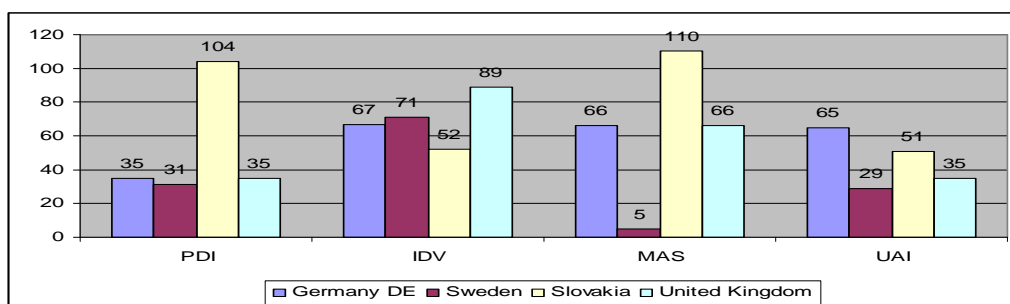


Figure 1. Cultural Dimensions, Chosen Countries (Chart: Author, Data: www.geert-hofstede.com)

The innovation performance of these countries according to the Summary Innovation Index scores is as following[4]: Sweden (SII = 0,75), Germany (SII = 0,696), United Kingdom (SII = 0,618) and Slovakia (SII = 0,269). From here we can feel, that particularly high score of Slovakia in the power distance, relatively low individualism, higher masculinity could be somehow interrelated with the low innovation performance.

However, such a simple comparison is not enough to make conclusions. Thus, I put together data from 20 EU member states- SII 2010, PDI, IDV, MAS and UAI. I calculated correlations between SII and each of the cultural dimension for this sample of countries. Results are shown in Table 1.

		Hofstede's - Cultural Dimensions			
		PDI	IDV	MAS	UAI
Correlations with SII 2010		-0,65925	0,62514	-0,45567	-0.54

Table 1. Correlations between Cultural Dimensions and SII 2010 for 20 EU states. Author

Positive correlation is between the extend of individualism and innovation performance. This means that higher individualism is connected with higher innovation performance. On the other hand, high power distance index undermines innovations, just as we supposed above. There is

a negative correlation between power distance and innovation performance. Correlation is lower between masculinity, uncertainty avoiding and innovation performance. However, if the uncertainty avoidance is lower, the Summary Innovation Index for the particular country tends to be higher. The higher is the presence of masculinity in the society, the lower is the Summary Innovation Index.

5. Conclusions

Simple correlations do not show functional relationship between culture (cultural dimensions) and innovation performance (Summary Innovation Index 2010). This was even not my goal. However, the findings show and confirm what we feel and somehow (more or less) recognize. There is a relationship between the elements of culture and innovation performance. The principal finding is that culture matters. Based on this, we can conclude that innovation is a multidisciplinary issue influenced by various (cultural) factors. A long-term and complex strategy and vision is thus needed. This is what we can do even during a crisis and without significantly increasing spending. Understanding multidisciplinary character and complexity of innovation is crucial. Just to give an example: the national Innovation strategy 2007-2013 for Slovakia is missing this point. It is strongly focused on research and development, its infrastructure and economic benefits, and creating research – business linkages. At the same time there are several other governmental initiatives that are not included in the Innovation strategy but are clearly connected with innovations: e-governance, e-healthcare... Issues included in the Strategy are important. However, we would need to take more complex approach if it shall be called “The Strategy”. National cultures need to be shaped just as the best companies shape their organizational ones. As Peter Drucker said: „*there is a lot of space for innovation and there is wide need for applying the managerial techniques across our society*“. Culture can be shaped by legislation, system of primary and secondary education (focusing children on creativity, better skills of processing information, the evaluation of students, organization of the academic year), public media (their educational function), etc. Interdisciplinary character requires many if not every Ministry to participate in becoming innovation nation.

Acknowledgement

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Company Culture as a Means of Achieving Business Success

*Ladislav Eliaš

* University of Žilina in Žilina, Faculty of Operation and Economics of Transport and Communication, Department of Economics, Univerzitná 1, 01026 Žilina, Slovakia, ladislav.elias@fpedas.uniza.sk

Abstract: In the today's hurried world there are certain company values that lead to critical aspects. However the essence and aims of enterprise are often forgotten. Company owners frequently see only profit and overlook other important aspects. One of these is company culture and it leads to success in business.

Keywords: company culture, business success, competition, values, company policy.

1. Company culture and its definition

There are various interpretations of does this phrase mean. Alžbeta Bielkiková defines it as follows [1]: „Company culture is a type of enterprise, a spirit, a set of internal rules, that influences not only thinking and actions of coworkers but overall atmosphere of company life.”

In certain literature there exists also a term organizational culture of firm culture. Štefan Hittmár states that organizational culture influences execution of managerial functions. According to Hittmár organizational culture [2] “represents a complex of aims, ideas, rules, opinions, attitudes and conditions that on the one hand reflect the necessities of business, but on the other hand take into account demands of workers.”

From these definitions it is obvious that company culture significantly effects the performance of employees. They should be identified with the already-established company culture and therefore with activities of company that have lead to its current prosperity. Company culture is always formed by the company management. It is a kind of transfer from top to bottom. This is the moment when company culture shows its essence. The management has its predominant ideology created by values and best practices. Company ideology is the basis for deciding on what action to take. Actions of superiors are always apparent. Subordinates follow them on both factual level (what needs to be done) and meta level (what is the superior's opinion and his point of view). Employees also often copy the preferences of their managers. Their dislikes and critiques devastate their work motivation and those less scrupulous may even replicate it (particularly to improve their self-esteem, e.g. put themselves above the customer). This is where the possibility of competitive advantage appears. The company with solidly established competitive advantage acquires a customer while the one with lesser company culture loses him/her. Strong company culture projects itself into more direct and clear communication, faster solutions and decisions and more fluent incorporation of innovation.

The internet portal www.personality.sk however shows a more negative side of company culture. It is the one of enclosed company system, demands on conformity and difficult adjustment of new recruits; all of which could eventually lead to problems within company. [3]

Criteria of a correct and therefore strong company culture are primarily clearness and directness- the individual fields of company culture need to be clear and comprehensible. They must express what is deemed as necessary and as unacceptable. All workers should be informed and stay in contact with specific points of company culture.

2. Leadership and learning organization

A very visible and important aspect of a whole company culture is leadership. The survival of entire company hangs on the ability of managers to safely and wisely lead their subordinates. Company culture is there to say how they should take charge of this responsibility. It is important to communicate strategy to employees clearly and periodically. Following step is to allow the employees to learn from their successes as well as their failures. Managers should reserve time for celebrating success and not be prone to changing behavior. That is also a sign of company culture. In regards of establishing a proper company culture, learning organization model ought to prove suitable. Learning organization has a higher probability to adopt and change through people who are learning themselves. It is a radical change in thinking and philosophy of a company, linked with changing the entire company culture. In a learning organization, the employees and individuals should be able to analyze what measures are to be taken to improve the company's current situation. They ought to be looking for answers, be more initiative and willing to learn something new and always give a helping hand towards company's prosperity. Reaching common goals as a whole should be top priority in business success. Company culture should also be reflected in common values of a company. These are enclosed, binding and essential valuables or ideas influencing behavior of a men.

Alžbeta Bielíková states factors that influence company culture (see picture 1).

Internal influences	External influences
History of company	Speed of market feedback- competition
Age of company	Market position
Stage of development	Character of culture on higher levels
Company assets	History
Legal form of company	National mentality
Subject of enterprising	Culture of mother company
Degree of profitability	Regional influences
Used structures and processes	Economic system
Dominant technology	Social system
Company strategy	Political preferences
Qualification and interests of managing forces	Legislative
Employees	Ecology
Mentality	The level of research and development in the field o business
Education	
Attitude towards growth	

Picture 1 – Influential factors on company culture

The level of company culture differs from company to company. In general, a good company culture is such, that aids reaching company goals while managing to fulfill needs of all its employees. This makes a company useful for its surroundings.

If a company has or has not an established company culture is possible to observe through forms of company culture. They consist of [2]:

a) *exemplary behavior-„models“*

- there exists a model of an „ideal manager“ and an „ideal employee“ which is regularly used in selecting new staff
- ability to make individual decisions, find solutions and on-time fulfillment of tasks is highly appreciated

b) *symbols*

- these are words, gestures and items that are used in company because of social convention
- these include among other: manner of addressing others, usage of abbreviations and names, clothes and logos

c) *rituals and ceremonies*

- they are specific collective activities followed in a company
- these include: celebrations and customs or a way of discussing important matters,

d) *values*

- are consciously and subconsciously respected and appreciated qualities of phenomena or things,
- all employees know what is supposed to be good, rational, what counts as virtue etc.

It is possible to discover whether a particular company has an established company culture by means of internet presentation. It is a solid indicator for discovering how the company treats its customers and suppliers. Typically, the result is the same as treating one’s employees.

Backtracking to achieving success in an enterprise. Latest studies show that successful companies differ in four key areas (see picture 2) [3]:

Successful companies	Unsuccessful companies
Atmosphere of honesty- subordinates are not afraid to comment their boss’s decisions	Employees do not give feedback to their managers
Subordinates respect their superior, accept him, are loyal towards him and expect the same in return	Workers do not have confidence in their superiors, however they often demand to be trusted themselves.
Subordinates do not feel helpless towards their boss and make use of opportunity to influence decisions and work of their managers	Subordinates often don’t even realize their influence on management.
Employees feel responsible for the decisions of their bosses.	Boss makes a decision and people under him/her boycott or let him/her make a mistake on purpose. Company becomes a battleground for nonsense disputes.

Picture 2 – Four areas of successful and unsuccessful companies

3. Success as a proof of established company culture

It is indeed possible to measure company culture. There are various ways of performing the measurement [5]:

1. using external Mystery-shopping or Mystery-calling (directly within the company or at the client),
2. internal survey of company culture (questioners, interviews, focus groups),
3. combining the above-mentioned methods and searching for a correlation among

frequent shortcomings of employees who are in contact with customers; flaws in company culture which may be the cause.

Results from the methods used should provide the following information:

- how is the company culture focused,
- which are the positive points supporting selected competitiveness strategy
- which are the negative, counterproductive points for competitiveness strategy.

Ján Uriga, together with his team, has discovered the financial value of developing a company culture. On average 20% of business results belongs to company culture. If one fifth of employee performance is dependent on work conditions, leadership style, identifying with company values and pro-active motivation, how could such a result be dismissed? A previous question arises- does the company culture lead to business success? Ján Uriga further claims that making people more identified with company's values or that improvement in leadership style results in increase of customer satisfaction in up to 12 or 18 months. Impact on customer satisfaction (their realization that behavior of employees has changed) is therefore delayed and presumes a long-term qualitative run of service/product supplier. [6]

4. Conclusion

Company culture may be a useful tool in fight against competition and also a key to company success. There are many ways of resolving company culture. However, unless the whole company is identified with the idea, it does not work. By establishing a proper company culture, company may achieve success in following areas:

- people are better motivated to improve their performance,
- increased feeling of identification with company,
- better internal and external communication.

Company culture bolsters solidarity of employees with the company, assists development of both internal and external potential and helps to create and maintain a good name.

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Performance Management in Public Administration

Zuzana Fabianová

University of Žilina, Faculty of Management Science and Informatics, Department of Management Theories,
Univerzitná 2, 010 26 Žilina, Slovak Republic, zuzana.fabianova@fri.uniza.sk

Abstract. Representatives of public power make an attempt to increase performance of processes taking place in the organizations managed by them. As in the private sector, similar procedures towards an assessment and a performance improvement are concurrently applied. A contribution describes starting points for the management and performance measurement of processes in the public administration and compares the approaches towards the performance measurement in the public administration in the membership countries of the EU.

Keywords: performance management, individual performance, organizational performance.

1. Introduction

The performance management in the public administration in Slovakia is relatively a new concept which is still met with scepticism and an insufficient acceptance from the side of employers and employees of the organizations of the public administration. This phenomenon is connected mostly with the conception of the public administration as the performance of the state functioning represented by its authorities and public-legal subjects as a representative and a carrier of the public power. The public administration relates to an existence of a public-legal act, it means that it plans, manages and checks the fields and activities set by its relevant competent legal regulation (organization status, establishing document, law).

Objective activities are performed in favour of a public interest and therefore they are supposed to be performed the most effectively and their result is supposed to be the biggest asset for a maximal number of subjects. In the public sector there is no reason for a profit category, products and services of the public sector are not sold for the market prices. Although inputs are bought for the market prices and sources are consumed in a similar way as in the private sector, however there is a lack of a natural (internal) pressure for a performance and seeking for opportunities to decrease the costs at a present quality improvement of provided services as it is common in an entrepreneurial environment.

2. Starting points for process performance measurement

The main reason for the performance measurement of the public sector organizations is the effort to know the organizational performance. Knowledge of this level requests the measurement, evaluation and a consequent comparison of the performance with other organizations. Obtained data serve the organization as a starting point for a process improvement, an implementation of corrective and preventive measures, checking, budgeting the money for the following periods of time, an employee's motivation and many other factors concerning the permanent improvement. [1]

Information obtained from the process performance measurement should provide the owners of these processes with accurate and objective information about their progress with an aim to identify the improvement potential.

In general, it is possible to define the basic requirements for the effective performance measurement of any process:

- tying up the performance measurement with critical aims and organizational processes,
- comprehensibility, accuracy, relevancy and validity of obtained information,
- sufficient frequency and measurement detail together with the high level of achieving the integrity of learnt data,
- determination of responsibility for the course of measurement and processing the results of process performance measurement.

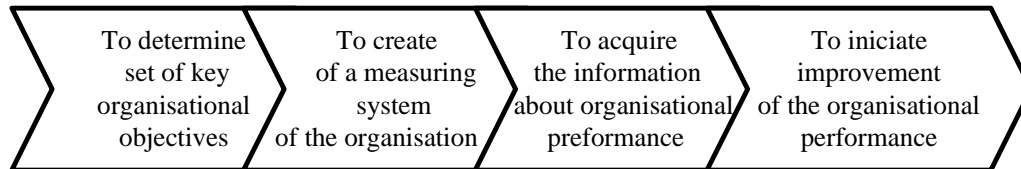


Fig. 1. Main steps of the improvement including measurement of the organisational performance

An identification of the improvement potential is possible by comparing the obtained data from the performance measurement with target, planned values which can also be called an expected level of a service quality.

2.1. Public administration – from checking the society to providing services to its citizens

At the beginning of the 20th century the most important role of the public sector was rather to check the society than to provide the services to its citizens. In the 70s the society, government and civil servants aimed more to a regulation, checking and a programme implementation than to an output assessment of their activities, requirements of citizens and a satisfaction of customers. In the course of time authors of the management methodology in the public administration started to focus on monitoring the politics performance. In that time in the public administration started to apply the systems such as the management based on objectives (Management by Objectives), the system of balanced indicators (Balanced Scorecard), Total Quality Management and other systems of the quality measurement such as Common Assessment Framework.

The history of the performance assessment systems in the public administration shows that the approach focus in the past lay in the standardized and centralized approach and in making use of tools such as a centralized remuneration, a career promotion based on the results, and suchlike. This assessment approach was considered to be sufficient enough and easy to apply. Up to a recent history, together with advances in a management theory, more efficient ways of the performance assessment have been developed. A present development leading towards a competence management and a system of a determination of individual tasks led towards a creation of a high amount of innovative, hybrid and other methods of assessment, procedures and criteria for different categories of employees. Detailed and traditional systems of the performance assessment have been gradually substituted by the systems which are aimed to individual competences and their tying up to organizational targets.

2.2. Present approaches towards performance measurement and assessment of the public administration

The study which has been made by the European Union in the field of performance assessment pointed out the growing significance of the individual performance assessment and the need for a relation analysis between the assessment of an organizational and individual performance. [2]

Assessment of organizational performance

A traditional approach towards the performance measurement in the public administration is based on the assessment by means of achieved outputs – what has been achieved, how many tasks have been solved. Less attention is paid to achieving the quantitatively set targets and very sporadically the targets of the performance are agreed with citizens, potentially in relation with citizens. At the same time there are continuous problems to monitor, together with the achieved

targets, also another indicator connected with the performance which is, in the quality management called efficiency. In the efficiency is evaluated a portion of consumed sources against planned sources for achieving an expected output. This approach towards measurement of the organizational performance is called the end to end performance measurement. For its simplicity it is not complicated to create and keep the system of the measurement, however in the organization it does not allow to identify the fields where there is the biggest improvement potential (bottleneck, stint of the quantity of sources, error rate).

There is a solution in a creation of the system of a concurrent measurement of the performance, known from the process approach, where the measuring points are set inside the key processes and they provide managers of the organization with foundations for accepting the preventive and corrective measures.

Assessment of individual performance

The performance of the organization is dependent on the performance of its employees. The purpose of the performance management of an organization is to manage the performance of individuals in an effective and coordinated way. An ability of the individual to create expected outputs and to be efficient from the point of view of the organization depends on the quality of a work organization, knowledge of an employee, a capability for the particular work and on the quality of a work environment. If the mentioned factors are fulfilled, also a degree of a person's internal motivation has a great significance on their performance.

Different systems of the performance assessment are applied in different membership countries of the EU. A reason for these differences lies mostly in existing cultural and social-economical differences, administrative traditions in the public services and consequently a different level of the centralization and decentralization of systems of performance assessment.

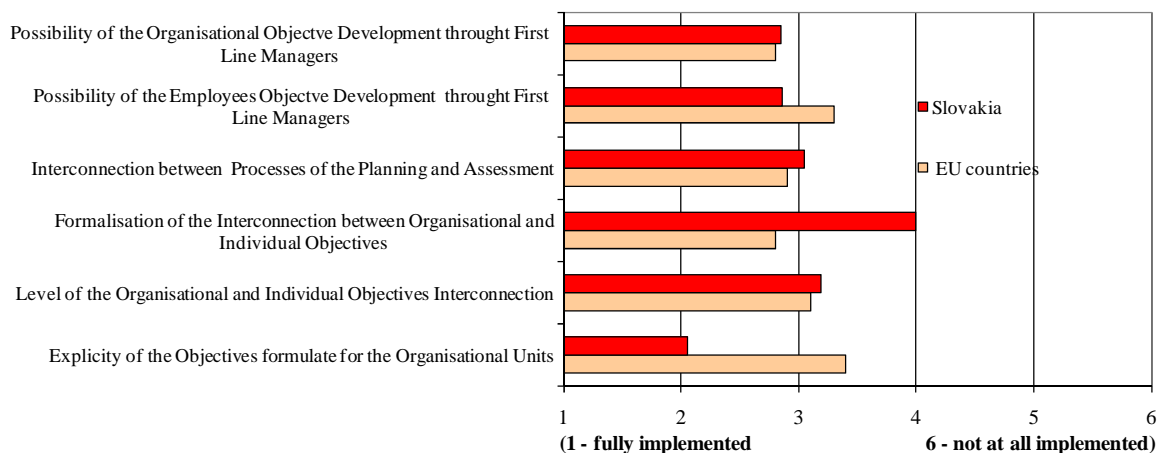


Fig. 2. Perception of the Interconnection of the Assessment Systems for Individual and Organizational Performance by the First Line Managers in Public Service Organisations in EU Countries and Slovakia

The questionnaire survey conducted in Slovakia shows that the line managers achieve better than the introduction of formal guidelines and recommendations as in ensuring the harmonization of individual and organizational goals. At the discretion of the line managers in the process of developing the objectives of the Organizational Unit we have reached a similar evaluation as in EU countries. The biggest differences in performance evaluations occurred at a rate of an explicit formulation of objectives for the Organizational Unit.

According to the results of the study almost a half of the membership states have a hybrid system applied and this system connects the elements of a classic system of the performance with competences of employees and with aspects aimed at objectives. Clearly objectively directed systems are in the European public administration still quite rare. [2] The countries with a more centralized system of the performance assessment use more often systems which are applicable in a similar way to all categories of employees. In the countries of Eastern Europe, including Slovakia,

standardized systems for the assessment of all employees have been used so far. [1] Until recently employees employed as civil servants have been evaluated and rewarded according to the law about the civil service. The assessment has been performed in practice in a formal way, for employees it has not been motivational enough, for evaluators the process of assessment represented a useless administrative burden and not a starting point for an improvement of the process performance. This system did not respect basic principles of modern systems of the performance assessment, it did not provide tools for a remuneration of a good performance and a management of a bad performance. However, after his cancellation a relevant replacement has not been implemented yet.

3. Conclusion

In the last decade a lot of possibilities for the performance improvement of organizations and individuals in the public administration have been opened. However, utilizing the scientific approaches requires not only the knowledge of managers of the public administration in the field of possibilities of solving these problems, but also accomplishing many particular steps, among which, in the Slovak Republic, we can include the requirements for:

- advocacy of the process approach in the organizations of the public administrations ,
- implementation of the system of activity (task) classification in the organizations of the public administration,
- tying up the performance measurement and assessment of an organization with the performance measurement and assessment of employees,
- determination of mutually tied up aims in the organizations of the public administrations (Balanced Scorecard),
- utilizing the system approach for an exchange of experience from the measurement of individual and organizational performance (benchmarking).

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Simulation as a Powerful Tool of Job Shop Scheduling

*Štefan Figa, *Milan Gregor

*University of Zilina, Faculty of Mechanical Engineering, Department of Industrial Engineering, Univerzitna 1, 01026 Žilina, Slovakia, {stefan.figa, milan.gregor}@fstroj.uniza.sk

Abstract. Presented in the paper are simulation techniques, which are used to the improvement of scheduling approaches, especially simulation for evaluation of scheduling approaches. The paper describes the overall approach of simulation-based performance assessment of production control approaches and what is needed to build a simulation model that can be used for production scheduling. Such a model as a simulation-based planning and scheduling tool enables the user to check his decision, and to test new action replay or some situation from the past.

Keywords: job shop scheduling problem, simulation, evaluation

1. Introduction

The production process of manufacturing enterprises has always been a key factor for overall business success. Production scheduling problems are facing thousands of companies all over the world that are engaged in the production of material goods. Therefore, to solve production scheduling problems effectively and efficiently has attracted the interest of many experts and researchers from both fields of production control and combinatorial optimization.

The scheduling can be described as the allocation of available resources over time to meet the performance criteria defined in a domain. Typically, a scheduling handles a set of jobs to be completed, and each job consists of a set of operations. Each operation is performed by specific resources such as machines and operators. In terms of scheduling theory, most of scheduling problems are in the class of NP hard [1].

The simulation is used to describe a certain process in a time-dependent manner [2], [3]. Depending on time progression, we differentiate between discrete-event and continuous simulation. In the first case, future events are determined, and the simulation clock jumps to the next future event. In some cases, we consider an equidistant time progress; however, because of computational reasons, time progress is very often made in a non-equidistant manner. Continuous simulation means that infinitesimally small time steps are considered. Hence, continuous simulation is basically the (numerical) treatment of differential equations. The difference equations are used in case of a discrete time steps.

Simulation and scheduling belong for long-term among the efficient techniques used for Operations Research and Industrial Engineering. Many papers discuss either simulation or scheduling. However, much less literature exists on the interface between the two different approaches because usually researchers from different communities consider scheduling and simulation problems.

2. Simulation Techniques within Scheduling

Many articles and many software programs have been written that focus on manufacturing scheduling problems. Manufacturing scheduling systems are available on all platforms at many levels of complexity. Simulation-based planning and scheduling systems have proven to be very

successful in this area. Simulation, however, can be used in this meaning for more than just manufacturing planning and scheduling problems.

Three different applications for simulation in this context were identified [4]. First simulation-based schedule generation and refinement use simulation directly in order to determine initial schedules (generation) and to improve existing schedules (refinement), generally for short periods of time. In addition, simulation-based optimization applies simulation in a repeated fashion in order to estimate a certain objective function value and to improve it. The second application is given by deterministic forward simulation in order to evaluate certain parameter setting strategies for a given production control scheme. The third application of simulation is in emulating a scheduling system and is to evaluate deterministic scheduling approaches. The last two techniques are subject to other considerations.

2.1. Simulation for Emulation and Evaluation of Scheduling Approaches

Simulation has two important roles in this context. First, it acts as an emulator for the real system and second it can be used to evaluate the performance of the system. In the emulation role, simulation can be used to determine what decisions will have to be made when things happen in the production system.

In the evaluation role, simulation is used to compare the performance of alternate production scheduling approaches. While this role is easy for simulation when the scheduling approach is to simply apply the dispatching rules, it is considerably more difficult when a deterministic scheduling approach is applied. This role requires the simulation to also emulate the information flows. The overall approach of simulation-based performance assessment of production control approaches is shown in Figure 1.

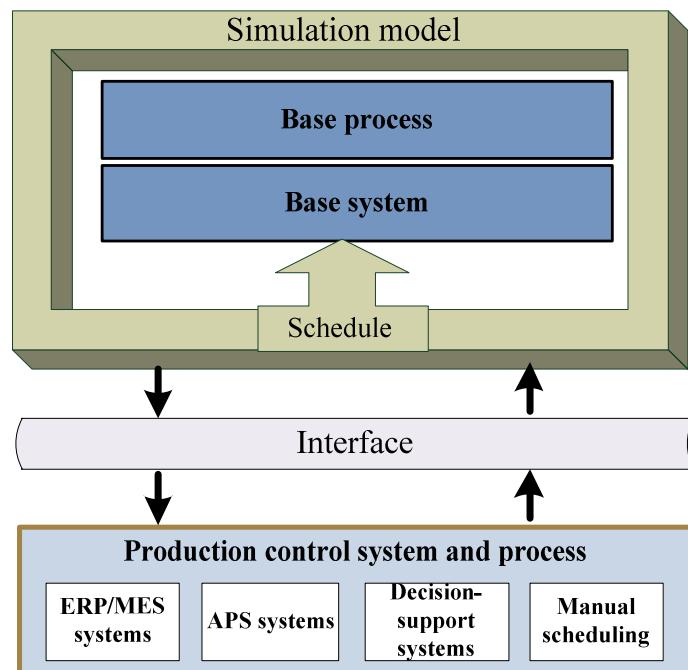


Fig. 1. The Overall Approach of Simulation-based Performance Assessment of Production Control Approaches

The base system and the base process in Figure 1 is represented by a discrete-event simulation model that is connected to the production control system and process (i.e. ERP – Enterprise Resource Planning, MES – Manufacturing Execution System, APS – Advanced Planning and Scheduling etc.) using the interface. The description of the production control process using the simulation model should know when to call for the scheduling approach. The schedule obtained via the interface is implemented within the simulation model, i.e. within the base system and process.

It is quite simple to build a simulation model that can be used for production scheduling. The main components of the model that the analyst has to define are few. These include:

- When are people, machines, vehicles, etc. available to do work?
- What product needs to be made or service needs to be performed?
- What is the process to make the product or perform the service?
- What resources are required to complete or perform the process (i.e. machines, people, tooling, trucks, etc.)?
- How many parts do we need to make for each customer or what services does the customer need?
- When do they need the products delivered or the services performed?

Varady at all [5] discussed the detailed characteristics of dynamic simulation-based scheduling in his workshop paper, highlighting many key issues. A simulation-based planning and scheduling tool enables the user to check his decision, test a new action or replay some situation from the past. It characterized the simulation-based planning and scheduling as follows:

- Realistic process representation in one integrated model with all relevant constraints
- Dynamic behavior of all queues
- Quick understanding of all dynamic elements through excellent animation, dynamic tables, charts, plots, etc.
- Choice of several scheduling methods
- Strategies are easy to change
- Calculations are event-based
- Automatic reduction of setup and queuing times to minimal necessary amounts
- Easy visualization of the effect of changing orders on other orders.

In article [6] Gupta described the conjunctive simulated scheduling (CSS) approach. CSS is an approach of scheduling, where discrete event simulation is conjuncted with the scheduling criteria. Further, there is described the summary of differences between the typical simulation studies and the CSS approach, as it is shown in Table 1.

	Typical Simulation Studies	Conjunctive Simulated Scheduling
Scope	Design and analysis	Operational planning/scheduling
Usage	As “throw away” models for excessive experimentation	As decision-support tool in making scheduling decisions
Model	Stochastic model (random processes)	Deterministic/stochastic flexible model
Experiment	Extensive multiple runs for statistical variance according to the design of experiment	Fewer shorter runs, experimenting different scheduling rules (or strategies)
Output	Statistical estimates of effects of various factors	Operational plan with system performance parameters

Tab. 1. Differences Between the Typical Simulation Studies and the CSS Approach

Pfeifeer [7] described that simulation captures those relevant aspects of the production planning and scheduling (PPS) problem, which cannot be represented in a deterministic, constraint-based optimization model. The most important issues in this respect are uncertain availability of resource, uncertain processing times, uncertain quality of raw material, and insertion of conditional operations into the technological routings.

The features provided by the new generation of simulation software facilitate the integration of these tools with the production planning and scheduling systems. Additionally, if the simulation

system is combined with the production database of the enterprise it is possible to instantly update the parameters in the model and use the simulation parallel to the real manufacturing system supporting and/or reinforcing the decisions on the shop-floor.

The reason of the intention to connect the scheduler to a discrete event simulator was twofold. On the one hand, it serves as a benchmarking system to evaluate the schedules on a richer model; on the other hand, it covers the non-deterministic character of the real-life production environment. Additionally, in the planning phase it is expected that the statistical analysis of schedules should help to improve the execution and support the scheduler during the calculation of further schedules. In the proposed architecture the simulation model replaces a real production environment, including both the manufacturing execution system and the model of the real factory. Simulation also generates continuously new orders into the system, while these new orders are scheduled and released by the scheduler.

3. Conclusion

In recent developments, simulation is not just a tool to mimic the real-world system for analyzing it, but it has become a popular technique for developing production schedules and dispatch lists in manufacturing environments. This paper has presented the simulation techniques within scheduling, especially simulation for evaluation of scheduling approaches. Proposed techniques can be used as the practical tool for manager in praxis for quick identification of bottlenecks in creating of schedule to minimize production costs.

Acknowledgement

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Robot Maintenance and Recovery

*Lenka Flanderová, *Richard Tencer

*University of Žilina, Faculty of Mechanical Engineering, Department of Industrial Engineering, Univerzitná 2, 01026 Žilina, Slovakia, {lenka.flanderova, richard.tencer}@fstroj.uniza.sk

Abstract. In today's highly competitive global market, manufacturing companies rely more and more on industrial Robots in order to obtain the flexibility and quality they need in their production processes. Essential part of production systems are preventive maintenance methods and techniques guaranteeing a high level of operational reliability and product quality. Preventive maintenance is the single most important thing, what can do also for robotic system. In terms of reliability is regular and preventive maintenance essential to keep robots equipment safe and reliability. With preventive maintenance, robotic equipment will last longer and require less down time. Lack of maintenance or inadequate maintenance can lead to dangerous situations, accidents and health problems.

Keywords: Robot maintenance, Periodic inspection, Overhaul periods, Preventive maintenance

1. The importance of maintenance

Maintenance methods and techniques are today's essential part of production or assembly systems and decisive activities guaranteeing a high level of operational reliability and product quality. The importance of an effective maintenance program cannot be overlooked because it plays such an important role in the effectiveness of Lean manufacturing. Regular maintenance is essential to keep equipment, machines (includes robots workstation) safe and reliable to continuous manufacture process. The benefits of effective maintenance are many. Here is a list a few such benefits:

- Increases the efficiency and speed of equipment;
- Improve production by reducing machine downtime;
- Mitigate wear and tear on equipment by keeping it clean and lubricated;
- Detect potential machine/part failures that cause production loss;
- Schedule full repair instead of performing a partial repair

Maintenance is performed regularly or by device status. Maintenance is always in term of preventive potential failures and extending the useful device. For execution of the maintenance it is necessary to create detailed instructions. Important role to play are schedules and related questions:

- What time is the full functionality of individual parts or whole equipment?
- What facilities are planned downtimes required for maintenance?
- What is required for maintenance actions for safe operations?
- What contingencies may arise when unforeseen events?

Regular maintenance is a prerequisite for trouble-free operations without interruption of operation and long life. Maintenance intervals depend on the extraction time (the total operation time) or class of operation. [8]

1.1. The importance of maintenance in robotics systems

In today's highly competitive global market, manufacturing companies rely more and more on industrial Robots in order to obtain the flexibility and quality they need in their production processes. Robots are used for spot-welding, sealing, arc-welding, assembly, cutting, water-jet cutting, material handling, dispensing, etc.

All these operations must operate at very high levels of reliability and repeatability/accuracy to meet the demands of modern manufacturing. This means that any mechanical failure of the robot system - whether the robot itself or any of its peripherals - can result in many hours of lost production or can generate large amounts of scrap parts. [1]

Maintenance methods and techniques are today's essential part of production systems and decisive activities guaranteeing a high level of operational reliability and product quality. One of the main key factors is advanced technology requirements and corresponding levels of operational practices. This technique covers the service robotics consistent implementation of activities (e.g. Inspection).

In most of robotic applications, the Tool Centre Point (TCP) and Joint Mastering (Zeroing) must be maintained to very strict tolerances. Therefore, if the robotic tools becomes bent, or if the robot joints crash, the recovery process can be very time consuming and costly to the manufacturer. [1]

Poor maintenance practices can be identified by an inferior performance of the robot. This fact generally associated with poor performance is sluggish response to motion, missed part placement or erratic behavior in the programmed task. At times it can be as simple as a loose bolt, lack of lubrication in a joint or more often than not, a wire is loose at a terminal. This wire loose can cause arcing across the junction and create erratic behavior in the robots motion.

2. Robot maintenance

Robot maintenance and the frequency of the maintenance depend on the environment in which that robot is working. The use of industrial robots can be utilized in many locations. Schematic algorithm of steps to carry out maintenance service of robotic device is showed in Fig. 1.

Locations range from clean rooms for electronics, to paint booths and harsh welding applications. Maintenance except overhaul repair may include daily cleaning to the structural robot body.

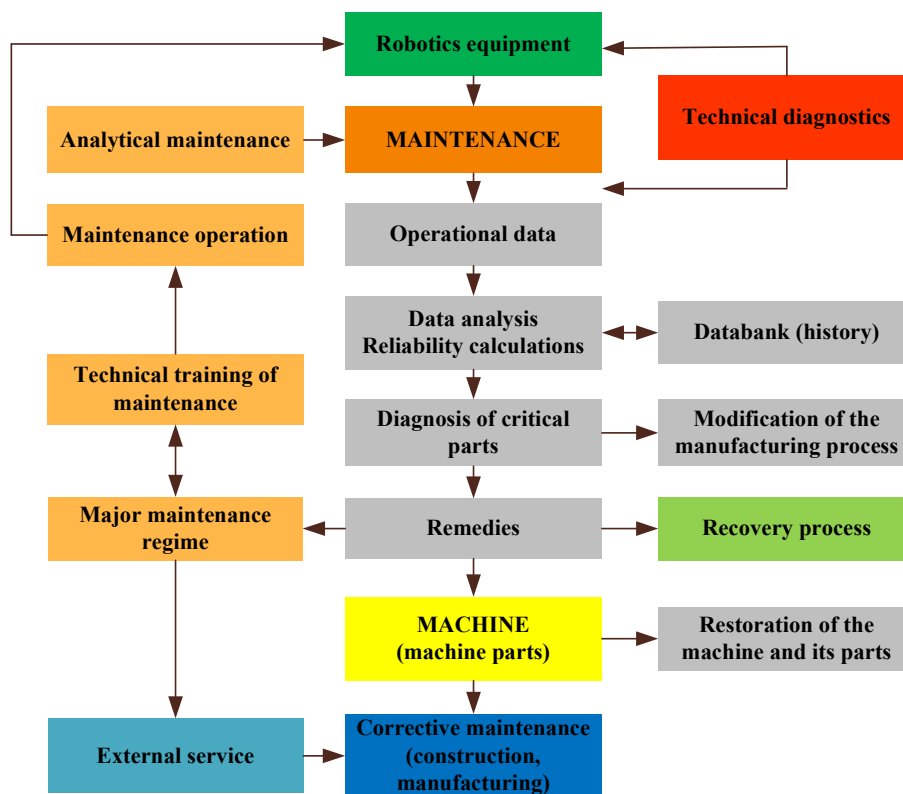


Fig. 1. Maintenance in the operation of robotic devices [6]

Robots have many articulating joints that require proper lubrication in the form of gear oils and special grease. All maintenance personnel who perform work on robots should be well trained and understand the complete working of the machine. [4]

Robots which have been in operation for an extended period of time can suffer from wear and other forms of deterioration. In regard to such robots, it can be define overhaul as an operation to replace parts running out of specified service life or other parts which have been damaged, so that the robots may be put back in shape for continued use. Overhaul interval for robots presumably varies with their operating conditions and thus with the degree of the equipment's wear and loss of performance (Fig. 2). As a rule of thumb, is recommended that overhaul should be carried out before the total amount of servo-on time reaches the predetermined levels (to Mitsubishi robot RV-6SL 24.000 hours for the robot body and 36.000 hours for the controller).

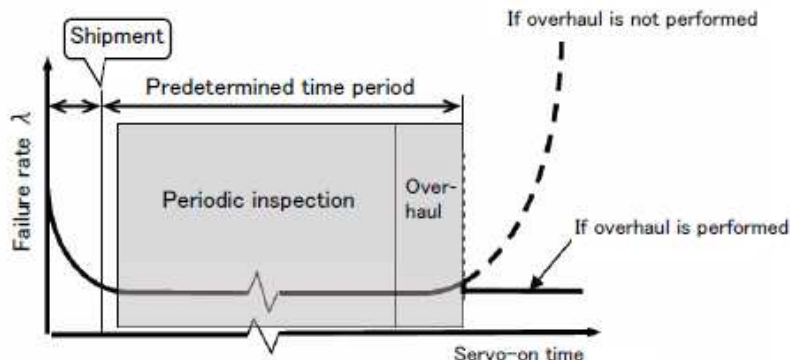


Fig. 2. Periodic inspection / overhaul periods [7]

3. Preventive robot maintenance

Preventive maintenance is the single most important thing, what can do for robotic system. If followed on a routine basis, it can save company money, time and production. With preventive maintenance, robotic equipment will last longer and require less down time. [2]

The cost of preventive is very small when it is compared to the cost of a major breakdown at which time there is no production. In terms of reliability is regular and preventive maintenance essential to keep robots equipment safe and reliability. It helps to eliminate workplace hazard. Lack of maintenance or inadequate maintenance can lead to dangerous situations, accidents and health problems.

Important of preventive maintenance for robotics systems and equipment is based on following statements:

- Identify potential failures which otherwise may have gone undetected by routine inspection.
- Complete grease purging of each axis, including balancer and bearings.
- Accurate metering on grease replacement to protect against over pressure and seal damage.
- Periodic inspection and replacement batteries in robot to keep positional data.
- Periodic inspection and replacement filters on controllers to provide ventilation and heat dissipation.
- Periodic inspection motor brake slippage and internal robot cables.
- Periodic inspection robot connection cables if accessible mechanical unit inspection (physical damage, excess backlash, abnormal vibration, balancer wear).
- Periodic robot controller inspection (fans, heat exchangers, physical damage).
- Auto lubrication systems.

All these actions maximize the robot uptime; improve the efficiency of productions or assembly operations; or by preventive maintenance we can identify potential failures before they results in unexpected downtime. [3]

3.1. Basic Preventive maintenance

Preventive maintenance should follow set schedules. Some parts, such as the manipulator, axes motors and working area, must be inspected daily. Other parts must be inspected at specific hourly cycles. Multiply factors, including application type, influence maintenance needs. Robotic handling systems, for instance, must undergo more frequent axes inspections. Lubricants should be replaced on a consistent basis, and terminals, connectors, harnesses and brake leads, tested. It is wise to keep spare robot parts on hand for quick replacement. [2]

3.2. Benefits of Preventive maintenance

The first benefit is that preventive maintenance increases the efficiency and speed of robotics equipment. It conserves the energy and life of the robot, if it goes through regular and preventive maintenance programs. It also helps to avoid the replacing of the parts of the equipment before the scheduled time. A preventive maintenance procedure take lesser time and cost lesser then corrective repairs, because when machine breaks down, it requires more time to repair or a replacement to get back to initialization condition. Also in terms of safe, preventive maintenance ensures the safety of the person who is working with robot since if the robot is not in a proper condition it might also lead to a major accident which is not desirable at all. [5]

4. Conclusion

Robot maintenance and the frequency of the maintenance depend on the environment in which that robot is working and on carried operating period. Overhaul interval for robots presumably varies with their operating conditions and with the degree of the equipment's wear and loss of performance. Poor maintenance practices can be identified by an inferior performance of the robot. This fact generally associated with poor performance is sluggish response to motion, missed part placement or erratic behavior in the programmed task. If maintenance is followed on a routine basis, it can save company money, time and production. With preventive maintenance, robotic equipment will last longer and require less down time.

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Modern Approach of 3D Layout Design

*Radovan Furmann, *Martin Krajčovič

*University of Žilina, Faculty of Mechanical Engineering, Department of Industrial Engineering, Univerzitná 1, 01026 Žilina, Slovakia, {radovan.furmann, martin.krajcovic}@fstroj.uniza.sk

Abstract. Technological design of production systems has gained new dimension nowadays. Modern technologies and tools based on Digital Factory concept, has transferred solution of this problem into virtual reality environment. Interactive 3D design of production systems represents important part of Digital Factory concept implementation, mainly in the phase of solving production organization. Projection system VisTable represents integrated solution for supporting intuitive, team oriented design of production systems in 3D environment. Output of this solution is factory 3D model, which can be used for simulation and animation of production process.

Keywords: 3D design, layout, interactive system, VisTable.

1. Introduction

Current business subjects place emphasis on increase of their competitive advantages through innovations, research and development. The future success can't exist without product innovation and without innovation of production process and production system. Nowadays manufacturing corporations need new impulse, that can be ensured through redesign of production system and thus they can improve economic indexes and effective utilization of resources. Design of new production system and creation of concept for future production, which can be further developed and expanded, represents highly complex and difficult process. Realization of each change is related to possible risk of unsuccess. Each change representing dispensation must be well projected and considered. High-class and well prepared project determine future long-term effectiveness of production. Modern High-Tech technology contributes much into high-class solutions. These technologies move problem of 3D design of production system into completely new level. Advantage of these modern technologies is its wide utilization, which brings quality and precision into productions design. Speed and quality of 3D design process can be significantly supported by digitizing, i.e. created 3D models are part of designed production system.

In Slovakia nobody deals systematically with design of production systems in virtual reality environment (3D design), neither their dynamic analysis, despite the fact, that these solutions are already requested by High-Tech companies placed in Slovakia. 3D prototype creation is irreplaceable in the field of designing production systems. Using virtual reality tools it is possible to test products and processes and to train workers who will execute operations in production or maintenance.

2. System of interactive 3D layout design

The effort to accelerate and streamline the cycle of planning manufacturing and logistics systems leads to the present trend of digitizing and virtual planning of systems. The effort to improve the level of visualization, transparency, presentation of projection outputs, but also the effort to assess the feasibility of proposed solution complexly and to identify the potential collisions of proposed system in the proposed phase leads into the development and the use of 3D models of individual objects as well as complex manufacturing and logistic systems.

2.1. Support of production system design in virtual environment

One of the problems that can appear during technological design of production system is loss of direct contact between workers, who interfere into process of production system design. System approach in the designing requires involvement of people with various professions into multidisciplinary team. This problem is possibly solved by suitable combination of software application, which is suitable for implementation with Digital Factory concept and multimedia presentation techniques. Designing in virtual environment should respect requests on team oriented solution in the every individual step of design.

In cooperation with The Institute of Competitiveness and Innovations at the University of Žilina we have bought interactive projection system visTABLE® as supporting tool for 3D layout design. Software visTABLE® represents integrated solution for supporting intuitive, team oriented layout design. Suitable combination of software and hardware can help to speed up and optimize process of designing and preserve decision team decision.

VisTABLE® environment includes tools for supporting basic activities connected with layout design:

- interactive team oriented layout design,
- analysis of material flows,
- detailed design of production system,
- consistency check design with safety distance,
- evaluation and comparison of different variant solutions.

Base software interface is divided into two windows, „classic" 2D view and presentation of 3D model of production system. These two views are interconnected each other. Changes in the three-dimensional organization are realized directly in 2D view and automatic transfer into 3D view.

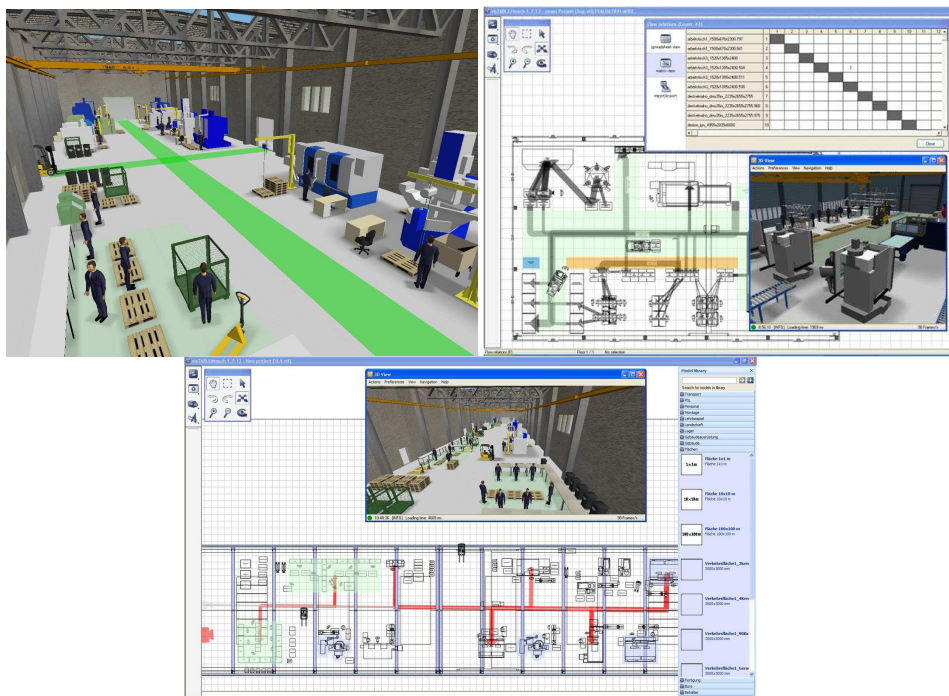


Fig. 1. VisTable environment

Except three-dimensional layout of the objects at shopfloor production, software provides basic functionalities for its further optimization through definition of transport relationship between individual work places. Layout evaluation is realized on the basic attributes - transfer performance and distance. Intensity – Distance graph and automatic control of safety distance between individual object of production system can be used for evaluation of designed layout. Material flow is represented by Sankey graph right at the 2D production layout. If any changes are done in three-

dimensional organization, then Sankey graph is updated automatically. These functionalities help designers to evaluate proposed changes during the design process and thus improve quality of final solution.

2.2. Interactive and team oriented designing

For supporting teamwork in the design of the layout, software visTABLE® allows single interconnection with multimedia resources such as planning table (fig. 2.) or plan board.



Fig. 2. Utilization of visTABLE® software with planning table.

Both solutions are suitable for team work in the process of layout design and optimization. The main problem in using of planning table is its mobility. Classic interactive plan board and planning table represent static solution for interactive projection of layout.



Fig. 3. Principle of 3D interactive design.

2.3. Advantages of interactive 3D design

Interactive 3D design offers:

- discovering possible collisions in the detailed design of workstation,
- visualization of material flow for documentation of critical places in proposed solution,
- examination of different variants by analyzing and testing of material flow,
- reduction of the time needed for layout creation thanks to interaction of projection team during working meeting,
- superior visualization of the solution – possibility to move in the digital hall.

3. Conclusion

System of interactive layout design represents complex problem solution which supports team oriented work, uses visualization performed changes during layout design and support interactive corrections with possibility to evaluate each realized step.

Nowadays it is running development of such system in the Central European Institute of Technology in Žilina in co-operation with the Institute of Competitiveness and Innovations and the Department of Industrial Engineering (Faculty of Mechanical Engineering, University of Žilina in Žilina).

Acknowledgement

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Tool of Assembly Designing - DELMIA

*Beáta Furmannová

*University of Žilina, Faculty of Mechanical Engineering, Department of Industrial Engineering, Univerzitná 1, 01026 Žilina, Slovakia, beata.furmannova@fstroj.uniza.sk

Abstract. This paper presents DELMIA solution as a strong tool of assembly design. It shows general process of assembly workstation design, using connection of three modules – Process Engineer, V5 and QUEST. Competitive advantages in the global environment make possible to increase. Competitive advantages, than quality, costs, time, flexibility, productivity, innovation, are essential for every producer. Time is now the most important element, how to gain a customer. DELMIA solutions make possible to shorten production time and delivery time of product.

Keywords: Assembly, designing, digital factory, DELMIA.

1. Introduction

The 21st century is typical by development and implementation of “intelligent solutions” in all areas of human life. Production and technologies become intelligent. Only countries, which maintain top technological development, will succeed in the future.

Assembly presents prominent and prospective field of innovation activities in machine engineering production. In many enterprises assembly takes a large part of total production time. It is important to prevent all possible mistakes before production start. We may reach this by examining of assembly at virtual environs. Arrangements proposed at virtual assembly are necessary, because they insure high productivity level, they enable to increase the production competitiveness, its quality and etc.

Digital Factory (DF) represents one of the most progressive, integrated approaches to the design of new products, production processes and systems. Digital Factory entitles virtual picture of a real production. It represents the environment integrated by computer and information technologies, in which the reality is replaced by virtual computer models. Such virtual solutions enable to verify all conflict situations before real implementation and to design optimised solutions. This concept is offered by DELMIA software.

DELMIA solutions make possible to shorten production time and delivery time of product. It integrates approaches to the design of new products, production processes and systems.

2. Delmia

DELMIA (Digital Enterprise Lean Manufacturing Interaction Application) offers the most complex totality of digital 3D solution for the production field that is in the present in the market. Technology provides complete solution that is focused on critical production process of customers. It includes production of engines, final assembly and body in white in the field automobile industry, assembly aircraft in the air industry and assembly practices in industrial department. It enables complete design and verification production process with utilization of digital model. DELMIA consists of three basic parts (figure 1).

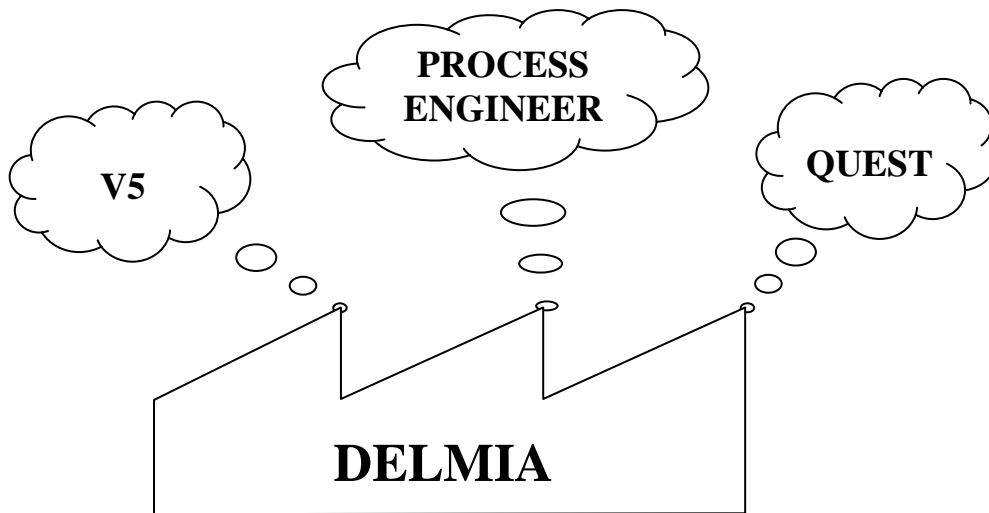


Fig. 1. DELMIA - modules

3. Designing of Assembly in condition DELMIA

At the beginning it is necessary to model all assembly system elements in CATIA and thereafter to work with them in DELMIA modules. It's needed to divide all assembly system elements into product (all components that are assembled in assembly process) and resources (all assembly system elements, e.g. working table, assembly line, workers, buffers, tools, etc). Chosen elements of assembly system modeled in the CATIA software are shown on figure 2.

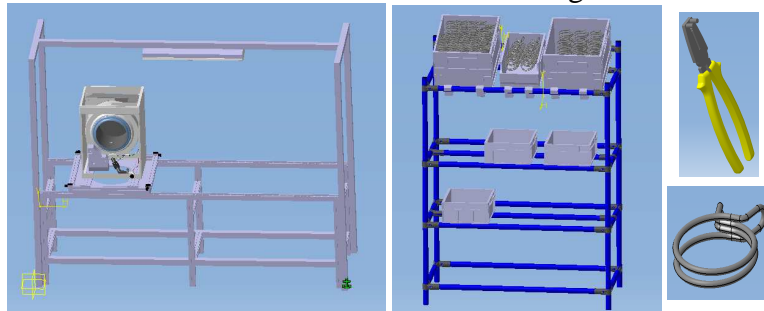


Fig. 2. Elements of assembly system in the CATIA software.

3.1. Delmia Process Engineer

DELMIA Process Engineer (DPE) is a powerful tool for process and resource planning, providing a high quality solution for early recognition of process risks, re-use of proven processes, traceable changes and decisions, and access to scattered process knowledge. Each project is organized and based on the unique structure of the product, processes, resources and plant involved with easily configured project structure.

For description of assembly process and generation of static 3D model is possible to use procedural graph from DPE. In the case we don't know exact assembly process, it is possible to generate it automatically from the product structure. This automatic technique is modified according to requests given in advanced. Figure 3 illustrates several views on workstation in company, which deals with production of white techniques.

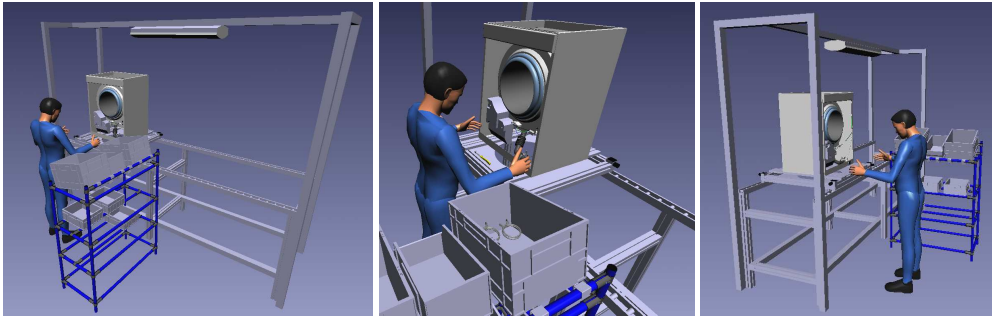


Fig. 3. The workstation for connecting heating body and pump.

If we need to analyze whole assembly system, then created workstations are connected together and are interfaced into one unit. If it is enough to create only some part of assembly system, then we can work with static 3D model. Line balancing and different ergonomic analysis for work improvement and work conditions of operator are realized on this model.

3.2. Delmia V5

DELMIA V5 is a tool for design and 3D modeling of product and resource objects. This module is divided into several sections, in assembly are used two of them: *DELMIA DPM Assembly* (it is an assembly process planning and verification solution for developing manufacturing and maintenance processes) and *DELMIA Human* (it provides such organizations with a suite of human simulation and Human Factors tools specifically geared towards understanding, and optimizing, the relationship between humans and the products they manufacture, install, operate and maintain).

Assembly process is drawn by animation of assembly sequence. We create animation that shows us the real assembly in virtual environment. This model doesn't have static task anymore, but it presents dynamic section of assembly process. Basic scheme of assembly on the workplace for connecting heating body and pump is on following figure (figure 4).

Using this assembly model we release and evaluate workstation by several analysis (cutting 3D objects method, distance measuring), crash analyses, PERT and Gantt chart, assembly products decomposition, ergonomic analyses, etc.

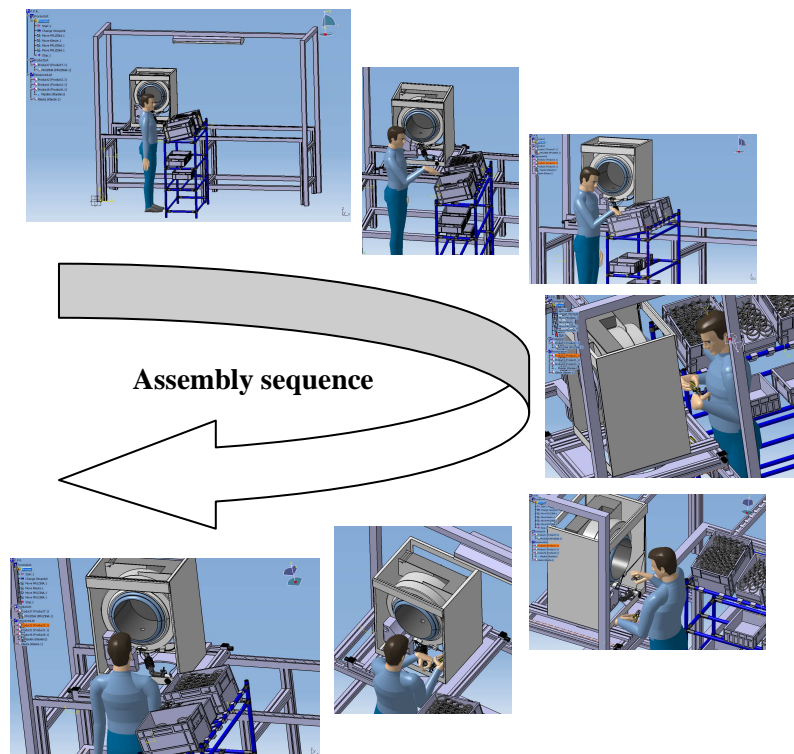


Fig. 4. Scheme of assembly on the workstation for connecting heating body and pump.

3.3. Delmia Quest

After creation of model and execution of all suggestions, based on different analyses, dynamic verification of all variants is needed. DELMIA QUEST allows simulation, analysis, finding suitability and profitability of process. According to requests given in advanced it is necessary to perform several simulation experiments and define possible solutions how will assembly system work after its establishment. Some of the indexes which can be monitored are: optimal machine placement, quantity of transport facilities and technological palettes, average production time, production performance, maximum and average stocks before assembly knots, costs flow, machines and operators utilization and also transparent material flow. In conclusion it is needed to choose the optimal solution based on target criteria given in advance and this solution is thereafter implemented in manufacturing corporation.

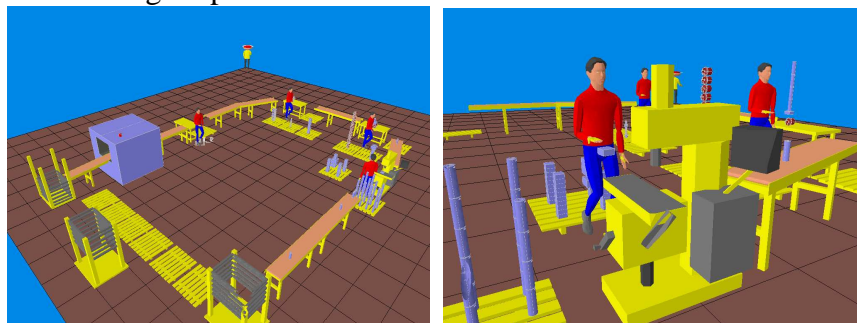


Fig. 5. Example simulation model in the Delmia Quest.

4. Conclusions

This article intents on basic structure description of assembly design by using DELMIA tool, while all modules cooperate and complement each other.

Assembly design belongs in interesting scope nowadays which needs its further development. Digital 3D solution allows: to discover constraints and clashes before assembly realization, to verify assembly process before opening production, to create minimal number of prototypes. The biggest advantage of Digital Factory concept applications is cost and time saving – indexes that are the most important.

Acknowledgement

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Use of Augmented Reality in Maintenance

*Ivan Gabaj, *Martin Krajčovič

*Žilinská univerzita v Žiline, Strojnícka fakulta, Katedra priemyselného inžinierstva, Univerzitná 1,
01026 Žilina, Slovakia, {ivan.gabaj, martin.krajcovic@fstroj.uniza.sk

Abstract. The article describes the use of augmented reality as a support for the maintenance and repair operations. In the introductory part article describes the current status of the implementation of maintenance activities and augmented reality technology. Research in the field of the use of augmented reality in the maintenance is progressing at a rapid pace and thus it reaches not only the awareness of industrial companies, but there is also a connection of the application with practice. The core of the article is to describe concepts and to substantiate the use of augmented reality in maintenance. Moreover, it informs about existing projects, applications and software support. The article also describes the interaction way between user and applications of augmented reality. In the final part the expected benefits of using augmented reality in maintenance are described.

Keywords: Augmented reality, maintenance, repair.

1. Introduction

Realization of personnel training, for maintenance operations, is by far the great majority performed only in two ways:

1. *in the real world* – mechanic's hands and used tools are placed directly on the real equipment,
2. *in the virtual world* – using computer models.

While both methods have justified place, there is also a third option, better and different in many ways and it is augmented reality and its applications. Augmented Reality combines the two above-mentioned views and it is view at the real world and view at computer generated virtual models. This system increases the awareness of personnel about maintenance in performing their professional and everyday challenges. The basic characters of augmented reality are:

- it combines real and virtual views,
- it is interactive in real time,
- it is displayed in 3D.

2. Augmented reality

Augmented Reality or rarely called enriched reality is a direct or indirect view at real physical environment, whose parts are in the digital, most often in text or image format, enriched with additional information relevant to the object at which a person is looking. This information is gathered from various information sources by using off-line or on-line applications.

The main hardware components for use augmented reality are display, monitoring device and input and output device of the computer. With combining the powerful CPU (central processing unit), cameras, GPS (global positioning system) and solid state (systems for saving the data) are essential for the creation and use of augmented reality in industrial practice.

The principal types of augmented reality are:

- in terms of user perception of augmented scenes:
 - with direct view - with semipermeable display,
 - with indirect view - with the HMD (head mounted display),
- in terms of harmonization of virtual objects with the real world:
 - system of symbols (marker systems) – into the real scene is placed special tags that are detected at runtime and replaced with virtual objects
 - system without symbols (markerless systems) - evaluation of real scenes and insertion of virtual objects is realized without markers, but it is necessary to get other additional information, such as a video interface, or GPS, and more.

3. The concept of augmented reality support system in the maintenance

The basic concept of maintenance support system using augmented reality is shown in Fig. 1. The worker is equipped with portable computers located on his waist. The computer is connected through a wireless network from a central computer from which you can download information about maintenance. The worker is also equipped with a HMD device and video camera, which captures the surrounding area, located on the worker's helmet. This system guides the worker to the place of carrying out the maintenance and through augmented reality there are displayed various information in carrying out the maintenance operations.

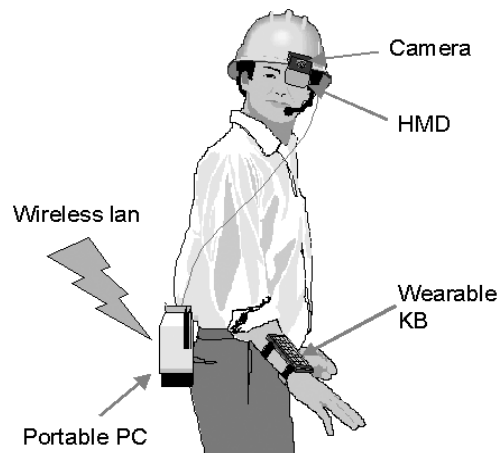


Fig. 1 Equipment for the use of augmented reality

4. Why maintenance in augmented reality?

The problem occurs when the operator of maintenance gets a new task, or gets in contact with an unusual element of technical equipment, or needs to fix something that he has never fixed. In this case, he must to take a look into the work manuals and study them. This procedure of maintenance work is extremely slow and it costs companies money due to inaction of production equipment. The worker can help in this case by using augmented reality applications. The wireless connection between computers allows to maintenance personnel to download the necessary manuals, pictures of the repaired equipment and workflows. The imaging device allows them to study the following manuals in real time directly to and during the actual work. While augmented reality is relatively a new technology, it has already found justification in the industry. The most applications have been developed for maintenance and for the needs of military and automotive industry.

5. ARMAR (Augmented Reality for Maintenance and Repair)

Developers of computer graphics at Columbia University and UI Lab created a system that guides how to do repairs. ARMAR (Augmented Reality for Maintenance and Repair), or augmented reality for maintenance and repair, is the system using a head mounted display, which provides virtual graphical information to assist in maintenance and repair. This system can reduce maintenance time by up to half in such a way that it leads the user to the damaged area of technical equipment and displays a 3D animation of using the appropriate tools, their orientation towards individual components, the number of turning tools and other necessary information.

ARMAR is project of prof. Steven Feiner and his students from Columbia University. He examines the use of augmented reality like a support in the implementation of procedural tasks of maintenance and repairs. The main aim is to increase the productivity, accuracy and safety of maintenance personnel. A display shows the user augmented physical view at the system with information, as an indication of subcomponents, controlled steps in real-time maintenance and safety precautions.

Virtualization of environment on the user side has to help with maintenance and repair. Moreover, the integration of the real world with detailed 3D models provides the opportunity to use the system as a simulator (the training instrument) for maintenance personnel. System ARMAR represents the offer and the implementation of the most modern motion tracking system, mobile computing, wireless networking, 3D modeling and man-machine interface, as it is shown in Fig. 2.



Fig. 2 Motion tracking system ARMAR

On the left hand side of picture there is the worker performing the tasks of maintenance and he is wearing head mounted display. On the right hand of picture is shown the view through the display unit, which guides the mechanic in the implementation of his activities.

6. Interaction between users and augmented reality

One of research directions of ARMAR is what types of interaction between users with augmented reality are suitable for implementation of procedural tasks. The prototype led to the creation of a simple user interface for interaction between users with the application of augmented reality, as is shown in Fig. 3. The user manipulates with the 3D virtual keys during the maintenance and he receives feedback how is illustrated on the right sight of Fig. 3. The interaction between the user and the application of augmented reality takes place through the user's hand gestures. This implementation uses a single webcam mounted on a stationary base, which captures 30 frames per second. These images are then analyzed by a computer algorithm. This algorithm exploits the high level of red, which is naturally reflected in human skin. Taking into account the ambient light can effectively isolate the user's hand to the other objects in the image.



Fig. 3 Interaction between users and augmented reality

7. Conclusion

As is evident, the use of augmented reality in the maintenance and repair is justified. It is already proposed many augmented reality applications for various work environments in which maintenance is performed. The biggest advantage of using augmented reality applications in the maintenance of the state:

- prerequisite for raising the performance of maintenance personnel,
- reduction, and eventual elimination of the preparatory stages prior to the actual dismantling and assembly operations,
- reduce worker's errors , there is no removal of the unnecessary components and thus it eliminates unnecessary movements,
- increase of worker security due to the virtual representation of grasping components.

For the possibility of introducing augmented reality in maintenance, it should be fully processed 3D digitization of individual components, which maintenance personnel during their work get to contact. This fact is known as the greatest obstacle to the creation of augmented reality applications. For necessary 3D digitization can be used CAD software. If you want to create the application yourself you can use software support from Metaio or freely distributed libraries for the programming language C++ for augmented reality.

Acknowledgement

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Value for Money – Quantification versus Achievement

*Katarína Gajdošová

*Matej Bel University, Faculty of Economics, Department of Public Economics, Tajovského 10, 97590
Banská Bystrica, Slovakia, katkagajdosova@yahoo.com

Abstract. Public-private partnerships involve private sector in provision of infrastructure assets and services with the objective to deliver value for money. There are various methods of value for money measurement. In most countries value for money is identified through comparison of public-private partnership with traditional public procurement. Its achievement depends on value for money drivers. Assessment of the economic viability of PPP based on the quantification of value for money does not consider, whether the value for money drivers are observed in the preparatory phase. We identified the key value for money drivers in the Central Europe and analyzed their impact on the value for money generation. Introducing of a new indicator raises the importance of these drivers in the PPP approval process. The indicator of achievability evaluates the value for money potential of a PPP project.

Keywords: Economic viability, public-private partnership, value for money, indicator of achievability.

1. Introduction

Failure of market mechanism due to existence of public goods can be eliminated by various public sector intervention in the economy. The public sector chooses the method of producing public goods. The decision is based on comparison of alternative production options in terms of their costs and benefits. The same output can be achieved at different economical and social costs. The first option is internal production when solely technological, human, and material sources of the public sector are used. Organizational and functional separation of public goods producer and purchaser creates preconditions for involvement of private sector sources. Public and private sources can be shared in a joint venture (equity principle) or the public sector can purchase public goods from private producer through public procurement (contractual principle). Economic characteristics of public infrastructure entitle to its inclusion in mixed public goods.

Effort to increase productive efficiency, lack of financial sources and fiscal constrains led to initiation of public-private partnerships (PPPs) in the United Kingdom in the early 1980s. PPPs represent innovative approach to procurement of public infrastructure and services. Various forms of PPPs differ in the legal structure, the ownership of an infrastructure asset, and the private sector responsibilities. In general, PPPs transfer to the private partner execution and financing of investment projects of public interest. The archetypical PPP is a DBFO project where a private sector company or consortium designs, builds, finances, and operates an infrastructure asset and sells the final service to the public sector or to the public under a government concession [1]. Single contract with one private entity (usually special purpose vehicle) covers design, construction, operation, maintenance of the infrastructure asset and reward in the form of payments from public budget or charges on the final users. The role of the public partner is to define required outcomes, monitor performance of the private partner and penalize its non-compliance with the standards established in the contract. Key features of PPPs [2] are the long duration of the relationship, the project funding in part from the private sector, the participation of the private partner at different stages in the project, the distribution of risks between the public partner and the private partner according to their respective ability to manage these risks. In this context, involvement of private sources in funding of an investment project means that private entity expends either its own or borrowed money to cover project costs.

2. Economic Viability of PPPs

PPPs should be used only if they provide better value for money than traditional methods [3]. Value for Money is defined as the optimum combination of whole-of-life costs and quality (or fitness for purpose) of the good or service to meet the user's requirement [4]. Delivery of value for money means that public sector gains the best available and useable value for expanded public funds [5]. PPPs are an appropriate instrument of public sector intervention on condition that not only eliminate they the market failure (allocative inefficiency due to public goods), but they also create added value through higher quality or lower costs. Value for money is the criterion of economic viability of PPP used in the procurement model decision.

2.1. Quantification of Value for Money

Demonstration of value for money is mandatory presumption of the approval of PPP implementation in many countries including Slovakia. Value for money assessment methods can be grouped into four tests [1]:

- Test 1: performing a full cost-benefit analysis (this compares the net social benefits of each possible production option)
- Test 2: assessing the cost of service delivery to the public sector (this compares the costs to the public sector of traditional procurement with the costs to the public sector of conducting the project as a PPP)
- Test 3: comparing private alternatives (this compares costs of submitted bids in the procurement process)
- Test 4: confirming the viability of the chosen project (this verifies a positive net present value of the chosen project).

Value for money tests differ in the options that are considered. If all available alternatives (i.e. internal and external production) are considered, the test 1 should be used. In the case, that the options are reduced to external forms of production (i.e. traditional procurement and PPP), the test 2 is suitable. Assuming that decision to implement PPP was adopted, value for money should be quantified by the test 3. Value for money of the selected project can be verified by the test 4.

Value for money assessment process in Slovakia [5] is based on comparison between the two alternative procurement approaches: PPP and traditional procurement (i.e. the test 2). In traditional procurement there are sequentially awarded contracts to supply goods, services and construction works, that are necessary for provision of public infrastructure (i.e. design, construction, operation and maintenance). In PPP there is awarded single contract to a private entity, that supplies all necessary goods, services and construction works. Appraisal of value for money is carried out in two stages. Prior to the bidding process discounted estimations of cash flows under PPP and traditional procurement are compared. Estimated costs and benefits to public sector under traditional procurement are called the public sector comparator (PSC). Prior to the signing the contract PSC is updated and compared with the successful bid. PPP is economically viable on condition that it delivers better value for money than traditional procurement.

2.2. Achievement of Value for Money

Quantification of value for money is used in deciding on suitability of PPP. It informs about potential cost saving but does not guarantee its delivery in PPP implementation process. Achievement of value for money is determined by critical success factors known as value for money drivers. A survey [6] conducted in the United Kingdom identified 18 drivers of value for money in PPP including: risk transfer, output based specification, long term nature of contracts, performance measurement and incentives, competition, private sector management

skills, innovation, alignment of interests of public authority and contractor, public sector project development skills, public sector comparator, quality of advice to public sector and bidders, transparency of process, cost of capital, deal flow, public sector implementation, release of hidden asset value, project bundling and involvement of third party financiers. They are correlated but magnitude of their impact on value for money varies. We have researched the magnitude of the impact of identified value for money drivers in the Slovak republic and the Czech republic. For this purpose we utilized the Delphi method and compounded views of the experienced academics and practitioners from public and private sector. The result of the research shows that achieving value for money through PPP in the Central Europe primarily depends on 6 drivers including: risk transfer, transparency of process, performance measurement and incentives, public sector development skills, output based specification, and competition.

PPPs generate value for money through two basic origins. The private sector can provide:

1. the quality required by the public sector at lower costs due to higher productive efficiency or
2. a higher quality at the same costs due to quality innovations.

Value for money drivers strengthen the incentives of the private sector to reduce costs or improve quality. Some of them create general preconditions for delivering value for money through PPP, and thus affect the economic viability indirectly. In Tab. 1 there are distinguished the key drivers by the way they affect generating value for money in PPPs.

Key value for money drivers	Direct impact		Indirect impact
	Cost reduction	Quality improvement	
Risk transfer	x		
Transparency of process			x
Performance measurement and incentives	x		
Public sector project development skills			x
Output based specification		x	
Competition	x	x	

Tab. 1. Impact of the key value for money drivers.

Risk transfer, performance measurement and incentives, and competition stimulate the private partner to raise productive efficiency. Output based specification and competition determine the opportunities for quality innovations. General preconditions of value for money delivery are transparency of process and public sector project development skills.

3. Assessment of Value for Money Potential

Quantification of value for money is the main decision-making tool in the approval process of PPPs. There are many factors that can cause failure of a PPP despite its demonstration of value for money potential. These value for money drivers play important role in delivering value for money, but are often underestimated during approval of PPPs. Therefore we propose an additional tool for assessment of the economic viability of PPPs. The indicator of achievement (1) evaluates the ability of a PPP project to meet the key value for money drivers (i.e. value for money potential of a PPP project).

$$IoA = 0,21 * D_1 + 0,18 * D_2 + 0,17 * D_3 + 0,15 * D_4 + 0,15 * D_5 + 0,14 * D_6 \quad (1)$$

IoA indicator of achievability

D_i degree of compliance with the key value for money driver i (i = 1 for the risk transfer; i = 2 for the transparency of process; i = 3 for the performance measurement and incentives; i = 4 for is the competition; i = 5 for the output based specification; i = 6 for the public sector project development skills)

Mathematical expression of the indicator of achievability is a weighted average of values reflecting the degree of compliance of a PPP project with the key value for money drivers. For determination of the weights we utilized experience and knowledge of academics and practitioners from public and private sector. They established a ranking of the relative importance of value for money drivers and assigned them points according to their absolute importance. The calculation of the weights incorporates the competence of experts as well.

There are more options how to determine the degree of compliance. It can be quantified as a percentage of the PPP project's ability to achieve the key value for money driver. The subjectivity of this assessment can be reduced by setting support criteria for each driver. These support criteria should respect the specific features of particular public services (i.e. they can differ across sectors). Exceeding the indicator's threshold (e.g. 65 %) confirms the economic viability of a PPP project in terms of the key value for money drivers. Dependence of the PPP project approval on its compliance with the value for money drivers stimulates the public sector to put greater emphasis on them during preparation of PPP projects.

4. Conclusion

The implementation of a PPP is economically viable on condition that it delivers value for money. Assessment of economic viability concentrates on demonstration of potential cost savings in the PPP (i.e. the value for money quantification). Qualitative success factors, that significantly affect the achievement of value for money, are insufficiently reflected in the approval process. The indicator of achievability evaluates the compliance of a PPP project with the key value for money drivers. Not only stimulates it the public sector to observe the key value for money drivers, but it also prevents eventual failure of PPP (i.e. reduction of the maximum potential value for money), thereby reducing related transaction costs (e.g. compensation for eligible expenditure of the private partner; expenditure on litigation) and sunk costs (e.g. feasibility study).

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The Relations of Input Quantities for Creation of Stereoscopic Record

*Martin Gašo, *Martina Smutná

*University of Žilina, Faculty of Mechanical Engineering, Department of Industrial Engineering, Univerzitná 1, 01026 Žilina, Slovakia, {martin.gaso, martina.smutna}@fstroj.uniza.sk

Abstract. Article describes the relations between the main input quantities when creating stereoscopic recording. It focuses on basic camera settings and their impact on the quality of the 3D perception of the observer. The purpose is to inform readers about the possibilities of influencing the resulting shift in values on the imaging medium. This allows you to decide on the parameters of the resulting stereoscopic record before the creation of this record. Subsequently according to their calculated parameters of the cameras settings and create the desired stereoscopic record. Article also describes basic rules for adapting stereoscopic record biological limitations of human eyes. They constitute the basic framework of rules for creating stereoscopic records which are not harmful to human eyes.

Keywords: Stereoscopy, 3D camera system, human vision, spatial perception.

1. Introduction

If is creating a stereoscopic recording is necessary to create two records. First designed for the left eye and the second designed for the right eye. Spatial vision arises with a merger of the two images. These two images are due to different cameras each position moved. This move is affected by distance cameras, camera angle and distance of the scanned point. Changing the values of these quantities can affect the interaction of moving images. This is the basic process for creating 3D record.

2. Calculate

For simplified calculation of the observed quantities are two basic formulas. First (1) on calculate the move on imaging equipment. Second (2) for calculate the observation (parallax) angle.

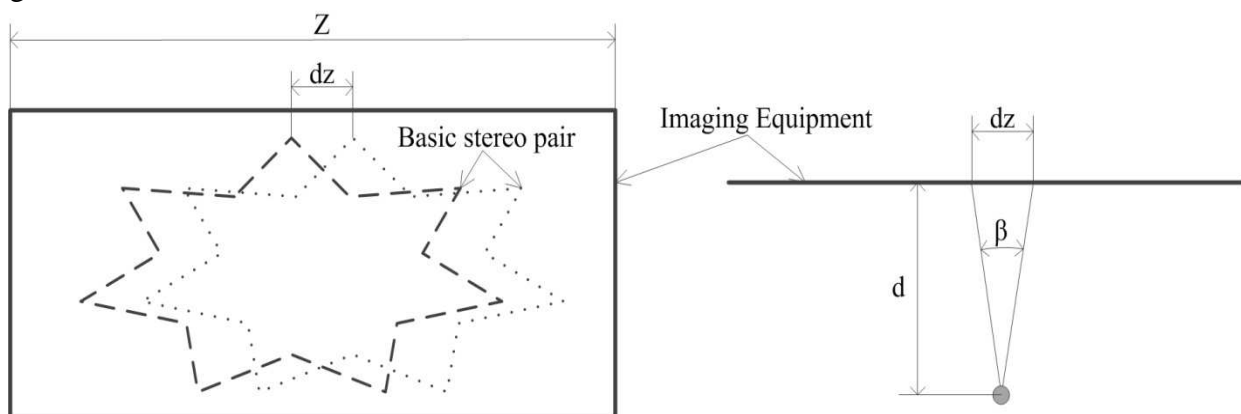


Fig. 1. Basic quantities.

$$dz = \frac{Z \cdot B \cdot f}{Y \cdot x} \quad [mm] \quad (1)$$

$$\beta = 2 \cdot \arctan\left(\frac{dz}{2 \cdot d}\right) \quad [^\circ] \quad (2)$$

Where:

- Z – Width imaging equipment
- B – Stereoscopic base
- f – Focal length of the recording equipment
- Y – Width of recording media
- x – Distance to the nearest point the scanned
- dz – move on the imaging equipment
- β – Observation (parallax) angle
- d – Observer distance

3. Determine the relationship

The most important parameters for stereoscopic recording are the resulting move and viewing angle. These can affect by the distances camera, angle camera axis convergence, shooting distance of points and the distance of the observer.

When creating a stereoscopic recording is necessary to take into account the biology of the human eye. Records need to be adapted to the natural human vision as described in [1]. We also called ergonomics stereoscopic records. In creating and presenting stereoscopic record is necessary to comply with at least one basic rule. The value of the observation (parallax) angle should not, as Lipton [2] exceed the value 1,5°.

3.1. The distance to the scanned point

Graph (Fig.1.) shows the evolution of the resulting move and viewing angle for distance of the nearest point change.

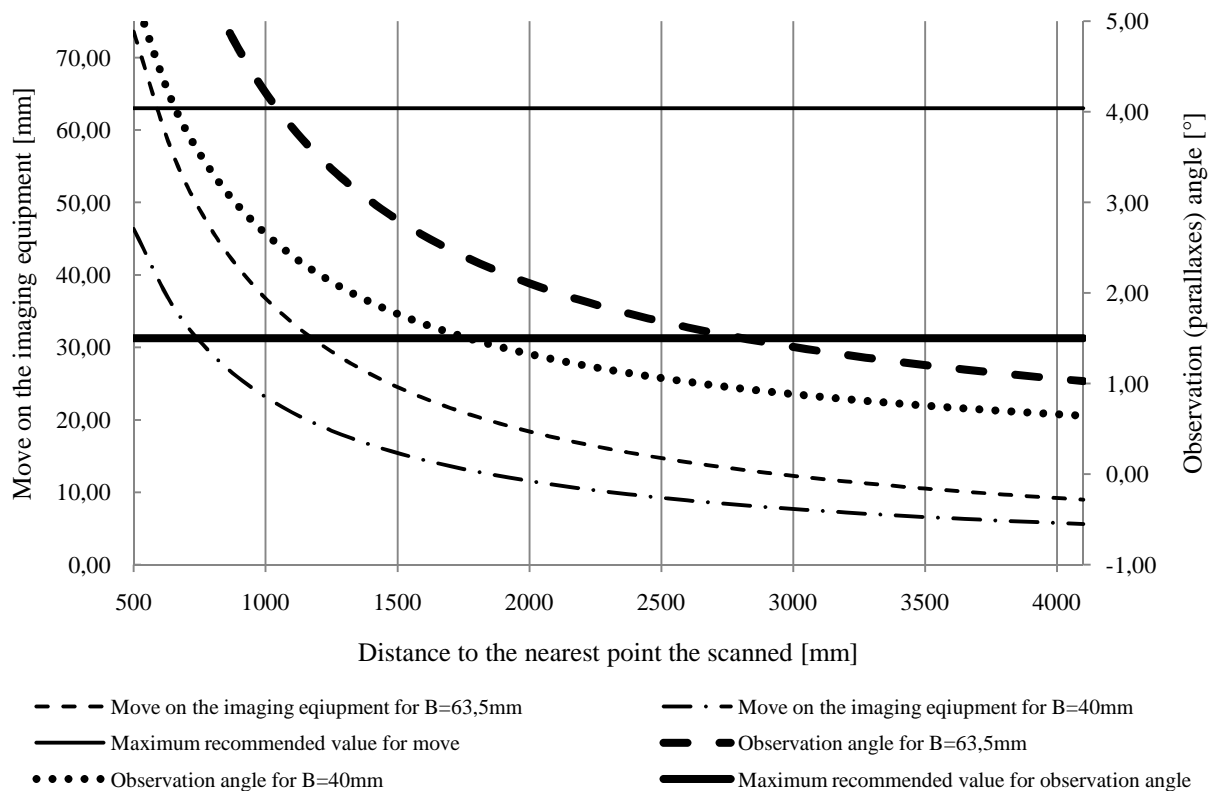


Fig. 2. The distance to the scanned point

Curve has a concave shape and converges to zero. When we increase the distance decreases the value of the resulting move for the imaging media. Decrease this value can be achieved by varying the distance cameras (B - stereoscopic base).

3.2. Observer distance

Graph (Fig.2.) shows the evolution of the resulting in viewing angle for the observer distance change.

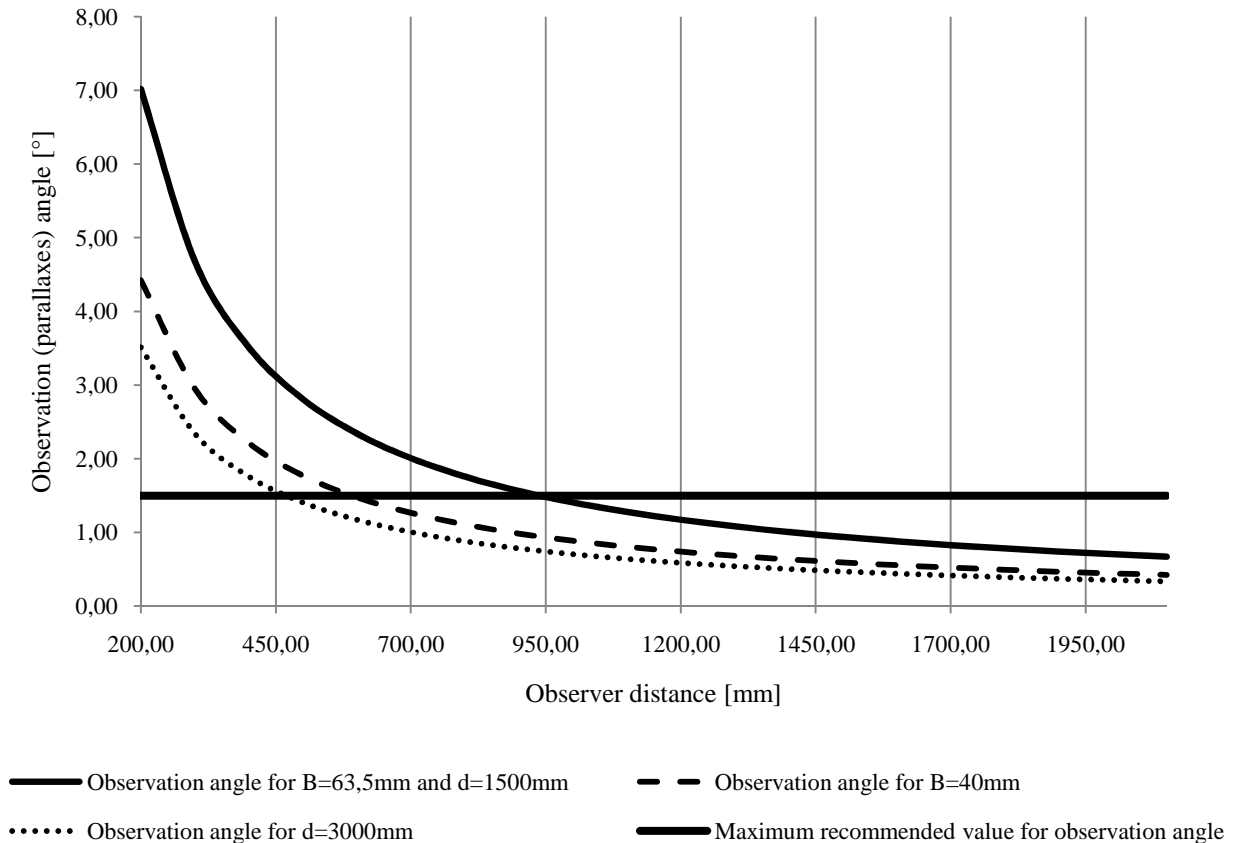


Fig. 3. Observer distance.

The resulting viewing angle can be influenced by changing the distance the observer from the imaging equipment. If the distance increases the value of the observation angle decreases. This makes it possible to regulate the resulting viewing angle and achieve satisfactory value. For comparison for graph also shows the evolution in changing the viewing angle of the stereoscopic base and the nearest distance of the scanned point.

3.3. Converging axis cameras

The first two charts show the development of values in the parallel axis camera. The second method of stereoscopic recording is the convergence of the cameras axis. Camera is directed at an identical point. At this point, move is equal to zero. More objects are in the field of negative parallax. Distant objects are in the field of positive parallax.

Graph (Fig.3) shows the evolution of change in viewing angle of the cameras point of convergence. Recorded area is specified and no infinity. Distance camera imaging medium size and distance of the observer is static.

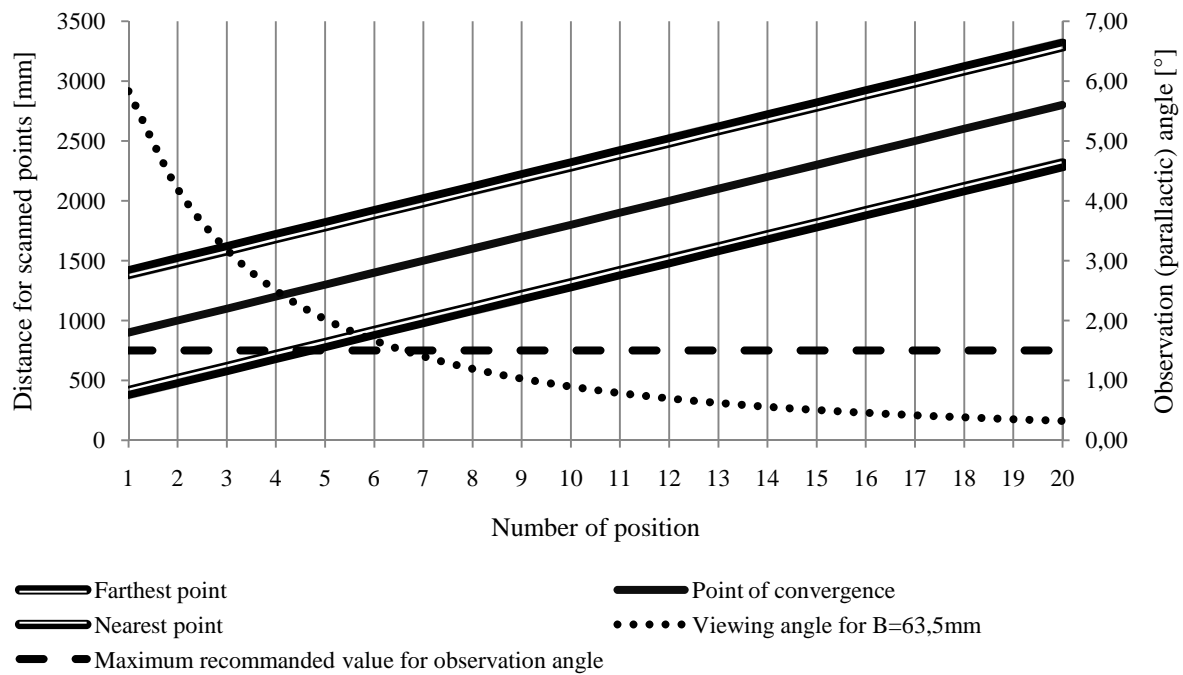


Fig. 4. Converging axis cameras.

Resulting from the viewing angle increases the distance decreases. This is likely to affect its value. The curve is again concave and converges to zero.

4. Conclusion

Stereoscopy respectively 3D movies may be encountered for almost every step. It is a technology that is highly developed. Currently has the largest application in the entertainment industry. Its potential use is much greater. One of the potential applications of 3D results is ergonomics and ergonomic analysis for creation of the video. With stereoscopy, we can replace the classic video for 3D video. This provides professionals better overview of the actual distribution of workplace without the need for physical presence at the workplace.

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Internal Controls in Slovak Corporations

* Martin Gašpierik

* University of Zilina, Faculty of Special Engineering, Department of Security Management, Ul. 1. mája 32, 01026 Žilina, Slovakia, mgaspier@fsi.uniza.sk

Abstract. This article defines the cornerstones of internal controls, their organizational strengths, compares attributes of internal and external audits, as well as describes the internal controls incident map. The text presents the opinion on functions of internal controls and other supervisory bodies of the organization, not bypassing information systems security in corporations. It publishes basic theoretical standpoints and recommendations for planning and decision-making about form, extent and methods of controlling activities performance. It describes sequence of steps applied in practice for identification, analysis, quantification, treatment and monitoring of operational risks, vulnerabilities and threats.

Keywords: internal controls, internal audit, risk treatment, operational risks, risk reduction.

1. Introduction

Had we consider about corporate governance and assurance tools in the companies, internal controls and internal audit is the response. The two protect created assets, well-running processes and organisational interests against unpropitious threats which misuse assets' vulnerabilities. The three elements: threats, vulnerabilities and value of assets impose a certain level of risk [1]. The material risks must be treated. Control is one out of 4 management functions. On average, the higher the rank within the organisational structure a manager is, the less his labour time is devoted to direct active on-site controls. This fact is one of the reasons, why it is necessary to have correctly set up and functional internal controls reporting system and individuals, who are empowered, responsible, skilful and competent in case of enregistering of any significant deviation from expected state to immediately react to the activated risks. Reporting systems must not overload the responsables with brunt of unnecessary data. The most protected and, simultaneously, most vulnerable asset in multiple organisations is information. Absolute integrity, secured authenticity, kept confidentiality and reasonable accessibility of key information in ICT/IT systems is the source of competitive advantage of each successful organisation.

2. Internal Audit

Statutory audits or controls are deemed obligatory, introduced by laws (see Fig.1.). Non-statutory are optional to perform. Externality or internality is the classification dependent upon the fact, whether subject of control (controller or auditor) is organizational employee or contractual collaborator. Internal audit is relatively new discipline in Slovakia, started to be implemented in late 1990's, serving as a managerial controlling tool. One cannot find much detailed information written about the topic, as this matter always belongs among intra-organizational know-how.

Depending on the organizational structure, internal controls are relatively independent body aimed at objective assurance, which improves and advises on company's jobs, processes, activities and shall be designed not to "add value" to its operations, but to secure those are not losing their already created value. It is recommended to form this unit as a part of corporate governance. Those professionals provide insights on data analysis of business processes.

	AUDIT CONTROLS	
	INTERNAL AUDIT	EXTERNAL AUDIT
contract	labour	commercial
serving for	management	shareholders
orientation	past, presence & long-run future	past, presence, limited future
information required	financial and non-financial	predominantly financial
solving suspicions	all	if materially affecting financials
accountability to management	independent in audit activities, however open to needs and wishes of management	mostly independent on management
aims of audit	resulting from intra-organizational strategy	set by general rules & contractually agreed
policies compliance check	detailed	limited; materiality principle
time-consumption	permanently established unit	ad-hoc event (usually 1x or 2x a year)
intensity of activities	less demanding than external	more demanding than internal

Tab. 1. Comparison of internal and external audit

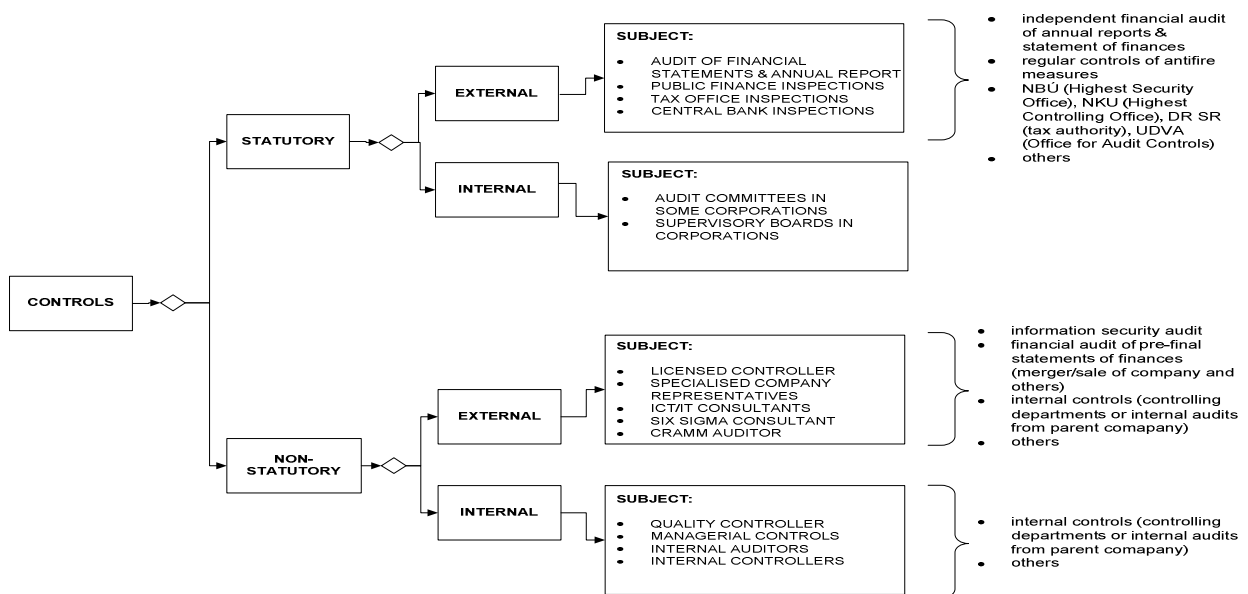


Fig. 1. Controls Scheme per Subject of Controls and Legislation Requirements

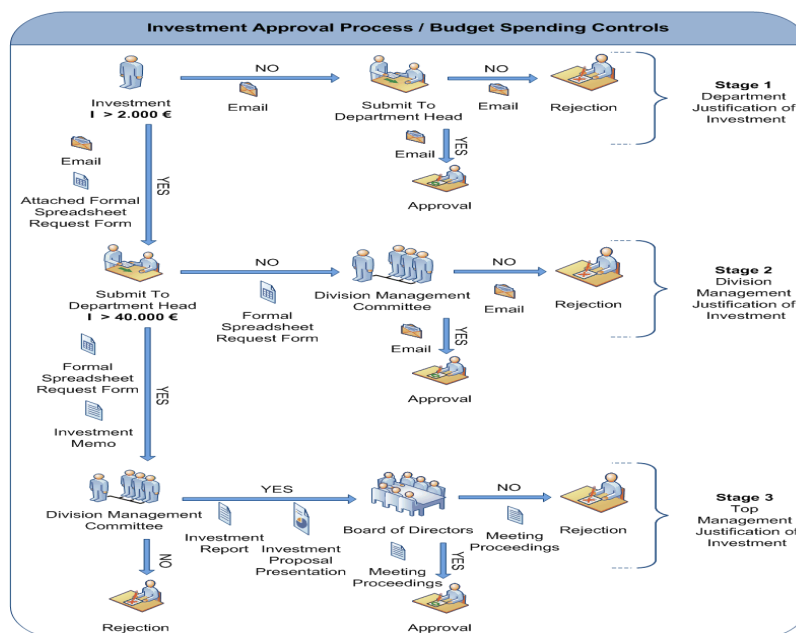


Fig. 2. An Example of Approval Controls' Framework [2]

2.1. Internal Controls and Risks Treatment

Internal controls systematically utilizes reporting activities for managerial decision-making support via adding value by risk monitoring, risk treatment and improving of business processes. Much of internal controllers' time is devoted to communication about solving deviations from standard. In modern corporations' slang terminology those standards in services sector are frequently called "KPI's" (Key Performance Indicators), in industrial sector the "norms". Within risk management in general we organize 4 concepts of risk treatment: avoidance, acceptance, reduction, transfer. International Organisation for Standardisation developed ISO 31000 standards [3], providing general principles and guidelines on risk management, which can be organized by any organization. It promotes frameworks taking into account the varying needs of specific enterprises, its particular objectives, operations, functions, projects, products or assets.

Internal audit and controlling belong to „reduction“ concept of risk management, due to the fact that application of internal controls in organizations in departments are aimed to prevent situations such as fraud, breaking of internal rules and corporate ethical norms, non-compliance with set work-flows, abuse of organizational ranks, manipulation with inputs for financial statements and reports, unauthorized expenses or undeserved bonuses or payrolls, overcharged purchases, breaking length arm principle, disobedience of target price lists, deliberate incorrect calculation of interest (commissions of salesmen), as well as betrayal, abuse, modification, unsatisfactory protection and loss of meta data in databases and information systems. Controllers pursue the enforcement of such employees' behaviours, which are in line with posed requirements towards their work positions, with intention to prevent activation of predominantly already identified risks. Internal controls follow compliance with rules of law, intra-organisational rules and directives in departments: ordering and purchases, payments & cash flow, inventory and other assets management, long-term investments approvals, data back-ups, security of communication lines, authentication and authorisation rules at log-ins into ERP & CRM systems and many others. [4] Controllers regularly report in structured memorandums to senior managers as per agreed criteria and intervals. They struggle to identify „best practices“ and advise on enforcement of their compliance, monitor and manage activated risks, mainly within internally set action plans govern the incident reaction processes (Fig. 3.).

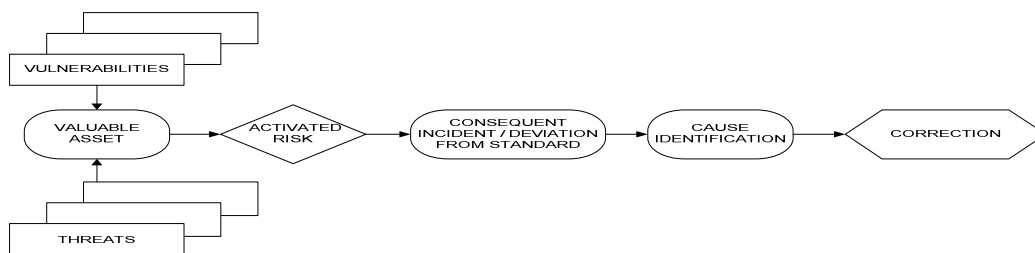


Fig. 3. Internal Controls Incident Map

Time, risks and budget are 3 basic dimensions within planning of controlling activities. Time is in-shortage commodity, which is necessary for mapping of all material and imminent risks. During contemplation of time tables and planning activities we differentiate among time of controlled employees, time of managers and time of controllers themselves. Costs of internal audits are high and resources always scarce. These activities themselves do not produce new resources and generate no new cash flow, however they restrain waste of already existing assets. Risks must be identified, quantified, prioritised and those material also being managed and continuously monitored. Frequently monitored by priority level are financial, business, regulatory, and predominantly operational risks. Auditors shall consider all material risks, and based on their quantification and prioritizing, execute all necessary procedures.. Conditional probability within risk management represents the fact, that already activated risks in the past are more probable to repeat in future, as there has existed vulnerabilities which were already at least once abused by identified threats. Useful tool from so-called "taxonomy category" of risk identification are check

lists in form of questionnaires in which, based on controlling questions, it is being identified presence of expected risks and threats. Most effective and quick tools of new risks identification are dialogues with the responsible officers, time comparisons of changes in data evolution within analytical reviews, SWOT analysis, brainstorming or scenarios (What-if Analysis).

2.2. External auditors (in)dependence

Increasing inner needs of companies to have their own transactional processes under reasonable control and the ability to monitor them not only for the purposes of managerial reporting, but lately also due to the existence of requisition records laid down by legislative norms such as Sarbanes–Oxley Act in USA from y. 2002 and Directive of European Parliament and Council of EU 2006/43/EC as a revision of the eight Directive of Council of EU [5] place major emphasis on independence and professional performance of auditors, as well as the qualification of employees of internal controls' units.

Auditor's independence is crucial within external statutory audits. Expected independence of external auditors and acting of managers or procurists on behalf of organizations are more often than not challenged by the actual way in which and by whom an auditee organization negotiates and signs the statutory audit contracts, including fees. Managing directors and procurists of organizations as executives and being-controlled organizational bodies shall not anyhow interfere with this process. In order to assure the real independence of external audit execution, these contracts including fees shall be negotiated and signed exclusively by Supervisory Boards or Audit Committees members, if these are formed by a company.

3. Conclusion

Internal auditors are here to draw attention to malfunctions, advising senior management and to supervisory organizational bodies. With correctly set monitoring criteria, action plans and communication channels you have your internal audit. Internal controls mechanisms belong to key management tool in monitoring performance and actual exertion of duties by the employees per agreed standardized processes, as well as correct disfunctions of information systems. It shall help prevent losses due to activated risks, but predominantly to protect already existent assets, which comprise also information, either in form of exportable databases on servers or manufacturing processes. Firstly, they have preventive character, during enforcement of expected employees' behaviour and help set-up suitable work flows. Secondly, internal controls aim to detect usual transactional and systems mistakes. Only thirdly, they act as bodies of unmasking of frauds and abuse of authority. Principal review criteria, by which we differentiate between functioning and non-functioning internal controls from those non-functioning, are the high level of reliability of monitoring and recording of occurred deviations, consistency in sending structured reports, unqualified audit opinion, flexibility and short reaction time in solving of these defective situations.

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Concept for the Analysis of Behavioral Effects of Controlling Instruments in the Product Creation

Michael Gobert

University of Zilina, Faculty of Transport and Communication, Department of Economics, Univerzitna 2,
01026 Žilina, Slovakia, gobert@web.de

Abstract. In the Product Creation, there is a high need for communication due to the inherent uncertainty. As support function of the management, the controlling here has a major role. Beside direct face-to-face-communication, frequently controlling instruments in the form of reports, written analysis etc. are used. These reports are intended to positively influence the behavior of the addressee. This article develops a concept for the analysis of behavioral effects of controlling instruments in the product creation. For this, a specific Controlling Communication Model for the application of Instruments is developed. Based on this model, a template for the analyze of behavioral effects of the use of Controlling Instruments is introduced.

Keywords: Controlling, Instruments, Behavior, Communication.

1. Introduction

The Product Creation is characterized by its low structuring and the lack of anticipation as well as the high complexity of the task and the surrounding. [1] Thereby, it is necessary to control the product creation. The aims of control in the product creation are in general: [2]

- To generate transparence about the status of the project,
- To identify deviations and risks in an early stage,
- To get trends and prognoses about the course of the project until the end and
- To gain data for the operative and strategic decisions (e.g. increased deployment of personnel and resources).

In order to integrate the demands of marketing and sales department as well as the production belongings during the product creation, these highly specialized members work together in Simultaneous Engineering Teams.[3] The exchange of information is one crucial prerequisite for the work in teams.[4] In this context, the management uses the support of the function controlling.[5] The underlying controlling system consists of the design of the controlling instruments and also the position in the organization.[6] This paper focuses on the controlling instruments and describes an approach to analyze the behavioral effects of their use.

1.1. Controlling & Information

Controlling Instruments are all methods, procedures, techniques and models for the solving of controlling problems. [7] They aim to generate insight by procedures of information / data generation and processing. Following VANDENBOSCH, the types of use are: [8]

1. Score keeping (Monitoring),
2. Problem Solving / Improving individual understanding, summarized under 'Decision making'[9]
3. Focusing organizational attention and learning as well as
4. Legitimizing decisions.

1.2. Communication Theory

Communication comprises processes of unilateral or mutual handing over, transmission as well as reception of information by human beings and/or other subjects (living being / machines) able to communicate. [10] The communication may occur in the form of speech, text, pictures or data.

A basic communication process consists of a sender which transfers a message to a receiver using a certain channel (communication instrument or signal carrier). [11] This transfer is initiated by a certain event. The involved units such as sender, transmitter and receiver form the communication flow. The sender thereby selects and encodes the message and the receiver as addressee decodes and interprets the message. The encoded message interferes with noise during the transfer to its destination. The encoding/decoding step demands the same standards of processing, otherwise a misconception occurs. To reduce this risk, the receiver may in turn return a message to the former sender with his feedback. Both the sender and receiver have a priori filter which influence the process of editing and transferring the message. These filters are existing knowledge, emotions, opinions and attitudes, culture, values and needs, language skills, position and status, etc.

The described basic communication model shall be used for the derivation of a Controlling Communication Model.

2. Concept for the Analysis of Behavioral Effects of Controlling Instruments

2.1. Controlling Communication Model

The controlling uses instruments to control the Product Creation. These instruments are in the Product Creation either procedures like e.g. the Target Setting (budgeting) or reports and plans. With these instruments, the Controlling wants to trigger a certain behavior of the addressees (intended behavior). Thereby, the relevant message is selected and encoded. The addressee of the message decodes and interprets it. Then a certain behavior results: This might either be the intended behavior or be not-intended behavior. The message may be influenced by noise, e.g. in the context of controlling instruments contradictory statements in reports, ambiguous graphs or tables and so on. Fig. 1 shows the derived Controlling Communication Model

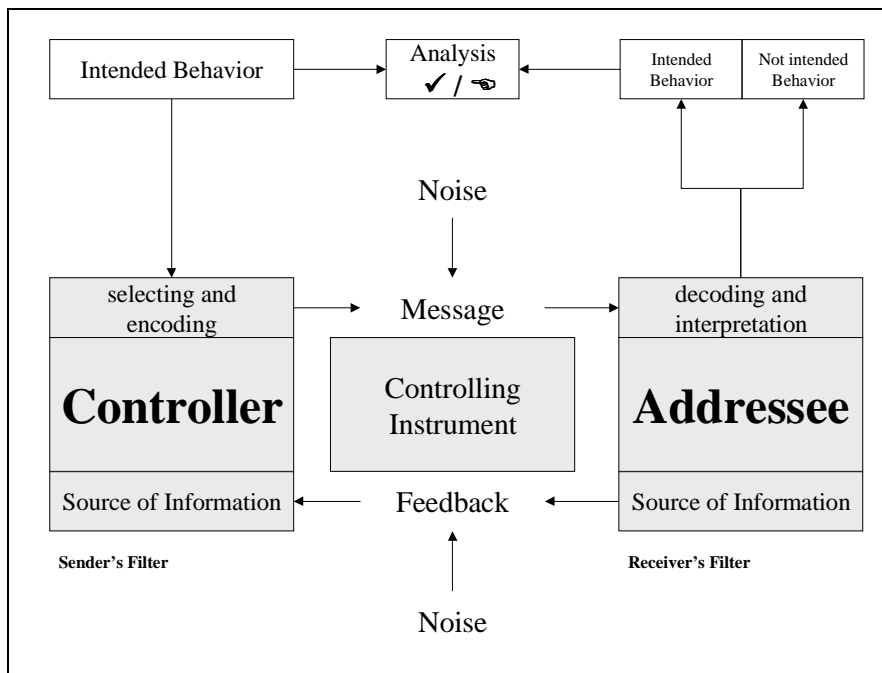


Fig. 1. Controlling Communication Model.

2.2. Classification of negative Behavioral Effects

In addition to the intended effects (i.e. a behavior in the way the management represented by the controlling desires it for the product creation); also not-intended behavior may occur. This may range from the building of slack, over manipulation to resistance. Fig. 2 summarizes the not-intended behavioral effects of controlling instruments.

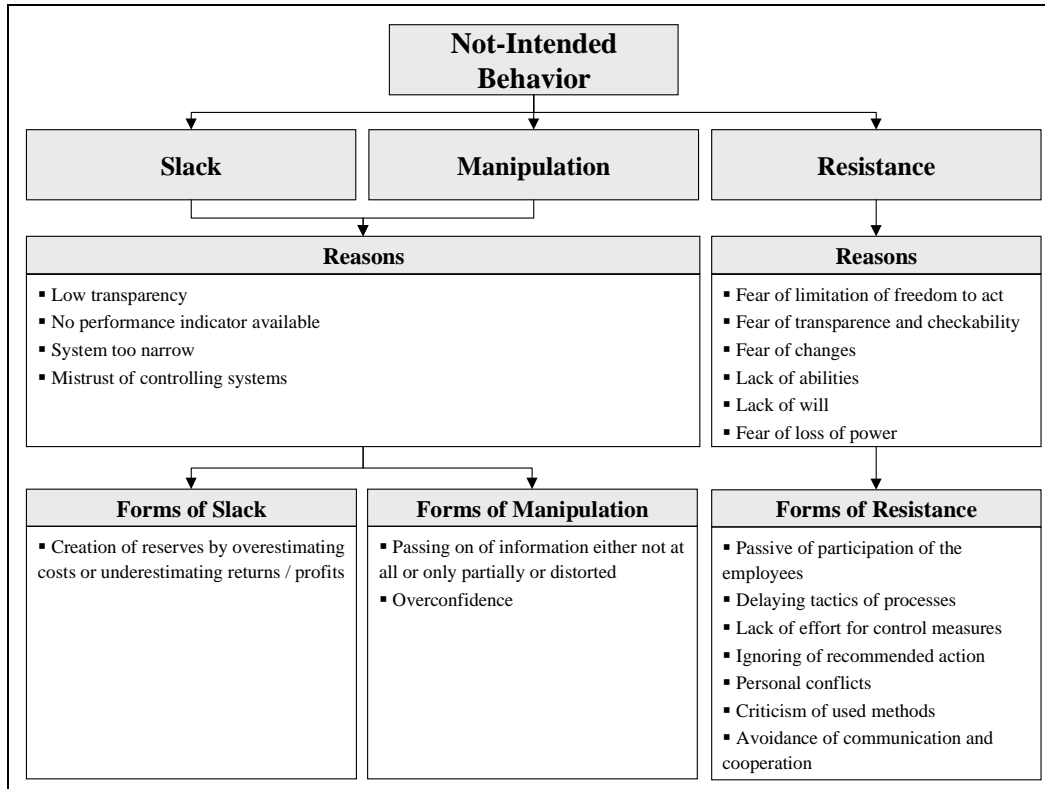


Fig. 2. Classification of not-intended behavioral Effects of Controlling Instruments.

The consequences of these mentioned not-intended behavioral effects are:

- Reduced profits and subsequently unnecessary cost reduction programs, often adversely affecting the product features,
- Displacement of the decision authority from the management to single departments and
- Low transparency about chances and risks and consequently too late start of (counter-) measures.

Beside these negative effects, some positive aspects may result from the creation of slack. It allows equalizing moderate changes and has a stabilizing and motivating effect. [12] Also innovative action is supported.

2.3. Concept of Analysis

When analyzing the controlling instruments and their behavioral effects, the author suggests using the following template. The objectives of the use of each instrument is divided into a main target (contribution to a successful product creation) and a behavioral aim (“What is the addressee expected to do?”). Based on observed results, the analysis considers intended behavior as well as not-intended behavior. The intended behavior should correspond to the behavioral aim.

The in-depth examination of the not-intended behavior should refer to the controlling communication model. Shortcomings may here exist in the context of the used message, the selecting and encoding or the decoding and interpretation or in the instrument itself. Tab. 1 shows an exemplary examination of the instrument “Cost Management Status”.

	Instrument	Cost Management Status
	Addressee	Project Manager, R&D Departments
Objective	Main Target	- Assure the reaching of the financial targets by permanent cost transparency
	Behavioral Aim	- True and fair assessment of chances and risks
		- To assure that the departments identify themselves with the targets
	Result	No prompt and actual naming of the chances and risks
Analysis	Intended Behavior	Partly fulfilled (depending on department)
	Not-intended Behavior	<ul style="list-style-type: none"> - Passive participation of employees - Lack of for control measures - Avoidance of communication and co-operation - Problems of motivation - Underestimation of chances and overestimation of risks - Withhold of information

Tab. 1. Exemplary Examination of the Instrument “Cost Management Status”.

3. Conclusion

The results from the analysis of the behavioral effects of the controlling instruments give important indications for the improvement of the instruments and the communication itself. The controlling should here not just focus on the optimization of the technical solution procedures, but also take the human side into account. In the Product Creation, human beings still are the most effective source of information. [13] The challenge is to consider the special characteristics of human beings in the design of the controlling system. These characteristics are e.g. “[...] severe limitations on the amount of information that we are able to receive, process and remember.”[14]

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Reorientation the Financing of Transport Tasks

*Božena Grad, *Ewa Ferencztajn - Galardos,

* Technical University of Radom, Faculty of Transport and Electrical Engineering, Malczewskiego 29,
26-600 Radom, Poland, {b.grad, e.ferencztajn}@pr.radom.pl

Abstract. In today's socio-economic conditions, there is a need for a new look at a number of components of the system of public, including transport. The new, market-oriented changes in the management of public responsibilities is a key challenge facing the public finance reform known as activity-based budget. European transport policy encourages the development of transport infrastructure in terms of sustainable transport, taking into account, inter alia, economic efficiency. Structure of transport links with the budget is visible in both the financing of the tasks in the transport infrastructure and the performance of transport services (financing of statutory). The subject of the considerations taken in this paper is to analyze changes in the orientation of the expenses for the management of public funds under the new law on public finance with particular emphasis on the transport sector.

Keywords: the budget task force, task transport efficiency, public finances, the sustainable transport

1. The Transport System as a Part of Public Sector

Public Sector is the sphere of employment and the sphere of public ownership. In Polish law, the public sector is defined in the Public Finance Act. In addition, public sector executing functions: stabilization, allocative, redistributive, finance various projects, which are the responsibility of the State.

Transport sector is connected with the public sector task - competitively, legally and financially. The State therefore, through the public sector to carry out their basic functions which shapes and affects the quality of functioning of the transport business.

Development of transport contributes to the development of many areas of socio-economic life, and consequently to improve the standard of living. At the same time, this development must be a sustainable development, recognizing the complementarity of economic, social and environmental protection. Transportation, as an activity aimed at overcoming space, plays an important role in the development of the country's economy by enabling it to smooth and effective functioning, but it contributes significantly to the degradation of the environment makes the conversion to reduce the adverse effects of becoming one of the major directions of development economic growth. Transport is one of the drivers of economic development. If transport is developing in the right direction and in the manner planned by transportation needs, it thereby enables the development of national economy, a growing economy can increase national income.

Investment and modernization needs with reference to the Polish infrastructure are significant. This results not only from the insufficient level of development, but also a high degree of recapitalization infrastructural facilities and equipment, as well as spatial resolution is not appropriate network elements that generate the disparities between regions.

Investment in transport infrastructure are largely financed by the state, with the share of public authorities in supporting the financial each mode is varied. Overall funding for the implementation of infrastructure investment may come from:

- the state budget,
- local budgets,
- European Union funds,
- loans international financial institutions,

- private equity,
- own resources.

Funding the infrastructure from the state budget is quite complex, which has undergone reform in light of the new Law on Public Finance prepares to introduce performance budgeting. In summary, identifying the subject of public sector expenditures are expenditures related to the functions of the State, including expenditures for the financing of transport tasks.

2. Essence Performance Budgeting in Improving Economic Efficiency

Increasing the efficiency of public administration is to have long assumed by policy makers as well as posed by the demand of taxpayers at the state and persons acting on its behalf. More and more categorically requires that the state has been subjected to market regulation, a characteristic of the company that its expenses were planned and carried out in a rational way and allow a realistic assessment of their effectiveness.

Considerations on efficiency should be possible to start from a precise definition of the concept of efficiency, while pointing out that the ambiguity of the definition. Same category of efficiency is not a unique concept, and its essence boils down to the relationship between effects and expenditure. Efficiency can be defined as: the ratio of investment to economic effects, costs or expenses as necessary to achieve the intended effects, or as payback time.

Issues related to the processes on the effectiveness of financial management implemented in the transport business are diagnosed at three levels: the level of economic, social level, and isolated in its level of organic structures - with the analysis shows a correlation of all the ingredients involved in improving efficiency.

One of the key tools for the improvement of modern management system is state-based budget, which is part of the mainstream of research and implementation work described in the literature, as the new public management. Budgeting is a reorientation of spending to manage public money. A budget for management of public funds by objectives adequately substantiated and hierarchical, to achieve specific results in the form of a specific task, as measured by the established system of metrics [1].

So defined concept of budgeting allows you to extract the following features of budgeting:

- Accent placed on the objectives and tasks, which in turn requires the budget is no longer seen as a plan of revenue and expenditure, as well as a plan of revenues and expenditures in themselves, but as expenditures (expenditures) aiming to finance specified, and then structured according to priorities set by the state, public tasks.
- Designation of a specific result to be achieved.
- The system of measures, designed to serve the analysis and evaluation of the degree of implementation of the assigned tasks well - succeeding investigation of responsibility from people who have been assigned tasks to perform.

The essence of activity-based budget is the expenditure management in the public sector based on sound management principles, such principles as [1]:

- transparency postulates introduction of a new budget classification,
- postulates efficiency and effectiveness of the targets and indicators and to compare the effects of effort,
- Multi-year long-term projection postulates expenditure for the task,
- consolidation of public expenditure.

3. Change of Reorientation Public Funds on Transportation Tasks

The new Public Finance Act is aimed at efficiency and transparency of public finances. The main objectives of the Act amount to a fundamental change in the organization of the finance

sector. New developments call for the introduction of the Multi-annual Financial Plan and the introduction of solutions for budgeting. An important objective of the new public finance law is to supplement the provisions on the management of public funds with particular emphasis on the principles of transparency, effectiveness and efficiency and consolidation expenses and multiannual footing, and to focus the country's financial policy through the introduction of long-term financial forecast in the public finance sector [4].

4. The Nature of the Financial Task in the Transport Sector

Budget task is defined in detail the financial scope of showing the status of your exist in conjunction with the needs of the public. The tasks of the budget dedicated to the financing of transport activity is clearly defined purpose and scope of tasks and costs, and those responsible for its implementation and monitoring procedures and a way of assessing the performance of a task. Model for the formulation of budgetary tasks involving reorientation of public resources in financing the transportation tasks are the experiences of local governments, foreign solutions as well as numerous operational programs of the European Union.

The Tasks of budget in the transport sector should be included both current expenses and expenditures for investment purposes. The task of the budget should include inter alia [3]:

- Quantification of objectives tasks, which will achieve the strategic goals, along with the instrument.
 - Subtasks to be implemented under the project.
 - Description of the measures to be taken in the individual subtasks.
 - The objectives and measures of subtasks.
 - The planned expenditure in the system according to the basic functional and economic categories.
 - The annual spending limits and commitment of public funds.
- Features of the financial tasks include:
- A well defined goal.
 - The reference to the existing situation and current needs.
 - Indicate the specific scope of the task.
 - Determination of responsibility.
 - Calculation of actual cost of the task.
 - Specification of the steps necessary to implement the tasks set at the time.
 - Determination of the effectiveness indicators - indicators of performance and efficiency.
 - Inclusion of financial flows.

No.	Task	Subtask	Activity	Meters
1	Development of road infrastructure	The development and the modernization of the network of national roads The maintenance and the restoration of national roads	Increase in the bandwidth on national roads	The number of road accidents
2	Development of rail transport	Supporting the development and upgrading of rail infrastructure Financial support for modernization of rolling stock	Improvement of technical parameters of railway lines	Increasing train speed and load circuits
3	Development and safety of the air transport	Financing development activities, airport and navigation infrastructure	Increasing the availability of airport	The number of passengers using the line
4	Development of the sea transport	Financing activities relating to development of infrastructure spot	Increasing the competitiveness of Polish seaports	The number of ships operated in the port
5	Development of the traction in metropolitan areas	Support for complex projects that promote the development of environmentally friendly public transport system	Construction of transfer knots	The number of people using solutions of the type „Park&Ride”

Tab.1. Sample-based budget implemented in the transport sector

The tasks of the transport sector should also be paid attention to the Operational Programme Infrastructure and Environment, which co-finances a number of solutions in the field of sustainable transport solutions that comply with European transport policy. This program calls for the tasks of budget through the fullest use of environmentally friendly modes of transport for both passenger and cargo such as rail, maritime transport, public transport in metropolitan areas, and intermodal transport. Thus, this program calls for improving the investment attractiveness of Polish and its regions through the development of technical infrastructure while protecting and improving the environment. The purpose of the tasks funded from the state budget of the European Union is the implementation of priority amounting to - Environment-friendly transport, whose main goal is to achieve an efficient and integrated transport system.

5. Conclusion

The process of collecting and spending of public funds in particular, should be based on reasonable grounds, be subject to rationalization within the meaning of operations conducted, or at least conducive to efficiency, the use of specific behaviors can be improved in respect of transport operations.

One result of the reorientation of the changes - the transition to rationalize public spending, is to determine the optimal legal rules for the management of public funds collected - by earmarking them for tasks under the new Public Finance Act pilotażującej adoption of performance budgeting.

Rationality in public expenditure is a component of the efficiency of financial management. Case rationalize spending was a response to the need for budgeting, which is regarded as a model to improve the efficiency of the financial management of the state. Recommendations for changes in the orientation of the expenses for the management of public funds in the transport sector do not relate to the rationalization of public expenditure while maintaining the traditional budgeting system, but assume the rationalization of expenditure through the introduction of performance budgeting, allowing for measuring the amount and quality of tasks.

New task management of public spending in the transport sector, and not only that challenge. Expenditure implemented within the transport sector are particularly important element of socio-economic policy in the integrated European Union. Changing the approach to the measurement system calls for economic and financial management model based on a system to measure the effectiveness and efficiency, which is a legitimate source for making rational decisions.

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Value Chain in the System of Public Transport in Theory

*Božena Grad, *Renata Krajewska,

* Technical University of Radom, Faculty of Transport and Electrical Engineering, Malczewskiego 29,
26-600 Radom, Poland, {b.grad, r.krajewska}@pr.radom.pl

Abstract. This paper presents the concept of creating customer value chain and reference it to the sphere of public services in urban public transport system. Creating customer value is recognized in the context of the broader issue which is the marketing logistics.

The essence of marketing logistics, in terms of theoretical considerations, it is an activity designed to achieve a competitive advantage in the turbulent and ever-changing environment. This is made possible through innovative products and strong brands that solve new problems and can provide concrete and the expected benefits to customers, build strong relationships with customers, so that was created effective in terms of organization and economically competitive chain. Supply chain that provides better services at lower cost.

In a market economy, characterized by a high degree of competitiveness, important to achieve success is create solid relationships with buyers. Therefore, companies need to understand what constitutes value for customers and focus on the processes, that this value is able to provide.

Due to the specific characteristics of the services market, value for the customer has much more emotional nature, than the perception.

Consequently, the marketing actions undertaken by public transport services market, in terms of marketing logistics, should be directed to increase the service, which provides public transportation system and to shape their subjective evaluation by customers.

Keywords: customer value chain, logistics marketing, value management, added value, public transport.

1. Introduction

In recent years, we may notice changes in the dynamics of the market in all sectors of the market economy, including in urban transport. These changes are mainly due to the action of four factors: market globalization, changes in the structures of industrial and technological revolution, and rising expectations and customer requirements. The result is that companies operate in increasingly less stable competitive and predictable environment. It is not easy for them to adapt to the pace of change. This means that the relevant instruments to compose marketing - mix is not sufficient to achieve a high position in the market.

One of the ways in which we can gain a sustainable competitive advantage is the logistics of marketing.

2. Transition From Traditional Marketing To Logistics Marketing

Since several years our market is characterized by a surplus of supply over demand. This means that we are dealing with the market the buyer, not seller. Such a system encourages companies to compete not so much product, which means their production, or methods of management of all business processes and adapt them to market needs. These changes result in the need to revise the classical concept of marketing - mix.

In addition to the product, its quality and price, important is to quickly and reliably meet a demand.

Key to achieving success in the market by the company are three elements: a rapid response to customer needs, reliability of service and appropriate relationships with clients. These are the

elements lying underlying logistics of marketing. Logistics of marketing focuses on methods to improve customer service in order to obtain a competitive advantage by managing the area and the relationship between marketing efforts a logistics company [1]. The aim is to emerge a common strategy in the context of managing the entire supply chain.

So far, actions taken in the marketing and logistics are carried out individually. Traditional approach does not take into account customer service as a strategic point, which will contribute to success by the company. With the increase in the supply of goods and services on the market, customers' sensitivity to time and the level of customer service, increasing the importance of logistics management and marketing, as a whole. This approach allows for the creation of supply chain strategy for market-oriented, which is able to deliver customer value and the consumer in the most efficient and effective. Integration of marketing and logistics allows the formation of customer satisfaction, through the implementation of integrated logistics operations - marketing. Actions taken under the company's customer satisfaction associated with making the best use of marketing instruments and logistics [3].

3. Customer Value

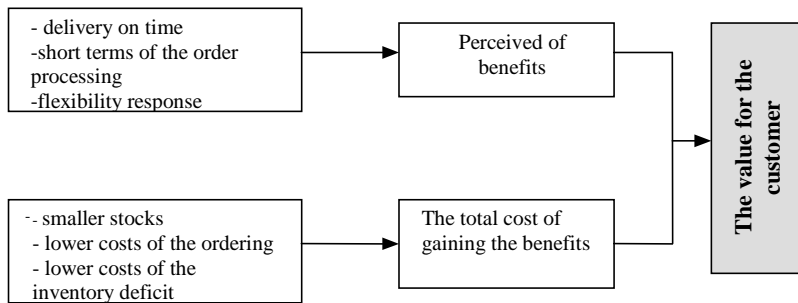
To gain sustainable competitive advantage a company should establish a long-term relationships with customers, giving rise to additional benefits for the customer [2]. These additional benefits often occur as the value that consumers get when purchasing the product. The value for the customer we can call the difference between the total value of the product, and the cost of which must be borne by the customer to its acquisition. In the modern market economy we are dealing with a sophisticated customer who is more stringent and resistant to the marketing's "tricks". This implied that the decreased loyalty of buyers to the brand. What matters is the value to be delivered to the customer.

It is possible to notice it on the example of the evolution of marketing paradigms. At the beginning we dealt around paradigm of satisfying the customer. It relied on the fact that the customer had been satisfied or satisfied from the use, consuming or having the product which meets his expectations. This approach changed in direction of delivering to consumers of unique value which will lead to building the long-lasting relation with the customer. In a long stretch this association will provide not only customers, but also enterprises with benefits. Table 1 is describing these acrobatics.

Vital statistics paradigms	Paradigm of satisfying the customer	Paradigm of the customer value
Subjective aspect of taken decisions	Concentration on aspirations to satisfying of, perceived as ultimate customers users	Concentration on offering and delivering to the value for customers as well as the canvass of the competition and holding them
Main evaluation criterion of offered values	Evaluation of satisfying, made by present customers of the enterprise	Assessment of the level of delivered values, made by customers of the enterprise, including also an evaluation of the offer of the competition in addition
Prospect of the conducted research on processes of creating and delivering to the value	Experimental prospect, firebrands about character analitical – diagnostic	Comparative perspective, including both aspects analitical – diagnostic, as well as prognostic
Basic process serving creating and delivering values	Customer service	Strictly defined and restructured strategy
Gravity of action of values serving creating and delivering	Of acting about operating character, offers emphasizing the necessity of permanent improving and making rich product - service	Of acting about strategic character, determining the connecting bundle of values offered on the market in comparing to offered values by competitors

Tab. 1. Satisfying the customer and the customer value as paradigms of marketing [3]

Main and so increasing the customer value by seeking and delivering new benefits is a basic task of the marketing logistics, lowering costs of getting them in addition. This action is aimed at an application difficult to imitate methods of the competitive edge meaning gaining and getting by the on the market. Picture 1. is presenting methods of increasing the customer value.

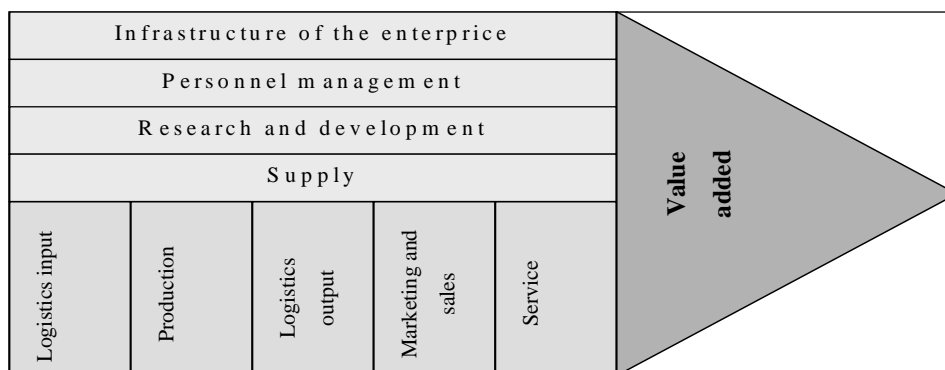


Picture 1. Methods of increasing the customer value [1]

We can provide higher value for the customer by the building or improving distribution logistics in the company. It can rely on better customer service, with smaller stocks and lower cost, increase a convenience making a purchase or a convenient payment conditions.

4. Creating Customer Value Chain In The Services Market For Urban Public Transport

The value chain is describing the process of adding the value to the product. It is starting from activities connected by the enterprise of elements necessary for a production process with the purchase (raw materials, materials, semi-finished products, means of transporting) – logistics of the entry, through manufacturing operations (production), of sale and marketing, and finishing on providing additional services for customers (service) [2.3]. Picture 2. is presenting the conception of creating the value chain suggested by the M. Porter.



Picture 2. M. Porter's value chain

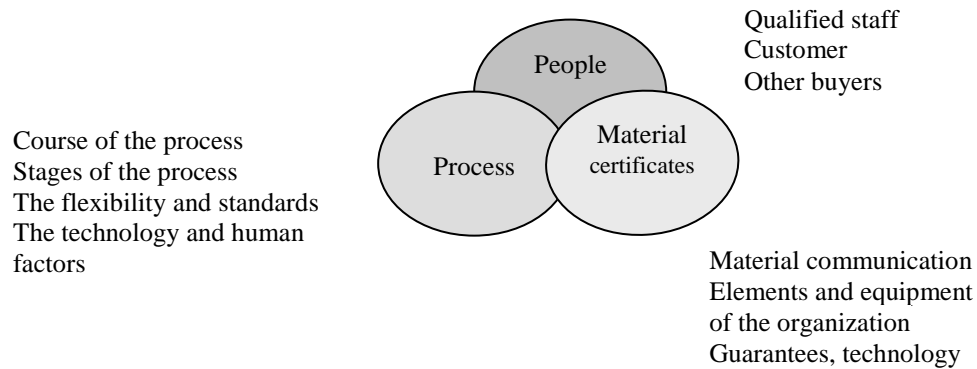
According to the M. E. of Porter's value chain is a main tool of identifying the way of increasing the customer value [5]. Every company wanting to achieve success on the market must appropriately coordinate actions in each of its departments. To do this, companies should improve the management of basic business processes, most of which requires the involvement and cooperation of several departments. The basic processes in the company include [2]:

- The process of the product development;
- The process of the inventory management;
- The process of receiving and fulfilling orders;

- The process of the customer service.

Creating the chain of the customer value on the market of the public transport, you should pay attention to two aspects which the service has: technical – technological and market. This first specificity causes, that action should be concentrated in the company more on: human resources than financial, selection of the adequate staff getting in touch with the customer, for taking adjustment efforts of the supply and demand with a view to creating the balance.

Picture 3. is showing elements of services which are the most valued by customers.



Picture 3. Elements of services valued by customers [6]

On the market for public transport is a very important part of creating good relationships between the service provider, and a consumer. The most important in dealing with passengers is the selection of employees who have direct contact with them. They should be trained, depending on the function of which remain in the provision of transport services, in the knowledge about provided services, proficiency in performing their duties, and the skillful carrying out discussions and negotiations. The customer should feel surrounded by a comprehensive care and information they need to be communicated in a fair way and in an atmosphere of friendliness.

The second aspect of the service - aspect of the market - is the importance of a parent, because it takes into account the usefulness of public transport services due to consumers' needs. Creating the service should start from the core, which is the main benefit of the customer buys, and surround him with layers of material and intangible elements, attributes, or additional benefits. Table 2 shows the concept of development from the perspective of service levels for consumers and businesses in public transport. This concept is joining two points of view to itself: the producer, who assesses the service under the account of expenditure incurred in the process of its creation and the consumer, which service is treated as a set of performance that ensure a certain benefit.

Service levels	Customer's perspective	Producer's perspective	Example of public transport
Core	General type of the need which is supposed to be satisfied	Basic benefits which are supposed to be assured	Transferring the around one place to second
Basic version	Absolute expected minimum	Decision concerning material and immaterial elements meeting expectations of the minimum	The average technical standard in the vehicle, timetable, place in the vehicle
Expected version	Service fulfilling transit demands on the average level	Decision concerning material and immaterial elements fulfilling transit demands	On average required level of the punctuality, frequencies, availabilities, directness, of the reliability, the rhythmicality, the speed, the convenience and the information
Expanded version	Offer exceeding the average level of expectations	Selection of marketing instruments	Frequency higher than expectations
Potential version	Offer arousing the admiration	Choice of directions of the evolution of the service	Automatic air-conditioning in vehicles

Tab. 2. The concept of service levels for public transportation [4]

The value of the transport service for the passenger is being created above all during direct as well as indirect contacts with customers. Therefore includes processes directly creating high value for the customer: the appropriate identification of needs and preferences of customers, providing and communicating information about the offer, order entry, customer service during the implementation of service and consideration of complaints. However, the supporting processes are often determinative of the quality of service.

Using services of the public transport, passengers often looking for tangible evidence of their quality. This serves to reduce uncertainty and risk of acquiring services, and thus also maintains its value. Customers are searching them out in modes of transport, bus stops, ticket offices, information points, and even the tickets. Therefore, companies should ensure their quality and image, because they generate high value for the customer.

Passengers using public transport services shall evaluate through an assessment of an employee who provides a service. The valuation of services therefore depends on the quality of communication between the purchaser and the person executing the service. Important factors forming the basis for increasing customer value are: solid, credible cooperation, positive reports with customers, meeting dates, elasticity in the selection of the offer, orientating to understanding the customer and willingness bringing help. On the market for customer transportation services shall assess the value through the prism of its quality, but by all the factors that can confirm this quality.

5. Conclusions

An important element in the creation of marketing logistics in the company is to identify the factors creating value for the customer., This process is particularly important in the services market because of the specific features which the service has. Their intangibility and impermanence of forcing customers to seek additional benefits (added value), and the material elements of the service are a certificate of their quality. Everything is to choose a service which is offering the highest value.

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Task-Oriented Budget as a Modern Form of Public Funds Management

*Marcin Grad

*Warsaw School of Economics, Poland, mrgrad@interia.pl

Abstract. Together with the implementation of the administrative reform of the State on 1st January 1999, Poland witnessed a process of public power decentralization. The introduction of a three-tier division of the state allowed to arrange the state apparatus, and constituted a major step further towards the democratic process. The local government obtained then autonomy in the management of their resources, which enabled the development of local communities and an increase in the impact of society on the exercise of public authority. One of the key powers gained by local government units, was to obtain greater autonomy for the disbursement of funds, and also, to some extent, to raise funds for the implementation of statutory tasks.

Keywords: public finance, state budget, task-oriented budget, traditional budget.

1. Introduction

The implementation of these rights is manifested in the possibility of shaping the budget at all levels of local government, which similarly to the central state budget is regulated by the Act on public finances.¹

The above mentioned Act is, in addition to the Polish Constitution, the most important legislative act regulating all key aspects referring to the country's finances. In the third article of this Act, the legislator determined that 'public finances include processes associated with accumulation and allocation of public funds, in particular:

- 1) collecting incomes and public revenues;
- 2) expenditure of public funds;
- 3) financing loan needs of the state budget;
- 4) incurring liabilities involving public funds;
- 5) management of public funds;
- 6) management of public debt;
- 7) clearance with the European Union budget.²

The main tool for implementing the fiscal policy of the state is budget. It is a focal point of public finances. 'The state budget is the heart of a democratic state. Citizens transfer a part of their remuneration in the form of public charges to the state budget. Salaries for the major creators of public life in Poland are paid from the budget. They represent the bodies of legislative, executive and control powers of the state, courts, tribunals, and key government offices.'³ Thus, budget situates itself as an interdisciplinary tool linking the issues of political-social nature, fiscal policy of the state, and its impact on the whole economy, a widely-understood management and accounting.

'A cost approach is currently dominating in the planning of expenditure. It is a historical analysis of the size of expenses incurred by individual trustees, and then determining the costs of maintenance of possessed resources. Such planning does not take into account sufficiently the purpose of the incurred expenditures and their effectiveness.'⁴

¹ Act of 27th August, 2009 on public funds (DzU of 2009, No 157, item 1240 with subsequent amendments)

² Act of 27th August, 2009 on public funds (DzU of 2009, No 157, item 1240 with subsequent amendments)

³ Lubińska T., *Budżet a finanse publiczne*. Difin, Warsaw 2010, p. 9.

⁴ Lubińska T., *Budżet zadaniowy w Polsce*. Difin, Warsaw 2007, p. 9

After years of operation and the subsequent reforms of public finances in Poland, public authorities face new challenges of transforming the existing system of expenditure management into a modern, more efficient system. Such a system must take into consideration the country's development strategies at all levels of government and precisely indicate the way of financing the implementation of the strategy taking into consideration the detailed measurement of the effectiveness of the spent funds. These criteria are fulfilled by the task-oriented budget, which is described, unlike the traditional budget, as a tool of governing the state or a subordinate unit which spends public or private funds.

The main difference between the traditional recognition of the budget and its task-oriented recognition lies in the thought which guides the creation of these two tools of public finance. Distinction between these two approaches is shown in the comparative table.

Traditional budget	Task-oriented budget
Expenditure tool	Government tool
Difficulty in linking spending with the objectives and tasks of the government - the traditional budget classification	Enables linking spending with the objectives and tasks, which allows the functional arrangement of expenditures according to tasks - a new budget classification
There are no links between expenditure and categories of efficiency and effectiveness	Expenditure management in the direction of an increase in efficiency and effectiveness through the evaluation system
Lack of a long-term projection of expenditure for the tasks.	A long-term approach - a three-year projection of expenditures of the public finance sector - consolidation in accordance with tasks.
Lack of expenses integration	Global approach to expenditure of the finance sector - consolidation in accordance with tasks
Impeded expenditure prioritization	The hierarchy of expenditure and instruments in accordance with the relevance to the tasks of the government
Departmental approach	Favours inter-departmental cooperation in the government and other public sector institutions
Lack of clear information about the spending policies of the Ministry - a low transparency	A clear information about expenditure in the new budget classification - enables to communicate with the public
Directs the discussion in the Parliament to the single expenditure items	Enables a substantial discussion in the Parliament about the tasks of the government

Tab. 1. The differences between the traditional budget and the task-oriented budget

Source: Lubińska T., *Budżet zadaniowy w Polsce*, Difin, Warsaw 2007, p. 30.

The presented comparison reveals some essential differences between the recognition of the state finances in the traditional way, and the task-oriented way. The above table clearly shows the benefits resulting from the introduction of the task-oriented budgeting. They include, among others: linking the state spending with strategic planning and building the country's development strategy, and thus, long-term financial planning for realization of specific objectives, introducing a new classification of the state expenditure oriented to specific tasks, whose substantive structure allows for better communication with the public. The task-oriented budget is treated as a tool of government because it is an essential part of building a strategy of development, and it can be used not only at a central level, but also in local government units and the widely-understood public.

The task-oriented budget gives great opportunities to achieve transparency of public finances, their more efficient management, and provides some tools for monitoring the implementation of pre-defined tasks. These instruments derive from the nature of such a financial plan. They include complex metrics, but also an increased social control. It is possible because of the simplification of procedures for public communication and construction of the task-oriented budget, which enables to better inform citizens about the fiscal activities of the government.

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Tax and Contribution Policy and Its Optimization Options

*Richard Hančín,

*University of Žilina, Faculty of Operation and Economics of Transport and Communications, Department of Economics, Univerzitná 2, 010 26 Žilina, Slovakia, Richard.Hancin@fpedas.uniza.sk

Abstract. The biggest problem for businesses operating in Slovakia is high contribution burden and too demanding contribution system administration. The paper focuses primarily on the optimization possibilities for simplification contribution system and peculiarly on reducing the contribution burden. I can see the way out for this problem in the removal of exceptions to the contribution system which makes it inefficient. For instance, the unification of the assessment base which taxes and contributions on income of employees are counted from. The optimal solution is to unite assessment base not only to its range, but also to its maximum height. Unification of maximum assessment base is also possible assuming that it does not affect the amount of benefits paid at all.

Keywords: tax policy, contribution policy, business environment, assessment base, rate.

1. Introduction

Taxes represent a primary source of income for the state budget in the market economy. Taxation system has to be necessarily transparent and simple. Along with nontransparent and complicated taxation system there often arise tax evasions resulting in tax increases and ultimately negative impact on particular population with lower income. A good tax system should have a fair collection of funds and undemanding administration.

1.1. Business Environment

A favorable business environment is basic assumption for long-term competitiveness and growth of every market economy. An important assumption for the development of business sector is the existence of a motivate business environment [1]. The main barriers to create motivate business environment in the Slovak Republic include administrative, legal and economic barriers (contribution burden). Among the administrative barriers there are mainly bureaucratic and administrative barriers which entrepreneurs meet in public institutions. Legal barriers in the business are enforcement of law, incomprehensible legislation and constantly changing legislation. Economic barriers are especially high contribution burden. The Slovak Republic is the eighth country in the world rankings with the highest contribution burden.

2. Tax and contribution policy

Tax policy is a complex of measures of government by which it manages tax system in line with its economic objectives. Its aim is to ensure a sufficient level of funding for proper functioning of the state. Tax policy is part of national economic policy, and deals with issues such as introduction of the tax or tax rate. Contribution policy similarly to tax policy is a complex of measures of the government by which the collection and allocation of public funds is ensured. Its aim is to ensure sufficient funds to provide health services or social benefits to citizens at income loss. It also deals with the insurance rate (premium rate). Tax and contribution policy in the Slovak Republic is administrated by three separate systems: taxation, health insurance system and social insurance system.

2.1. Effects of tax and contribution policy

Effect of tax and contribution policy should be pursued in various areas (social policy, employment, etc.), not only from the viewpoint of the state and increasing in its fiscal revenues, but also from the viewpoint of businesses and citizens. Company tax and contribution policy does not deal with the height of tax rate, but only with specific consequences resulting from such a rate. The major role of company tax and contribution policy is to ensure quick orientation for an entrepreneur about who is a taxpayer of taxes and contributions and what duties and obligations ensue from it. Then, he can effectively manage and control his business. For example, an entrepreneur or employer decides who to employ (pensioner, student) and what labor relationship to choose.

2.2. The issue of administrative costs of the contribution policy

In addition to the standard wage-work, personal agenda of business includes also performing of basic reporting duties such as submission of applications, notification of cancellations of insured persons or changes in personal data of insured persons. Furthermore, personal agenda comprises submission of monthly reports to the Social insurance agency and health insurance agencies, quarterly statements to tax authorities, tax annual accounts as well as annual accounts of insurance for health contributions. To this the reporting of maternity, parental leave, sick leave, or agenda for workplace accidents must be added. It means not only to lead but also keep the relevant records, which increases the cost to human and technical capacities. Increase in administered obligations becomes a great hindrance, especially for smaller companies, which prefer to leave the payroll process to other accounting firms, to concentrate only on their business what causes other indirect costs. Institutions are not sufficiently connected, do not seek to communicate among themselves and lack a common focal point. Employers must also ask for confirmation from each office separately. It employs many officers who are doing duplicate work, and many new buildings that need to be operated as well. Ultimately these are other expenses for citizens and businesses.

2.3. Way out of sketched issue

One of the solutions for simplifying of the tax and contribution system is the unification of tax and contributions collection on social and health insurance to a single institution. This union is scheduled to run until 2014. Entrepreneurs' costs for personnel and payroll agenda, paper, postage, transportation, phone bills etc. would decrease. Centralization of database for collection of tax and contributions would eliminate currently poor coordination between different institutions. Additionally, it would greatly improve government control over all social life actors (citizens and businesses) and, vice-versa, these subjects would have a better overview and control over the state. The state would also save the amount of work associated with phoning, writing challenges, the realization of the distraintment or bankruptcy. Payment discipline would have been secured. It would also be necessary to adopt abandonment of various exceptions to facilitate the contribution system. Primarily it is about the optimal setting of the assessment base, which should be the same for the calculation of taxes and contributions. Except from small differences the assessment bases for calculation of tax, social and health insurance from 2011 are similar in terms of range. Currently, insurance is paid from the severance but also from the income paid after termination of employment. However, assessment bases are different at reaching higher income, because there is maximum assessment bases for the health and social insurance. The insurance is no longer paid from the employee's monthly income, if it is higher than the maximum assessment base. Paradoxically, there is no minimum assessment base for calculating the insurance of employees. Because of the different maximum assessment bases it is not possible to simplify the forms for calculating of various types of insurance, because the forms must be universal and also calculate with the cases of higher income. Bismarck system, to which the social security system of the Slovak Republic is included, is based on the fact that all groups of people should be insured. High quality insurance system should have minimum restrictions and should not favor population

groups, which do not have to pay contributions from the income exceeding maximum assessment base. Insurance should be paid from all incomes of every individual. For this reason, it would be best to unify or completely abolish the maximum assessment bases. The maximum assessment base has been introduced in order to indirectly limit the amount of benefits paid. It would be optimal to limit the amount of benefit directly by determining the maximum achievable benefit. We can illustrate it on the following example. For example, currently, the maximum assessment base for retirement insurance is 4-times the average wage. Calculation of the maximum achievable pension benefit depends on this maximum contribution base. It would be optimal to determine maximum possible achievable benefit in the legislation to such a value which would after calculation correspond to calculated benefit for individuals with 4-times the average wage. Therefore, the amount of maximum possible benefit would not change. This would have eliminated an exception when calculating insurance.

3. Characteristics of tax and insurance and analysis of their rates

Tax is generally an obligatory payment to the state public budget in order to ensure the needs of society. The tax is paid by anyone who meets the conditions specified by law and not by tax exempt. Payment shall become part of the total public budget, which finance various public needs. The tax is not eligible for consideration at the time it is paid. Taxes can be sorted and classified according to various criteria. Probably the most common division of taxes is on direct and indirect taxes. In the list of direct taxes the most important ones are income tax and corporational tax. The most important taxes in the system of direct taxes are tax on personal income and corporation tax. It is possible to transfer indirect tax to another subject, most likely on consumers, through prices. These taxes are mainly value added tax (VAT) and excise duties. Despite these, there is a large number of other divisions for example according to the object of taxation (income taxes, property taxes), according to a subject who pays the tax (taxes paid by individuals and taxes paid by legal entities). OECD (Organization for Economic Cooperation and Development, which is 30 industrialized member countries of the world including SR) divides taxes into six main groups and then further into subgroups. According to OECD the contributions or insurance (premiums) for social and health insurance belong to the tax system. Taxes can be divided according to the tax rate as well. The tax rate reflects the way in which the amount of tax from the tax base is determined. We know more types of the tax rates. Fixed rates (absolute) - determine the total sum regardless of the amount of the tax base (i.e.: excise duties on tobacco = 64.06 euro/kg). Relative rates (floating) – express the share on the tax base determined mostly in percentage. We know proportional, regressive and progressive rates:

- proportional rates (linear) – determine one percentage level by which all tax bases are taxed, irrespective of their height (e.g.: 20% VAT)
- progressive rates - the tax rate increases with increasing tax base, and thus higher income is burdened with relatively higher tax. According to the method of progression we distinguish simple (staged) and drifting (eventually slightly drifting) progressive rate,
- regressive rate - the principle is that increase in the tax base decreases the tax burden. Our system does not use this type of rate

Combined rate may also occur (e.g.: tax on cigarettes), which simultaneously uses fixed and floating rate. The rates of health and social insurance are essentially proportional. However, reaching a certain maximum assessment base this rate changes to a fixed rate; excluding the rate for accident insurance. Since this moment the tax (contributions) becomes flat tax. (Fig.1). In this case depending on the tax base, fixed and floating rates are used. Therefore it is necessary to define a new tax rate as a mixed rate. By adding all single functions of rates together we get a single function which has slightly regressive character, but its course is similar to a linear function (Fig.2).

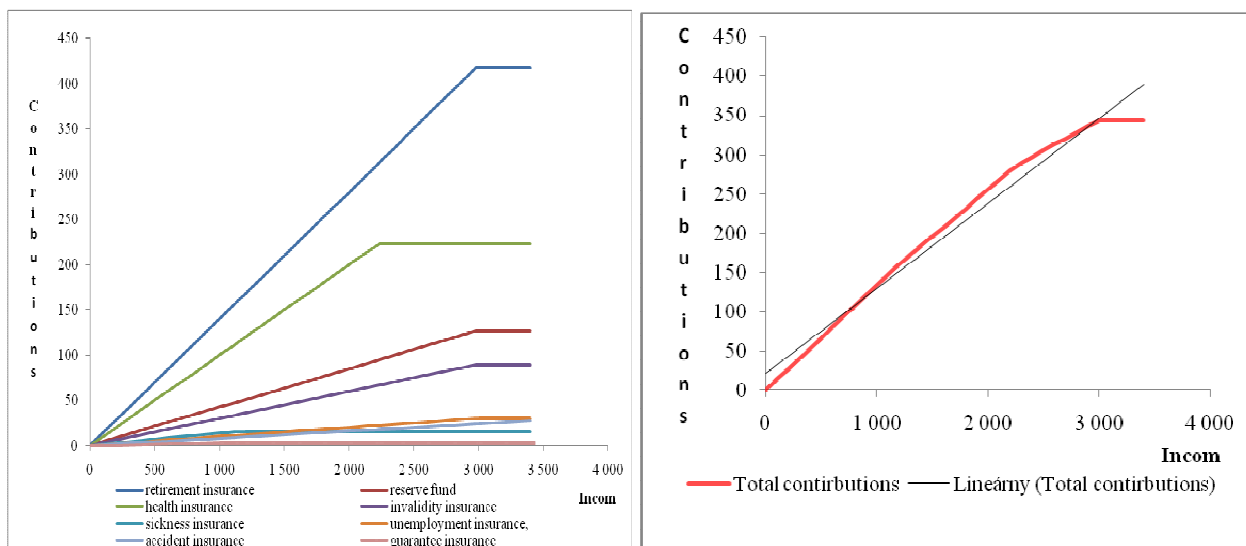


Fig. 1. Dependence of income and each type of insurance **Fig. 2.** Dependence of income and overall insurance

Assuming cancellation of assessment bases we get a simple linear function. Basically the same function as the function with regressive character. In this case it is possible to consider a reduction in the contribution burden on the employees or employers for such a percentage, which we would potentially collect from population groups with higher incomes. Consequently, even a reduction in the contribution burden for self-employed and voluntarily insured persons who are bound with contributions of employees could be considered. We can also count with less number of licit contribution evasions. Managers of companies would not pay inadequate income to themselves and the saved funds would remain for the company's development. In terms of state, we would achieve higher employment and also less administrative costs.

4. Conclusion

Complicated contribution system is not transparent and carries increased administrative costs for all parties: citizens, businesses, state. With the help of the proposed optimization we would create the system that would allow easier calculation and reporting of taxes and contributions on a single form. Eventually the space for reduction of contribution burden would be created.

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Reducing the Administrative Costs with the SCM

*Petra Hollá Bachanová

*University of Žilina, The Faculty of Operation and Economics of Transport and Communications,
Univerzitná 1, 01026 Žilina, Slovakia, petra.bachanova@fpedas.uniza.sk

Abstract. Regulation is important and necessary, but implementation of regulation can have a number of consequences for businesses, especially in form of costs. Some of these expenses are linked to legal obligations to provide information either to public or private parties. These are called administrative costs. A subset of administrative costs is the administrative burdens.

Keywords: Standard cost model (SCM), administrative costs, administrative burdens, regulations.

1. Introduction

Administrative burdens are daily barrier in the life of all enterprises. In order to accomplish obligations from public authorities, enterprises have to allocate resources to administrative activities rather than investing them in more productive activities. This is not only a costly affair for the business community in each country, it also inhibits economic growth, competitiveness of the economy and prosperity in society. That's why these administrative burdens need to be reduced. For the purpose of reducing the administrative burdens and simplification of regulation was developed Standard cost model (SCM). A key strength of the Standard Cost Model is that it uses a high degree of detail in the measurement of the administrative costs, in particular going down to the level of individual activities.

2. Process of reducing the administrative costs with the SCM

The process of reducing the administrative costs with the SCM method can be divided in three basic steps:

2.1. Break down regulation into manageable components that can be measured

The SCM decomposes regulation into a range of manageable components that can be measured, namely information obligations, data requirements and administrative activities. **Information obligations** are the obligations resulting from regulation to provide information and data to the public sector or third parties. An example of information obligation can be registration, filing of tax returns, applications for subsidies or grants, reports on employment and wage conditions, labeling provisions of goods and operations, publish annual reports and the like. Each information obligation consists of one or more **data requirements**. A data requirement is each element of information that must be provided in complying with an information obligation. Each data requirement consists of a number of specific **administrative activities** which have to be carried out. Administrative activities which can be measured may be done internally or be outsourced. [1]

2.2. Measuring the administrative burdens

In order to calculate the resource consumption in connection with an administrative activity, it is necessary to identify the cost parameters that are associated with the existing activity. Cost

parameters are the expense variables that are associated with the individual administrative activities and are included in the Standard Cost Model measurement.

Cost parameters are:

- **Price:** consists of a tariff, wage costs plus overhead for administrative activities done internally or hourly costs for external services providers.
- **Time:** the amount of time required to complete the administrative activity. The variable time should be taken to mean the time (in minutes or hours) that it takes a business to perform a certain activity.
- **Quantity:** quantity comprises of the size of the population of businesses affected and the frequency that the activity must be carried out each year.

$$\text{Quantity} = \text{Population} \times \text{Frequency}$$

Population: the number of businesses to which the regulations apply. This means that when determining the administrative costs, the target group of the regulations and the number of businesses involved needs to be determined.

Frequency: the number of times that a business delivers a data requirement per year. [2]

Combining these elements give the *basic* SCM formula:

<p>COST PER ADMINISTRATIVE ACTIVITY (OR PER DATA REQUIREMENT) = PRICE * TIME * QUANTITY (population * frequency)</p>

Example:

An administrative activity takes 3 hours to complete and the hourly costs of the member of staff in the business completing it is 5 €.

Time = 3 hours

Hourly costs = 5 €

*The price is therefore: 3 * 5 = 15 €*

The requirement applies to 100 businesses that each have to comply 3 times a year.

*The quantity is therefore: 100 * 3 = 300.*

Total administrative costs for complying with the obligation therefore are:

*Total costs = Price (15 €) * Quantity (300) = 4500 €*

2.3. Simplifying the regulation

SCM measurements highlight where areas of regulation ripe for administrative burden reductions exist. Due to the action-orientated nature of its results, the natural extension for SCM measurements is simplification.

The key advantage of using the SCM measurements for simplification is that "what gets measured gets don". The SCM provides a crucial baseline and source of ideas for simplification opportunities. [3]

The following diagram shows the ways to simplify regulation and the actions to take.

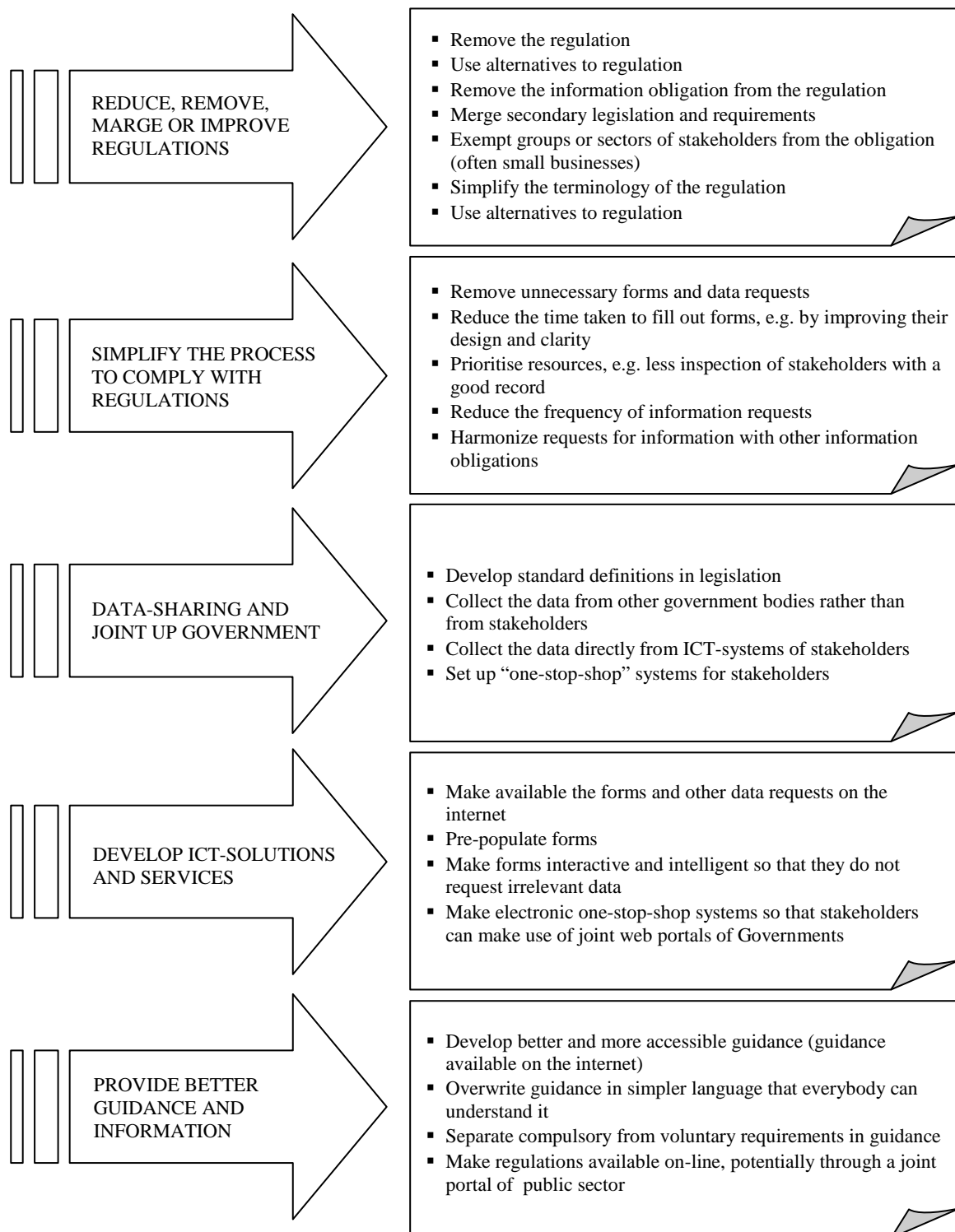


Fig. 1. Five Routes to Simplification of regulations [1]

3. Conclusion

The Standard Cost Model has been developed to provide a simplified, consistent method for estimating the administrative costs imposed on business by central government. It takes a pragmatic approach to measurement and aims to provide estimates that are consistent across policy areas but which are indicative rather than statistically representative. The SCM method is a way of decompose regulation into a range of manageable components that can be measured. The SCM does not focus on the policy objectives of each regulation. As such, the measurement focuses only on the administrative activities that must be undertaken in order to comply with regulation and not whether the regulation itself is reasonable or not. [3]

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Role of the Board in Governing Nonprofit Organization

*Terezia Holubkova

*University of Žilina, Faculty of Operation and Economics of Transport and Communications, Department of Economics, Univerzitna 1, 01026 Žilina, Slovakia, {Terezia.Holubkova}@fpedas.uniza.sk

Abstract. This article is dedicated to the issue of nonprofit governance; especially organizational governance. It starts with definition of governance and of two key actors of organizational governance: the board and the executive director. Afterwards it presents existing theoretic approaches towards nonprofit governance.

Keywords: Corporate governance, board, executive director, nonprofit organization, nonprofit sector.

1. Introduction

Since the 1990's Slovakia has been passing through a period of rapid political and economic change. Nongovernmental or nonprofit organizations (civic associations, foundations, non-investment funds and public benefit organizations) are considered to be important partners of the state and the market in the transformation process. In order to successfully influence social, political and economic change, they need "to meet the challenges of legitimacy, sustainability, effectiveness, and partnership that still elude them to a significant degree [1]." Growing competition, financial constraints and cross-sectoral partnership arrangements are pressuring nonprofit organizations (hereafter: NPOs) to use their resources in an effective and efficient way. A fundamental aspect of NPO management is organizational governance. Organizational governance is decisive for all aspects of nonprofit management: financial and fundraising capacity, human resource management, strategic management, quality management, control management, conflict management and evaluation. Growth in the size and significance of NPOs raises new concerns about the quality of governance, transparency and accountability of NPOs and attracts more attention on how governance structure can be best supported. Good governance is an essential tool for ensuring that NPOs are effective, sustainable and positively perceived by all key stakeholders: "adequate governance structures and mechanisms are a highly important prerequisite for success and decisive for the survival of any NPO [2]." In foreign countries professional and academic interest in organizational governance of NPOs is growing [3]. Until now the organizational governance of NPOs in Slovakia has not attracted a great deal of public or academic attention. For many NPOs in Slovakia, the basics of good governance are still to be learned.

2. Corporate governance (CG)

In recent years governance has become a topic of increasing interest especially in USA and Western Europe. The rationale for this interest has been several major governance scandals, resulting in pressure from different stakeholders to rethink and change frameworks and raise ethical concerns about NPOs. This has left an increased emphasis on the role and composition of the board, and the ways in which it can exert control.

2.1. Definition of corporate governance

Different academic disciplines offer a variety of definitions of CG. The concept of CG refers to arrangements of guidance and supervision within organization. This concept has been originated in

the theories for-profit organizations: “CG deals with the ways in which suppliers of finance to corporations assure themselves of getting a return on their investment [4].” CG is about how companies are directed and controlled. These include “procedures associated with decision-making, performance and control of organizations and with providing structures to give overall direction to the organization and to satisfy reasonable expectations of accountability to those outside it [5].” More specifically nonprofit governance “refers to the mechanisms through which a private, NPO sets its long-term direction and maintains its organizational integrity [6].” Several specific issues can be discussed within the context of nonprofit governance, this paper focuses on choice, composition, roles and responsibilities of the governing body’s members and their relationship with chief executive officer (CEO).

2.2. Board and its role and responsibilities

The board constitutes a key actor in every NPO. Governing body is characterized by the involvement of board members who are voluntarily involved and come from outside of the organization. The commonplace conception of the NPO is that it is hierarchically structured with the board of directors as the highest authority in the NPOs. In reality there can be gap between formal purpose of the board and what actually happens in practice. Some researchers constant that there is relatively little research on how governance is actually conducted [7]. We can find many different perspectives and various approaches on board’s functions and responsibilities. The board main responsibilities should include: policy setting, strategic planning, oversight of the organization’s financial situation, supervising compliance of the organization with legal requirements and professional as well as ethical standards, fund-raising, representation and promotion of the organization s mission. Regarding the executive director, the board must: select, supervise, advise, support and evaluate [8].

2.3. Executive Director (Chief Executive Officer)

This term refer generally to the highest ranking staff position within the organization. The CEO is usually a full-time employee of the organization, in contrast to board members, who are volunteers, facing restrictions regarding the time they can and they are willing to dedicate to the organization. CEO has been chosen for his expertise or management capabilities, in contrast to board’s members often with limited professional knowledge related to the nonprofit management’s area. Due to legal requirements and in line with the organization’s hierarchy, the executive’s role is primarily being interpreted as that of board’s assistant. It is very controversial because, “in spite of the formal hierarchical structure that puts the CEO as subordinate to the board, the day-to-day reality- as it is experienced by CEOs, board members, and staff- is that CEOs are expected to accept the central leadership role in NPOs. This often requires that CEOs take responsibility for enabling their boards to carry out the board’s duties [9].”

3. Theoretical perspectives

The field of NPOs is very heterogeneous. Due to this heterogeneity (e.g., mission, size, stage in the organizational life cycle, field of action), it is very difficult to make general assumptions concerning organizational governance of NPOs. Therefore “there is no one right way to manage the business of a board, or one superior model of governance [10].” We will present different theoretical models which may help to understand the nature of various roles of the board. Taken individually, these different theoretical perspectives are rather one-dimensional, trying to illuminate one particular aspect of the board’s work and the roles it play. “The governance of NPOs is relatively under-theorized in comparison with the governance of business corporations [11].” It would be not reasonable just to transfer concepts from the for-profit world to NPO, but concepts

can be usefully extended to throw light on non-profit boards. The relationship and interaction between the board and CEO is crucial for the NPO's performance.

3.1. Principal-agent theory

Principal-agent theory has been dominant theory of the corporation and CG arrangements in private sector [12]. This theory assumes that the owners of an enterprise (principals) and those that manage it (agents) have different interests. From this point of view the main role of the board is to monitor, control managers and assure that they are acting in owner's best interests. The key problem in applying this theory to NPO is to define who the principals are. Is it founder of the organization, service users, government, beneficiaries or members?

3.2. Stewardship theory

The stewardship theory [13] is based on human relations perspective [14]. It assumes that managers want to do a good job and that they will act as a good stewards of an organizations resources. From this perspective we can describe the relationship between board and CEO as a partnership relation. In this theoretical approach the board has the strategic function to improve organizational performance and board members should be selected on the basis of their expertise and contacts, that they can add value to the organization by improving its top decision making.

3.3. Democratic theory

The central ideas of this perspective are: open elections, the separation of elected representatives, who make policy, from the executives, who implement policy decisions. In this model expertise of board members is not central requirement, as in the partnership model. So any member of the electorate can put himself or herself forward for election as a board member. Central to this view is the idea of non-professional board that represents the interests of the organizations members.

3.4. Stakeholder theory

This theory is grounded on the premise that organizations should be responsible to a range of groups other than just organizations owners or members [15]. The main idea of this theory is the incorporation of different stakeholders (e.g., members of the organization, clients, government) on boards. From this perspective it is supposed that organizations will respond to broader social interests than the narrow interests of one group.

3.5. Resource dependency theory

Resource dependency theory [16] is based on the premise that organizations are interdependent with their environment. This theory suggests that the job of the board is to maintain good relations with key external stakeholders in order to ensure that the organization receive the resources and information needed. From this perspective board members should be selected for their important external links and knowledge that they can bring to the organization.

3.6. Managerial hegemony theory

There is a variety of empirical studies [17] which support managerial hegemony theory. This theory assumes that managers have a tendency to dominate and that the control and power remains with the chief executive rather than board [18]. The role of the board is symbolic. The existence of the board gives legitimacy to chief executive actions.

4. Conclusion

The need for effective governance is increasing because it has a substantial influence on the performance of NPOs. Demands for accountability, legitimacy, transparency, credibility of NPOs are often articulated governance challenges. This article brings together different models of governance. There is no appropriate uniform model. The review of some key models of organizational governance provides useful insights for understanding the role of the boards and its relations with CEO. In the CG of NPOs in Slovakia there is a lack of knowledge compared to the abundant amount of research on nonprofit governance in foreign countries (e.g. USA, GB).

Empirical research is missing and there are substantial gaps in this field, therefore it is needed to explore the situation in Slovakia. How effective is and which role has board in governing NPOs? The nonprofit sector in Slovakia deserves academic efforts to explore nonprofit governance and to help to support NPOs learning how to become better governed and managed organizations.

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Innovations – Path towards Improving Competitiveness of Slovak Enterprises

*Lucia Horvátová

*Faculty of Operation and Economics of Transport and Communications, Department of Economics, Univerzitná 1, 01026 Žilina, Slovakia, Lucia.Horvátová@fpedas.uniza.sk

Abstract. The contribution deals with the relevance of innovation for competitiveness of country and enterprises. It points to innovation activities of the Slovak Republic, importance of innovation initiatives, and serious deficiencies in the support of innovative enterprises in the Slovak Republic. There have been proposed feasible measures ensuring improvement of support tools for innovative business. They are crucial factor of innovative progress in country.

Keywords: innovation, entrepreneurship, competitiveness, innovative enterprises, research and development.

1. Introduction

Innovative enterprises conduce to enhancement of competitiveness of country, economic growth, and achievement of high living standard. The development of the world economy declares that countries oriented at support of innovations and knowledge economy are resistant to external shocks and they are at the top places in valuations of the global competitiveness. The Scandinavian countries are the best example of good practices in these activities. Among the most competitive countries belong Switzerland, USA, Singapore, Sweden, Denmark, Finland, Germany and Japan in long-term horizon.

2. Innovation activity of the Slovak Republic

According to *The Global Competitiveness Report 2010-2011*, the Slovak Republic fell to the 60th place from the 47th place of the world held one year ago from between 139 countries. This fact is determined by unstable conditions for doing business. Main reasons of this statement result from inefficient government bureaucracy, high corruption, restrictive labor regulations and inadequate supply of infrastructure. There is needed to enhance Slovak competitiveness. Innovations are the best and long-term sustainable path to achieve this goal.

The Slovak Republic significantly lags behind other EU countries in innovative activities and it decreases its rating. According to statistics, the expenditures on research and development reached 0.48 percent of GDP in 2009 (without changes in four preceding years). Sweden and Finland have been spending the highest expenditures on research and development in EU all the time (more than three percent of GDP). Germany, Austria and Denmark follow behind them. On the other hand, Malta, Cyprus, Latvia, Slovak Republic, Romania, and Bulgaria allocate less than 0.5 percent of GDP. For comparison, expenditures on research and development in the USA were 2.61 percent and in Japan 3.3 percent back in 2006. Positive trend can be spotted in the tempo of expenditure's growth on R&D in the EU – it has been higher than in Japan and USA.

There are several institutions oriented in support of research and innovation in the Slovak Republic: Slovak Innovation and Energy Agency, Agency of Ministry of Education, Science, Research and Sport of the Slovak Republic, Slovak Research and Development Agency and network of incubators and technology innovation centers.

The government orientates its programs towards support of spin-off and start-up companies and towards the development of cooperation between universities and business sector insufficiently. Incubators and innovative centers try to help on innovative ideas especially from universities and to afford facilities for starting a business of their holders with low effect. The Slovak government interest in support of research activities is more formal than objective. There are no systemic activities on the part of government for improving research initiative in enterprises. Noticeable change is the name modification of *Ministry of Education of the Slovak Republic* to *Ministry of Education, Science, Research and Sport of the Slovak Republic* since July 2010. The act No. 185/2009 on incentives for research and development is for small enterprises little understandable and it decreases interest in state assistance of small innovative enterprises. There has been proclaimed only two calls for innovative small and medium sized enterprises by the Slovak Research and Development Agency. It is too little calls from the main agency providing subsidies for research and development initiatives. The real problem of Slovak institutions responsible for effective allocation of funds from EU is unallocated 1 billion Euros intended for science which will be probably transferred to highway construction.

The Slovak Republic had not been elaborating national innovation plan or consistent innovation policy till 2005. Even innovations had not belonged to priorities of social and economic development till 2004. *National Development Plan* and *Competitiveness Strategy* were executed in 2005. The objective of *Slovak innovation strategy for 2007-2013* is the improvement of conditions for development of innovative entrepreneurs. Since 2007 there has been an opportunity to achieve subsidies from European Union's Structural Funds for small and medium sized enterprises within the 7th Framework Program. The insufficient interest of Slovak enterprises in it results from administrative burden, anxiety about collaboration with other enterprises at international level (the creation of international group of collaborative enterprises is one of requirements) and loss of unique innovative ideas. But there are more benefits, e.g. economic profit and enhancement of international position.

The serious problem of the country is corruption. This major barrier in the Slovak business environment induces ignorance of really good and perspective entrepreneurial ideas and it supports interests of chosen groups. Rejection of corruption practices in schools and media and the training of skilful and honest entrepreneurs are very substantial.

3. Proposals for improving innovation initiative in Slovak enterprises

Innovations are essential to keep up competitiveness of the country and of enterprises too. There is necessary to create favorable environment for innovative activities. The enhancement of cooperation between research and development organizations, universities and enterprises would be very beneficial. The innovative initiative in enterprises, especially small and medium sized enterprises, depends on their financial resources. The state support and risk capital serve the important task. Just risk capital is used rarely in the Slovak Republic and the recent case in National Agency for Development of Small and Medium Enterprises does not help to change of this fact. In countries with high competitiveness and innovation, the risk capital is a substantial financial source for small and medium sized enterprises.

As the biggest challenges for improvement of Slovak international position can be considered:

- Strengthening of cooperation between universities, high schools and business sector,
- Support of creation of start-up and spin-off companies in order to accelerate transfer of new knowledge into the practice,
- Simplification of laws regulating the conditions for obtaining tax and financial benefits for innovative companies (e.g. the act No. 185/2009 on incentives for research and development),
- Remission of taxes for enterprises successful in patent application in last two years,

- Complex computerization of government and extension of using of electronic signature by entrepreneurs,
- Information days for small and medium sized enterprises in every district town to provide comprehensive view at supporting possibilities of innovations.

The strengthening of cooperation between universities, high schools, research centers and business sector would allow direct contact with the source of innovation ideas and solutions come from universities to enterprises. It would accelerate transfer of them into the economical practice. This cooperation would provide the student contacts with business sector what could increase their interest in realization of their own innovative ideas. The success of innovative business is guaranteed by originality, competitiveness and uniqueness of innovations.

The simplification of conditions and requirements to obtain state subsidies and reducing of administration burden would conduce to higher interest in subsidies, grants and tax remissions and to higher success of applicants. Especially patents prove innovation activity of an enterprise and it is reason to aid this enterprise in its innovation activities. In the number of patents lag the Slovak enterprises far behind European, Japanese, or American enterprises.

The administration burden is phased down by slow computerization of state administration. Its acceleration should be one of priorities of government to create more favorable environment for small and medium sized entrepreneurship.

Periodical information days for entrepreneurs are notable requirement to ensure them easy access to transparent and understandable information from all necessary areas. The consequence and contribution of these days results from the direct contact between relevant institutions and entrepreneurs.

4. Conclusion

Innovations are the only effective response of enterprise to environment changes induced by globalization and competition. If they were known by an entrepreneur as the opportunity not threat, the enterprise could reach additional progress and reinforcement of its competitiveness. The essential requirement for government is to invest into the knowledge economy, better interconnection between science-research basis and business sphere and to reduce barriers that hinder entrepreneurship. These activities would create favorable environment for creation and development of competitive and innovative small and medium sized enterprises that could bring economical prosperity and better international position for country.

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Communication Activities between Universities and Alumni

*Alena Chrenková, *Mária Rostášová, *Peter Kolarovszki

*University of Žilina, Faculty of Operation and Economics of Transport and Communications, Department of Communications, Univerzitná 1, 01026 Žilina, Slovakia, {alena.chrenkova, maria.rostasova, peter.kolarovszki}@fpedas.uniza.sk

Abstract. The article deals with various communication channels through which universities try to build relationship with alumni, to monitor their application in practice, to detect use of acquired knowledge and get feedback about the quality of education. Universities are aware of the importance of continuous communication with this target segment. Their aim is to inform about objectives and future plans, activities, opportunities for lifelong learning and to stimulate interest in cooperation and creation of mutual relationship. Contact between university and its alumni is essential, because it can significantly contribute to improving the quality of education, science and research and practical use of knowledge, which will lead to increasing prestige of university.

Keywords: University, marketing communication, target groups, alumni.

1. Introduction

Increasing competition in education environment forces educational institutions to focus on effective communication with their target groups. Universities need efficient and effective communication, but also conceptual development and enhancing of learning process in their long-term goals.

During last years universities have paid attention on communication with their alumni. They are source of information in the view of graduate employment survey, feedback, assessment of education quality and application of obtained knowledge. Universities are aware of the importance of continuous communication with this target segment in order to inform about future objectives, activities, opportunities for lifelong learning and to stimulate interest in cooperation and creation of beneficial relationship.

2. Communications activities of universities

Communication between university and its students would not end on the day of graduation of their studies. On the contrary, the graduates will become employers, experts, academics, representatives of state and government. Contact between university and this target segment is essential, because it can significantly contribute to improving the quality of education process, science and research, practical use of knowledge obtained during study, which will automatically increase prestige of the university in the view of experts and public.

Basis for effective cooperation between university and alumni is positive relationship to the university, where they studied. It is necessary to build this relationship during the whole study. Student who is satisfied with university and feels that university prepared him well for life, will most likely be interested in cooperation after graduation. [1].

During 2008, in Slovakia has been carried out survey focused on cooperation between universities and their alumni and also on awareness of respondents about the existence of alumni clubs. Respondents were alumni of twenty Slovak universities who have graduated in 1995 - 2008. 80,89 % of respondents said that their university did not contact them in order to find out satisfaction with education. This negative situation indicates a very low interest of universities to

get feedback. If universities do not begin to interest in alumni, it will be difficult to talk about the cooperation with them.

Other questions were oriented on alumni clubs. But even in this area have Slovak universities quite significant shortcomings. To the question: “*Is there alumni club at your faculty?*” said 7,94 % of respondents *yes*; 5,96 % *no* and 86,10 % could not answer. [1]

Slovak universities should learn about building relationships with alumni from the examples of foreign universities. Many of them have detailed and sophisticated system of building and developing the relationships with alumni. They use many instruments in various combinations, for example:

- on-line survey,
- alumni portal,
- alumni network,
- university magazine,
- carrier centre,
- annual or professional meetings, etc.

Specific examples of instruments used by selected foreign universities in order to communicate with their alumni are listed in Table. 1.

University	Communication activities between university and alumni
University of Melbourne	<ul style="list-style-type: none"> ▪ <i>Tell us your story</i> – survey focused on application of alumni in practice. Profiles of the most successful graduates are published by individual faculty on website and also in the special issue of university journal <i>Melbourne University Magazine</i>. ▪ <i>Alumni Portal</i> – collects information about graduates and allows them to stay in touch with former classmates, professors and enjoy various benefits. [11]
Harvard University	<ul style="list-style-type: none"> ▪ <i>Intranet Network</i> – available only for registered alumni; contents profiles and contacts information of alumni. ▪ <i>Meetings for Alumni</i> – professional meetings focused on various areas; alumni can exchange experience, references, etc. [5]
Washington University, St. Louis	<ul style="list-style-type: none"> ▪ <i>Carrier Centre</i> – have more than 15 000 registered alumni. It connects alumni with experts who help them with finding internships or jobs. ▪ <i>Shadow Program</i> realized by Carrier Centre – employee of company spends three days with students, during which he shows job description, employee benefits and disadvantages and so assist them in deciding about future employment. ▪ <i>WebREC</i> – on-line letter of recommendation in which teachers entered their evaluation of students in the database for companies. ▪ <i>Corporate Recruitment</i> – many businesses in cooperation with the university try to “capture” smart students during their study and so prevent their entry into competitive companies. [10]
University of Birmingham	<ul style="list-style-type: none"> ▪ Slogan: <i>You and the University of Birmingham – it is a relationship for life.</i> ▪ <i>On-line community for alumni (your.bham)</i> – alumni can get contact with classmates and also the opportunity for finding employment or establishing business contact. ▪ National survey <i>International Student Barometer</i> focused on alumni satisfaction with obtained knowledge, employment status, experience, career advancement, etc. [9]
University of Oxford	<ul style="list-style-type: none"> ▪ <i>On-line Carrier Network</i> – database of alumni who share information about job, carrier advancement, further education, etc. University students can contact and communicate with alumni via on-line form. ▪ <i>On-line Survey of Higher Education Statistics Agency</i> – more than 10 000 alumni share assessment of study program, obtained knowledge, application in practice and also provide possibilities for improving quality of education. [7]
Columbia University	<ul style="list-style-type: none"> ▪ <i>Centre for Career Education's Alumni Career Development Department</i> - offers

University	Communication activities between university and alumni
	<p>various kinds of assistance to support career, career planning through individual career counseling, professional development programs and workshops. It helps alumni with self-evaluation skills, job search and career planning, training programs, etc.</p> <ul style="list-style-type: none"> ▪ <i>On-line survey</i> – university annually sends questionnaires to more than 15 000 graduates; the response rate is on average 30 to 50%. [4]
<p>University of Pennsylvania</p>	<ul style="list-style-type: none"> ▪ <i>PACNET (Penn Alumni Career Network)</i> – database for detecting application of graduates in practice; provided personal details, year of graduation, job title, but also opportunities to acquire new positions in their field. Information is available only through a registration and compliance with strict conditions. ▪ <i>Annual personal meetings of alumni.</i> ▪ <i>On-line survey</i> - carried out by university every five, ten and fifteen years after the end of the educational process of students at the university. It is focused on information about trends in employment, reached level of education, industry, salaries, considering the skills obtained at university, etc. In order to increase the interest of graduates in survey participation, university provide various incentives – discounts on insurance, purchases of goods (computers, books, clothes), car rental services, etc. [8]
<p>Masaryk University, Brno</p>	<ul style="list-style-type: none"> ▪ <i>Association of Alumni and Friends of Masaryk University</i> - mediates contacts between alumni, organizes discussion meetings, lectures and social events, informs about the activities of the university, publishes information materials, etc. ▪ <i>Finding the 125 000 Masaryk</i> – activity focused on finding around 125 000 alumni of the university. The main objective was to get as much information on alumni, to enable them to meet with former classmates and re-establish and develop the relationship between them and the university. ▪ <i>Celebration of 90th anniversary of the university</i> ▪ <i>Alumni Day</i> – students and teachers prepare program presenting not only present but also past of the university. ▪ <i>Alumni Magazine</i> - informs about activities several times a year. ▪ <i>MU Alumni Network</i> – alumni can register and then edit data, establish personal or professional link, reach friends, organize meetings, share photos and discuss various issues. [6]

Tab. 1. Communication activities between universities and their alumni

As it is evident from the table, most of universities realize surveys in order to map application of alumni in the practice. During last years, universities have created alumni clubs, which bring benefits to both parts - university and also alumni. Activities of many universities are also focused on career counseling, job offers, graduates training, etc. The last but not least, university use as communication channel also journals and publications which provide lot of information about university and some of them have special editions oriented on alumni.

3. Conclusion

University which offers quality education tailored to employers and students needs is more attractive not only for students, but also for businesses, other partners and sponsors. Communication with alumni is important part of university activities. Universities should try to maintain permanent contact with them and prepare projects for possible cooperation. They should also improve the level of obtaining feedback and on its base eliminate specific deficiencies in the educational process at the faculties.

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Concept of Fundamental Analysis of a Company

Katarína Janošková

University of Žilina, Faculty of Operation and Economics of Transport and Communications, Department of Economics, Univerzitná 1, 01026 Žilina, Slovakia, katarina.janoskova@fpedas.uniza.sk

Abstract. This article aims to describe the proposed model of fundamental analysis of a company. It describes the individual steps of the proposed model of fundamental analysis of a company. This article is devoted to each of the monitored field – macroeconomic environment, sectorial environment and company environment. Further it describes a method for measuring the indicators in each of characterized monitored environment. Finally, it describes the preparation of subindex of macroeconomic environment – I_M , subindex of sectorial environment – I_S , subindex of company environment – I_C and total index of fundamental analysis – I_{MSC} .

Keywords: fundamental analysis, macroeconomic environment, sectorial environment, company environment, indicators

1. Introduction

Fundamental analysis is a method, with a help of which the indicators of internal and external background of a company are considered and analysed. These indicators might fundamentally endanger or support individual activities and objectives of a company and affect activity of a company in medium or long-term horizon and also its value.

The importance of fundamental analysis of a company lies in the effort to connect quantitative and qualitative, financial and non-financial indicators determining activity of a company and creating its value at the same time.

In this way fundamental analysis disposes of insufficiencies of the systems based exclusively on exact quantitative financial indicators there through the systems measuring indicators determining the value - company value accelerators are extended of non-financial quantitative indicators.

Quality and relevance of results of fundamental analysis of a company is determined by monitoring the development of indicators in time. Having considered the dynamic development of indicators determining the company value is inevitable to carry out fundamental analysis of a company continuously.

We are able to pass the opinion on whether the overall conditions affecting activity of a company are getting better, worse or stagnating just on the basis of the development of indicators values in time.

2. Process of the Fundamental Analysis of a Company

Drafted model of fundamental analysis of a company - model MSC describes the procedure and the steps, which are recommended when caring out this type of analysis. The title of this model stands for 3 basic areas (environments) the fundamental analysis of a company deals with:

- M - macroeconomic environment analysis,
- S - sectorial environment analysis,
- C - company environment analysis.

Process of the fundamental analysis of a company can be divided into several steps (Figure 1).

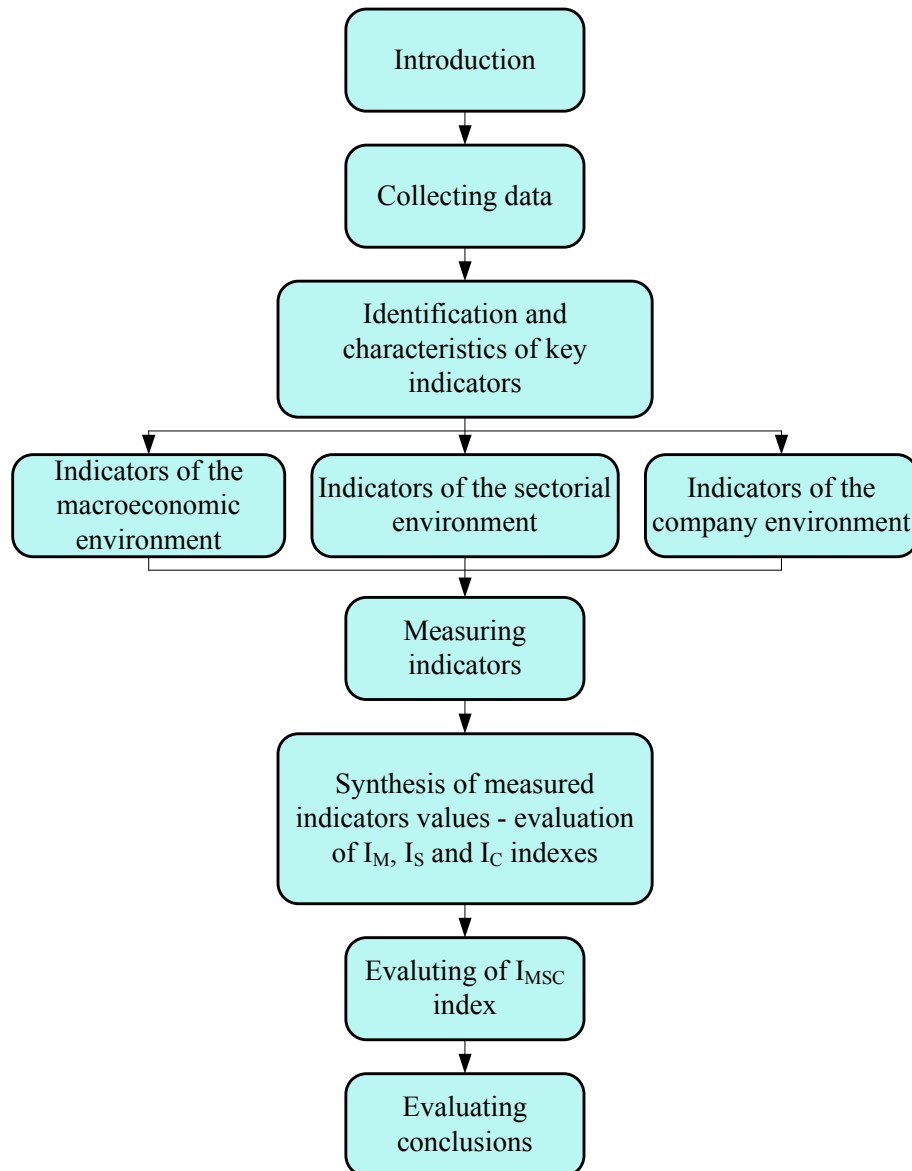


Fig. 1. Process of the Fundamental Analysis of a Company

Source: processed by the author

Model MSC analyze particular environments individually, what enables us to consider the impact of the influence of particular constituents of external and internal environment of a company and on the other hand provide for the synthesis of individual partial analysis into the single result - what provides overall view on indicators of particular areas being analysed.

Output of model MSC is to state an index value I_{MSC} , which displays the development of particular indicators in time. Partial outputs of model MSC is to state subindexes values in this model:

- I_M - subindex of macroeconomic environment,
- I_S - subindex of sectorial environment,
- I_C - subindex of company environment.

In the frame of particular subindexes is possible to state the development of particular indicators individually, what enables us to specify the impact of the development of particular indicators for final subindexes value and subsequently a resulting index I_{MSC} .

3. Constructing the Index

Hierarchy of indicators of the fundamental analysis of a company is shown in the following figure (Figure).

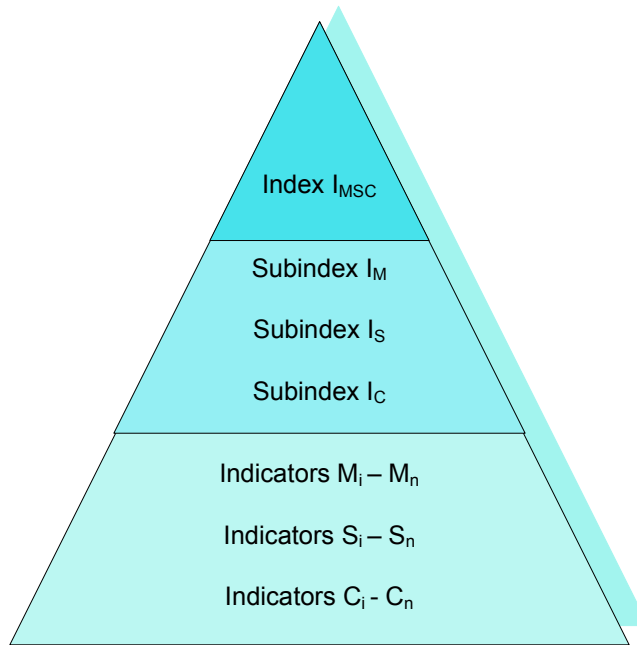


Fig. 2. Hierarchy of indicators of MSC model

Source: processed by the author

3.1. Value of indicators

The value of the indicator of macroeconomic environment is calculated by the following equation:

$$M_i = \frac{m_n - m_{n-1}}{m_{n-1}} \quad (1)$$

The value of indicators of sectorial and company environment is calculated in the same way.

3.2. Value of subindexes

The value of subindex of macroeconomic environment – I_M is calculated by the following equation:

$$I_M = \frac{M_1 + M_2 + M_3 + \dots + M_n}{n} = \frac{\sum_{i=1}^n M_i}{n} \quad (2)$$

The value of subindexes of sectorial and company environment is calculated in the same way.

3.3. Value of total index

The value of total index I_{MSC} is calculated by the following equation:

$$I_{MSC} = v_1 \cdot I_M + v_2 \cdot I_S + v_3 \cdot I_C \quad (3)$$

Weight of each subindex may be different depending on the particular conditions of the rated company, the industry in which it operates and the state economic policy.

4. Conclusion

Having evaluated I_{MSC} index and I_M , I_S a I_C partial subindexes and their deflections compared to the previous periods, the conclusions are stated on its basis, displaying the impact of particular areas of company activity and its competitiveness monitored.

The conclusions of fundamental analysis of the company should include recommendations for the future direction of business of assessed company, under which the management of the company can to carry out decisions and implement measures that will lead to the elimination of potential risks, whose disclosure would not be possible without making fundamental analysis.

Results of fundamental analysis will enable to management to better know the business environment in which the undertaking carries on business and know the action of modifiable factors beyond the control of external and internal environment. Management has information on past and current development environment and the basis of this knowledge will be able to assume its future development and possible consequences.



Cross-border Polish-Slovak Innovation and Technology Network

*Michal Janovčík, PhD., *Milan Hulín, PhD., **Radovan Furmann, PhD.

*Slovak Productivity Center, Univerzitná 6, 010 08 Žilina, Slovakia, janovcik@slcp.sk, hulin@slcp.sk

**Central European Institute of Technology, Univerzitná 6, 010 08 Žilina, Slovakia,
radovan.furmann@ceit.eu.sk

Abstract. The main "product", which is now sold in the world, is knowledge. The competitiveness of countries, regions and companies now decide people with their knowledge, creativity and inventiveness. The purpose of the project CITNET is to create a coordinated cross-border network with a more pronounced focus on problems of joint research and development, technological progress and innovation.

Keywords: innovation, network, high-tech technologies, digitization.

1. Introduction

Slovakia and Poland currently lacks a coordinated cross-border network with increased focus on issues of joint research and development, technological progress and innovation. Such a network must be able to integrate and further develop the theoretical knowledge base of institutions with current business trends. In collaboration of University of Zilina, Academia Technicno Humanistizna and Slovak Productivity Center there are being systematically built structures that enable information sharing, knowledge development, and human capital development but also building of joint laboratories. This happens mainly in areas of high - tech research, development and education with the support of information - communication technologies such as technologies of Digital Factory, simulations, virtual reality, artificial intelligence and so on.



Fig. 1. Map of the cross-border innovation and technology network.

However, implementation of such top research requires in addition to high investment also cross-linking of similar workplaces in order to achieve excellence in the European Research Area. It is therefore necessary to join forces and create a strong cross-border innovation and technology network that will contribute to the integration of common knowledge and skills and contribute to the development of the latest trends in the European Union.

Therefore Slovak Productivity Center, along with partner University of Zilina, CEIT, n.o., Akademia Techniczno-Humanisticzna and Fundacja Centrum Nowych Technologii implements a project "CITNET - Cross-border Polish-Slovak Innovation and Technology Network.

2. High-tech technologies of Digital Factory

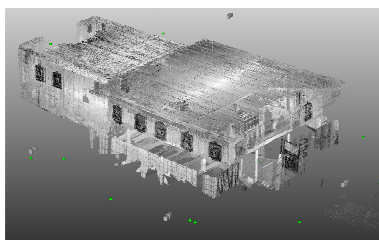
When we talk about the development of high-tech technologies, thus within the network we support the use of technologies of Digital Factory, which can be used mainly for production planning in the industry - a Digital Factory model allows integrally model all the important processes: from the emergence of ideas, through design, production preparation up to product assembly. The greatest potential to achieve high quality and low production costs is hidden in the pre-production stages. The application of Digital Factory has also a wider research, economic and social importance. Digital technologies used in the project can also be used in biomedical engineering, in the conservation and presentation of cultural heritage (digitization of cultural heritage, the possibility of virtual tours), construction etc.



Fig. 2. Sample of technologies used to develop the high-tech projects within the network.

2.1. Activities implemented within the project focused on preservation of cultural heritage

Within the project, the team of Slovak partners, led by CEIT Central European Institute of Technology, implemented the 3D laser scanning and digitization of St. George Church in Trnove. Under the project we scanned exterior and interior of the St. George Church in Trnove. On the basis of 3D scanned data a 3D CAD model of interior and exterior parts of the church was created. In the final phase of the project were created visualization pictures, videos of overflight for internet viewing of interior and exterior parts of the church.



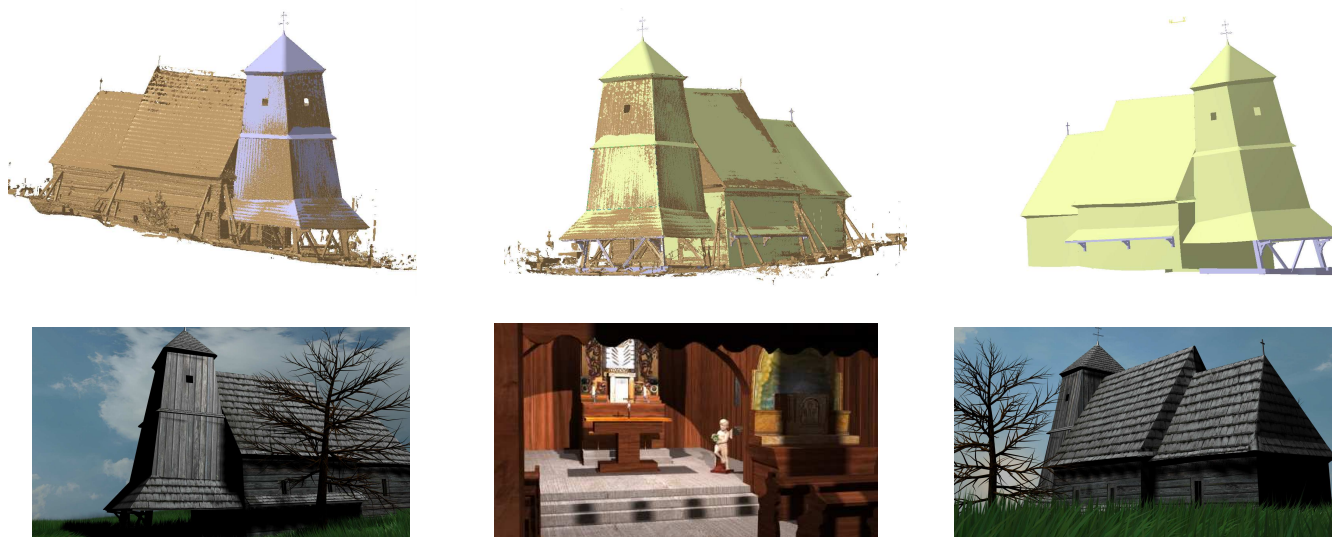


Fig. 3. The process from laser scanning to digitizing and visualization of St. George Church in Trnove.

2.2. Activities implemented within the project focused on support of SMEs

Another important activity was the 3D laser scanning, 3D digitizing and subsequent disposition of the production design of Kimatt, Ltd. Conceptual solution for the future development and expansion of manufacturing plants is extremely complex and difficult process. Implementation of even the smallest changes can be at high risk of failure. Therefore, any changes implemented in the current period must be well planned and thought out. To high-quality projection design contribute also modern high-tech technologies, which are pushing the issue of 3D design manufacturing systems to an entirely new dimension.

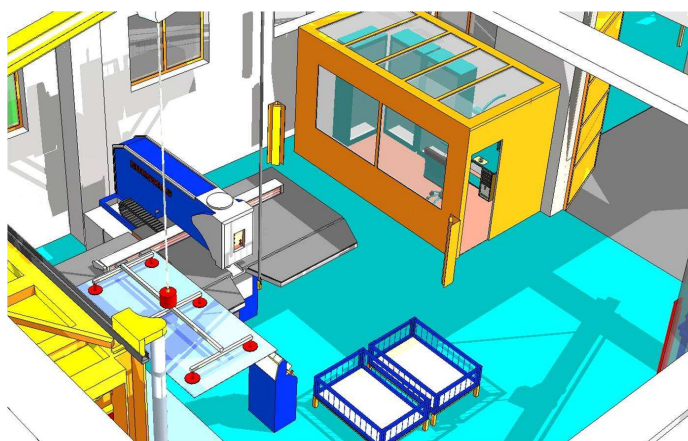


Fig. 4. The sample of simulation used in the company Kimatt, s.r.o.

3. Further development of the network

Establishment of such a network is not an end in itself, but should actively contribute to further economic development of the regions based on knowledge and innovation. In the final phase of the project we are creating a contact place = Innovation Center for small and medium sized enterprises, which upgrade their manufacturing process, products or introduce a product or technological innovation, it means most companies that want to succeed in the current market environment.

The actions provided by this center is also promotion of education and conference activities focusing on the support of innovation performance, productivity and competitiveness increase by applying the latest techniques and procedures.



Fig. 5. Pictures from conferences and workshops organized within the network.

4. Conclusion

Common purpose of partner organizations is an integrated system for building of research and innovation base and to bring the effect of long-term sustainability of the region based on the quality human capital. This network of partner organizations is able of its human and material potential help to develop small and medium-sized enterprises in the region and to bring further investment into the region.

Acknowledgement

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Value Based Management – Specifically Index CFROI

*Jaroslav Jaroš, *Janka Majerová

*University of Žilina, Faculty of Operation and Economics of Transport and Communications, Department of Economics, Univerzitná 1, 010 26 Žilina, Slovakia, {Jaroslav Jaroš, Janka Majerová}@fpedas.uniza.sk

Abstract. In nowadays dynamic and changing world, the position of companies and their activities is difficult. The market is demanding a maximum performance, optimal adjustments and perspective. To reach the growth of value it is required to understand many factors, which influence this value. The criticism of traditional approaches points out the need for more flexible approaches, which will be able to uncover problems tied to company's value management.

Keywords: CFROI, EVA, GCF.

1. Introduction

The growing need to take care primarily of the investors needs constantly brings new indicators, which should provide a real picture of effectiveness of company's performance including the perspective of the future. This process is supported by indicators of effectiveness of company's performance, which evolution correlates with movement of stock prices on capital markets.

After a wave of indicators based on the principal of residual profits (e.g. EVA), other indicators are steadily coming forward. Their coverage is more and more complex. Among these indicators we can count CFROI, which was created by American company HOLT Value Associates. It is important to stress out, that it is not a simple indicator, but a complex model, in which core is an indicator – the measurement of performance CFROI, which is primarily considered as a tool for searching the answers on the questions “What is the stock price and why?”

2. CFROI – Cash Flow Return on Investment

Indicator CFROI is similar to indicators of discounted cash flow – DCF, because the company's value counts on the basis of expected net future cash flows counted in real value with the help of discounted charge reflecting the expected investor's rate of return.

The indicator CFROI in contrast to DCF is used only for “real values”, so only for the values cleared out of inflation. By this approach it is possible to compare the company's performance in time.

CFROI compares the taxed future cash flow adjusted for inflation, which is being looked at by investors with inflation adjusted cash gross investments, inserted by these investors into a company.

$$CFROI = CE - \sum_{t=1}^n \frac{CF_n}{(1+i)^t} \quad (1)$$

where

CE capital expenses (the value of gross investment),
CF gross cash flow from operational activities,
I internal rate of return or the interest rate,
n the lifetime of assets.

The value of gross investment is adjusted for inflation and decreased by the sale end value from non-depreciating assets.

The life length of the asses is the same as the length of life of depreciating assets (weighted arithmetic average of economic life expectancy rate of depreciating assets, where the weights are the buying values-prices).

The indicator could be structured also based on the principal of net present value (NPV- Net Present Value):

$$CE = \sum_{t=1}^n \frac{CF}{(1 + CFROI)^t} + \frac{RVndA}{(1 + CFROI)^n} \quad (2)$$

where

RvndA residual value of non-depreciating assets.

It is possible to structure the indicator as CFROI spread in WACC (weighted average cost of capital).

The indicator has then a similar structure as EVA indicator:

$$CFROI_{spread} = CFROI - WACC \quad (3)$$

If the result is positive, it has a positive value for the shareholder (it signals company's value increase). In case of negative result, it has negative value for the shareholder (decrease in value of the company).

The indicator CFROI is based on the assumption that the in the long-term, the companies with above average profits are pushed by competitors to average profits (the gaining of positive profits attracts additional competitors to enter the market) and on the contrary, the companies with below average profits are pushed by competitors to implement corrective actions to increase performance and have tendency to increase it in a long-term to reach average profit gains. If they are unsuccessful, they gradually disappear. The indicator CFROI is connected with the competition life cycle.

The disadvantage of these indicators is the complexity of adjustments, which the indicator requires. In case of calculating CFROI by an external user of information, the brut estimation of investments in purchase prices is very difficult, because the external user does not know the purchase time of long-term assets. Because of this issue, this indicator is mostly only used at the company level.

2.1. Pricing using CFROI concept

The concept of CFROI can be used to evaluate the value of the company. This concept is deducted from the assumption of evaluating separately the value of existing assets and future investments.

Given:

$$\text{Company value} = \text{value of existing assets} + \text{value of future investments} \quad (4)$$

From the given equation, it is clear, that the value of the company depends not only on the value of existing assets and their ability to produce cash flow, but also from the future performance of the company, deducted from other investments and their profitability.

2.2. Calculation of CFROI

CFROI is basically an indicator of profitability of investments for the whole company, but not the indicator calculated with common statistical parameters.

Main components of CFROI:

1. Gross investments (starting costs)
 - a. non-depreciating assets

I

- | | | |
|----|--------------------------------------|------------|
| | b. depreciating assets | |
| 2. | Gross cash flow | GCF |
| 3. | Period of economical life expectancy | n |

Period of economical life expectancy - n

Under period of economical life expectancy we understand an estimation of average life expectancy of long term assets of company.

$$n = \frac{\text{adjusted long - term brut assets}}{\text{depreciation of long - term assets}} \quad (5)$$

Long term assets need to be adjusted for the parts, which are non-depreciating. For this reason we take out land from denominator as non-depreciating asset, unfinished asset (the end balance of accounts 041, 042), which would influence the result and also long-term financial assets.

Gross investments - I

Gross investments consist of depreciating and non-depreciating assets, but each and every item needs to be adjusted.

Adjustment of long-term assets for inflation

Expenses to reach cash flow need to be showed in current purchasing power of money. If we don't have the data for breaking of long-term assets by year (how many assets were acquired in each year) and also the deflator of GDP, it is possible to simplify the calculation – it is derived from the average yearly inflation rate. At the end, the calculation will be less accurate and the overall decrease in value lower than real.

Non-depreciating assets in current prices

Within the model of CFROI for non-depreciating assets we calculate:

- NWC – net working capital (monetary assets + inventory – not interested current loan capital),
- land (in current prices),
- other assets used for creating cash flows.

With inventory we assume, that they have been evaluated (priced) using the FIFO method. Then, it is the pricing in current prices. When pricing using different methods, a potential mistake or deviation can be created and an external analyst does not have a real opportunity to evaluate the degree of the deviation.

Land is in accounting recorded at purchased prices, it is therefore needed to price them using similar approach as in depreciating long-term assets.

Gross cash flow - GCF

In the model CFROI we search the gross cash flows, which are the cash flows from trading operations with no regard to the system of financing.

We adjust the accounting profit as follows:

- depreciations (are not money expense),
- interests (we add them, we do not differentiate the payments for own and loan capital),
- rent from leasing (we add it for the same reason as interests),
- profit (loss) from holding cash.

Profit or loss from holding cash

If the company has a positive net monetary assets, it encounters a loss, if the gains from this asset are lower than the inflation. And the contrary, if the company has a negative net monetary (cash) assets, we can calculate with profit if the inflation is higher than gains.

The exact loss from holding cash can be found by subtracting income interests from inflationary depreciation.

Using the same procedure, we calculate the average in not interested liabilities.

To calculate the indicator we use the relationship (2). We get the resulting values of the indicator CFROI using Excel, where we solve the given relation with function of internal rate of return.

3. Conclusion

The advantage of CFROI indicator is the opportunity to compare companies performance in time, with different structure of assets (placed in different industries – markets) and in different countries. Its value in percentage is more convenient for many managers than its monetary value (e.g. EVA), especially when we compare companies, divisions, or investments of different size. The indicators is most accurate from the perspective of its construction and the preciseness of removing accounting defects, it counts also with inflation.

The added value of using CFROI concept (especially in pricing) is the suggested way of counting discount rate – the costs of capital, which is trying more to accept market conditions.

Among its disadvantages, we can include its complexity of adjustments, which its calculation requires. Some of them might not be understandable, especially for non-financial managers. In case the indicator CFROI is calculated by external user of information, it can be hard for him/her to precisely calculate the value of gross investments, considering his/her lack of knowledge of time of purchase of each individual items of long-term assets. Considering the difficult adjustments, the use of this indicator remains often only on the company level. Objections can also be raised from the assumption that CF will not be constant during the life of long-term assets.

In business practice in Slovakia, the indicator CFROI is not very used, with exception of few enterprises under foreign ownership. The result is a low awareness of this concept, but also the difficult calculation, lower understandability of adjustments of entries and opportunities for its use in managing the company. It is used to a higher degree in measuring performance and primarily in evaluating the value of the company by portfolio investors in the scope of activities of consulting companies.

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The Necessity of Organizational Changes in Government in Relation to the Implementation of the UNITAS Programme

*Jana Jarošová

*The University of Žilina, Faculty of Operation and Economics of Transport and Communications, Department of Economics, Univerzitná 8215/ 1, 01026 Žilina, Slovakia, Jana.Jarsova@fpedas.uniza.sk

Abstract. In order to achieve organization's goals, fulfill the vision and implement plans, the work of the individuals must be organized in certain departments, organizational units, where work of individuals creates working groups and teams. The role of the organization is to maximize the level of organizational system with defining and ensuring the planned activities in the mutual relations of conditionality in space, time and sequence. System of tax collection, customs and social security is expensive and not very effective. One reason is its organizational fragmentation. High number of authorities does not permit the specialization of controllers, reducing the percentage of tax collection.

Keywords: organization, organizational structure, state government, UNITAS Programme.

1. Introduction

It is necessary for actual inefficient mechanism of the tax, customs and insurance contributions collection to comply the extensive changes and changes in organizational structure, which include changes associated with creation of new organizational structure model, with the highest calling, or changes in the rules aimed to increasing the efficiency of the organizations. It is essential to clarify the status of individual workers, to remove their overwork and secondly to increase their work activity.

Another organizational interventions are the changes of technical and administrative nature. These are caused by dynamic changes and affect the information system. Specifically, information gathering, processing, communication and information transfer. Also the questions of improving the working environment of employees and other organizations belong here.

2. Organization, organizing, organization structure

The form of the association of activities and people to ensure organization tasks finds its meaning in the organizational structure. It tells about the decision-making and implementation of the authority and responsibility for defined areas of activities.

The role of the organization is to maximize the level of system organizing with defining and ensuring the planned activities in the mutual relations of conditionality in space, time and sequence. It takes advantage of division of the labour, specialization in particular. It ensures the coordination of the necessary actions and interactions of people and teams who made it. The division of the labour and demarcation of the activities should meet the criteria of economy and efficiency.

All organizations should have some form - more or less formalized structure which was defined by Child (1977) as something containing "all clear and regularly occurring features that help to shape the behavior of their members". The organizations differ in their complexity, but it is always necessary to distribute the tasks of the overall management in a range of activities, assign these activities to different parts of the organization and create tools for their control and integration.

State government should represent the type of the organization based on processes (process organization). It focuses on horizontal processes that overstep organization boundaries. Traditional structures were focused on vertical relationships and the management based on their powers - it was a command and control structure. Reengineering business processes need to show that the tasks separated in each of the functions integrated into a single horizontal work. The primary objective of such an organization is to maintain a smooth workflow between functional departments and achieve synergy common use of resources.

3. Experience from abroad

On the basis of tax and customs reform strategies coming from abroad it can be stated that most of the reforms were motivated by the desire either to increase its effectiveness in the selection of state revenue or its efficiency by reducing costs. In the area of government it would be able to inspire our country by abroad, where the government bodies and local authorities leased from the corporate sector know-how- that means effective practices, management, decision making and economy in its scope. In northern European countries (Finland, Sweden, Norway) within the concept of "new public management" leading companies released their top managers in the service of state institutions for contracts, the agreed period of time (e.g. the term). These managers transfer to the state bureaucracy their management skills and in many cases they have a positive impact, for example the efficiency of financial management.

4. Trends continuous development organizations in a constantly changing environment

In the process of globalization of the economy cause the changes in global economic environment the demand of fundamental changes in management activities. The fundamental change in management of the organization philosophy becomes the management devoted to the development problems that were previously removed as irrelevant.

Continuously growing organization exists and has the best opportunity to success in an environment of constant changes. Burns and Stalker (1961) argue that organizations which are based on bureaucratic structure with many rules and procedures are more suited to a stable environment, while structures that are described as organic, they can promptly cope with constant changes.

In relation to any system we can never count on it lasting constancy. Like other systems, neither the government can lag behind in the process of transformation, despite the satisfactory performance of their duties defined by law as they arise. Given the vital importance of position of the tax and customs administration, which represent the main authorities in providing the revenues of the state budget, it is crucial for these organizations to undergo the process of modernization. It allows them to respond both to a variety of economic and social aspects of the changing times, as well as the need to increase efficiency and effectiveness of their own operation to accomplish their statutory duties.

The basic assumption for effective coordination is to establish information links and information analysis. It requires, therefore, the necessity of the purpose- built structured system of collecting, processing and application of information on electronic media as subsystem of the "Information system of local authorities".

5. The UNITAS Programme

The system of tax, customs duties and insurance contributions collection is expensive and not very effective. One reason is its organizational fragmentation. The high number of offices does not

permit the specialization of controllers thus the percentage of tax collection is reduced. In addition to the organizational fragmentation another problem lies on the actual setup of processes resulting in a high workload.

The organizational reform of the tax authorities of the Slovak Republic is due to the adoption of Act no. 479/2009 about government bodies in the field of taxes and charges and amendment of certain laws (hereinafter the "Act no. 479/2009) and related legislation. Adoption of Act no. 479/2009 Z.z. constitutes the legislative framework of the UNITAS program which will aim in its first phase to reform the tax authorities of the Slovak Republic and merge it with the Customs Administration of the Slovak Republic on 1.1.2013.

The final aim of the UNITAS programme is the creation of a single institution - the Financial Report of the Slovak Republic which later takes on itself also the selection of insurance contributions. The new law on government bodies in the field of taxation and fees assumes a reduction in the number of existing tax offices from 102 to 8 offices. Within the reform it is assumed the radical reducing of the number of employees, because it is expected to transfer most of them to the new created offices.

An important element in the modernization and computerization is the introduction of such information and communication technologies, which will result in a paperless communication and relieving the employees of the financial report from routine activities. It is necessary to eliminate the need of physical contact of the staff with the subjects to a minimum by the introduction of electronic services.

The current tax administration consists of the Tax Directorate of the Slovak Republic, 8 subsidiaries of the Tax Directorate of the SR and 101 tax offices, and the Tax Office for selected subjects. This highly decentralized structure is not an effective way of using resources. The aim is to reduce the high number of tax authorities, as over half of them have no more than 50 employees. That is why these offices become very expensive as each office must take into account also its own operations. And in the case of small authorities main activities are provided instead of the ones which should be required. Another disadvantage is also the fact that it is not possible to achieve the necessary specialization, which results into an inefficient use of quality human resources for low-skilled jobs.

6. Conclusion

By concentrated effort it is possible to transform the tax and customs administration at the institution within several years which will set an example for other components of the government in the access to citizens. So that the financial relationship - citizens versus the state and aspects related to it are no longer perceived as a negative aspect, but as a partner relationship that will benefit both parties. At the same time, this institution will be able to assume the responsibility and competence in the mandatory of the insurance contributions collection from the social insurance and health insurances. This will lead to a reduction in bureaucracy and improving communication between agencies providing on the revenue side of public budget and citizens.

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The Collective Investment in Globalization Conditions

Petra Karafová

University of Zilina, Faculty of Operation and Economics of Transport and Communications, Department of Economics, Univerzitna 1, 01026 Žilina, Slovakia, petra.karafova@fpedas.uniza.sk

Abstract. In practice, legal and natural persons in certain circumstances have a surplus of available funds it's means within the household incomes are higher than the expenditure and income within firms are higher than costs. Money as such, have no income, therefore, not investing in them, it's means whether households and businesses are trying to free funds to invest. One option is to invest in mutual funds, namely the use of collective investment.

Keywords: Financial market, assets, risk, securities, liquidity.

1. Introduction

Collective investment is a business, which accumulated cash from unspecified and unlimited number of individuals and entities. The main element of this type of investment is diversification of risk.

Cisko, Klieštk¹ argue that collective investment has also another tasks in the financial market:

- Investing in securities and other assets to recover embedded capital and savings,
- diversification reduces the rate of individual risk for the investor to invest in various securities, assets,
- issuers of shares, debentures and other securities giving access to the necessary capital,
- purchase and sale of securities involved in the increase of turnover and liquidity in the secondary securities market.

2. Collective investor in the investment process and his functions

Investment process deals with how the investor has to decide which securities to be invested and which has chosen the investment made. The most effective form of financial investment is to create an optimal portfolio. Investor monitors investment performance, risk and liquidity level. Based on these parameters, the collective investor decides on admission of the securities in its portfolio. A prerequisite is the ability to realistically evaluate performance of individual securities and determine the likelihood of achieving a given yield. When we are creating an optimal portfolio it is actually about finding the optimal combination between return and risk.

Deciding on a financial investment is based on the following basic knowledge:

- Between the expected return and risk is directly proportional relationship
- risk-free investment brings low, but steady and sure income
- investor is determined by relationship to the risk and expected return.²

Portfolio is not a static variable, which means that it is not only once to draw up and wait for income derived from it. This stems from the fact that the individual securities in the portfolio are

¹ CISKO, Š., KLIEŠTIK, T.: *Finančný manažment podniku I.*, EDIS, Žilina, 2009, ISBN 978-80-554-0076-1

² CHOVANCOVÁ, B., BAČIŠIN, V.: *Kolektívne investovanie*, 1. vyd. Bratislava: Uira edition, 2005, ISBN 80-8078-062-5, 45s.

changing their revenues, market price, liquidity, depending on movements in financial markets. The investment process includes the following phases:

- Setting investment policy;
- analysis of securities,
- construction of portfolio,
- portfolio review,
- valuation of portfolio performance.³

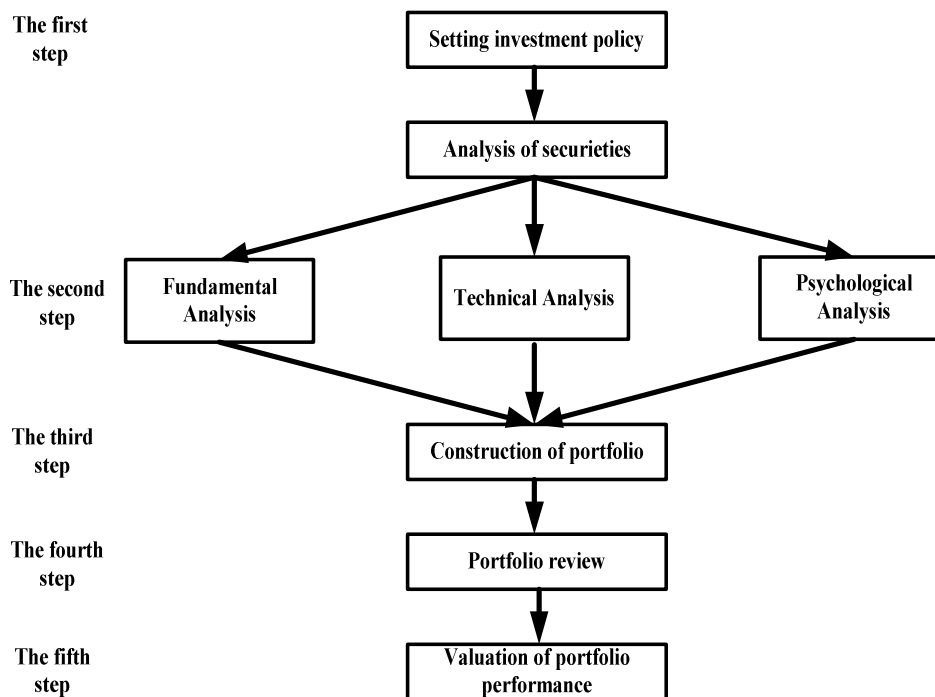


Fig. 1: The algorithm of the investment process

Source: CISO, Š., KLIEŠTIK, T.: *Finančný manažment podniku II.*, EDIS, Žilina, 2009, ISBN 978-80-554-0076-1, own processing

3. Types of investors and the parameters of the fund

The collective investment, the investor must consider a number of criteria. Possible factors are: the height of the expected return, investment horizon and different risks. Under this approach, we can talk about different types of investors:

- *Nonrisk investor*, for whose clear priority is security of funds invested. The investor in many cases do not enter into mutual funds. It remains only to invest in the market for bank deposits, even at low yield, especially when interest rates decline. Does not admit the loss, while often aware that low interest rates in the banking market and higher inflation caused by the effect of negative real yields and the money is depreciating. If you enter the market mutual funds, are mostly about money market funds and its portfolio includes mainly tools like bonds (the vast majority of home and cash),
- *conservative investor* is also not a fan of the risk. When investing does not admit any losses. Seeking higher returns than banks offer. The primary task for him is the preservation of assets, thus placing their funds in bonds, preferred. They are an essential component of his portfolio. Significant representation here also have a money market instruments. The investment horizon for this investor should be no longer than one year, because the shorter

³ CHOVANCOVÁ, B., BAČIŠIN, V.: *Kolektívne investovanie*, 1. vyd. Bratislava: Uira edition, 2005, ISBN 80-8078-062-5, 4žs.

the section would not return to cover the entrance fees fund. Such an investor realizes its diversification and other investments, such as life insurance, short term deposits with banks or building savings. The investor must also have resources for unexpected expenses, was forced to sell shares when the material gets into the temporary emergency,

- *balanced investor* is aware of some risk, it can bring investment. It follows that short-term fluctuations in its investment, but even if its short-term investment finds himself in minus figures, subject to panic. Expects higher returns than the conservative investor. Spreads its investments between cash, bond and equity funds. Dominant position in its portfolio to bond funds - 55%, equity funds are represented 30% and 15% cash funds. His portfolio is slightly more risk laden, which involves a requirement for a longer investment horizon. The investment horizon should be longer than 3 years. It follows that to cover their current needs and casual investor still must have a financial reserve, for example. on short-term accounts or current accounts,
- *growth investor* requires a higher return, but also accept higher risk. Invests in stocks as in bonds. Half of its investment portfolio consists of equity funds, bond funds represent 35% and 15% represent cash funds. In the case of stock titles prefers investments in well-known companies. Given the high percentage of equity funds in the portfolio can also expect more volatility, and hence the need for longer term investment horizon. Investor provides investment time horizon longer than five years, what he can bring some high valuation reflects the risk. It is therefore necessary, an investor should have available additional financial resources and did not enter all their funds to funds,
- *aggressive investor* has a fearless attitude toward risk. Its objective is to achieve high profits from the investment and at a higher level of risk. In its portfolio with the greatest proportion of shares 70% - 75%, the rest are bonds 20% - 25% and 5% cash funds. Given the high proportion of equity funds in its portfolio, the investor does not exclude the possibility of investments in less-known companies, but which can bring high returns in dividends and capital gains. The investor is willing to accept short-term and relatively high losses. Investment horizon is long, it is recommended this song to investors who are investing in mutual funds have long-term experience and not be subject to the depreciation of panic. It is also necessary that the investor has available additional financial resources
- *speculative investor* has one goal: fat profits. Invests very risky, only in equity funds. Besides his interest or do not remain so. "emerging markets". The investor knows that he can lose quite a lot, accept a very high level of risk. To relieve its nearly 100% of shares in the portfolio or the negative development in the markets. Low rates typically used for purchases of fund shares. The time horizon significantly exceeds the limit of 10 years, respectively. is not limited to, whilst waiting for an opportunity. It is logical that such plan should have a very rich investor who knows vyrosť with very high losses and has more financial resources represented in other forms of investment, for example. real estate, collections, precious metals, etc. recommended to invest in the meaning "everything in one basket".

Collective investment is a modern way of storing and earnings of the free finances already in the Slovak Republic. The growing importance of collective investment supported the interests of the European Union, the existence of different associations and associations (eg. European Fund and Asset Management Association EFAMA, Investment Company Institute ICI and Slovak Association of management companies SASS in Slovakia.

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Features of Modern Economic Policy of Russia in the Field of Innovation

Alla Kirillovskaya

Saint-Petersburg State University, Faculty of Economics, Department of Economic Theory and Economic Policy, Chayskovsky 62, 191123, Saint-Petersburg, Russia, akirillovskaya@mail.ru

Abstract. An effective economic policy in Russia in recent years has become especially topical issue. The growth of the middle class, as the effect of economic recovery after the crisis, it stopped. According to various expert estimates, the size of the middle class in Russia at the beginning of 2011 year does not exceed 20%. The current economic model and capacity of the Russian economy at the present stage does not allow the middle class continue to grow. One of the main factors affecting the welfare of the population is innovation. To improve the welfare state pursues a policy aimed at the introduction and development of innovations using different strategies.

Keywords: economic policy, welfare of the population, innovation, choice of innovative strategy.

1. Introduction

An effective economic policy in Russia in recent years has become especially topical issue. The growth of the middle class, as the effect of economic recovery after the crisis, he stopped. According to various expert estimates, the size of the middle class in Russia at the beginning of 2011 year does not exceed 20%. The current economic model and capacity of the Russian economy at the present stage does not allow the middle class continue to grow. In this situation, the state should take measures to create conditions for human welfare. Which way should develop Russia's economy and what measures of industrial policy should be adopted by the state?

Noted economist Joseph Schumpeter in his book *Business Cycles: a Theoretical, Historical, and Statistical Analysis of the Capitalist Process*, (1939) [4] wrote that the innovation in the economy causes a withdrawal from the market obsolete technologies, which leads to the emergence of new industries, resulting in and is economic growth and human welfare.

According to the new growth theory P. Romer and R. Lucas [1] increasing returns to innovation accrues not only to those who carry it out, but all of society, increasing people's welfare.

2. National Strategy of Innovation

Thus, we can say that one of the main factors affecting the welfare of the population is innovation. To improve the welfare state pursues a policy aimed at the introduction and development of innovation. In accordance with the "Strategy of Innovation Development of the Russian Federation until 2020" [5] proposed by the Ministry of Economic Development in 2010, the key tasks of the state of innovation are:

1. Human capacity building in science, education, technology and innovation;
2. Increased innovation activity existing business and the dynamics of the emergence of new innovative companies;
3. Increasing the "innovation" of the state, expanding the use of state-order system to promote innovation, to create a favorable "innovation climate";
4. Formation of a balanced, sustainable research and development sector;

5. Increased openness of national innovation system and the economy, the degree of integration of Russia into the global processes of creation and innovation, expansion of bilateral and multilateral international cooperation.

Quantitatively, the key indicators for 2020 should reach the following values shown in Tab. 1:

Indicators	2009	2020
The share of enterprises with technological innovation	10,4%	45%
Russia's share in world markets high- tech goods and services	0,3%	7,5%
The share of exports of Russian high-tech products in total world exports of high-tech products	0,35%	2%
Gross value added innovation sector in gross domestic product	11,8%	18,5%
Share of innovative products in total industrial output	12,4%	30%
Gross domestic expenditure on research and development	1,24%	2,75%
The share of Russian researchers in the worldwide number of publications in scientific journals	2,48%	5%
Average citations of scientific works of Russian researchers	2	5
The number of Russian universities among top 200 world universities according to international ratings	0	5
Number of patents registered annually by Russian legal entities and individuals in patent offices of EU, U.S. and Japan	63	2750

Tab. 1 - Key Performance Indicators Strategy of Innovation Development of the Russian Federation until 2020

Reach their goals may be using different strategies. There are 3 main options:

1. Strategy indirect stimulation of the state innovation development. In line with this strategy, the state creates, on a background of macroeconomic stability, favorable conditions for businesses using innovation. The state must improve the quality of education and research, attracting scientific personnel decent wages.
2. Catch-up development strategy and local technological competitiveness. This version focuses on re-economy based on borrowing of imported technologies, and to encourage local development of domestic developments.
3. The strategy to achieve leadership in leading scientific and technical sectors, and fundamental research. Strategy is characterized by significant government efforts to modernize the sector researches and development and basic science, a significant increase in their effectiveness, focusing on breakthrough science and technology areas that dramatically expand the use of domestic development and to improve Russia's position on the world market of high technology products and services.

For countries with large economies, diversified industrial structure policy choices of technological upgrading cannot be universal for all industries and sectors. Thus, for Russia in modern terms it would be rational to use a mixed strategy. At the initial stage in the technological gap in all sectors of the economy should adopt a strategy of catching up, which will allow for large-scale modernization of the economy without huge expenses. Pursue implementation of their own innovations at this stage is only necessary on certain priority sectors. Move on to the stage of active implementation of innovations (the third strategy) is necessary only after achieving some positive results in the first stage. Premature focus on innovative development can lead to inefficient use of resources. Moreover, the first strategy to create state-friendly "innovation climate" should be applied in parallel at each stage, regardless of the current strategy. A positive example of such a sequence of development is Japan, which began to bet on innovation only in the 1980's, when the

level of per capita GDP, it caught up with European countries. Prior to that, the Japanese have evolved by borrowing Western technology [3].

The strategy of innovation for Russia it is necessary to provide a combination of its base (largely resource-based) and new competitive advantages, particularly in computer science, nuclear energy, production of new materials, space industry, etc [5].

In implementing this strategy and goals, the State must proceed from the following principles: Concentration of government efforts in areas characterized by lack of entrepreneurial activity, the predominant focus on filling in "market failures":

- close interaction between state, business and science as in identifying priority areas for technological development, and in the process of their implementation;
- transparency of budget allocation and evaluation of progress;
- orientation when assessing the effectiveness of organizations of science and education, innovative business and innovation infrastructure to the highest international standards;
- to promote competition, overcoming monopoly in the sector generating knowledge as a key motivation for innovative behavior.

3. Conclusion

In Russia, one of the main problems is the welfare of the population. One of the factors improving the welfare of the population is innovation. The state, through economic policy, introducing an innovative strategy. There are three strategies: indirect, catching and innovative. It would be advisable to use a mixed strategy - at the initial stage should be used overtaking strategy. Fasting how, catching up strategy would yield positive results, it is necessary to implement progressively innovative strategy. Indirect methods must be present at all stages of the innovation strategy.

Now, Russia has used a mixed type of innovation strategy - both are being actively implemented, all three types of strategies. This leads to inefficient use of resources and waste of budgetary funds.

It is important to take into account also that in view of the world experience for the transition to innovative development requires at least 10 years. So it makes sense to give a new innovative Strategies longer time horizon – 2030.

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Supervisors' Assessment According to BOST Method in Chosen Polish Company

*Manuela Konstanciak, *Stanisław Borkowski, *Marta Jagusiak

* Czestochowa University of Technology, Faculty of Management, Institute
of Engineering Production, ul Armii Krajowej 19b, 42-200 Częstochowa, Poland, manuela@gazeta.pl,
bork@zim.pcz.pl, m.jagusiak@op.pl

Abstract. The main subject of the research presented in this paper is assessment of polish supervisors with use of 4E+1P principle, 12 golden rules and Toyota's principles. This is a part of researches conducted within the confines of BOST method, based on rules of Toyota's system. This test method can be successfully used both in production and service institutions. There are two versions of the survey questionnaire in this study: for supervisors and staff. The questionnaire includes also: the most important areas of improvement, visual control of factors, elements of the manufacturing process, competitive products and manufacturing processes. The results of research are presented as pie charts and bar charts.

Keywords: BOST method, 4E+1P principle, 12 golden rules, Toyota's principles, supervisor.

1. Introduction

A BOST method presented in papers [1, 2] was used for carrying out researches. This test method, based on the Toyota's production system can be successfully used both in production and service institutions.

There are two versions of the survey questionnaire in this study: for supervisors and staff. The questionnaire includes: the most important areas of improvement, visual control of factors, elements of the manufacturing process, competitive products and manufacturing processes. The final part of the survey includes an assessment of employees, the respondent's birth certificate and determine the nature of the business. With use of the BOST method human resources company can be characterized. This method includes also a SERVQUAL method questionnaire [3], which measures quality of service.

2. Description of research problem

Development of the problem was based on three issues relating to:

1. Assessment according to 4E+1P principles, based on 5 features: 1E – Is full of enthusiasm all day long, 2E – Is able to encourage others to take actions, 3E – Makes decisions fast, 4E – Knows how to implement decisions, 1P – Cares for the success by co-workers.
2. Assessment according to golden rules, based on 12 features: KA – Sets good example, KB – Communicates about goals of actions, KC – Informs about news in the company, KD – Asks staffs about advice, KE – Gives support during performance of tasks, KF – Directs and requires, KG – Allows to improve work independently, KH – Prizes for good work, KI – Thanks openly, KK – Criticizes in discreet manner, KL – Forgives and encourages to achievement of good results, KN – Is open to ideas by the staff.
3. Toyota's principles, that is what leaders do?, based on 8 features: KP – Improves work in his team, KR – Cares if the team lives by company's vision, KS – Influences with energy and positive attitude, KT – Is open, KV – Is confident while decision-making, KW – Cares if his

questions are followed by actions, KU – His behavior inspires for learning, KZ – Is success-driven.

4E+1P principles [4] are used for assessment of the candidates during interviews for managerial positions. Twelve golden rules [5] contain a comprehensive characteristics of a person and can be successfully used during investigations. Toyota has developed leaders traits (8ZT), which can also allow for revealing a number of supervisor traits [6].

3. Characteristics of research company

Company X started its activities in 1982. Manufacturing plant with technical facilities is located in Sosnowiec.

From the beginning, the company is associated with the automotive industry. In this regard, the company performs technical services for the design, execution and assembly. It designs and manufactures technical equipment of production lines, mainly: pendants to transport the body of a car, car parts (doors, fuel tanks, seats, etc.), storage pallets, as well as trucks to transport the sequence of components from storage to the cost assembly/production. In addition, it manufactures auxiliary equipment used in mass and small series production for the automotive and other industries.

The company's portfolio also includes equipment and tools for hot extrusion of aluminum profiles. These include the device for the separation of the forming dies, conveyor production lines, both predefined and generated waste products (roller, apron, chain conveyors). In cooperation with foreign companies, the company X does covers and the roof of recreational and commercial sports halls, which creates a support structure. It offers design construction of very complex shapes and narrow tolerances).

In the company X BOST analysis was conducted among 25 workers. 5 supervisors and 20 people from the staff answered to questions in the survey.

4. Supervisors' assessment according to different tests

Results of characteristics of supervisors based on the 4E+1P principles are presented in Table 1. Their graphic interpretation is presented in Figure 1.

Result	Denotation of principle [%]				
	1E	2E	3E	4E	1P
1-YES	40	64	64	92	48
2- NO	60	36	36	8	52

Tab. 1. Assessment's structure according to 4E+1P principles.

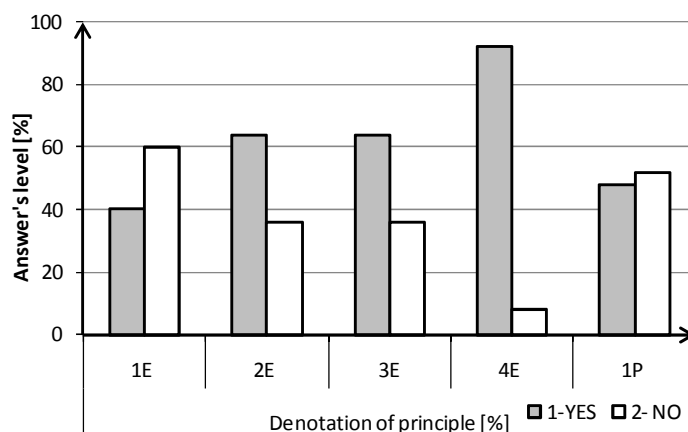


Fig. 1. Supervisor's assessment characteristics based on 4E+ 1P principles.

During the assessment of superiors according to the 4E+P principles vast number of employees of the company X has concluded that the most important feature, representing 92% of the possession of the superior, is knowledge how to implement decisions and strive to achieve the target. To be able to encourage others to take actions and to make decisions fast are also important – 64% of respondents think in this way. The opposite opinion has 36% of workers. 60% of respondents voted on the "no ", taking into account whether the supervisor is full of enthusiasm all day long. According to the respondents (52%) a superior does not care for the success by co-workers.

Results of characteristics of supervisors based on the 12 golden rules are presented in Table 2. Their graphic interpretation is presented in Figure 2.

Result	Denotation of principle [%]											
	KA	KB	KC	KD	KE	KF	KG	KH	KI	KK	KL	KN
1-YES	80	88	64	36	88	96	68	44	36	72	72	80
2- NO	20	12	36	64	12	4	32	56	64	28	28	20

Tab. 2. Assessment's structure according to 12 golden rules.

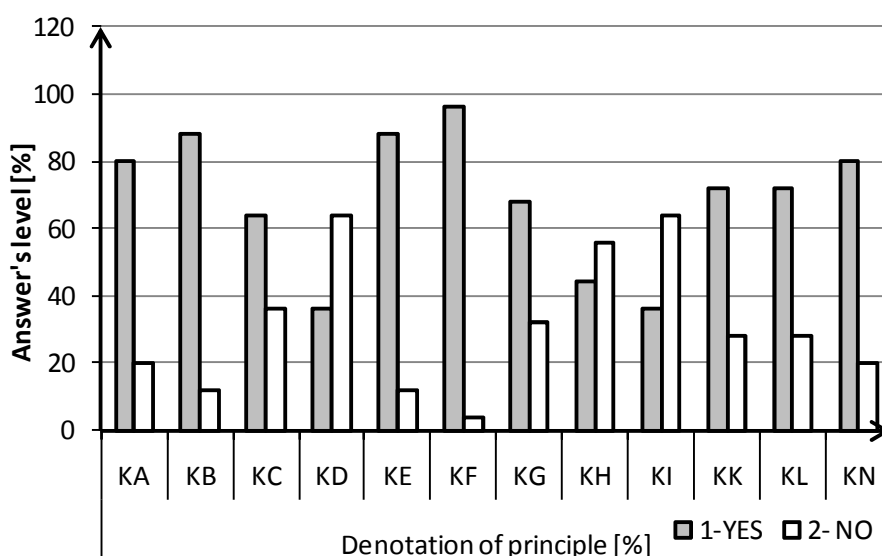


Fig. 2. Supervisor's assessment characteristics based on 12 golden rules.

An ability of directing and requiring of employees is a top-rated feature of superior among the respondents, which amounted to 96%. Features: to communicate about goals of actions and to give support during performance of tasks were also very high assessed, i.e. 88%.

The next features with almost the same value, i.e. 80%, which have big importance in the assessment of superiors are: to set good example and to be open to ideas by the staff. To criticize in discreet manner and to forgive and encourage to achievement of good results both got 72% of "yes". The crew of the company is satisfied when the supervisor listens to them and are open to their ideas what means that he allows them to improve work independently (68%).

Respondents working in the company highly rated (at 64%) these features of supervisor, which inform about news in the company, demonstrate its independent decisions without asking their subordinates for advice and does not express public thanks to them. 56% of respondents said that the supervisor not too often prized them for good work

Results of characteristics of supervisors based on the Toyota's principles are presented in Table 3. Their graphic interpretation is presented in Figure 3.

Result	Denotation of principle [%]							
	KP	KR	KS	KT	KV	KW	KU	KZ
1- YES	48	56	56	64	80	64	36	96
2- NO	52	44	44	36	20	36	64	4

Tab. 3. Assessment's structure according to Toyota's principle.

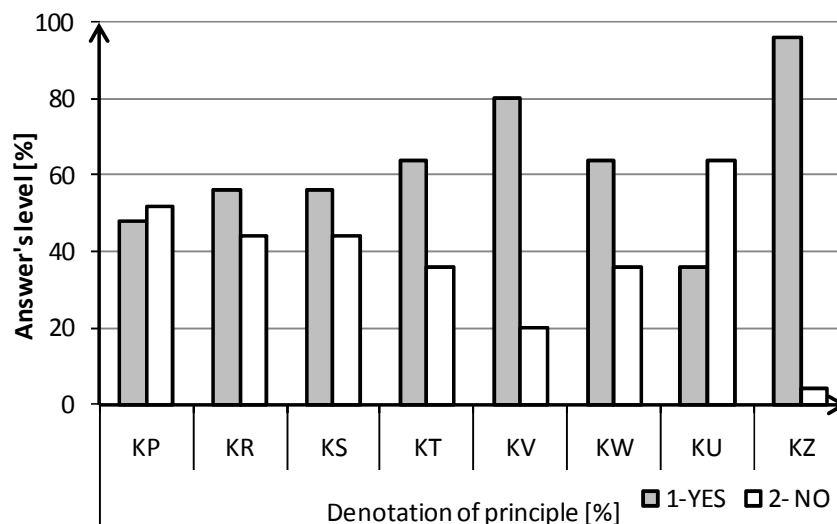


Fig. 3. Supervisor's assessment characteristics based on Toyota's principles.

The feature: to be success-driven received the highest score – 96% according to the Toyota's principles. To be confident while decision-making also was assessed highly – 80% of respondents said "yes". Features of the supervisor, which prove that he is open, and that cares if his questions are followed by actions were assessed at 64%.

Respondents stated, and at the same time, they negated behavior of the superior, which according to them does not inspire for learning (64%). 52% of employees participating in the survey felt that the supervisor did not improve work in his team.

5. Conclusion

Suitability of 4E+1P, 12 golden rules and 8 Toyota's principles for assessment of leadership traits was determined for a supervisor from one of the polish companies. Quantitative comparison of acceptance level for the traits contained in the principles was made. Impact of personal traits of the employees on the acceptance of manager traits was also determined.

Multi-aspect analysis of the results points to the suitability of 4E+1P principles, 12 golden rules, Toyota's principles for determination of leadership traits in supervisors. The obtained results are characteristic of the manager, which emphasizes sensitivity of the adopted research methodology to a variety of factors.

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What Contributions an Enterprise Can Expect from Application of Talent Management?

*Monika Kormancová

*University of Žilina, Faculty of Management Science and Informatics, Department Management Theories, Univerzitná 1, 01026 Žilina, Slovakia, monika.kormancova@fri.uniza.sk

Abstract. Enterprises expect some contributions from all activities to help for their development and achievement of goals. Globalization has given opportunity to move and obtain resources from all over the world; staff has been becoming a strategically important source. Staff has a potential and a talent, and manage of them can be the creator of competitive advantage. The article points on the contributions of manage of employees' talent. The method Balance Scorecard is used for clear understanding of effects of its.

Keywords: talent management, internal/external and objective/subjective character of contributions, balanced scorecard.

1. Introduction

Continuous changes in the market thus increasing demands from customers as well as from competition encourage business to seek to be a step ahead of the expectations of customers and innovative ideas of competition. It is not enough "only" to be good now in business. If an organization wants to advance, to get maximum of every opportunity and to use even threats for their profit, then all its efforts must be directed to continuous development of the organization. This organization is even not satisfied if they achieve leadership in business and are considered a leader on the market. The organization understands that their people are the reason of the success.

Each of them is seen as a member of a team and has got a potential or a talent. It is an effort of the organization to utilize such a potential effectively. It means to assign a right man to their right position and to work and develop their talent. Systematic work with potential and talent of staff is called '**talent management**'.

Talent management, in larger sense, is work with talent of all employees. "Development of a talent is not designated just for a few special people. The real development of a talent means to develop strengths of any man. It lies in appreciation of diversity and encouraging creativity and imaginativeness. However, first of all it means to work on creating environment in which the firm boils in energy and excitement of people in it whenever they are going to work." [7]

In narrow sense, Talent management is interpreted as work with those employees who achieve superior results in this area of work, who exceed expectations and business requirements. These employees motivate others and in many cases, if an enterprise had lost them, than enterprise would have lost a competitive advantage too. From this point of view talent management is work "only" with talented employees, employees who show their talent and apply it in their day-to-day activities. These employees have potential for further development of their talent. It is up to each enterprise, which approach they chose.

Implementation of talent management and activities, which are necessary to achieve the correct work of talent management, are financial, personnel and time demanding. Therefore it is necessary to discuss about benefits and contributions of talent management or to say which benefits of talent management we want and expect. However, it is desirable to develop and improve talent management in an enterprise permanently, and also permanently to monitor its impact on business performance to ensure enterprise's growth and prosperity in long-term.

2. Character of contributions

Some benefits can show very quickly, within a few weeks after implementation, but some of them we can evaluate after months or even after a few years. Enterprise is influenced from external and internal environment so we can differ internal and external benefits. **Internal benefits** bring positives for internal customer such as employees, investors or an owner. They influence work in enterprise, enterprise's culture and motivation. **External benefits** bring positives for external environment such as customers, suppliers or external job applicants. They create enterprise's brand on the market. Internal benefits have an effect for external ones and vice versa. Benefits have a substitution effect at the same time and they have positive impact on total growth of an enterprise in the course of time.

We can say that:

- The first benefit is from an internal area which affects an external one. That one gives feedback and affects internal area.
- There is some time-delay unless we can see benefit. Therefore, it is necessary to monitor and evaluate them carefully because if we do not, we can evaluate them as random.

Another view divides benefits into:

- **Objective** benefits – they are measured by analyses or by another analytical procedures which provide objective evaluation of benefits from used methods of talent management.
- **Subjective** benefits – they are measured by individual evaluation of the involved. They evaluate the benefits from their feeling and emotions. Subjective benefits have impact on objective benefits, too.

As well as at internal and external benefits also in this case benefits are interconnected together.

3. Benefits of Talent Management Presented through the Method of Balanced Scorecard

If we want to presented benefits of use of talent management in a well-arranged way, then we can use method of Balanced Scorecard (BSC). Enterprise can use the BSC as a tool for understanding enterprise's processes and activities, how they work and how they operate.

BSC divides enterprise's activities into four perspectives by their focus. Kaplan (author of BSC) says about the following perspectives: 1. **Learning and growth** – they are employee skills; 2. **Internal/business process** – they are process quality and process cycle time, for example quality, response time, cost and etc.; 3. **Customer** – they are on-time delivery and customer loyalty, for example satisfaction, retention, account share, market share and etc.; 4. **Financial** – they are return of investment and economic value added. Relationship between perspectives presented follow picture:

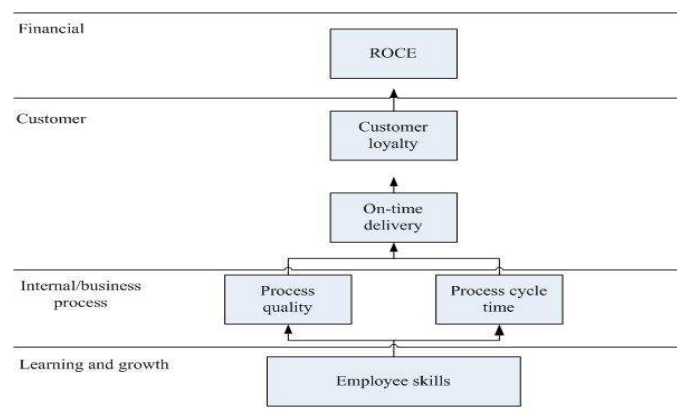


Figure 1. BSC [6]

If an enterprise looks at the benefits of talent management through BSC, then it is obvious that adequate and effective work with potential and talent of employees influence internal/business processes. If internal/business processes are performed correctly, then they have impact on customer's perspective. Satisfied customer brings sales and cash to the enterprise. This is reflected in the financial perspective. Favorable financial situation and good financial indicator make a value for investors. Interpretation of which perspectives benefits perform in, how they work together and how they influence each other, in time and logically, can be obtained by transforming the elementary benefits from implementation of principles and methods of the talent management into the BSC clearer.

Contributions in Learning and Growth Perspective

“To work with talented people successfully means to communicate with them and identify which phase of development they are in.” [7] Talented people are characterized by their aspiration to develop their potential and talent permanently. The enterprise should build on this aspiration and give greater attention and endeavor to development of competencies i.e. professional qualification and personal predisposition for effective achievement of work goals and task. Enterprise should develop their potential and talent in accordance with organization's goals and strategies. *The benefits of talent management in learning and growth perspective are augmented on all areas the work with talented people.* We can see and find some benefits which talent management brings in each of these processes. Major part of these benefits has a subjective character but their impact in financial perspective has an objective character.

Benefits in Internal Processes/Business Perspective

Internal processes mean all activities which transform inputs into outputs intended to satisfy customers and to achieve organization's goals. It is an ambition to make quality processes (administration and production) and to optimize the time complexity. We can also see impacts of the learning and growth perspective in this perspective; especially creativity, motivation to do better work and innovation.

Some of the benefits in this perspective have a subjective character for example improvement of quality. But more of them have an objective character and we can express them in numeric/analytic indicators.

Benefits in Customer Perspective

This perspective is focused on customers; their needs, attitudes, expectations and values. “The following are the values for customer: characteristics of a product or service, customer relationship and goodwill and image of an organization.” [9] Customers are a source of turnover and profit. Therefore, enterprise must be increasingly focused to meet customers' needs and expectations. They are particular expectations of certain quality of bought products or services and employees' communication with them.

Contributions of this perspective have mostly an external character. They influence not only customers but also competition, suppliers or financial institutions.

Benefits in Financial Perspective

“Financial indicators show, when implementation and subsequent execution of new strategies or principles lead to the major improvement.” [9]

No presented benefits of previous perspectives would make sense, if they were not shown in a financial perspective. Although some of the benefits have a subjective character (e.g. improving culture in an enterprise), they final impact on the enterprise has an objective character; we can describe it in a financial perspective. Financial interpretation of benefits is difficult in many cases.

If an enterprise monitors them permanently and carefully, they have a more detailed overview of how individual activities and benefits of activities affect the performance and growth enterprise.

Benefits of principles of talent management application in the financial perspective are a result of benefits from others perspectives. Benefits have a multiplying effect. There is a certain time-delay of their evidence in a financial perspective.

4. Conclusion

If an enterprise wants to survive and to develop in a high-global competitive environment, then it must be prepared to apply the strategies to their activities, which allow using a potential and talent of their employees. Work with talent is financially demanding and time-consuming. Therefore, investors, owners and managers have to know about benefits which work with talent brings. How can we organize benefits of use of talent management into a logical, coherent and transparent form? The method Balance Scorecard is one of the most structured ways. "BSC is more than a measuring system and many enterprises use it as a central enterprise framework for their management processes." [8]

BSC works with four perspectives. Benefits are divided into these perspectives too. ***This gives clear understanding of an effect of benefits on the enterprise and their interaction.*** Work with talent needs to apply activities in learning and growth perspective initially. Gradually, the benefits from this perspective reflect into activities and benefits in internal process/business perspective and customer perspective. However, no activities would be effective, if they were not linked to the financial perspective. The financial perspective provides arguments of efficiency of activities of talent management for investors and owners. Other perspectives are more focused on benefits for external and internal customers and improvement of organization's processes.

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The Analysis of Selected Factors which Affecting Profit

*Katarína Košťálová

*University of Žilina, The Faculty of Operation and Economics of Transport and Communication,
Department of Road and Urban Transport, Univerzitná 2, 01026 Žilina, Slovakia,
katarina.kostalova@fpedas.uniza.sk

Abstract. The article is deals with factors which affect to profit in suburban public transport. In the first part of the article all factors are analyzed by calculation formula. The next part deals with selected factors. These factors have the biggest part of total costs and they are the most important for the operator. The main costs are elaborated in detail.

Keywords: suburban public transport, cost, operator

1. Introduction

In Slovakia, providers of bus transportation are corporations in most cases. These corporations are established for the purpose of profit. It means that the main aim of each operator is to achieve profit. If operator provides services in suburban public transport, so the level of profit will be affected also contractual conditions which are contracted by operator and authority. The operator (if there is an application guaranteeing contractual conditions) cannot achieve the same profit as another operator, which runs a business with high level of risk. It means, if the risk increases, the profit of operator has to increase, too. The profit can be affected by optimization of internal activities of a company. Many factors are affected by profit through costs. The aim of this article is to point out selected factors. If operator would accept these factors it can lead to an increase in the extent of profit.

2. Analysis of cost transport in suburban public transport

When considering factors which affect to profit of the operator, the article comes out of the unified calculation formula for calculating own costs [1]:

1. driving fuel
2. direct material
3. direct salary
4. depreciation of vehicle
5. repairing and maintenance of vehicles
6. other direct costs
 - 6.1. fare
 - 6.2. contributions to insurance and employment fund
 - 6.3. another direct costs
7. operating costs
8. administrative costs

Figure 1 describes share of individual costs to total costs. The operators from Slovakia in suburban public transport achieved these costs in 2008. The figure shows that the biggest part of the total costs is driving fuel- 28 %, then direct wages- 19 % and depreciation of vehicles.

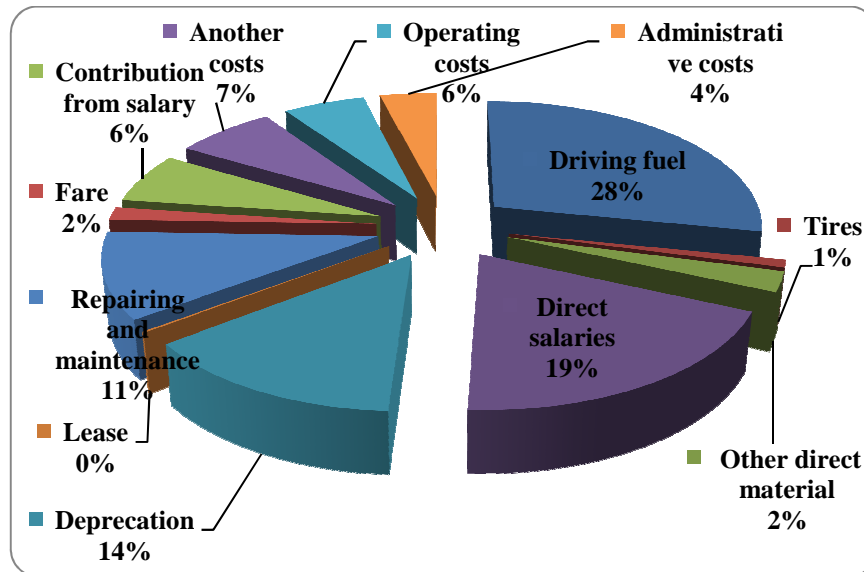


Fig. 1. The share of individual costs to total costs.

The next section will deal only with the contribution of factors associated with major costs. It means with fuel, salaries and depreciations.

2.1. Driving fuel

Fuel costs belong to own costs, which are applied to certain performance and belong to direct costs, too. Finally there are variable costs which vary depending on volume of realized performance. Fuel costs are affected by many factors. For example fuel consumption. Consumption is different in individual type of buses and in this case it applies positive correlation which means: the higher consumption the higher fuel costs. However consumption is affected by the other factors, for example age of buses, condition of vehicles and the season in which vehicle is in operation. As it has been mentioned the costs of fuel can be determined by consumption, the number of kilometres and by the price of fuel in following relation (1):

$$\text{Cost(fuel)} = \text{consumption} \left(\frac{1}{100\text{km}} \right) \cdot \text{price} \left(\frac{\text{€}}{\text{l}} \right) \cdot \text{performance}(\text{km}) \quad (1)$$

Table 1. shows the fact that consumption depends on the age of a vehicle and on the condition of vehicle. In this table there is standardized consumption for vehicles with comparable age years and 14 years. The difference is 1, 5 l/km. It means that if the price of fuel is 0, 95€/l without VAT and performance per year is 50 000 km, so there is increase in costs of 712, 5 €/year per vehicle. In table there is a comparison of two various buses.

Type of vehicle	Age	Average consumption l/100 km
NOVOPLAN C12	6 years	24,8
KAROSA LC	14 years	26,3

Tab. 1. Information about vehicles of SAD Poprad a.s.

Direct salaries

According to The statistics office, average monthly wage in transport was 712 € in 2008. Compared to year 2009 it was 700, 41 €. It is possible to state that development of average monthly wage has been increasing. In the first time, the cost of direct salary (wage) represents the need to employ a certain number of employees depending on performance of operator. This cost depends on

volume of transport performance and thus need of specific number of employees. The following figure shows the number of kilometres accounted per driver in individual regions in the years 2005 – 2008 (Fig.2).

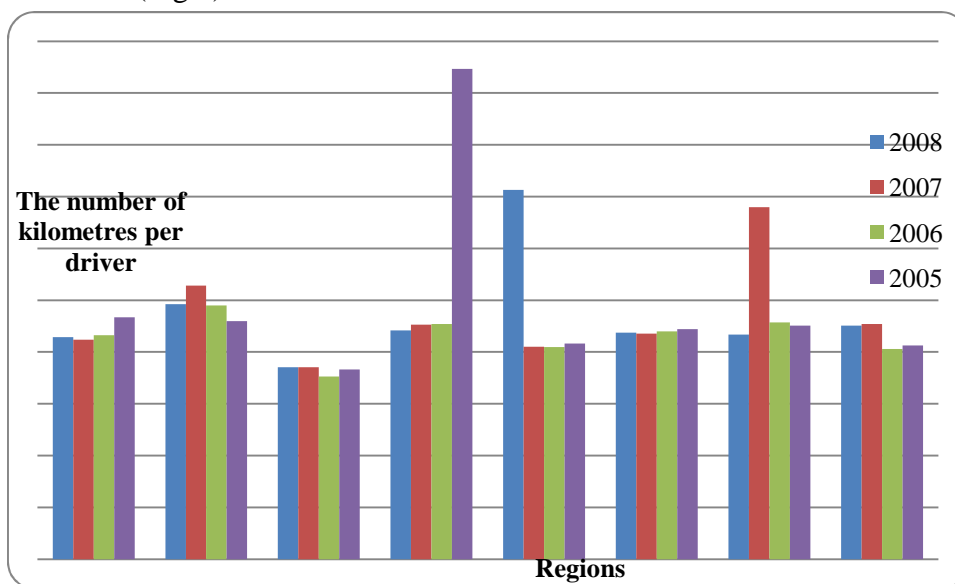


Fig. 2. The number of vehicles accounted per driver.

In 2008, the highest wages were in transport sector in the Zilina region and lowest is the Trencin region.

Depreciation of vehicles

Increasing requirements for quality and an overall tendency for systematic fleet renewal is due to increasing costs for depreciations. Depreciation of vehicles is increased with purchase of new buses in suburban bus transport. Costs for depreciation are increased with purchase of new buses, too. In general, the amount of depreciation of the vehicle can be calculated as follows (2):

$$\text{Cost(depreciation)} = \frac{\text{price(entry)}}{\text{depreciation period} \cdot \text{performance}} \text{ (€ / km)} \quad (2)$$

Depreciation is a fixed cost, it means, that it is possible from the position of authority or operator, this cost reduces only with procurement of cheaper vehicle or with its better using. Nowadays classical bus with capacity 45 seats, is possible to obtain within the price 200 000 € without VAT. If we consider operating life of vehicle for example 15 years, so annual depreciation is at:

Depreciation=price/operating life= 200 000/15= 13 333 €/year.

The table 2 shows the process of depreciation costs in €/year in various annual performance of the vehicle.

Annual performance (km)	10 000	20 000	30 000	40 000	50 000
Cost(€/km)	1,33	0,67	0,44	0,33	0,27

Tab. 2. The process of depreciation costs.

When converting these costs, it's a fact that that the annual increase in driving performance costs in € / km decrease.

3. Conclusion

Aim of article was to show specific factors affecting cost and profit of an operator, too. It is necessary to show the fact, that operating new vehicles and their better using, reduces the costs of vehicles. Therefore, performance contracting should take into account the carrier's efforts to better utilization of vehicles. Operators want to have higher efficiency of car fleet. It means the level of profit should be developed from the annual performance of the vehicle. And this performance should be higher than performance ordered by authority.

Acknowledgement

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The Importance of Business Environment for the Development of the State

*Katarína Kováčiková

*Faculty of Operation and Economics of Transport and Communications, Department of Economics, Univerzitná 1, 01026 Žilina, Slovakia, Katarina.Kovacikova@fpedas.uniza.sk

Abstract. This article focuses on the importance of the business environment for the development of the state of the Slovak Republic. The business environment is one of the basic assumptions of long-term competitiveness and growth of the market economy. In the article is filed the definition of the business environment, the structure of the business environment and the relationship between state and business environment.

Keywords: Business environment, structure of business environment, economic impact, socio-cultural impact, technological impact.

1. Introduction

In today's globalized world is the business environment very important for business, entrepreneurship, and businessmen and state. This phrase is relatively used frequently in the economics literature, but also in the media. Generally, the business community is everything that surrounds the company and their individual elements have impact on the business activity of the enterprise in a positive and in negative direction.

The Entrepreneurship sector provides a vital part of gross domestic product, it is necessary to know the quality of business environment and barriers affecting the activities of entrepreneurs, the decision of potential investors and the competitiveness of enterprises and State.

2. Business environment

Definitions of the business environment by domestic and foreign authors is not correct for the Business environment. In many cases is lacking characteristic business environment at a level higher than the national. We therefore offer our own definition of business environment, which is characterized as an environment in which businesses operates. However, we must understand the environment in a bigger context, it can not be limited by the border of region or state, but we have to talk about global economy. This environment is made up of individual components, which are economic, ecological, natural, social, cultural, demographic, technical, legal and political environment. In addition to these elements is necessary to include into the environment also relations between businesses and other incumbents, whether suppliers, customers, clients, intermediaries, competitors, interest associations or other businesses. The quality of the business environment is highly influenced by the firm itself with its employees, their behavior, attitudes and ethical level of communication.

3. Structure of business environment

Based on several approaches to analysis of business environment that are identical in many areas and still are insufficient, we can divided the business environment into four parts:

- Level of global business environment - the external environment, comprising the political-legal, economic, social, ecological, scientific, technological and demographic environment for transnational (international) level;
- Macro-business environment - the wider business community at both regional and national level. Furthermore, the business environment in the macro-level is influenced by varies interest groups such as investors, professional associations, unions, institutions, trade and business associations and the like;
- Intermediate business environment - includes the effects of industry, in which the enterprise operates. This environment is called the restricted business environment, which is formed by suppliers, customers, competitors, customers, interest groups and the like also referred to the concept of stakeholders;
- Micro-business environment - to the environment within the company. It should be noted that the business affects the overall operation of the enterprise market and the value of the company. Therefore we have in a commercial activity to speak about resources of the enterprise (manpower, capital, technology, etc.), the very process in company (organizational structure, the various departments of the undertaking and their relationships, corporate culture and ethics, etc.) and about the business activities, which are goods and services.

All levels of the business environment are very important not only for economic literature, but also for economic practice. These four levels of analysis of the business environment are closely interlinked.

4. Relationships between state of the Slovak Republic and business environment

There is bilateral dependency between the state and business environment. The state (government officials, ministries, institutions and authorities) are trying to create a business environment with favourable conditions for the adoption of laws, regulations, decrees, etc. On the other hand, the state expects feedback from the business. Therefore the Enterprises with their activity in the business environment affecting the development of particular households and individuals, thereby contributing to an increased welfare of the state/increasing employment, value added, gross domestic product, etc.). Correlation between these entities is shown in Fig. 1.

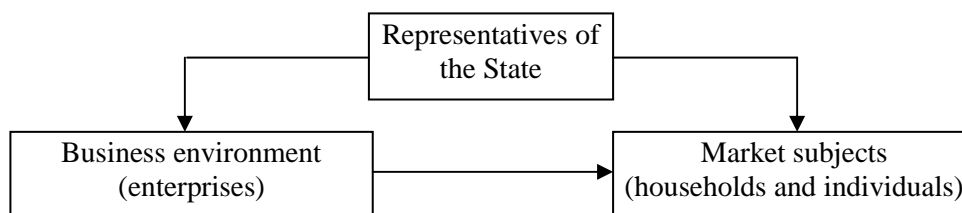


Fig. 1 Correlation between the state and business environment

The State, through its functions (security, legal, economic, social, cultural, etc.) interferes with the market mechanism determines the conditions that must comply with the various market players to ensure the performance of the economy. State is made up of various stakeholders, among which there are multiple relationships. In particular, the enterprises and households (individuals).

Enterprises and other business subjects doing business in the Slovak Republic for the purpose of production and provision of goods and services which meet the needs of the general public. In order for businesses to do their own business, you need the factors of production, which are an

Essentials element of start-ups. The basic factors of production are classified work, land and capital. Production factors are considered to be a source of wealth that created their combination-productive combination. Relationships between businesses and households (individuals) with regard to factors of production are shown in Fig. 2

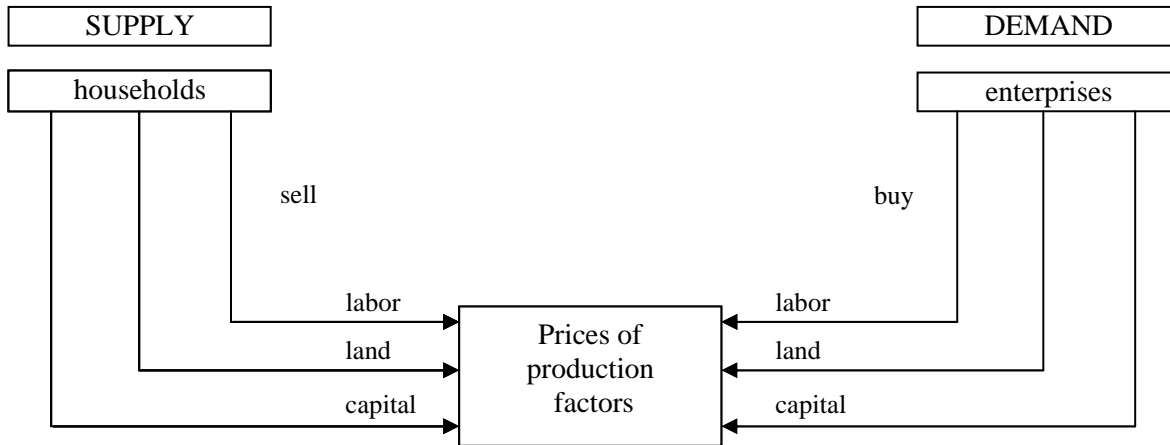


Fig. 2 Scheme of economic processes among enterprises and household on production factors

The individual influences of the business environment for the development of state are based on the relationships described in Fig. 2.

The influence of the micro business environment for economic growth of the Slovak Republic can be divided into four basic groups according to the nature of their activities, such as:

- Economic impact - for Example. Impact of International trade, the state budget, employment/unemployment, inflation, wages, consumption and savings;
- Social-cultural influence - eg. contribution burden, social security, sponsorship, health, crime, tourism;
- Technology impact - eg. impact of technology, computerization, innovation, science and research, qualified human resources affecting productivity and gross value added;
- Other impacts - eg. impact on public-private partnerships and the environment.

When entrepreneurs have good conditions for business, they increase economic activity and are creating new jobs. More jobs mean more money in the pockets of people. Reducing the costs of the state welfare system, unemployment is decreasing, demand for new workers in the market increases, their price increases, which pushes the overall wage level. Higher wages mean higher social benefits for dependents, higher pensions. Consumption is growing and businesses continue to expand their production. [1]

Therefore, it should be noted that the business environment is not just for businesses, but especially for citizens of (consumers) it improved environment for better goods and services, but mainly to a higher standard of living.

5. Conclusion

To measure the efficiency of the Slovak economy, but also in other countries is used macroeconomic indicator, and a gross domestic product. SR businesses account around 90% of gross domestic product of the SR, which indicates the significance of these enterprises and entrepreneurs for the Slovak economy.

Relative to the dynamism and volatility of the business environment is vital that businesses are constantly monitored and monitor all changes in the environment. On the basis of its own findings they can respond flexibly to opportunities and threats from the business environment.

Early use of the opportunities and respond rapidly to threats can bring the enterprise to obtain competitive advantage. Competitiveness of enterprises is reflected in the overall competitiveness of the sector, regions and state of the SR, and Slovakia is becoming an attractive country for foreign investors and also economic development of our country.

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Multicriteria Method Selection.

Ján Král'

University of Žilina, Faculty of Mechanical Engineering, Department of industrial engineering, Univerzita
8215/1, 01026 Žilina, Slovakia, kral.jan@fstroj.uniza.sk

Abstract. Although the great diversity of MCDA procedures may be seen as a strong point, it can be a weakness, and a systematic analysis of decision procedures if one method makes more sense than another for a specific problem is necessary. The problem of selecting the most appropriate (MCDA) technique for a particular application is in itself a MCDA problem since the decision making criteria used for the selection are different and conflicting in project.

Keywords: Multicriteria method, PROMETHEE, ELECTRE.

1. Introduction

The use of Multi Criteria Decision Aid (MCDA) provides a means to develop future strategies and a system methodology to rank projects in the presence of different objectives and constraints to satisfy the broad objectives defined by the sociopolitical conditions which are sometimes disproportionable and conflicting. These techniques can be applied to problems with either deterministic or stochastic characteristics, with continuous or discrete variables. In this paper, primarily because of space limitations, the methodology adopted to select the most appropriate MCDA method is described.

2. Multicriteria method selection.

This paradigm is based upon a set of descriptors which characterize multicriteria decision situations (Table 1). For a given technique selection problem, a subset of the descriptor set is selected to describe the decision situation, and the subset is used to screen sequentially the set of available techniques by using screening templates (included as appendix to the model) to reduce the list of methods to a smaller subset. Fig. 1 shows the flow chart to implement the model.

The following steps were followed. The outcome of the application of each step is summarized below.

Step 1. Define a list of available multi-objective techniques

Different techniques were considered, excluding techniques which either only pertain to very specific applications or cannot be considered as a useful tool because of the:

- hardware and software sophistication required for implementation,
- needed reliable data,
- limited applications of these methods in literature, therefore providing limited exposure to analysts and decision makers.

These techniques could be categorized as utility, mixed, distance based, direction based, and outranking .

Step 2. Formulate the decision problem

Understanding of the decision problem and the context within which the problem is to be solved was formulated.

A	Finite set of discrete alternatives
B	Continuous alternatives
C	Ordinal attributes
D	Ordinal ranking of alternatives sought
E	Cardinal ranking of alternatives sought
F	Portfolio of discrete alternatives sought
G	Single stage decision problem
H	Multi stage decision problem with changing preferences
I	Large number of objectives or discrete alternatives
J	Need for highly refined solution
K	Decision maker reluctant to express preference explicitly
L	Decision maker experiences difficulty in conceptualizing hypothetical trade-offs or goal levels
M	Decision maker preferences for marginal rates of substitution among objectives not independent of absolute levels of objective attainment
N	Need for decision maker understanding of method
O	Limited time with decision maker available

Tab.1 Decision situation descriptors

Step 3. Examine descriptors for relevance

The decision situation descriptors were examined in the context of our problem. Six descriptors were found to be irrelevant to the situation.

First, descriptor B (continuous alternatives) is not applicable, since the problem involves an explicit list of predefined alternatives.

Second, descriptor E (cardinal ranking) is likewise not applicable, since an ordinal ranking would suffice and the accuracy of evaluations precludes exact cardinal measures for the alternatives.

Third, descriptor F (portfolio of discrete alternatives sought) is eliminated because a ranking of alternatives is sought.

Fourth, descriptor H (multi-stage decision problem) is eliminated because the process would only be performed once to produce a workable development policy, which would become essentially irreversible.

Fifth, descriptor J (highly refined solution needed) is not applicable since what is required is an overall ranking of generalized projects.

Sixth, descriptor K (decision maker reluctant to express preferences explicitly) is not applicable because decision makers were able to state preferences explicitly.

Step 4. Selection of decision situation descriptor subset

The remaining descriptors (after elimination of the six descriptors above) comprised the elements of the relevant subset (A, C, D, G, I, L, M, N, O).

Step 5. Screen the list of the multi-objective decision aiding techniques

Possible techniques can be classified into four types: outranking, distance base, value or utility base, direction based and mixed. This step consisted of a sequential application of the relevant descriptor subset to evaluate available MCDA techniques by using the screening templates. Each template corresponds to one of the decision descriptors listed in Table 1. Results indicated that all

techniques included under "Utility or Mixed Type of Techniques" except Multicriterion Q-Analysis were eliminated because they were not applicable based on the relevant descriptor subset. More specifically, these methods require a large portion of decision maker's time and mostly cannot produce a ranking of alternatives. Some of the "Outranking Type" techniques were retained at this step, except the ones which could not handle finite alternatives such as ELECTRE and PROMETHEE. The method of Exclusionary Screening, which is a special case of conjunctive ranking, the Lexicographic method and Copeland's Reasonable Surrogate Worth Function methods were eliminated because, even though they are not as time consuming as multi-attribute utility theory, the process of solution still would be a burdensome task to the decision maker for a moderate or large set of objectives, and the process of sensitivity analysis would be time consuming. Sequential application of the relevant descriptor subset resulted in the elimination of some of the MCDA methods. The possible MCDA techniques were PROMETHEE, ELECTRE, AHP and JAS (for description of these methods, see Bana e Costa, 1990).

Step 6. Develop additional selection criteria

In this step, three additional criteria were identified to assist in selecting from the available methods:

- (1) Ease of use.
- (2) Interpretation of parameters.
- (3) Stability of results.

Ease of use refers to the idea that some methods are much simpler to apply than others. Interpretation of parameters refers to the idea that some techniques require development of some form of preference structure. This criterion therefore evaluates the methods based on the simple interpretation of such data. Stability of results refers to the effect on the final optimal solution due to small changes in the parameters used in the methods. The application of these three additional criteria is outlined in Step 7.

Step 7. Select most appropriate method

In terms of "ease of use", results of evaluations showed that goal programming, MCQA and PROMETHEE were all slightly easier to use than ELECTRE, AHP, and JAS (a modified version of AHP). The second chosen criterion, "interpretation of parameters", is an important criterion for evaluating outranking methods because all outranking methods use some form of parameters and threshold values elicited from the Decision Maker. With respect to this criterion, PROMETHEE surpassed MCQA, ELECTRE, and AHP, because PROMETHEE's threshold values have a significant meaning in terms of the alternatives. In addition, the third criterion "stability of results" is considered important in outranking methods for the purposes of analyzing how small deviations in the values of threshold parameters affect final solutions. In a relevant study to measure stability of results of the different methods (Brans and Mareschal, 1986) 21 different problems were examined with 300 random variations of thresholds. After the analysis, it was concluded that PROMETHEE is more stable than ELECTRE III.

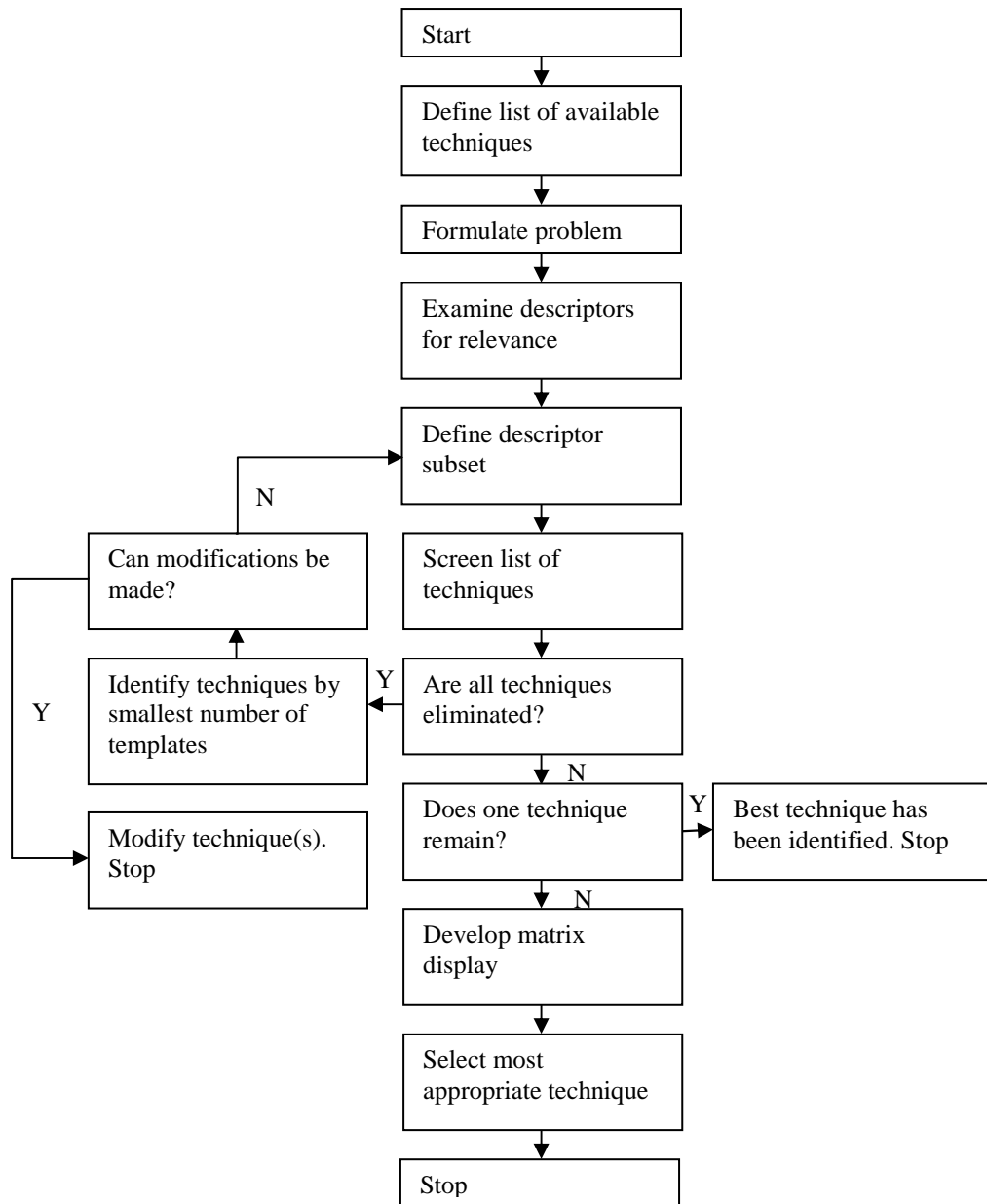


Fig. 1. Flow chart of the model selection paradigm

3. Conclusion

After examining the decision problem requirements and applying the model selection paradigm with additional selection criteria, the PROMETHEE outranking method was identified as the most suitable solution technique for development projects.

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Real Options as the Method of Investment Appraisal

*Katarína Kramárová, **Veronika Achimská

*University of Žilina, Faculty of Operation and Economics of Transport and Communication, Department of Economics, Univerzitná 8215/1, 01026 Žilina, Slovakia, katarina.kramarova@fpedas.uniza.sk

**University of Žilina, Faculty of Operation and Economics of Transport and Communication, Department of Communication, Univerzitná 8215/1, 010 26 Žilina, Slovakia, veronika.achimska@fpedas.uniza.sk

Abstract. Current tough situation, especially last few years has been confirmed that relatively fast changes in macroeconomic and market environment, in some cases also in political one force investors to reappraisal traditional methods of investment valuation used in a process of capital budgeting. Traditional dynamic methods of investment project appraisal (traditional investment analysis), based on the time value of money, primary method of net present value (NPV), are insufficient. Current situation requires from managers to seem projects as a living organism that is capable to adopt brand new conditions which means to consider any option that can be associated with investments.

Keywords: Black-Scholes model, investment option, real option theory

1. Introduction

Current tough situation, especially last few years has been confirmed that relatively fast changes in macroeconomic and market environment, in same cases also in political one force investors to reappraisal traditional methods of investment valuation used in a process of capital budgeting. Traditional dynamic methods of investment project appraisal (traditional investment analysis), based on the time value of money, primary method of net present value (NPV), are insufficient. They are appropriate for investment projects with a relatively stability during all investment phases (stable market environment with stable manufacturing and business conditions, relatively acceptable technical and technological development, stable macroeconomic conditions etc.). In that case, investment project does not require any fair-size interventions carried out by managers (deviation of real project's cash flows from prospective ones is insignificant). Using this tradition approach in an investment project analysis means to take a final decision – to accept or to give up that project if the returns on the project exceed its hurdle rate. In other words, if the NPV is positive at the time of project analysis, project seems to be valuable.

1.1. Introduction into real option theory

Current situation requires from managers to seem projects as a living organism that is capable to adopt brand new conditions which means to consider any option that can be associated with investments – we are talking about *assets or projects with the option characteristics*.

An *investment (real) option* can be seen as a managerial right, but not obligation, to take some final decision following by appropriate act depending on actual situation [3]. Real options, like financial options, can be divided into call options and put options and option rights referring to the considered project can be realize in exactly defined time (so-called European option) or any time during investment's life time (so-called American option). But in contrast to financial options, real options can not be tradeable. It means that the investor can not sell his rights to do any changes during all phases of investment project to another investor. To make any investment decision relating to investment real option is an own right of investor.

Using of real option approach should assure that in the process of investment appraisal investor takes into account not just common factors that determine traditional NPV (cash flows, discount

rate etc.), but also any rights that allow him to modify analysed investment (for example the value of potential option to expand an investment, the value of potential option to stop an investment for some time, the value of potential option to delay an investment project for some time etc.). Thus, an investment project that has a negative NPV at the time of analysis may have a positive NPV in the future if we consider any option referring to that investment project. An existence of real option in other words the flexibility of investment project revives “classical” and relatively static NPV into strategic NPV [4]:

$$NPV_{strategic} = NPV + \text{value of option rights} \quad (1)$$

From the mathematical point of view, strategic NPV of investment project is a sum of NPV and project’s real option value. The value of real options can be calculated as the financial options using option pricing models: Black-Sholes model or binomical model. In case of second mentioned is a value of estimated project’s cash flows (the value of underlying asset) considered as a discrete random variable with a stable probability for increasing or declining of cash flows. In case of Black-Sholes pricing model the value of underlying assets is considered as a continuous random variable. Both methods have common that the value of option depends on the level of flexibility of considered project.

1.2 Types of real options

The real options that are embedded in many projects can be classified as an option to abandon the project, option to delay the project, option to expand the project, option to shrink the project, option to temporary stoppage the project and sequential option.

The Option to Abandon is a real option that can be used when a company (investor) worries about the risk that the investment will not be able to produce enough positive cash flows to cover all investments outcomes. Having such kind of option can be valuable, especially in case of projects with a significant potential for losses. **The Option to Expand** evaluates the potential of initial investment to make further investments. Therefore, the initial project can be seen as a yielding option allowing to the investor to invest in other project, also in the case, that the initial project has a negative NPV. **The Option to Delay** gives investors option rights to wait and take the project in a later period, when the project is able to be more valuable. This kind of option can be used in case of valuating patents, undeveloped natural resource and undeveloped land. **The Option to Shrink** gives investors rights to restrict capital expenditure referring to building or operation of existing investment project in case of negative conditions that make the project loss making. **The Option to Temporary Stoppage** gives owners rights to suspend any work on the project if the current conditions are unfavourable. **The Sequential Option** refers to the multistage investment projects. It is an option that value and also existence depends on whether the previous option was exercised or no (if the investor took the rights from previous real option).

2. Conclusion

The real option theory applied in the investment valuation is not a relatively brand new category from the theory’s point of view.¹ On the other hand – its use in practise is not common whether we talk about our country or about the rest of world. The problem is, that many investors realise option opportunities referring to their project, but just a few of them proceeds in their calculation. The reasons to do that are many. The main reason we have already mentioned – the option rights are not tradeable. Other is that the investment project can be made by more than one

¹ Note: The first one who mentioned the concept of *entrepreneur’s option* was I. Fisher in his work *The Theory of Interest* published in 1930. But as the author of coherent theory is considered S. Mayers. who presented his theory as a method of investment project valuation at the end of 1970s.

investor (the project is a property of more investors.). And in case, that project is able do generate more than one option opportunity there can be a conflict of investors' interests. The next problem is a value of underlying asset seems as a present value of future cash flows generated by the project. It is due the fact, that the prediction of cash flows, especially due their volatility is not exact. But in generally we can say that the investment project appraisal using a real option methods and the following modification of the traditional NPV into strategic NPV offers to any investor a detailed picture about a considered project. It allows to reappraisal a project with a negative NPV into a project with positive NPV by considering its optional opportunities to generate other cash flows that depend on managerial decisions.

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Efficaciousness and Economy of Business

*Lucia Krátka

*University of Žilina, Faculty of economics and operation of transport and communication, Department of communications, Univerzitná 1, 01026 Žilina, Slovakia, kratka@fpedas.utc.sk

Abstract. The objective of cost analysis is to detect changes in the cost of two (possibly more) comparable periods, as well as identify reserve of business economy, reserve of growth productivity and cost reduction. Managers on the basis of cost analysis will have a better overview of where and in what amounts in company incur costs, what is their development and how they affect the individual activity profit (or loss). On this basis managers can take necessary measures to reduce costs and streamline company operations.

Keywords: business efficaciousness, economy of business, cost ratio, business efficaciousness.

1. Introduction

All companies in their activities are making the costs. From the perspective of management accounting for the costs can be targeted and effective expending any resources are expressed in the form of money. In the current conditions, companies use costs in their management process. This application of costs, resulting from method of tasks control and their analysis, from choice of means to achieve the intended aims.

1.1. Costs and business efficaciousness

Costs as an important tool for decision-making are important criterion for business success. With systemic approach to managing costs in the company deals controlling. Controlling monitors costs rise in individual business centres, in various activities of companies, monitor cost through the account evidence and through integrated systems, analyzes the costs, plans and manages costs, control their creation and its impact on profit (loss) of company and on business efficaciousness. Cost controlling monitor the basic strategic aim of company, i.e. profit making and prosperity of company through maximum economy i.e. efficiency and effectiveness of cost control and achieving business efficaciousness in form of profit.

Business efficaciousness of companies is measured on based of the relationship between the output produced by company and the relevant company inputs. At present, we can consider for basic calculation of economic efficiency the ratio of profit to total capital or equity capital. Economic indicators can be evaluated to the previous period, to plan or to competitive businesses. [1]

2. Economy of business

The principle of profitability of the company (lower costs for those sales, the bigger the profit) effort raises of the managers to economy. Economy means the efficient use of production factors in order to reduce costs. [2]

Economy can be measured and evaluated through the costs with the ratio of incurred cost to some base, which can be for example sales, revenue. Economy as reasonably expending costs in the transformation process is reflected in two basic forms.

In the form of efficiency, which assumes that the aim is to construct a volume of the final performances, the focus is on minimizing the costs for given, required or expected production volume.

In the form of effectiveness, which assumes that a range of production factors is available, the focus is to maximizing the effects derived from the amount of costs.

Efficient and effective aspects of economy are possible and advisable to track as a whole – process costs, but also for each sub-process costs, partial transformation of inputs to outputs.

Efficiency and effectiveness of the self, separately from each other in pure form do not occur, but usually complement each other. Both lead to similar results.

Economy measured by costs as category of its own transformation process. Subject of economy evaluation may not be the full amount of costs, which is different and incommensurable at different volumes of production. It is therefore necessary to have for economy commensurable quantity per unit of production; a measure of economy is the cost per unit of production.

Between efficiency and effectiveness, there is a close relationship of interaction and conditionality. If it is not achieved optimum economy, there are also reserves in effectiveness. If economy is optimal and effectiveness is not optimal then it does not provide enough external site of criteria of economic rationality.

Costs as a synthetic indicator of the quality of the company's work express the amount of consumed materialized and live work with such precision as prices reflect the consumption of corporate production factors. In spite of the difference in appreciation of performance of goods by prices, costs are the best in the characteristics of consumption of production factors, the level of economy and reflect structural changes of the work involved.

By monetary expression of consumption of production factors is quantified qualitative difference in labor consumption, whereby it is possible to compare. Only by costs can calculate how much the production and implementation of a product cost.

The level of costs is a mirror of company economy with working material and monetary resources and allows evaluation of the effectiveness of a substantial part of the business activity. Therefore costs are an important management tool.

Costs are the criteria of economy. Enterprises are interested in reducing costs, because the opposite tendencies could cause them a financial distress.

Costs are the base for pricing. This is important for business and administrative management. Influencing of costs and prices is mutual.

Not only costs affect prices but also prices affect the level of costs (inputs prices into the transformation process of the company).

Costs are for the distribution of gross domestic product, and that part of its expenditure to consumption, gross investment and in some cases also government spending of goods and services. [2]

2.1. Cost analysis leads to economy of business

Aim of the cost analysis is a detection of changes in the cost of two or more comparable periods, as well as the detection of reserves in economy of business, reserves of productivity increase and costs reduce. On the basis of cost analysis managers gain a better insight about in what amounts are costs incurred, what is their evolution and how they affect individual actions of economy. Managers can therefore take necessary measures to reduce costs and to streamline company operations.

2.2. Cost analysis based on financial accounting

Financial accounting understands costs as withdrawal of equity and records costs in accounting class 5. In this case, analysis focuses on the development of the total costs of enterprise, on economy and cost development in the species breakdown. There is observed evolution in time as

well as share of individual types of costs to total costs of company. Total costs are in the financial accounting analyzed in classification by operating, financial and special costs. Operating costs rise from the primary business activity (production, trade, services), but also from various irregular transactions (sale of material stock, tangible and intangible assets, etc.). Financial costs rise from financial and investment operations of company. These are mainly paid interest, purchase price of stocks, foreign exchange losses, bank charges and etc. Special costs incurred in unusual operations for the usual activity of the company, as well as special incidents occurring at random (for example shortages and damages). When analyzing the cost breakdown by species the attention of the analyst is focused on different groups and items of costs according to the chart of accounts. By analysis we determine the development of costs groups (for example consumed purchases, services, personal costs, depreciation, reserves) and their items, as well as their share of the total costs.

So that we can monitor the development and level of economy, we measure it using of these three indicators:

- profit,
- cost-effectiveness,
- cost ratio.

Profit is the difference between revenues and costs (R-C). Apart from the impact of price, range and other factors, then the gain and economy are developed in proportion, growth of economy raises growth of profit and vice versa.

Cost effectiveness is found from the ratio of revenue to cost (R:C). Increase of the cost activity are entered in the growth of revenues, decrease of costs, or both ways simultaneously. The effort is to maximize the value of this indicator.

Cost ratio is the most important of these indicators, so we pays him more attention. When using cost ratio (as well as use of other indicators) of conversion is need to be noted, that comparing the cost ratio between two periods, or comparing facts with the plan, is found only total change, which can cause a lot of factors. By comparing the total cost ratio their positive and negative effects may offset one another. Such global information is unsatisfactory for managing. It is therefore requested to quantify the impact of individual factors to change the cost ratio specifically.

By verification it was found, that in most cases the most act on change of cost ratio is change of range, costs and prices. In monitoring the impact of these three factors, there are many alternatives to their mutual relations. Particularly interesting are:

- a. prices and costs of individual products do not change and change in range cost ratio increases or decreases,
- b. costs of products increase, prices do not change and by change of range cost ratio is reduced,
- c. costs of products grow, prices decline and impact of range change the cost ratio is developed positive – decreases.

This indicator shows how many pennies of costs appropriate for 1€ of revenues, the lower the value the better. Analysis of this indicator can be done by its gradual decay. Level of cost ratio indicator depends on incremental cost ratio indicator (operating, financial and extraordinary) and on the proportion of incremental revenue (operating, financial and extraordinary) of the total revenues.

Based on data from the profit and loss statement for past and current period is found change of total cost ratio in operational activities, as well as the partial cost ratio. It is true that the resulting change of cost ratio of operating activities is the sum of incremental changes in the cost ratio. The analysis shows which direction (positive or negative) and what force they affected individual partial cost ratio of operating activities cost ratio, profit from operating activities and also through its achieved profit.

2.3. Kaizen – efficient new method for reducing costs in company

One of the basic assumptions for building a world class company is cutting costs. To reduce costs companies use various methods to bring them some benefits. One of the new approaches, which is used in practice a achieved considerable success is Kaizen approach. The overall level of

costs in the company affects the financial situation in terms of the two approaches, namely the economy and efficiency.

Kaizen is a system that involves everyone. Everybody is welcome to come up with small improvement suggestions on a regular basis. This is done continuously. Kaizen is a method based on making little changes in improving productivity, safety and effectiveness while reducing waste.

Overall effectiveness of company governance is based on just attained labor productivity, which is monitored through the performance of workers. In consideration of this fact it can be concluded that the method of Kaizen is focused primarily on employees and their performance, because employees are the bearers of values in company.

Kaizen represents:

- mind oriented on procedure (process), because it is necessary to improve the procedure first and only then we can expect better results,
- contrast mind in comparison with western managers, who are oriented more or less on results only,
- focus on the human factor.

The main objective is the introduction of system:

- cost savings, time, material and personnel,
- improving quality,
- reliability of processes, products,
- high productivity.

One of the unique features is that it leads to a large number of improvement suggestions from employees and that managers are working hard to evaluate such proposals and their incorporation into the overall Kaizen strategy. Essential concept of kaizen is that none single day would take place without anywhere in company there is some improvement at least.

3. Conclusion

The worldwide trend is oriented to reduce business costs, increasing productivity, reducing times between orders and deliveries, increasing flexibility to respond to market needs, etc.. Concepts for building businesses and means to gain competitive advantages are specific to each area a can be applied at different levels of corporate governance with respect to quality, costs and time. The most important step of any enterprise is willing to change mindset of the human factor and allow new opportunities, new trends in business, that may mean for business way to achieve economy of company. Kaizen method is appropriate and well to use tool to identify and analyze any problems in business practice. This tool of modern management techniques should be used because; it helps to detect weaknesses in various phases of business process management.

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What Can the Taxpayer - an Individual Deduct from the Tax Base in the Annual Accounting of Advances on Income Tax from Employment in 2010?

*Eliška Kuželová

*The University of Žilina, Faculty of Operation and Economics of Transport and Communications,
Department of Economics, Univerzitná 1, 010 24 Žilina, Slovakia
eliska.chromicka@fpedas.uniza.sk

Abstract. Any natural person who is employed, he receives a salary - taxpayer's income for his job performance, which is taxed. In monthly salary it is counted out non-taxable portion of the taxpayer, which reduces tax base and the child tax credit, which reduces your tax liability.

At the end of the year employer is responsible for carrying out an annual accounting of advances on income tax, if the employee requests for it. Then in the annual accounting there can be tax overpaid, that the state will pay to the taxpayer or tax arrears that the taxpayer will pay to the state.

Keywords: taxpayer, annual accounting, tax base, income tax, non-taxable portion.

1. Introduction

After the tax year any natural person who engaged in paid employment, is required to file a tax return. When filing a tax return is necessary to be in accordance with the Tax Income Act no. 595/2003 Z.z., as amended.

The obligation to file a tax return in 2010 is a natural person - the taxpayer:

- whose total taxable income (gross income) exceeds the amount of € 2 012,85,
- whose income did not exceed the amount of € 2 012,85, but the taxpayer reported a tax loss,
- who have to fill the tax return, if the tax administrator asks him for it.

The taxpayer files a tax return by himself or can ask his employer for annual accounting of advances on income tax from employment. An individual written requests his employer, which is taxable, to perform the annual accounting of tax advances on income from employment to the 15 February. The employer is obliged to make an annual accounting of advances only to employees who meet the statutory conditions.

A taxpayer may request the annual accounting the employer, that he applied for a non-taxable portion of the tax base to the taxpayer and the tax credit as the last. If a taxpayer has not applied for the non-taxable portion of the tax base and tax credit any employer, he may request to carry out the annual accounts any of his employees.

The employer have to meet several deadlines:

- To the 31 January is obliged to give employees sign a statement on taxation of personal income from employment for next year.
- To the 10 February the employer have to issue a certificate of personal income from employment, on the advance tax, the withholding tax on this income and child tax credits for tax year to employees whose annual accounting fill another employer and this confirmation request to the 5 February.
- To the 15 February the employer receives requests from his employees for annual accounting of advances on income tax.
- To the 10 March the employer have to issue a certificate of income to employees who did not have requested him to carry out the annual accounts.

- To the 31 March the employer is required to make annual accounting for the employees who applied for it and submit a Report on the tax bill and the total income from employment to the tax office.
- To the 30 April the employer is obliged to give a copy of the annual accounts to the employees that he carried out an annual account.

Annual accounting of the advances on income tax for 2010 concerns to all taxable incomes from employment, which tax was withheld in the form of advances to employee and only those voluntarily income from employment, which have been taxed at source (up to € 165,97).

2. Deductions from the tax base or tax liability

In the annual accounts of the advance on income tax for the year 2010, the taxpayer can deduct the non-taxable portion of the taxpayer, non-taxable portion of his spouse, a non-taxable portion of the contributions paid to supplementary pension saving, targeted saving and life insurance, child tax credit or the amount of employee bonus.

2.1. Non-taxable portion of the taxpayer for the year 2010 (the same in 2009)

If the taxpayer's tax base is equal to or less than 86 times the subsistence minimum (subsistence minimum € 178,92), so it does not exceed the amount of € 15 387,12, the non-taxable portion of the taxpayer is in the amount of € 4 025,70 (that is 22,5 times the subsistence minimum).

If the taxpayer has the tax base more than € 15 387,12, then the non-taxable portion of the taxpayer is calculated as the difference of 44 times the subsistence minimum (€ 7 872,48) and one-quarter of his tax base.

If the taxpayer's tax base will be amount € 31 489,92 (176 times the minimum subsistence) and more, so non-taxable portion of the taxpayer is zero.

The non-taxable portion can be applied also by the taxpayer who is a beneficiary of a retirement, early retirement or pension. If he is the beneficiary of a retirement from the beginning of the year, non-taxable portion is reduced by the amount of pensions paid in 2010. If the amount of retirement is higher than € 4 025,70, a non-taxable portion is equal to zero. However, when he becomes the pension beneficiary during the tax year (in 2010), the amount of non-taxable will be determined by the revenue generated.

2.2. Non-taxable portion of the taxpayer's spouse for the year 2010 (the same in 2009)

The taxpayer may apply for non-taxable portion of his spouse if they live together in a common household and the taxpayer has not tax base € 47 92,72 and higher.

If the spouse has no income of her own, so the taxpayer with the tax base up to € 31 489,92 may apply to her non-taxable portion of € 4 025,70.

If his spouse has income which does not exceed € 4 025,70 per year, a taxpayer with the tax base to € 31 489,92 will apply for non-taxable portion of his spouse in the annual accounts. The amount of non-taxable portion of the spouse can be determined as the difference between 22,5 times the subsistence minimum (€ 4 025,70) and spouse's own income.

If the spouse has no income of her own, but the taxpayer has a tax base more than 176 times the subsistence minimum (€ 31 489,92 and more), the amount of non-taxable portion of his spouse is determined as the difference between 66,5 times the subsistence minimum (€ 11 898,18 for the year 2010) and one-quarter of the taxpayer's tax base.

If the spouse has her own income up to € 4 025,70 and taxpayer's tax base is more than € 31 489,92, the amount of non-taxable portion of his spouse will be calculated as the difference between 66,5 times the subsistence minimum (€ 11 898,18) and one-quarter of taxpayer's tax base reduced by spouse's own income.

2.3. Contributions paid to supplementary pension saving, targeted saving and life insurance (the same in 2009)

If the taxpayer contribute to supplementary pension saving, targeted saving or life insurance, he can reduce the tax base from these contributions in the annual accounts, a maximum amount of € 398,33 per year.

2.4. The child tax credit

After deduction of the non-taxable portion of the taxpayer and his spouse and contributions paid to supplementary pension saving, targeted saving or life insurance from the tax base we can calculate reduced tax base. From this reduced tax base is calculated 19 per cent tax rate (for the 2010 still valid tax rate 19 %). From the calculated tax the taxpayer can deduct the child tax credit.

The taxpayer applies to the child tax credit either each month in the monthly settlement or in the annual accounts. The taxpayer may reduce tax liability by the tax credit for each dependent child (if the child lives in the same household with the taxpayer). An amount of the child tax credit depends on subsistence minimum and is defined in the Act. In the first half of 2010 was an one child tax credit in the amount of € 20 per month and from the 1 July 2010 is the amount of tax credit € 20,02 per month.

The child tax credit can be claimed by taxpayers with unlimited tax liability, which in the fiscal year reached the income from employment, business, other self-employment or rental at least 6 times the minimum wage in amount of € 1 846,20 (from 1 January 2010 minimum wage is € 307,70). If his income is lower, the tax credit is not entitled.

The tax credit can be applied already in the month when the child was born. Tax credit is paid until child reaches 25 years if he is constantly preparing for a vocation. After the completion of compulsory schooling of the dependent child the taxpayer has to submit to the employer confirmation of the visit grammar school or college, in terms of daily study every year.

To the child tax credit may also applied by a person other than a parent, if his income is in that range, if the child has married, meets the requirements of age 25 years and continues preparing for future careers.

Also the taxpayer with limited tax liability has currently right on the child tax credit, if at least 90 % of his incomes for the tax year is produced in the Slovak Republic.

In 2009 the amount of child tax credit the first six months was € 19,32 and from 1 July 2009 the amount of child tax credit was € 20. The taxpayer had to achieve revenue at least € 1 773 in 2009 (minimum wage in 2009 was € 295,50, that is $6 \times 295,50 = € 1 773$) to be able to reduce tax liability with the child tax credit.

2.5. Employee bonus

The employee bonus in the annual accounts for the year 2010 may be applied the taxpayer who meets all the following conditions:

- The taxpayer had to reach taxable income from employment produced in the Slovak Republic only pursuant to § 5 paragraph 1 letter a) and f) (incomes from current or previous employment relationship, staff ratio, civil service employment, membership relation or other similar relationship, where the employee have to work comply with instructions and orders from the taxpayer, incomes from the work of pupils and students in practical training or income from the Social Fund).
- The taxpayer have to achieve these law defined incomes at least 6 times the minimum wage, which is an amount of € 1 846,20 and more (in 2009 revenues of at least € 1 773).
- The taxpayer have to receive these incomes at least six calendar months (it has not to be the following calendar months in a row), but it does not count the months, which the employee worked on an agreement in.
- Other taxable income the taxpayer did not receive in a given tax period.

- The employee cannot apply to a refund of withholding tax from income (under § 43 of the Tax Income Act), except the tax from such taxed incomes from employment to € 165,97 in the unsigned statement which is possible to refund in the annual accounts of the advances.
- The taxpayer could not be recipient of a pension in 2010 from the 1 January 2010 or an earlier date.
- The employee bonus can not applied by the taxpayer who was given the contribution to the maintenance of employment, the contributions for health and social insurance, which is paid by the employee and employer and contribution to superannuation.
- The employee bonus may be applied if the conditions are met for application of non-taxable portion of the tax base (for fuses, supplementary pension insurance and utility savings up to € 398,33 per year).

The amount of the employee bonus is determined by the amount of incomes for the tax year. If the employee reaches the total income from 6 times to 12 times the minimum wage per year (in 2010 from € 1 846,20 to € 8 692,40 and in 2009 from € 1 773 to € 3 546), the amount of employee bonus is calculated as 19% of the difference of non-taxable portion of the taxpayer and 12 times the minimum wage reduced by statutory insurance. In 2010 the maximum amount of the employee bonus is € 157,04 and in 2009 is € 181,03.

If the total income for the year is more than 12 times the minimum wage (€ 3 692,40 or more in 2010 and € 3 546 and more in 2009), the amount of employee bonus is calculated as 19 per cent of the difference of non-taxable portion and the taxpayer's actual taxable income reduced by statutory insurance.

The full amount of the employee bonus will apply when the employee was receiving those assessed incomes throughout the year. If he received assessed incomes only a part of the year, he will be entitled to a proportion of the calculated employee bonus.

3. Conclusion

In the annual accounts of the advances on income tax the taxpayer may reduce the tax base of non-taxable portion of yourself and spouse, non-taxable amount for contributions paid to supplementary pension saving, utility saving and life insurance. Child tax credit and employee bonus can reduce their tax liability. All these items have their specific conditions defined by the Tax Income Act. With these conditions, the taxpayer is entitled to apply them.

When comparing the annual accounts in 2010 and 2009 we find that deductions from the tax base in 2010 are the same as in 2009. The amount and conditions for the application of non-taxable portion of the taxpayer, his wife and contributions paid to supplementary pension saving, utility saving and life insurance are the same in 2010 and 2009. The amount of the child tax credit and employee bonus changes in different years.

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Impact of Process Management on Consumers

*Katarína Lehutová

* University of Žilina in Žilina, Faculty of Operation and Economics of Transport and Communication, Department of Economics, Univerzitná 1, 01026 Žilina, Slovakia, katarina.lehutova@fpedas.uniza.sk

Abstract. The implementation of business process management and process orientation on consumers are considered to be important trends in the process of getting better competitiveness, of achieving higher productivity, company efficiency and of maintaining its position on the dynamic market. Business process management helps to manage and organize work as a complex process which is divided into particular connected sub processes focused on the final value which company gives to consumer, customer.

Keywords: process management, business process management, consumer, customer, Act on consumer protection

1. Introduction

In general, the process management is very popular. If we want to improve the efficiency of a company, it is necessary to think of its operation principles as of the system whose particular parts are mutually connected. If we realize some changes regardless the other parts of the system, the result will not be effective. On the basis of this, a company can be defined as a neuronal system. It consists of many mutually connected parts which are realized by divisions, they react on impulses from the external environment (requirements of consumers, competitors or legislative requirements) they realize various transformational operations and provide outputs of their work to the external environment, consumers and owners.

2. Business process management

In every organization there are a lot of processes which need to be recognized, defined properly and documented. Process is defined as a system of activities, whether they are arranged chronological or logical, and where the process of changing inputs to outputs is realized. The common problem is that the theory and practice are mainly focused on technological processes. In the organization only process brings added value to the consumer. If there is no or not sufficient added value given to consumer, we have to think if the process is reasonable.

Business process management is focused on the process and its progress in the organization. For instance, the process of handling with consumers begins in the marketing department. The consumer is addressed by an offer, it is important to conclude contract, then the production preparation starts, production itself, controlling and product delivery to a consumer. The owner of the process is assessed according to the quality he provides to the consumer.

3. The Role of Consumer in the Process Management

The process management is based on the given principles. It takes into account the management, process approach, employees involvement, focusing on consumers, constant development, profitable purchaser-supplier partnership and system approach. One of them is also focusing on consumers. Consumer plays an important role in the process of company operation because it represents the main source of revenues. The main aim of effort and business activities of every company should be the fulfillment of consumer needs. Consumers can be defined as a subject (person) who we give all outputs of our activities to. It is necessary to consider following tasks:

- Systematic research of consumer needs
- Fast and effective fulfillment of requirements
- Linkage between the aims of the company and needs and expectations of consumers
- Systematic comparison of satisfaction and loyalty of consumers
- Development and management of relation with consumers
- Development of relation with other subject concerned (owners, employees, public administration etc.)

From the point of view of many companies it is relatively useless to make consumers a centre of their interest and they focus themselves on inner processes and on company operation itself. On the other hand focusing on consumers can bring new ideas and other advantages. If the products are produced on the basis of consumer requirements, consumer is involved in product creation and it increases their loyalty to company or to trademark. Consumer represents valuable and relatively cheap source of information and new ideas. As consumer is a person who uses the product, has good or bad experience with it, he can bring new ideas or improvements much easier. Interest in consumers' ideas and innovation should not be pretended because then they can feel misled and finally it can lead to negative assessment of the company.

Every company should concentrate its attention to make consumer choose its product or service. Consumer behavior is followed by so called AIDA rule:

- attention
- interest
- desire
- action

There are two main problems connected with the AIDA principles. Firstly, if the demand for product or service is stimulated also the demand for similar products or services increases on the market. Then it is of a vital importance to put more emphasis on consumer to choose the given company. Secondly, the loss of consumer is very easy. If the company attracts consumer attention but cannot fulfill the needs, the risk of loss is even higher. The risk appears also in the case if the low-quality product or service is provided.

On the basis of consumer law (in the Slovak republic Act on consumer protection) consumers has their rights and these cannot be forgotten by any producer or seller. The consumer is entitled to:

- products and services in common quality
- make complaints
- detriment compensation
- education
- information
- health, safety and economic interests protection
- give initiatives and make complaints to supervision and control authorities or municipalities in a case of breaking the rights of consumers

Refusing or low fulfillment of the basic consumer rights usually leads to the loss of consumer. The five following ways of how to lose consumer may be abbreviated as LICAL:

- lying

- ignorance
- complacency
- arrogance
- lethargy

If the consumer is given misleading information about product or service, it is considered to be a lying. It is possible to prevent it as consumer is protected by the Act on consumer protection which provides following: producer, seller, importer or supplier The producer, trader, importer or supplier may not deceive the consumer; in particular, they may not state untrue, undocumented, incomplete, inaccurate, obscure or ambiguous information or withhold information concerning the characteristics of a product or service or concerning purchase terms and conditions. Consumer deceit also encompasses the offer or sale of products or the provision of services violating intellectual property rights, as well as the storage of such products with the intention of offering or selling them.

Every company should try to focus its activities on consumer. It is incorrect to believe that no action is needed to acquire new customers. The bankruptcy can be firstly slow but as the consumer finds out that other company can offer more, the risk of loss is higher.

4. Conclusion

Process management, business process management implementation and concentration on consumers are very important in practice because they are prerequisites for appropriate competitiveness, long term efficiency, productivity and for better vitality. It is not important only to implement the process management but also to respect given principles, to make constant assessment and improvement. Implementation of process management is important for all those small, medium and large companies in all sectors of economy which are aware that the only way for being successful and profitable company is to react promptly on the inner and outer impacts that affect company.

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Proposal of System for Effective Work with Innovations and Knowledge in the Enterprise

*Viliam Lendel, *Michal Varmus

*University of Žilina, Faculty of Management Science and Informatics, Department of Management Theories, Univerzitná 1, 01026 Žilina, Slovakia, viliam.lendel@fri.uniza.sk, michal.varmus@fri.uniza.sk

Abstract. The aim of the paper is on based carried out research to propose a system for effective work with innovations and knowledge in the enterprise. The paper contains recommendations for successful use of this system. These recommendations should serve as a valuable tool for managers in the use of innovations in management. The paper also identifies areas of potential problems that managers must focus on achieving no problems work with innovation and knowledge of enterprise.

Keywords: innovation, innovative management, manager, knowledge, system.

1. Introduction

Innovations are essential presumption for competitiveness. At present, successful companies invest in R&D and introducing innovation. The basic precondition for the creation and use of innovation is the existence of the system their collection, record and distribution. Only then can take place effective work with innovations and knowledge in the company.

The main aim of the paper it is to design a system for effective work with innovation and knowledge in the enterprise on based carried out research. Provide to senior managers device as recommendations for its smooth running.

2. Empirical research - situation in Slovak companies

Research was conducted in the period from January to September 2010. His primary task was to obtain and interpretation information about using of innovative marketing strategies in Slovak companies. Purposes of research was to identify the preparedness of selected Slovak companies to introduce and use innovative marketing strategies by identifying its key elements, work with innovative ideas, opportunities, innovation and application of lateral thinking. Research was conducted on a selective sample of 262 senior managers of medium and large enterprises operating in the Slovak Republic. Most managers were interviewed via an online questionnaire (82.3 %). 17.7 % of senior managers we contacted personally by the semi-structured interview. In the process of information processing has been used χ^2 test the independence of the qualitative data and cluster analysis.

The lack of literature about the definition, structure and use of an innovation strategy is reflected in the fact that very few companies have an explicit, documented innovation strategy. Only 29.6 % of surveyed respondents did not address the issue of marketing innovation strategy. In the study phase is 9.5 % of surveyed enterprises, 6.2 % is in the process of deciding on its importance for the company and to 32.1 % of surveyed enterprises seeking to implement an innovative marketing strategy to business practice. 22.6 % of respondents said that marketing innovation strategy already in place, which is regarded as a positive development. The experience of these firms can make recommendations for the successful implementation of innovative strategies within the enterprise.

48.6 % of respondents surveyed all innovative ideas recorded and, if necessary, use them (Fig. 1.). Conversely only 6.4 % of respondents recorded no innovative ideas. 21.9 % of surveyed marketing executives reported that their innovative ideas in business are always generated from scratch if necessary. 24.3 % of surveyed respondents use analysis of innovative ideas in a group. Only 8.3 % of respondents have system of rating innovative ideas, which is necessary for successful implementation of innovative marketing strategies.

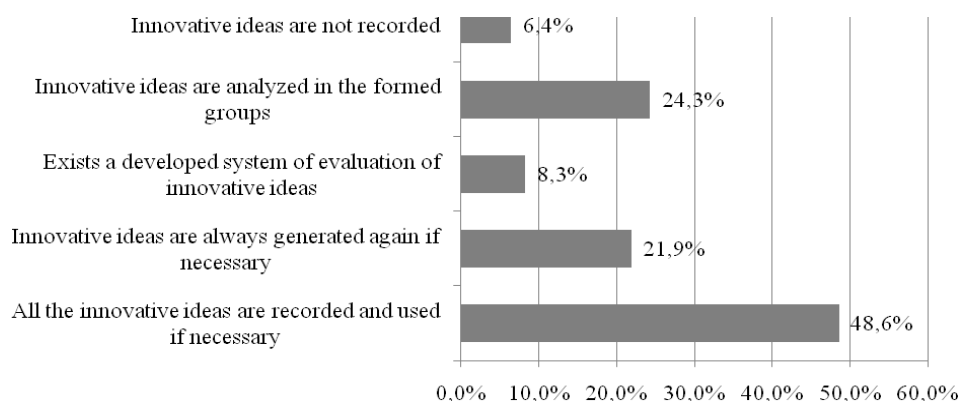


Fig. 1. Work with innovative ideas (inventions)

Source: own research

For the major issues hindering the implementation of innovative marketing strategies in the enterprise managers identified the lack of necessary funds (45.2 %), lack of enabling environment to support development of innovation (33.5%) and inefficient work with innovative ideas (28.1 %).

χ^2 test the independence of the qualitative data showed that there is no dependence between the applied marketing strategy and business readiness to implement innovative marketing strategies.

Based on the results of cluster analysis we can conclude that the majority of companies surveyed (57.4 %) fall into one cluster. It is made by marketing managers, who attach great importance to two innovative marketing and branding strategies and product and lateral thinking. They realize all the benefits of applying lateral thinking in relation to the product. Lateral thinking understood as a way to achieve product innovations offering new needs for new customer groups.

3. Proposal of system for effective work with innovations and knowledge in the enterprise

Successful implementation of innovations in management is subject of the existence of effective work with innovation and knowledge. The system is designed to ensure the smooth flow of necessary information required by business managers in real time. Its main objective is to eliminate most common problems arising in the work of innovation (Fig. 2.).

In the proposed expert system will act two basic actors: the user and the expert. The user is a person who uses the ability of innovation support system in the practice. These are the top managers and marketers. Expert is a source of knowledge from innovations sphere.

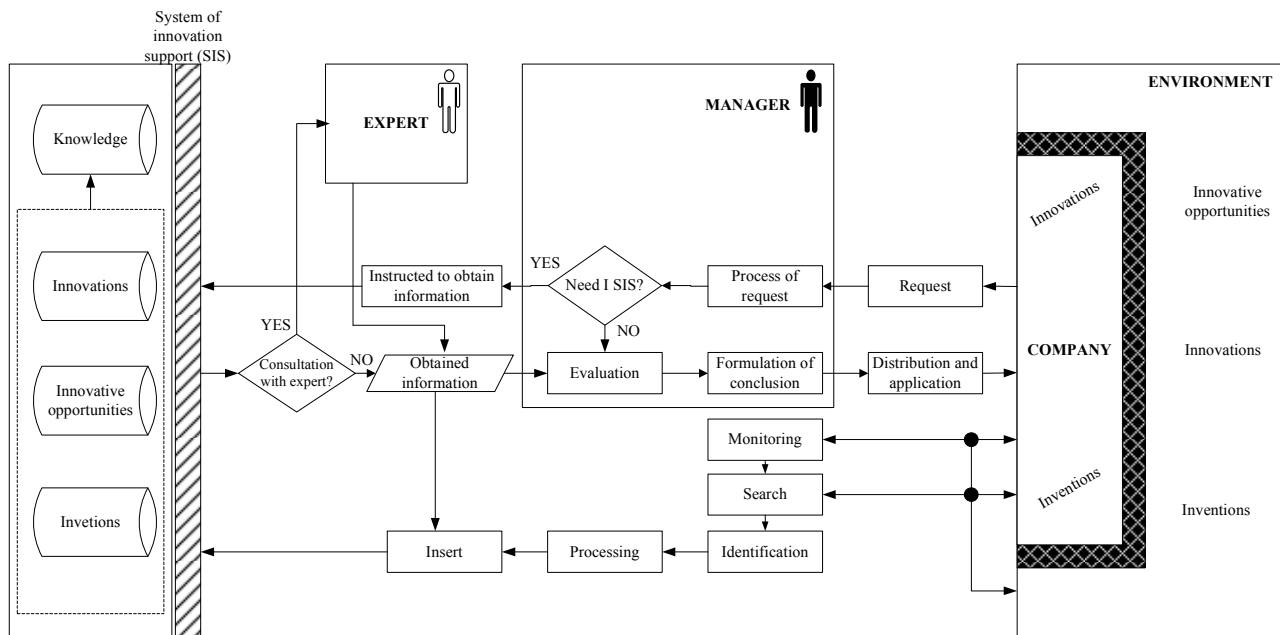


Fig. 2. The proposed system for effective work with innovation and knowledge in the enterprise
Source: own elaboration

The system performs three basic functions, namely the collection, recording and distribution of information and knowledge in innovations sphere. These are the inventions, innovations, and innovation opportunities that come from external or internal environment of company.

The company must be ready to capture this information, suitably process it and then take advantage. For this purpose, it is the proposed system, which aims not only to collect but also actively seek opportunities and innovative ideas that can bring the company an advantage in future market. Its essential core is the system of innovation support (SIS), which consists of:

- *Knowledge base*: provides space for the collection of all knowledge that can be used in the innovation process,
- *Data base*: contains all the unique information relating to innovations. It consists from Bank of inventions, Bank of innovative opportunities, Bank of innovations, which represent the space to record and work with the identified innovation opportunities, inventions and created innovations.

4. Identification of potential problems and proposal of recommendations

The most common problem is *missing pro-innovation environment*. It absents of confidence and subsequent support for the creation and use of innovation by management of company. An important prerequisite for success is the creation of such an atmosphere that encourages the development of creative ideas and allows them to spread through regular communication of marketing workers and managers, encourages the use also non-traditional methods to solve marketing problems.

Another problem is *the absence of evidence of innovative ideas, opportunities and innovations* (what showed the results of research). Marketers then have not an overview of the inventions coming from external or internal environment, which usually takes the situation, when marketers devote only to one invention. It can be recommended for business managers to record innovative ideas and opportunities and even those that currently do not apply.

Resting of innovation potential is reflected by creation of misunderstandings, and implementation costs of inefficient processes (often several times). Firstly, it is necessary to analyze in detail the innovative capacity of the enterprise. The company must keep track of own knowledge,

experience, resources, assets and managerial capabilities and skills to be available and can be fully exploited in the creation and management of innovation in product policy.

Very serious problem is *elimination of human error in preparing the system to work with innovations and knowledge*. The result is often inaction marketers or negative reaction to the new changes. Can be recommended for business managers to provide the necessary information for marketing workers, dealing with their ideas and explain the significance of these changes and their contribution to the company.

5. Conclusion

Currently, the companies try to be competitive through innovations. To be conducted effective work with innovation in the company it is necessary to adopt and implement the system to enable collection, recording and distribution in real time to the necessary places. The proposed model brings a new perspective on innovation support system. The system is consisting primarily of four main components namely, knowledge base, Bank of innovative opportunities, Bank of inventions and Bank of innovations. If the manager apply the recommendations, will be achieved in the company not only effective work with innovation and knowledge, but create a basic prerequisite for successful implementation of innovative business strategy.

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Dynamic 3D Laser Scanning Systems

*Milan Magdech, *Milan Gregor

*University of Žilina, Faculty of Mechanical Engineering, Department of Industrial Engineering,
Univerzitná 1, 01026 Žilina, Slovakia, {Milan.Magdech, Milan. Gregor}@fstroj.uniza.sk

Abstract. This paper describes a 3D laser scanning technology as a tool for reverse engineering. Describes how to use digital 3D scanning and laser scanning systems distributed static and dynamic systems. This paper describes the issue dynamic 3D scanning.

Keywords: digital factory, 3D laser scanning, mobile scanning system.

1. Introduction

Constant research and development brings an entirely new approaches, methods and technologies for designing and testing new products, production processes and systems that are integral to each product. Digitization technology, virtual reality and simulation tools are progressive technology, where their application will eliminate the costs of production. Transmit the design issues of manufacturing systems to the virtual environment, where through a 3D modeling and simulation tools, we propose optimal manufacturing system. And so the concept of digitization and digital becomes the new standard in all areas. Digitization technology create digital documents traditional approaches or tools use reverse engineering, which transforms real objects to virtual 3D models.

2. Tool of reverse engineering

3D laser scanning is the most effective contactless method of spatial measurement, by laser scanner, which sends a laser beam determines the spatial coordinates of the measured object by the polar method. Information thus obtained are input for reverse engineering because they are useful for creating 3D spatial models. Scanned object can be displayed using special software in the form of clouds of points on which is a 3D object model and can be transferred to a CAD system. The method of measurement by laser scanner is characterized by speed and accuracy of focus of the current status, completeness and security. Laser scanning has application wherever it is necessary to create a 3D model of the real object of the complex of buildings, structures, industrial structures (buildings, machinery, utilities, equipment), interior and underground spaces (tunnels, mines), cultural heritage (buildings, historical artifacts, excavations) to medicine, design tech and forensic investigations.

3. Scanning systems

Laser scanning is performed by scanning systems, which represent a set of 3D laser scanner and its accessories. To the accessories include: control computer + software, battery, tripod, chassis. One of the criteria by which you can share scanning systems is the position of the scanner during the scan. According to this criterion, we can share scanning systems:

- static scanning systems
- dynamic scanning systems

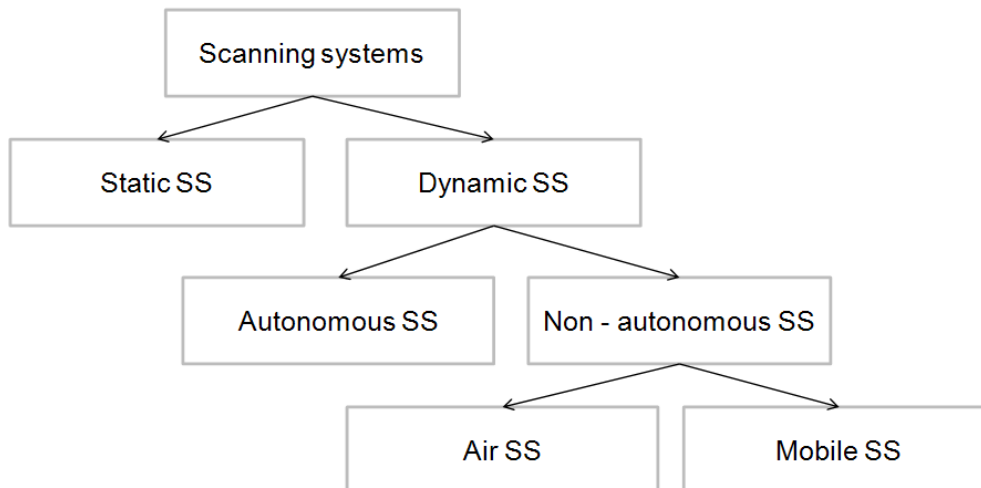


Fig. 1. Distribution of scanning systems

3.1. Static scanning systems

Are systems in which the scanner is placed on a tripod in the space, where the scan system not movement. He changed the position until after the measurement, since the creation of complete 3D object model is necessary the more data.

Central European Institute of Technology in Žilina (CEIT) in the process of digitizing using static scanning system for which it has developed its own process of digitization:

- mounting of the fixed points (coordinate system in the form of halls grid reference)
- mounting of reference points,
- tachymetry - focus fixed points and reference points,
- mounting of reference balls,
- 3D laser scanning,
- registration, change and transform 3D scan data in the form of clouds of points in the CAD system,

digitization process itself - the natural creation of 3D model.

3.2. Dynamic scanning systems

Need for rapid evaluation of complex environment creates scope for improvements to streamline the process of digitization. Potential in this area has mobile 3D scanning system that captures data on the need to digitize and navigation. Dynamic scanning systems can be divided with respect to management of a dynamic vehicle for autonomous and non-autonomous.

The issue of autonomous mobile scanning is a complex process. Main issues to be addressed are:

- *management of autonomous mobile scanning system*

Full and proper control of autonomous mobile system requires that data collection was ensured spatial orientation in a given environment. Mobile scanning system scans the environment and creates a map of the environment in real time, whether the data obtained from a scanner or a mobile platform equipped with its own independent system of SLAM (Simultaneous Localization and Mapping), for example by infrared sensors. In dynamic scanning systems such as auto and aircraft to determine position and orientation of the security system using GNSS systems such as GPS, DGPS, with the support of the IMU, which are also compatible with an autonomous mobile scanning systems, but only in "outdoor" a Co-conditions.

In the previously developed systems have been used 2D scanners, which formed a set of multiple 2D scanners. One is mounted horizontally and vertically species in order to create the final 3D model, which combines data from both scanners.

- *create a consistent model of the environment in a single coordinate system*

One key question that you can put a mobile scanning, we know that this method is affected and suffer from various errors is, how exactly correspond with each other scanned and processed data with reality. For complex 3D visualization environment should be more error-free scans. To be created correct and consistent model of multiple scans, scans must be linked in a single coordinate system. This process is called registration, which operates on the basis of spatial information through a set of algorithms. After registration, the resulting orientation of the 3D model coordinate system should be the same.

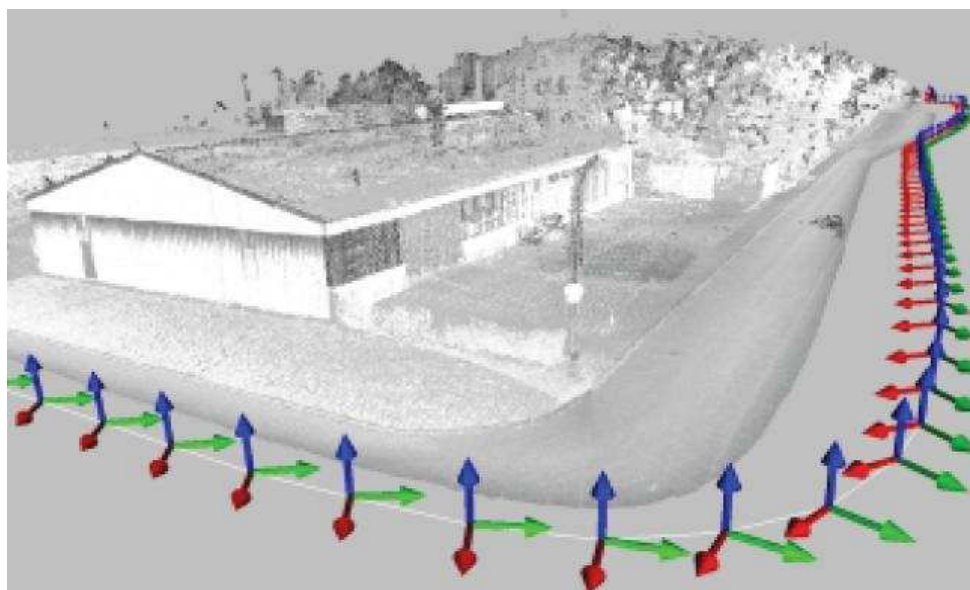


Fig.2 . Illustration of registration 'x' scans

- *calculation of other positional points for full coverage of the environment*

As mentioned above, to create a full 3D model is necessary for lots of 3D scans from different positions without collisions and errors. Autonomous robot must plan another position, so to cover the whole respectively. maximize space and to the measured data are of high informative value. The target position is a guess based on calculations from scanned data.

- *avoiding object.*

One important question in the field of mobile robotics is how the robot can avoid other objects that constitute obstacles to the move, such as subjects such as protruding from the edge, which often may not be detected by sensors and a collision may occur with these objects. Specific barriers are dynamic objects which, in addition, that may impede the trajectory of mobile scanning system causing errors and deviations scanned data environment.

4. Conclusion

Effective tool for modern design manufacturing is available modeling them in 3D view. Technological concept for the Digital Factory, which is a virtual image of the real production, conveyed problem-solving design of the production system to a virtual environment where using 3D models can be quickly, efficiently and above all just a productive disposition, which is corresponding to real values, because it improves communication between teams projection. Mobile laser scanning systems currently account for advanced solutions that enable significantly shorten the spatial orientation of real objects with high productivity and safety. Such systems will in future play an important role in gaining competitive advantage in particular for creating digital 3D models. Development of a dynamic 3D scanning platform will significantly reduce the time and increase the safety of workers serving the particular laser scanner in dangerous and poorly accessible areas.

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New European Commission's Legal Action in the Transformation of the Railway Market

Jaroslav Mašek, Martin Búda

University of Žilina, Faculty of Operations and Economics of Transport and Telecommunications,
Department of Railway Transport, Univerzitná 8215/1, 010 26 Žilina, Slovakia,
(jaroslav.masek, martin.buda)@fpedas.uniza.sk

Abstract: A short brief about past and present state of European law implementation in the member countries of the European Union. Paper deals with basic moments and corresponding documents which are shown in the first section, continuing in the second section with main insufficiencies of implementation state. These are listed and explained, including the table of European Committee's regulations and directives. The resulting new legal actions and their necessity is shown in the last section of the paper.

Keywords: railway transport market, competition, legal enactments, European Commission.

1. Introduction

The European Union in the effort of stopping the trend of decreasing railway transport market share admitted several legislative actions focused on the demand revival. The objective of these actions was progressive creation of "european united railway area."

In september 2001 European Commission published united transport policy named *Transport Policy of the European Union Until 2010 – Time to decide (COM 2001/370)*, which declares that the harmonised development of united transport policy has not been reached yet. The greatest problem of the strategic document such as Transport Policy is the fact that the kindly environment for implementation its transport policy is still not created and even in developed countries of the EU there is a delay about its application.

The European Union is creating by its authorities the space for progressive liberalisation of the railways and thereby supports efective european railway area. Practically it means creation of the legal framework for united arrangement of the relationships between railway undertakings, the infrastructure manager and the country's authorities. These relationships rising from the services of providing and using of railway infrastructure in the conditions of creating united european railway area. The relationships are adjusted to guarantee undiscriminated railway network access to railway undertakings on the one hand and on the other hand to provide the assurance established in the trade relationships, to the infrastructure manager as well as to the country's authorities. The enactments adjusting the railway transport are above all the European Committee's directions creating the legal framework for liberalization and transformation of the railways. The directives 91/440/EEC, 95/18/EC, 95/19/EC were revised by first and secon railway package.

The directive 91/440/EC with other actions belongs to so-called first railway package. Each of next packages (second and third) enlarged the activities for railway market competition within the common market. Each european country implemented first and second railway package differently and that was caused because there was a freedom in implementing the legal standards and there were various ways of implementation.

Regulation or Directive	Year	Effects
Directive 91/440/EEC	1991	Requirement for separate accounting for railway operators and infrastructure managers
Directive 95/18/EC and Directive 95/19/EC	1995	Licensing of railway undertakings and rules for allocating train paths and calculation of infrastructure fees
1. railway package: - Directive 2001/12/EC - Directive 2001/13/EC - Directive 2001/14/EC - Directive 2001/16/EC	2001	The first step towards the opening of the European rail market. Exposure to competition of international rail freight traffic within the EU.
2. railway package: - Directive 2004/51/EC - Directive 2004/49/EC - Directive 2004/50/EC - Regulation 881/2004	2004	The second step towards the opening of the EU rail market. The whole freight transport market to be opened up to competition.
3. railway package: - Regulation 1371/2007 - Directive 2007/58/EC - Directive 2007/59/EC	2007	Opening the rail passenger market starting with international services in 2010.

Table 1: European Committee´s regulations and directives

Source: SIKA report 2009:4

2. Reasoned opinions (complaints) of the European Commission

Twenty-four member countries received European Commission´s appeal in June 2008. On the basis of this appeal some of the countries adjusted their enactments so they could be in compliance with the enactments of the European Union. The European Commission established the dialogue with all member countries. The Commission pointed out in reasoned standpoints, above all these following limitations:

- insufficient independence of the infrastructure manager from the railway undertakings,
- insufficient implementation of the directive, especially the articles about network access application fee, such as performance-based regime absence, missing stimulates for cost and charges decreasing for the infrastructure manager, missing tariff systems based on costs of railway services,
- absence of independent regulation authority with necessary competences for solving problems in railway market competition.

In 2008 the European Commission sent reasoned standpoints to the member countries of the EU. The most complaints received Spain – 10, followed with Greece and Slovenia. Swedish, Germany and Great Britain received only 1 – 2 complaints, none of complaints received only Netherland.

On the 8th October 2009 the European Commission repeatedly sended reasoned standpoints to 21 member countries because they have not correctly implemented the enactments called *first railway package*. There were still unsolved questions about opening the railway markets for competition in Austria, Belgium, Czech Republic, Germany, Danish, Estonia, Greece, Spain, France, Hungary, Ireland, Italy, Lithuania, Luxembourg, Latvia, Poland, Portugal, Romania, Swedish, Slovenia and in Slovakia. The decrease of the complaints ocured since this date while Spain with France are still on the last place with highest number of complaints – 7. Countries wich didn't got any complation are Netherland, Great Britain, Finland and Bulgaria. The lowest number of complaints got the countries which divided the railway monopol into three separate parts – the infrastructure manager, passenger operator and freight carrier.

On the 24th june 2010 the European Commission decided to take action against 13 member countries again. The reason was incorrect implementation of various parts of railway packages, i.e. the Directive 91/440/EEC and the Directive 2001/14/EC. The action was taken against Austria, Czech Republic, Germany, Greece, France, Hungary, Ireland, Italy, Luxembourg, Poland, Porugal, Slovenia and Spain. Germany was the only country with higher volume of complaints than the year before. On the other hand Greece which originally got the highest number of complaints bettered itself. Bulgary bettered itself as well and got none complaint. In some cases the whole structure of implementation the articles is missing. Inappropriate transposition of correspondent articles of liberalisation railway transportation market loose railway undertakings of a chance to offer their services in other member countries and loose railway operators of greater supply of competitive railway services.

3. New legal actions of the European Union

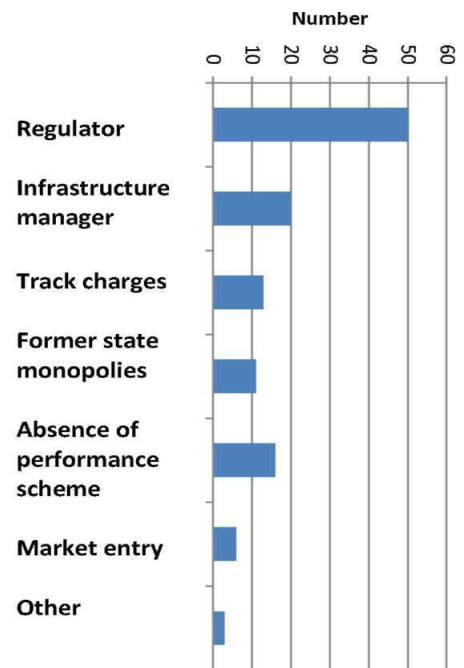
The European Commission accepted a suggestion about providing superior services in passenger and freight railway transport. This is based on railway market competition growth, supporting competences of country's regulatory authorities and on enhancement of railway transport investions framework [5]. The proposal of the Directive which provides the common railway area establishment features simplification of the legislative and consolidation because it is about joining three directives and their following revises and complements into one text. The goal of the proposal is also to solve basic problems avoiding effective railway transport market functioning.

The novel of the legislative has to solve three problem areas, which are market competition, regulator supervision reinforcement and reinforcement for the framework of public and private investments.

Market competition questions

The draft of Directive objective is the market competition growth via more transparent conditions and easier market access, for example with:

Figure 1:List of EC's compliances and their propotion Source: [4]



- better access (in some countries claimed access) to railway transport services, such as maintenance facilities, railway stations, information points and tickets selling points, etc. will be required
- clear standards about interest conflicts and discrimination practices in railway transport sector will set up
- more exact declarations about the state of the network will be required and these documents will be published every year so that potential railway undertakings coming on market should have accurate characteristics of available infrastructure and the usage conditions.

Regulator supervision reinforcement

The powers of country's railway regulation authorities will reinforce by introduced proposal within the proposals of actions, such as:

- Enlargement of regulation authorities' competences on the services connected with railway transport. The problems with the access to the services connected with railway transport have not always been in the competence of country's regulation authority.
- Requirement for country's regulation authority independence from any of public authority.
- Reinforcement of competences (in terms of awarding the sanctions, audits, appellate procedures and competences to lead an authority investigation) and duty for these authorities to cooperate with their foreign partners.

Reinforcement for the framework of public and private investments

The objective of new rules about infrastructure financing and charging is to create harmonized financial structure supporting the investments. The proposals includes:

- Requirement for long-term country's strategies and multi-year contracts between the country and the infrastructure manager (financing and effects and business plans connection). The objective is to be the development of the infrastructure more predictable for the subjects on the market and so that they can get more impulses for improvement their performance.
- Requirement more exact and intelligent rules for charging the infrastructure. Better realisation of charging within present enactments should lead to decrease of railway infrastructure access taxes in many member countries. New rules of charging (including gradation of taxes according to noisiness, which is equivalent to external costs charging in road transport, allowances for interoperability) should also attract public investments into interoperable and more ecologic solutions.

3. Conclusion

Incorrect implementation of the directives about first railway package do not lead according to the European Commission to elimination of market access barriers and to sufficient transparency of access conditions. It obstruct therefor fully functioning common railway transport market in Europe.

On the 20th september 2010 the European Commission has submitted to European Parliament and to European Committee the above mentioned proposal of the directive with purpose of rework first railway package in on the behalf of simplify, clarify and actualisate the regulation environment in european railway sector and to be progressing towards the strategy Europe 2020. The objective of this rework is to simplify the enactments with consolidating and clarifying the enactments about railway transport services market. It would facilitate adequate transposition and effective execution of Union law in all member countries. Nevertheless the objective of this iniciation is actualisation the enactments by removal of out-of-date articles and implementation of new articles, which will more adequate match the conditions of the railway transport market functioning in the present.

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Learning Organizations in the Context of E-HRM

*Zuzana Mičicová, *Mariana Strenitzerová,

* University of Žilina Faculty of Operation and Economics of Transport and Communications, Department of Communications, Univerzitná 1, 01026 Žilina, Slovakia, {zuzana.micicova, mariana.strenitzerova}@fpedas.uniza.sk

Abstract. This article supports a look at some of the generic characteristics of static organizations and learning organizations in terms of structure, atmosphere, management philosophy and attitudes, decision making and policy making, and communication. Further, this article argues that learning organizations are more desirable if today's organizations wish to remain competitive in a global economy.

Keywords: Static organizations, Learning organizations, E-HRM, human resources management.

1. Introduction

Electronic human resource management (e-HRM) mean that human resource management must now embrace electronic establishment. The environments that today's managers work in have changed. With the current technological revolution taking place, management methods can be catered to electronically.

Applying e-based solutions to human resource management is important, managers must have a clear view of what learning and static organizations may mean in order to add the electronic effect to "improved" management. Without in-depth knowledge of learning organizations versus static organizations, e-HRM would become an empty term. In today's organizations, corporate leaders use strategies such as "downsizing," "restructuring," and "catenation" in an effort to avoid an organization from collapsing or going bankrupt. Such organizations that go through these processes should say goodbye to their past, which may qualify them as static organizations. To deflect from static organizations, today's organizations must aspire to become learning organizations in order to remain competitive in a global economy. Learning organizations are totally different from static organizations in terms of structure, atmosphere, management philosophy, decision making, and communication. Addressing these irreplaceable aspects may lead to the rise or fall of an organization in today's competitive global economy.

2. Background

2.1. Static Organizations

In general, static organizations refer to organizations that are not moving or changing in the right direction. Static organizations are organizations that are rigid, task-oriented, controlled through coercive power without proper participation expected at all levels. Any decisions made in these organizations are considered final and communication is top-down. Confusion between management and leadership is a huge factor that leads to static organizations. Employee morale is another factor. The level of education of employees also contributes to static organizations. When examining static organizations, it is always a good idea to approach them comprehensively. One single factor alone does not necessarily lead to static organizations.

2.2. Learning Organizations

Learning organizations refer to innovative organizations that strive to transform themselves from static organizations to learning organizations. Anything that does not work for these organizations is bound to be changed in a timely manner. In this article, learning organizations are flexible, people-centered, and operated through supportive power with high participation at all levels. Decisions are treated as hypotheses and their system is open. Communication is multidirectional. Above all, employees' energy is released rather than suppressed. Learning organizations are full of learning facilitators instead of knowledge dictators. Leaders in learning organizations serve as resource persons, linking employees to learning resources. Leaders in learning organizations reward their employees in a fair and open manner. Leaders in learning organizations are creative leaders that strive to release the energy of their employees. They understand that power they hold need to be delegated. Creative leaders in learning organizations have faith in pent up energy of human beings. Therefore, they utilize a facilitative approach to their leadership styles.

2.3. Static organizations vs. Learning organizations

Unlike static organizations, learning organizations are flexible (Knowles, Holton, & Swanson, 1998, 2005). Learning organizations make frequent use of temporary taskforces. They easily shift department lines if they work for them. In fact, they are always ready to change constitutions if they find flaws with them. They like tradition, but they are ready to depart from tradition if it stands in their way. Learning organizations are no longer hierarchical. The atmosphere in learning organizations is that people are caring and that these organizations are people-centered (Rogers, 1980). On the whole, the atmosphere is warm, informal, intimate, and trusting. Management philosophy in learning organizations is to release the energy of personnel by delegating power to the employees. (Knowles et al., 1998, 2005). In static organizations, the whole system is closed. In learning organizations, the system is open regarding sharing resources. All in all, there is high tolerance for ambiguity. Because of the democratic nature of learning organizations, there is relevant participation by all those affected. In static organizations, there is low participation at the bottom because employees believe decision making is none of their business. In static organizations, communication is one way. In learning organizations, communication is multidirectional, that is, up, down, and sideways. Specifically, communication in learning organizations feature open flow and easy access. Leaders communicate with leaders freely. Leaders communicate with employees freely. Employees communicate with employees freely.

Dimensions	Characteristics	
	<u>Learning organizations</u>	<u>Static organizations</u>
<i>Structure</i>	Flexible	Rigid
<i>Management Philosophy and Attitudes</i>	Use of supportive power	Use of coercive power
<i>Decision making and Policy making</i>	High participation at all levels	High participation at top, low at bottom; decisions treated final
<i>Atmosphere</i>	People-centered	Task-oriented
<i>Communication</i>	Multidirectional	Top-down, one way

Tab.1. Comparison of Learning and static organizations

Table 1 illustrates how learning organizations differ from static organizations in terms of those traditional dimensions such as structure, atmosphere, management philosophy and attitudes, decision making and policy making, and communication. This is not to say that learning organizations cannot use any of the strategies utilized by static organizations at all. There may be

situations where strategies used by static organizations may be realistic for learning organizations. However, on the whole, learning organizations should keep their own characteristics in order to qualify themselves as true learning organizations.

3. Learning organizations in the context of E-HRM

To survive and remain competitive in this global economy, organizations must rise from static organizations that prevent themselves from being successful. Unlike leaders in static organizations, leaders in learning organizations tend to do the following (Knowles et al., 1998):

- Have faith in people, offer them challenging opportunities, and delegate responsibility.
- Involve their clients, workers, or students in every step of the planning process, assessing needs, formulating goals, designing lines of action, carrying out activities, and evaluating results.
- Believe in and use the power of self-fulfilling prophesy, they understand that people tend to come up to other people's expectations for them.
- Value individuality in sensing that people perform at a higher level when they are operating on the basis of their unique strengths, talents, interests, and goals than when they are trying to conform to some imposed stereotype.
- Stimulate and reward creativity.
- Are committed to a process of continuous change and are skillful in managing change.
- Emphasize internal motivators over external motivators.
- Encourage people to be self-directing.

4. Conclusion

This article supports a look at some of the generic characteristics of static organizations vs. learning organizations in terms of structure, atmosphere, management philosophy and attitudes, decision making and policy making, and communication. Further, this article argues that learning organizations are more desirable if today's organizations wish to remain competitive in a global economy. For human capital to contribute to the improvement of the organization's competitive advantage, learning organizations provide fertile ground for both corporate leaders and employees. Static organizations are detrimental to the development of any organizations. Therefore, they must be transformed in this 21st century. To transform them into learning organizations, the traditional aspects such as structure, atmosphere, management philosophy and attitudes, decision making and policy making, and communication cannot be overlooked. In fact, unless we fix these first, we cannot expect to transform an organization. In view of the difference between learning organizations and static organizations, it can be concluded that automated management characterized by e-HRM may not work well in static organizations because of their management philosophies. Automated management reduces excessive worry regarding smaller tasks and allows management to focus on other more important areas where immediate attention has to be applied. An e-based side of business would not be possible unless we strive to transform static organizations into learning organizations.

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Regulation and Ethical Aspects of Direct Marketing

*Monika Miháliková

*University of Žilina, Faculty of Operation and Economics of Transport and Communications,
Department of Economics, Univerzitná 1, 01026 Žilina, Slovakia, monika.mihalikova@fpedas.uniza.sk

Abstract. The aim of this paper is to highlight the rapid growth of the possibilities to use direct marketing thanks to the development of new communication media, and also to show the need to regulate these activities. I also explained the function of the lists of Robinson, and I described the importance of a direct marketing agencies and their impact on its regulation in the world, as well as in Slovakia, where I focused on the Direct Marketing Association (ADiMa).

Keywords: Direct marketing. Regulation. List of Robinson. Direct Marketing Association. Spam. International Federation of Direct Marketing Associations.

1. Introduction

In the last decades, the volume of direct marketing realized through traditional channel such as post or phone, grow quickly. However, due to the development of new communications media in recent years, the fastest growth was belonged to the direct marketing realized precisely through these new technologies, such as mobile phones, fax, e-mail or social networks, thanks to them the communication becomes easier, cheaper and faster. But the growth of direct marketing also raises fears from the part of consumers who are bombarded from all sides with unsolicited phone calls or e-mails, which disturb their right to privacy. Business entities should respect matters such as protection of personal data, or the right of the consumers to oppose this activities. As a consequence, in recent years, increased regulatory requirements of direct marketing activities implemented without being requested from the part of the consumer. This regulation should be applied to direct marketing in various communications media, for example, the prohibition or limitation of unsolicited phone calls, e-mails or post mails, and also should provide to consumers the opportunity to oppose to this activities.

2. Regulation of Electronic Mail

The control of unsolicited electronic mail ("spam") in Slovakia is regulated by the Law about advertising, as well as by the Law about electronic communications. In one part of the law about advertising is stated that the advertising cannot be distributed through "automated phone calling system, fax and electronic mail without prior consent of their user who is the recipient of the advertisement." [1] This provision shows that unsolicited e-mail is prohibited. This means that if the consumer does not express prior agreement with that marketing activity, it cannot be delivered. So by the law is established that the company can send e-mail that relates to direct marketing only if the consumer has chosen the possibility "opt-in", that means prior agreement with the sending those information (also known the "opt-out" - e-mail can be sent to the consumers until they requests the prohibition of these activities). However, in practice we find that the "spam" is one of the experiences of each consumer who is a user of electronic mail. This shows that the possibility of recovery is truly low. This regulation (both opt-in and opt-out) should be also applied to communication by telephone, sms or mms. But just as in the case of electronic mail, the respecting of the rules is an exception.

3. List of Robinson

"Robinson" in this case is someone who does not wish to receive e-mails or phone calls of marketing nature. List of Robinson is a list of people who do not wish to receive any unsolicited marketing information, and this prohibition is applied to post mail, e-mail, sms, fax, and phone calls. Anyone can register on the list for free, only has to identify by which way he does not want to receive unsolicited information and offers, that means through which channel does not wish to be addressing (whether the prohibition applies to phones, e-mail, post mail, or if he does not wish to receive unsolicited information from any possible ways). These lists can be generated in one country, associating marketing agencies and other businesses that undertake to respect the lists and to not contact the clients from the list called "Blacklist", but it can be also an internal list made by single business entity. The company divides their customers in two groups- those who will be contacted and those who have expressed opposition to such contact. Lists of Robinson have been already established in several countries, for example in Belgium, Spain, Canada, New Zealand and the United States. In the UK exists a service called Mail Preference Service, which is a kind of list, which is funded by companies which use in their activities tools of direct marketing. This list collects the names and addresses of people who do not wish to receive consignments of direct marketing. Companies are then responsible for not contact the persons mentioned in this list. Of course, they may be cases where this can be abused and to the registered person will be sent, intentionally or accidentally, unsolicited information. In the USA was established in 2003 registry "National Do Not Call Registry", thanks to which there was a chance given to the consumers to limit the telemarketing activities of the companies. Until 2007, have been registered 77% of Americans. In other countries, we can meet with different names: National Do Not Call List (Canada), Do Not Call Registry (Australia) Telephone Preference Service (United Kingdom), Name Removal Service (New Zealand). But all of them have a common goal, that is to reduce unsolicited communications between companies and consumers. Although lists of Robinson were created in order to reduce marketing junk mail, there is still a possibility that it will not be totally eliminated the existence of such consignments as the list works on the principle of "opt-out", it means that it becomes unsolicited mail only after a person decides prohibit its receiving. In fact, there are many people who did not record in that list, but they don't comply that the companies send information to them. A solution to this problem would be making any direct marketing activities only after prior approval of the client (possibility "opt-in"). But this restriction would significantly slow down development of direct marketing activities.

4. Direct Marketing Agencies

23 Direct Marketing Associations of the five continents in 1989 founded the International Federation of Direct Marketing Associations (IFDMA). It was established in order to supporting the implementation of direct marketing in practice, to improve the way of its realization and also to support self-regulation and control of ethical behaviour of companies involved in the direct marketing. In addition, there are individual associations in many countries. These include, for example AMDIA (Association of Direct and Interactive Marketing in Argentina), India DMA (Direct Marketing Association in India), United Kingdom DMA, DMA United States, etc. In important agency operating in Slovakia, which includes business entities involved in direct marketing, is ADiMa (Direct Marketing Association). This agency protects not only its members but also consumers. It follows the ethical code that regulates the behaviour of the member business entities and protects them from companies that could hurt by their doubtful activities reputation what has direct marketing. In addition, helps to efforts to develop direct marketing in a form that is appropriate for companies, and that at the same time respects the consumers' attitudes towards such activities. International Code of ethics rules in the direct marketing [2] contains a set of rules to be respected and identifies areas in which has to be applied. This Code of Ethics also deals with

ersonal data protection of consumers, controls data acquisition, its protection from abuse, unauthorized disclosure or destruction, also pays attention to the stored data is correct, also regulates the rules for the sale or rent of data to other entities. Within the telemarketing defines rules for realization of calls, relating to the content and length of call, time of call or options to ensure the control of ongoing calls. The role of committee consisting of board members of ADiMa is to monitor compliance with the rules of the Code of Ethics, and in case of their infringements to sanction such conduct. For non-compliance of those rules can be eliminated from an entity's membership in AdiMa.

5. Conclusion

Direct marketing has become wide spread marketing tool thanks to the new possibilities that are provided by a new communication media. Companies can achieve great success with direct marketing with only a minimum investment of funds. Therefore they try to use the most of opportunities which direct marketing offers to them. For commercial purposes obtain personal information about their potential or existing customers, addresses, family background, or interests. Furthermore, they distribute materials, sell over the phone or e-mail, and transmit collective e-mails to the people, often without their prior consent. Simply attack from each side, so the consumers can get a feeling of distortion of their privacy and also a feeling of helplessness in combating these activities. Therefore, direct marketing has become the most controversial marketing communication tool. So to make the consumers will not perceive direct marketing as something that bothers them and as something that is necessary to fight against, and to make they will use these activities for their advantage, it is important to establish, through adequate regulation, the legal and ethical limits for the use of the possibilities of direct marketing.

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Quality Management Schemes in Context of Public Accessibility

*Ing. Miroslava Mikušová, PhD.

*University of Zilina, Faculty of Operation and Economics of Transport and Communications, Univerzitná 8215/1, 010 26 Žilina, Slovakia, mikusova@fpedas.uniza.sk

Abstract. The paper is aimed to carry out a comprehensive overview of the state-of-the-art regarding policy audits and quality management schemes, related to the accessibility of public transport and public space, including the success factors and features of these schemes. It is focused on general and much-used international standards and models as ISO 14 000 family, EMAS and the EFQM Excellence model, describing the general structure of the schemes, working process, covered areas and type of indicators used as well as the way that they address detailed content-related matters, related specifically to the “public” accessibility.

Keywords: accessibility, quality management schemes, people with reduced mobility, audit.

1. Introduction

Every day a significant part of the population encounters many barriers in public spaces and on public transport. Among them are, for example, people with baby buggies or heavy luggage, people with mobility problems, those with hearing- or visual impairments or people with learning difficulties. Because of these barriers for many people it is difficult or even impossible to move around independently in the public spaces. Thus instead they have to depend on a car or mobility-service for much of their regular travel.

One of possible ways to solve this problem is application of systematic approach based on standardized quality management scheme related to the area described above. Development of these scheme is the aim of the project ISEMOA - Improving seamless energy-efficient mobility chains for all (henceforth referred to as ISEMOA-schemes).

At the core of the ISEMOA-schemes there is a moderated audit process that will help local and regional stakeholders, together with an external auditor, to assess the state of accessibility of public space and public transport in their area and to develop strategies and measures to continuously improve the quality of this.

Next text is dedicated to the description of findings of one of the core project tasks - carry out a comprehensive overview of the state-of-the-art regarding policy audits and quality management schemes related to the accessibility. Within this task more than 50 different schemes and audits were identified and analyzed as a base for the development of ISEMOA accessibility scheme. First part gives you description of important quality management scheme models on which many of the schemes and audits reviewed are based. In addition, general success factors as well as typical problems and barriers related to audits and schemes are described. Second part presents an overview of the material gathered and describes the content and provenance of a selection of schemes and audits directly connected to accessibility are described. The third part provides discussion on suitable structure for the ISEMOA QM-scheme.

2. Basic quality management scheme models

2.1. ISO 9000 family

The ISO 9000 family of standards represent an international consensus on good quality management practices. It consists of standards and guidelines regarding quality management systems and related supporting standards.

ISO 9001:2008 is the standard that provides a set of standardized requirements for quality management systems, regardless of what the user organization does, its size, or whether it is private or in the public sector. It is the only standard in the family against which organizations can be certified – although certification is not a compulsory requirement of the standard. The other standards, in the ISO 9000 family, cover specific aspects such as fundamentals and vocabulary, performance improvements, documentation, training, and financial and economic aspects.

The standard requires the organization itself to audit its ISO 9001:2008-based quality system. To verify that it is managing its processes effectively, or to put it another way, to check that it is fully in control of its activities. In addition, the organization may invite its clients to audit the quality system in order to give them confidence that the organization is capable of delivering products or services that will meet their requirements. Lastly, the organization may engage the services of an independent quality system certification body to obtain an ISO 9001:2008 certificate of conformity. This last option has proved extremely popular in the market place because of the perceived credibility of an independent assessment. The organization may thus avoid multiple audits by its clients, or reduce the frequency or duration of client audits. The certificate can also serve as a business reference between the organization and potential clients, especially when supplier and client are new to each other, or far removed geographically, as in an export context.

2.2. ISO 14 000 family

The ISO 14000 family addresses various aspects of environmental management. The very first two standards, ISO 14001:2004 and ISO 14004:2004 deal with environmental management systems (EMS). ISO 14001:2004 provides the requirements for an EMS and ISO 14004:2004 gives general EMS guidelines. The other standards and guidelines in the family address specific environmental aspects, including: labeling, performance evaluation, life cycle analysis, communication and auditing.

ISO14001 requires an environmental policy to be in existence within the organization, fully supported by senior management, and outlining the policies of the company, not only to the staff but also to the public. The policy needs to clarify compliance with environmental legislation that may affect the organization, and stress a commitment to continuous improvement. Emphasis has been placed on policy, as this provides the direction for the remainder of the management system.

The environmental policy provides the initial foundation and direction for the management system and will be more stringently reviewed than a similar ISO9000 policy. The statement must be publicized in non-technical language so that it can be understood by the majority of readers. It should relate to the sites within the organization encompassed by the Management System. It should provide an overview of the company's activities on the site and a description of those activities.

2.3. EMAS

Eco-Management and Audit Scheme (EMAS) is a voluntary environmental management system (EMS), under which companies and other public organizations evaluate, manage and continuously improve their environmental performance. EMAS has been operative since 1995. The latest revision (EMAS III) came into effect on 11 January 2010. Currently, more than 4,400 organizations and approximately 7,600 sites are EMAS registered.

EMAS was originally restricted to companies in the industrial sectors. Since 2001 EMAS has been open to all economic sectors including public and private services. EMAS was strengthened by the integration of EN/ISO 14001 as the environmental management system required by EMAS, by adopting an attractive EMAS logo to signal EMAS registration to the outside world, and by considering more strongly indirect effects such as those related to financial services or administrative and planning decisions.

The core elements of EMAS are performance, credibility and transparency. By carrying out annual updates of environmental policy targets and actions to implement and evaluate them, registered organizations continually improve their environmental performance and provide evidence that they comply with all environmental legislation that is applicable to them. Third-party verification from independent auditors significantly adds credibility to registered organizations, by guaranteeing the value of both the actions taken and the disclosed environmental information. Transparency is generated by the environmental statement, which an organization is required to provide as part of EMAS registration.

2.4. The EFQM Excellence model

The EFQM Excellence Model is a non-prescriptive framework based on 9 criteria. Five of these are 'Enablers' and four are 'Results'. The 'Enabler' criteria cover what an organization does. The 'Results' criteria cover what an organization achieves. 'Enablers' cause 'Results' and 'Enablers' are improved using feedback from 'Results'.

This model recognizes that there are many approaches to achieving sustainable excellence in all aspects of performance. It is based on the premise that excellent results, with respect to the four result criteria Performance, Customers, People and Society, are achieved through Leadership driving policy and strategy that is then delivered through People, Partnerships and Resources, and Processes. These latter are the enabler criteria. The EFQM model is graphically presented in Figure 8. The arrows emphasize the dynamic nature of the model. They show how innovation and learning help to improve enablers that in turn lead to improved results. On the left-hand side are the enablers, and on the right hand side are the results.

At the heart of the model lies the RADAR logic: Results, Approach, Deployment, Assessment and Review (more or less similar to the Plan – Do – Check – Act or PDCA-Cycle). Within this non-prescriptive framework, certain fundamental concepts underpin the model. Behaviors, activities or initiatives based on these concepts are often referred to as Total Quality Management (TQM). These fundamental concepts are: Results orientation; Customer focus; Leadership and constancy of purpose; Management of processes and facts; Partnership development; People development and involvement; Continuous learning; innovation and improvement; and Corporate social responsibility.

3. QM-schemes covering the working process

In this group we obviously find the ISO 9000 family of standards, which represent international consensus on good quality management practices. The same stands for the ISO 14000 family of standards in the field of environmental management. Other interesting and established schemes are the EFQM Excellence model and the CAF (common assessment framework), the latter being based on the EFQM model. The EFQM model/CAF is a QM instrument for the public sector, which is of special interest for the ISEMOA scheme as the responsibility of accessibility issues mostly is in the hand of the public sector.

Interesting transport QM-schemes found in the state-of-the-art review are:

- MaxQ (Mobility Management QM-scheme) and
- BYPAD (Bicycle Policy Audit),

both being highly inspired by the ISO standards and the EFQM model/CAF.

These schemes do not only measure the status of the working process but support a progress and give the organization tools for continuous improvements. This should be a requirement when developing a new, modern QM-scheme, such as the ISEMOA-scheme. MaxQ is quite new (2009), but has been used successfully by several cities in Sweden. As presented in the state-of-the-art-review BYPAD has successfully been applied in practice by over 100 towns, cities and regions, and up-dated, which makes it very interesting as inspiration for the ISEMOA-scheme. Especially interesting is that BYPAD is covering towns/cities as well as regions precisely as the ISEMOA-scheme is intended to do.

Both MaxQ and BYPAD, and also the QM-scheme from the MEDIATE project, contain a "development ladder". Whilst MEDIATE uses exactly the same levels of development as BYPAD, they are slightly different in MaxQ. In these schemes the quality of the processes in each of the elements are determined separately by assigning a quality level on a ladder of development to each of them, see table below.

The ladder of development shows, at a glance, the overall quality level of at least the working processes in the organization, and to some extent also the level of the outcome. The actual naming of the levels are of less importance as long as the naming follows an understandable order (from low to high quality), and that the levels are well defined. In MEDIATE a well structured definition of the levels are included which can be used as inspiration in ISEMOA.

4. Conclusion

It is concluded that there are working models that can form the basis of a workable quality management scheme, relevant to the ISEMOA project. It is an important observation stemming that micro accessibility (individual accessibility concerning the individual's possibility) is relatively commonly audited. Macro accessibility (the geographical meaning of accessibility), however, is rarely the focus of quality management schemes and audits.

In relation of finding suitable structure for the ISEMOA QM-scheme we can conclude that structure and content of the MaxQ and BYPAD systems can serve as inspiration. The schemes are in use and well-functioning and comprise of the essential components that are needed despite area of use (cycling, Mobility Management): vision, goals, programs, procedures for monitoring etc. The components of the MaxQ-system can be re-used with adaptation to the accessibility field. For example, as user needs are of special interest for people with reduced mobility the issue of "user needs" possibly could form a component itself.

The ISEMOA-scheme must as well embrace walking and public transport above cycling (By Pad) and Mobility Management (MaxQ), which will reflect in the number of indicators. Due to the character of the accessibility field not only the working process but also the actual situation must be covered. An integrated approach where the actual situation is covered within the same components as the working process should be the goal when developing the ISEMOA-scheme.

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Use of Augmented Reality in Industrial Engineering

*Gabriela Mirandová, *Martin Krajčovič

*Žilinská univerzita v Žiline, Strojnícka fakulta, Katedra priemyselného inžinierstva, Univerzitná 1,
01026 Žilina, Slovakia, {gabriela.mirandova, martin.krajcovic}@fstroj.uniza.sk

Abstract. This article deals with augmented reality as a new technology which currently has a great use in various fields of industrial engineering, such as storing and picking materials and components from warehouse, next in assembly, maintenance, ergonomics, design of production systems, transport, as part of the logistics process and marketing. Research in augmented reality focuses on developing technologies that enable in real-time to link digital content with the real world. At the beginning of this paper the technology of augmented reality is defined, next is described the basic equipment needed for augmented reality and the benefits which this technology brings.

Keywords: Augmented reality, industrial engineering.

1. Introduction

In difficult conditions of competition companies have to reach for new methods and applications. Augmented reality is now a technology that promises many innovations. Potentials for its use in everyday life are really a lot. The possibilities are truly limitless, for example it can be military, aviation, health care, education, architecture or the gaming industry. The field which offers probably the broadest use of this technology is industry.

2. Augmented reality and its use

Augmented reality is a combination of real and virtual world with 3D interaction and record in real time [1]. The basis is the ability to combine elements of real and virtual world into a single view. The augmented reality technology is supported by the human visual perception. Provides direct or indirect look into actual physical environment, which parts are in digital form enriched for an additional information. From definition by Azuma is clear, that one important part of augmented reality is to ensure the interaction. This means that the user can affect the displayed scene in real time. Unlike virtual reality, which is whole modeled by computer, augmented reality does not substitutes the real world, but it only adds in selected virtual elements, respectively objects. An appropriate mix of real and virtual objects allows providing an additional information. The basic equipment for augmented reality is HMD or glasses with camera, a portable computer and in some cases navigation. In simpler applications you can use webcam and a computer monitor to create a preview. The camera is a basic input device for augmented reality applications, it handles the input image.

The following subsections describe potential using of this technology in fields that industrial engineering solves.

2.1. Storing and picking components from warehouse

New technology which provides information on picking and can improve the logistics process is called pick-by-vision. The point of augmented reality is display the necessary

information for picking orders directly to the picker's vision field and at the right time and right place. This system may or may not be supported by the voice input. Systems providing the navigation must include a tracking system. This system can detect not only the position of the worker, but also its direction of view. According to the input it can correctly navigate to the place of storage. The proposal for a process picking from warehouse with the use of augmented reality is as follows:

- a) Acceptance orders and its insertion into the information system. Input of information is still a high degree of manual labor, but is usually associated with the SAP system for data processing.
- b) Picker puts on his head the HMD and makes the short login dialog. The system must to work correctly regardless of the speaker, respectively the user. It is very important for industrial applications with varying numbers of workers. He chooses the order from the menu and there are components what should be picked, as it is shown on Fig. 1.
- c) In the next step picker takes a truck and pallet. The system shows him the location of the searching component. On the way to the storage site picker may read information about selected components, i.e. description and quantity.
- d) After finding the component can be inserted into the pallet. After confirmation the selection is displayed next line in the order.
- e) Upon completion of the last line of the order is made command to transport to the place, where order is conclude. Each command is simply confirmed by voice or by signaling button.

Testing of augmented reality in picking material, components, products and tools showed that workers did fewer errors in the selection of components and the time needed for picking was shorter than usual [5].



Fig. 1 Use of augmented reality in picking (Reif, 2009)

2.2. Assembly

Assembly mainly means realizing of connection technological operations. It is characterized by high intensity of material and information flow and short times of operations. Augmented Reality offers solutions to reduce the consumption of time by providing visual information to the worker in assembly works. This method is suitable for manufacturing of complex small production runs or for the production realized on customer requirement. Each product may have a different order of assembly of individual parts. The traditional approach is to use manuals and job descriptions for each task. Given that production batches are becoming smaller, the need to guide the worker in his work is becoming increasingly important. Using augmented reality for assembly operations reduces, respectively eliminates the need for additional written assembly procedures. Worker can in his field of vision see not only the actual physical assembled parts, but also structural parts in virtual form, which are displayed step by step according to installation procedure. In this way the real environment is supplemented about virtual elements, which simulate the assembly operation, as it is shown in Fig. 2. By using the augmented reality in assembly we can increase the performance of man, reduce the time required to fulfill the assembly tasks, reduce errors and reduce the cognitive load [4].

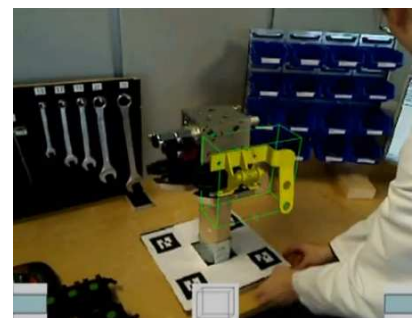


Fig. 2 Use of augmented reality in assembly

2.3. Maintenance

Maintenance operations and repairs are an interesting area for application of augmented reality. Using augmented reality in maintenance reduces the load on the worker in the complicated working environment. If the worker uses documented operating procedures on paper, he must alternately watch and orientate on document and on equipment. Moreover, he must understand the document and be able to find the target component in the technical system. It is expected that the use of augmented reality not only shortens the time needed to repair, but also reduces the number of movements for workers and lowers the number of errors in maintenance. If a worker uses a HMD (head mounted display), it increasing his safety, because he has free hands and in case of a fall he can catch on. The aim is to provide support not only to service technicians, but also to customers. The provided information might be in the form of text, design drawings, diagrams, voice instructions or a video. Information change frequently and therefore must be updated. For capacity reasons, they can not be stored in a local system. Therefore, it is possible to link to external systems. One of the most important system components is history of the machine, respectively of the object, which stores all the changes, corrections and errors that occurred. Troubleshooting is simplified on to find similar errors that have already occurred.

2.4. Design of production systems

Design of production systems is another potential area of industrial engineering for the application of augmented reality. Currently, in the design of production systems, is enormously used computer technology and its possibilities. Augmented Reality provides to designer the advantage of creating a digital production system and its insertion into real environment. The principle is based in the distribution of markers in the production area and assignment of virtual objects to individual markers. Through HMD (head mounted display), or glasses with camera, designer can overlook the proposed disposition. Objects can be created in different software, such as AutoCAD, CATIA, Microstation and they are displayed in 1:1 scale, which allows a realistic view of the disposition. The main benefit is in reducing the risk in introducing new production, improving the layout of production equipment, reduction in required areas, detect potential collisions and to better understand the proposed solution.

2.5. Ergonomics

Analysis of workplace from ergonomic point of view may be supported by augmented reality, too. Example is design of small workplaces like design of small hand-work places. Using augmented reality can be placed into real working environment virtual elements such as containers, boxes, tools and various materials. Layout is thereafter optimized according to worker's reach on elements or from another aspect, how it is shown in Fig. 3. Thus it is possible to create several variants of workplace layout and compare them. This makes it possible to identify the necessary dimensions of the workplace and with these data it can be designed. So the costs of additional rebuilding arising from incorrectly designed workstations are removed.

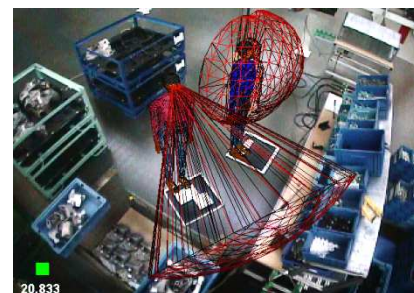


Fig. 3 Use of augmented reality in ergonomics (Doil, 2003)

2.6. Transport as part of the logistics process

Effective and well-prepared solution of transport logistics activities has the task to ensure the transfer of materials, products of physical nature, depending on customer requirements and should be designed such a way that its implementation made the minimum cost. Transport function is to ensure the physical transfer of people and things in space and time. Use of augmented reality in the field of transport has great potential in navigation. In the following section is described

visualization of information using GIS (geographic information system). This system is often called as a mobile augmented reality, because information is presented using a portable device. In the last years, the market appeared a variety of applications for mobile augmented reality. Now, it is used in more expensive cars and it displays information about the ride. Augmented reality would add the navigation displayed accordingly to what the driver sees through the window, such as direction to go. As a display device may be used HMD (head mounted display) or portable device.

2.7. Marketing

Marketing is another potential area for using augmented reality. Today, it has the greatest using in selling a products and realties, as a promotional tool. The application works with an internet database of realties. There are houses, apartments and land in the larger Slovak cities. In the each of those locations you just run the program and aim the camera lens on the street. Application in conjunction with GPS module determines where the phone is and compass identifies the direction of rotation. On the display we can see the reality together with the virtual description of objects, respectively realties, with their characteristics and price. Another example is the unnamed Swedish company dealing with the sale of household furniture, which offers its customers a possibility to choose furniture through a webcam and monitor and its virtual insertion directly into their living room, kitchen or bedroom.

3. Conclusion

The augmented reality system in assembly, together with providing support to worker in the performance of tasks, shortens assembly times and "learning time". From an ergonomic point of view, augmented reality reduces the cognitive load and guides the worker how to properly grasp, orientate and put assembled component. Testing of augmented reality in picking material, components, products and tools showed that workers did fewer errors in the selection of components and the time needed for picking was shorter than usual. As the biggest problem in implementing this system into practical applications seem to be the hardware components, especially the HMD and tracking system. Gaming and military industry is constantly developing this technology and therefore, it is only a matter of time when augmented reality will be used in other industrial applications.

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Human Resources Management in Networked Enterprise

*Kvetoslava Mišiaková, *Mariana Strenitzerová,

*University of Žilina, Faculty of Operation and Economics of Transport and Communications, Department of Communications, Univerzitná 1, 01026 Žilina, Slovakia, {kvetoslava.misiakova, mariana.strenitzerova}@fpedas.uniza.sk

Abstract. Networked enterprises are emerging as a strategic and organizational model based on the decentralization into a network of all business units, where every business unit specializes in its core competencies. Along with the intensive use of Information and communication technologies and knowledge, the networked enterprise can be characterized by its important impact on human capital. Every area of human resource management will be impacted by computer technology, including the human resource function itself.

Keywords: networked enterprises, human resources management, recruiting, selection, job design, training, performance measurement.

1. Introduction

The new competitive environment has forced the redesign and formulation of new organizational models in order to confront the new competitive pressures that are emerging from globalization, new technologies and new consumer habits. Organizations have to adapt themselves to the market requirements through new organizational formulas derived from the invasion of new technologies. The development of new systems and processes based on the intensive use of Information-communication technologies has provided the company with certain characteristics, favoring the development of a new business model: the networked enterprise. Networked enterprises are emerging as a strategic and organizational model based on the decentralization into a network of all business units, where every business unit specializes in its core competencies.

Although emerging computer technologies impact every aspect of human resource management, there is a considerable gap between research focusing on the technological aspects of computer technologies, and the human resource impacts. This paper focuses on emerging trends in computer technologies, and the human resource management implications of these technologies in networked enterprise.

2. Networked enterprise

The characteristic flexibility and interconnection of companies has favored the development of a new organizational design model known as the *networked enterprise*.

Networked enterprise can be defined as an organizational structure characterized by a high level of decentralization, interrelation, use of Information-communication technologies, use of information, flexibility and ability to confront changes. It consists of different units that interrelate and cooperate in a network in order to develop a common process or project. The collaboration of an agent in the net is determined by his or her ability and expertise—know how—to carry out a certain activity or process more effectively and efficiently.

Planned as a strategic and organizational model based on the decentralization of all business lines in a network, whose management is orientated towards system of cooperation and competence, the networked enterprise is derived from (Dyer et al., 2000; Roberts,2000) :

- large decentralized companies,
- network connection between companies of all sizes and the changing interconnection of different business lines within a certain firm.

The characteristics of these new organizations (see Table 1) have both a direct and an indirect impact on human capital.

<i>Characteristic</i>	<i>Description</i>
Flexibility	Firms are flatter and less hierarchical; they also have higher levels of independence and higher decision capability for employees.
Cooperation	The generation of team work is facilitated in order to achieve internal and external integration as a formula for motivating employees, giving decision capabilities to low hierarchical levels and deleting organizational levels. Firms are multidisciplinary teams that integrate employees with specialized knowledge or that break down functional barriers, thus facilitating mutual learning.
Outsourcing	Firms specialize in their core competencies, this is, the competencies that provide a competitive market advantage as regards competitors. The outsourcing of activities presents the possibility of establishing models of cooperation with other economic agents (both suppliers and clients).
Human Capital	The high level of involvement, the higher level of responsibility and the higher participation of employees is possible due to their high decision-making independence, which aims to solve problems from the lower levels of the organization. The integration of employees is achieved not only through the culture, strategy, value and behavior code, but also through the information systems that facilitate the transmission of rules and processes.

Tab.1. Characteristics of the networked enterprise

The networked enterprise, the result of a strategic and organizational change, alters the role of the traditional worker. Hence, the hierarchical and pyramidal structures have evolved into horizontal and flatter structures, new multidisciplinary work teams are emerging, the integration of information management and knowledge as the core business or intangible management itself are some of the transformations that have a direct and indirect impact on the configuration and regulation of jobs (Kahn, 2001; Roberts, 2000). Finally, the use of new technologies (such as cellular phones, personal computers, the Internet) permits employees and human resources department to work in new way (Tzokas et al., 2004).

3. The human resources management implications of computers

3.1. Job Design and Analysis

Part of a typical job analysis consists of identifying the work environment, the knowledge and skills necessary to perform the job, and the coworkers. Extended reality and mobile computing will impact our definition of the “work environment.” The skills and knowledge needed to perform tasks will be changed as a result of expanded reality and intelligent agents, and a coworker who is an artificial agent is a concept most job analysis techniques are not prepared for. In general, three major areas of job design will be greatly influenced by computers: teams, cognitive labor, and the need for redesign. In the case of teams, computers have made it possible for teams to work together without being collocated. This use of virtual teams leads to an increased demand for team job analysis. Traditional methods of job analysis may also have to be reevaluated due to the increasing amounts of cognitive labor brought about by the computer.

In addition, jobs may need to be redesigned specifically to encourage some of the side-effects of computer use.

3.2. Recruiting

The use of paper resumes and newspaper listings of job openings is becoming obsolete as resumes are giving way to sophisticated e-portfolios. Statistics show that 51% of new hires in 2005 came about through the Internet, and only 5% through newspapers (On-line Recruitment, 2007). E-recruiting is an integration and utilization of Internet technology to improve efficiency and effectiveness of the recruiting process.

E-Recruitment is the use of the internet for attracting, hiring and retaining job seekers. This involves matching candidates and validating their skills and qualifications. As the number of people searching online for jobs increases, companies are taking advantage of e-Recruiting software to manage the entire recruitment process and reduce recruiting-related costs.

E-Recruitment utilizes the power of online resume search technology to analyze resume databases and help recruiters and human resource personnel actively search for candidates on a global scale. Though E-Recruitment initially began as a simple method for finding talent online, it has evolved to incorporate all aspects of candidate management. Now companies and organizations are using it to manage job postings, candidate applications and even conduct online interviews.

3.3. Selection

Augmented reality tools mean there will be less accent on specific skill acquisition, and more accent on employees with flexibility, problem analysis, and cognitive skills. This increased accent on cognitive abilities means organizations will increasingly rely on personality and integrity testing. New selection criterion may be developed as well, such as the ability to tolerate ambiguity, the susceptibility to virtual reality, attitudes toward technology, and predisposition to carpal tunnel syndrome.

Not only the content, but also the method in which these tests are administered will change. Selection tests will be increasingly administered online, with automated scoring, screening, and reporting functions. Such systems will change the recruiting process dramatically. Another exciting possibility is computerized job interviews conducted by intelligent agents, as they can eliminate such problems as first impressions, nonverbal cues, and stereotypes, all of which plague the human interview process.

Additionally, intelligent agents make it possible to have highly structured interviews, which have a mean validity comparable to that of ability tests, without the adverse impact.

3.4. Training

Computers have altered both the way organizations train, and the content of the training. Self-paced and just-in-time computerized instruction, agent-guided training, and distributed team training are just some of the methods that are being used today. Training content will have to change as well. As organizations flatten, employees need training in handling organizational responsibilities, optimizing technology, creating business value, and meeting strategic goals. Computer-based training will therefore need to address both technical skills and inter and intrapersonal skill.

Virtual environments will allow for team training both with and without other team members, and with the possible addition of agents as trainers.

3.5. Performance Measurement

Input/output devices and omnipresent computing will alter the way that work is performed, requiring new criteria for evaluating work. Intelligent agents and extended reality will provide new methods of performing evaluations by making it possible to evaluate work samples in a simulated environment, or by providing the capabilities for the electronic monitoring of work. Electronic monitoring is an increasing trend.

4. Conclusion

Globalization, along with the spread of Information-communication technology, has favored increasing competition among firms. Hence, companies have been forced to improve their efficiency and productivity in order to preserve their competitive positions in a global market, facilitating the development of new organizational models based on the decentralization of functions and coordination between departments and companies. The networked enterprise, as a new organizational structure, and networking, as a new way of organizing work, are key elements in understanding the impact of the knowledge economy (Tzokas et al., 2004).

Networked enterprises are emerging as a strategic and organizational model based on the decentralization into a network of all business units, where every business unit specializes in its core competencies. This is an organizational scheme built upon a business project resulting from the cooperation of different components from diverse firms, operating in a network for the duration of the business project and reconfiguration the network for each project. Consequently, this is an organizational model based on networks of enterprises aiming at competing in cooperation and competitive conditions. This model has evolved from the decentralization process of large firms and the interconnection in a network of firms of different sizes.

Along with the intensive use of Information and communication technologies and knowledge, the networked enterprise can be characterized by its important impact on human capital. Every area of human resource management will be impacted by computer technology, including the human resource function itself.

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