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Modern methods for the cost management and process improvement integrated in the change management

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Abstract

The process of evaluation and monitoring of changes is difficult. The aim of change implementation is to achieve a positive effect. Adoption of an appropriate method is dependent on many different factors as well as an evaluation of a change influence. In the connection with that it is necessary to deal with process improvement. The utilisation of modern approaches in the Cost Management is really important. The aim of the paper is to show partial results of the primary quantitative research focusing on the Change Management integrated to the area of cost calculation, change effects and process optimisation. The data was acquired via questionnaire. Respondents would fill the questionnaire in online form as well as through personal interview. The questions were focused on the range of the utilisation of the modern methods, tools, indicators and calculations by Slovak enterprises. The tools of descriptive and inductive statistics were used for data analysis.

Keywords: Process optimisation, calculation, cost, change management.

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1. Introduction

The current market situation is forcing companies to be active. If they want to be successful, they have to monitor the situation around. From the point of competitiveness it is necessary to implement changes to their activities. According to Rank and Scheinpflug (2010) Change Management is a proactive method, by means of which they should be easier to schedule, controllable and thanks to that more successful. According to Badertscher and Scheuring (2007) without Change Management the risk that projects fail increases. With each change the aim, which need to be achieved, is connected. Change Management definitely helps in the controlling area. The company focuses this system of planning, management and control to the targeted aims. According to Tomanek (2001) it is important to find available information about costs, which are necessary for the cost analysis and it is necessary to determine how these information analyse. The author differentiates strategic and operational management costs. The strategic management can influence capacities, by operational management it is necessary to select other tools (Target Costing, Activity Based Costing (ABC), Zero Base Budgeting, etc.). The author reports that controlling has supporting effect on changes in Change Management. In Change Management we have to effectively monitor already achieved results and results based on newly proposed processes too. Same as Heib (2004) looks at the cost accounting strategically and operationally. Cost monitoring and cost management is difficult and important process. The main aim of cost management is according to Stibbe (2009) in optimising of the relationship between costs and benefits in company. It focuses primarily on extensive and early impact of costs level, costs structure and behaviour of costs. New modern approaches in monitoring and cost management are based on the process approach. They bring positives, for example, in the form of more precise costs allocation. It results in the more precise determination of price. The use of specific method depends on the area of business activity. For the mass production, engineering industry, according to Synek, Dvoracek, Dvorak, Kislingerova and Tomek (2007) it is typically the division calculation. Popesko (2009) considers its practicality as highly limited. According to the author there must be certainty that the performances are homogeneous. Along with that they are consuming same proportion of direct and indirect costs. Synek et al. (2007) also states that in traditional absorption costing the larger volume of indirect costs is allocated by larger volume of performance, which are transmitted to higher overheads per production unit. The situation occurs, that at smaller volume of performance the company fails to pay the part of overheads. According to Popesko (2009) variable costing originated as response to absorbing calculation and its deficiencies. It works with indicator of contribution margin. According to Synek et al. (2007) it brings new, more exact approach to company decision making. It is supplemented method of Break even point analysis and variable budgeting. Ponisciakova (2010) sees its strengths in flexible decision making by selection of suitable product range, by optimal usage in decision making of price changes, by tasks of either, or type and future capacity tasks. Macik (2008) says that new approaches in management, reduction and variable costing led to the creation of procedures that should avoid allocation of fixed overheads by direct wages. One of them refers to the method of activity calculation – ABC calculation. Synek et al. (2007) finds and allocates costs for a partial activities. The aim of this modern method is to allocate the overheads according to their cause of occurrence. Ponisciakova (2010) talks about new information that this modern method brings. It can be used in activity, operations and processes management along the line of performance also line of divisions. According Macik (2008) this method is significantly demanding for volume and detail of identifying information, which amount increases in relation with the amount of evaluated activities and their relation to certain part of final product range. The companies focus on possibilities to reduce their costs also in pre-production phases. Lang (2005) says that Target Costing is the tool of cost management for cost reduction throughout the product life cycle. The whole process contains areas of production, design, research, development, marketing and controlling. The method aims to adjust customer requirements with company capabilities. By the author the method plans costs and determines its clear definitions for all business areas. The method forces companies to constant rationalisation of competing practices. Macik (2008) states that it finds its usage, for example, in the automotive, electronics.

Target Costing is a tool used for the determination of potential reserves of the company and it can also provide solutions for the product differentiation done on product functions (Potkany, Hajdukova & Teplicka, 2012).

Prevention of a decrease in quality during production, supportive and operational processes is main target for achieving operative quality management and the most commonly used method is probably measurement and evaluation of the capability of processes (Simanova & Gejdos, 2015). Capability Maturity Model (CMM) is defined by Quality Management Maturity Grid including five evolutionary stages (Paulk, 2009):

- **Uncertainty**: Quality is not management tool. Management is confused and uncommitted.
- **Awakening**: Quality management is considered as a tool helping enterprise improvement.
- **Enlightenment**: Management makes a decision to create formal quality improvement program.
- **Wisdom**: Changes should be set a permanent (things are basically quiet and people wonder why they used to have problems).
- **Certainty**: Quality management is considered a necessary part of the company management.

CMM in Figure 1 is completed with key elements of managing and developing workforce of an organisation. This model has 5 levels and it could be stated that: repeatable practices lead us from initial level to managed level, competency-based practices lead us to defined level, measured and empowered practices lead us to predictable level and continuously improving practices lead us to optimising level.

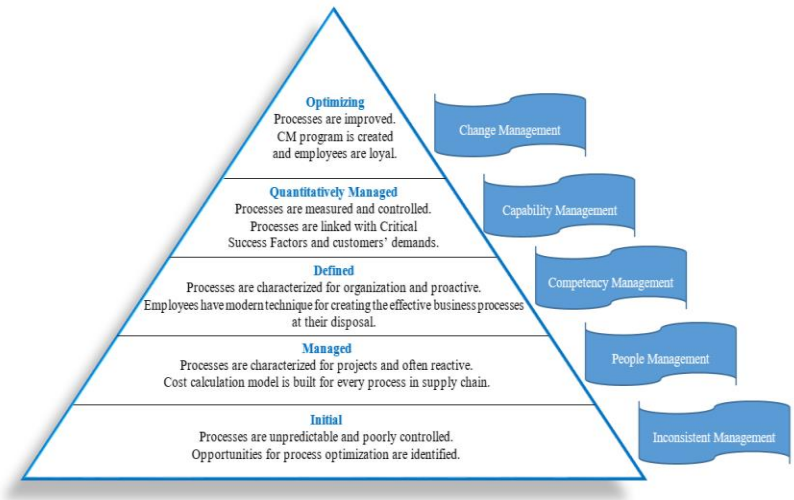

Figure 1. CMM with steps of change management process
Source: own study by Paulk (2009) and Curtis, Hefley and Miller (2009)

Successful Implementation of the Change Management is difficult process including these critical activities (Doherty &Waterhouse, 2006):

- Triger the Request for change (RFC)
- Perform the RFC Analysis
- Prioritise the change
- Categorise resource of change, risk associated with change and priority
- Create the Change Advisory Board consisting of all interested parties (IT and business)
- Schedule the change

- Build and Test the change
- Implement the change

Nomenclature

ABC	Activity Based Costing
BEA	Break Even Point Analysis
CMM	Capability Maturity Model
CM	Change Management
RFC	Request for Change
ROE	Return on Equity

2. Material and methods

In the primary quantitative research two research methods have been used, namely:

- online questionnaire
- controlled interviews

The enterprises from selected industrial branches of Slovak republic have been set as the research subjects. The aim of the research has been to find out the level of process control, value of Return on Equity (ROE) and implemented steps of Change Management project in research subjects. In addition dependence between the chosen variables has been investigated.

Database of the information about the enterprises has been created in the first step. Secondly the online questionnaire has been created. Subsequently the questionnaire has been sent to the enterprises' email addresses and controlled interviews have been carried out in the chosen enterprises. Data collection has been processed from 1 December 2016 to 31 March 2017. 108 questionnaires have been completed by the enterprises from wood-processing (77 enterprises) and machinery industry (31 enterprises). The answers in questionnaires have been processed and evaluated by chosen statistical methods.

Chi-squared test or χ^2 **test** is a statistical test commonly used to compare observed data with data we would expect. Pearson´s chi squared test as a test of independence assesses whether paired observations on two variables are independent of each other. The chi-squared statistic can then be used to calculate a p-value by comparing the value of the statistic to a chi-squared distribution. The formula for calculating chi-square is:

$$\chi^2 = \sum_{i=1}^{n} \frac{\left(O_i - E_i\right)^2}{E_i} \quad (1)$$

Where χ^2 is Pearson's cumulative test statistic, O_i is an observed frequency, E_i is an expected (theoretical) frequency asserted by the null hypothesis and n is the number of cells in the table.

3. Results and discussion

In this part of the paper selected research results are presented.

Relative frequencies of answer on selected question concern about cost accounting method is depicted in Figure 2.

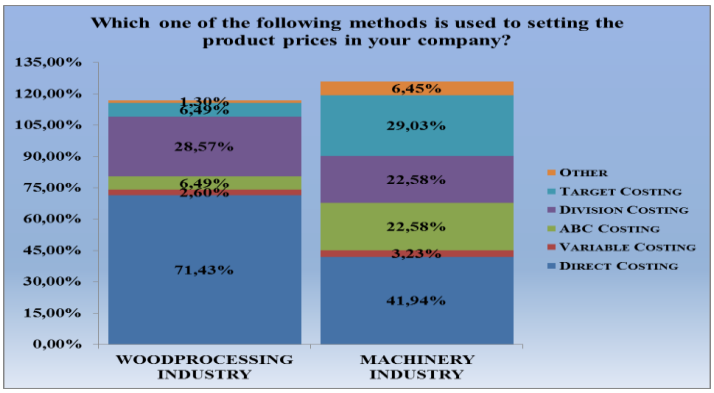

Figure 2. Cost accounting methods
Source: own study

Relative frequencies of using modern and traditional Cost Accounting Methods by enterprises in selected industries are depicted in Figure 2. 84.42% of enterprises in wood-processing industry use traditional cost accounting methods (direct costing and division costing), 10.39% modern methods (Target Costing, ABC and Variable Costing), and 3.90% both types of methods (modern and traditional). 1.30% of wood-processing enterprises use other methods. Wood-processing enterprise uses more than one method (116.88%) at average 29.03% of enterprises in machinery industry use Target Costing method and 22.58% ABC method. 45.16% of machinery enterprises use modern methods of which 6.45% use both types of methods. Machinery enterprise uses more than one method at average (125.81%).

Merkova, Drabek and Jelacic (2015) analysed selected areas of investment management in Slovak companies with the emphasis on wood-processing industry. The result of complex research shows lower performance in the mentioned industry compared with the average of all tested companies or some selected industries (automotive, engineering, etc.). Macroeconomic and sectorial analyses in connection with the assessment of the external business environment is essential for achieving target results of every business (Potkany & Giertl, 2014).

It was supposed that machinery industry is more efficient than wood-processing industry. Therefore null and alternative hypotheses were set.

- H0: It does not exist significant difference between indicator ROE in Wood-processing Industry and Machinery Industry.
- H1: It exist significant difference between indicator ROE in Wood-processing Industry and Machinery Industry.

Table 1. Observed and expected frequencies for ROE

	Observed frequencies				Expected frequencies			
ROE interval	**Wood-processing**		**Machinery**		**Wood-processing**		**Machinery**	
up to 2.00%	28	36.36	7	22.58%	25	32.41%	10	32.41%
2.00% to 4.00%	11	14.29%	7	22.58%	13	16.67%	5	16.67%
4.00% to 7.00%	24	31.17%	7	22.58%	22	28.70%	9	28.70%
over 7.00%	14	18.18%	10	32.26%	17	22.22%	7	22.22%
All groups	77	100.00%	31	100.00%	77	100.00%	31	100.00%

Source: own study.

Null hypothesis was verified using Chi-Square Test. The Chi-Square Test value has been calculated and so $\chi 2$ = 4.74665. P-value (0.19132) was comparing with significance level (α = 0.05) and it was

higher than significance level. Therefore hypothesis H0 could not be rejected and hypothesis H1 could not be accepted. Based on this result dependencies between variables were studied in the machinery and wood-processing industry, respectively.

Steps of successful change implementation have been defined. Respondents were denote which of the steps are taken in their company:

- Current state assessment
- Establishment and analysis of the Request of Change
- Definition of the change goal and sources for change realisation
- Creation of the Change Advisory Board
- Risk analysis
- Categorisation of financial demands of the change
- Building and testing the change

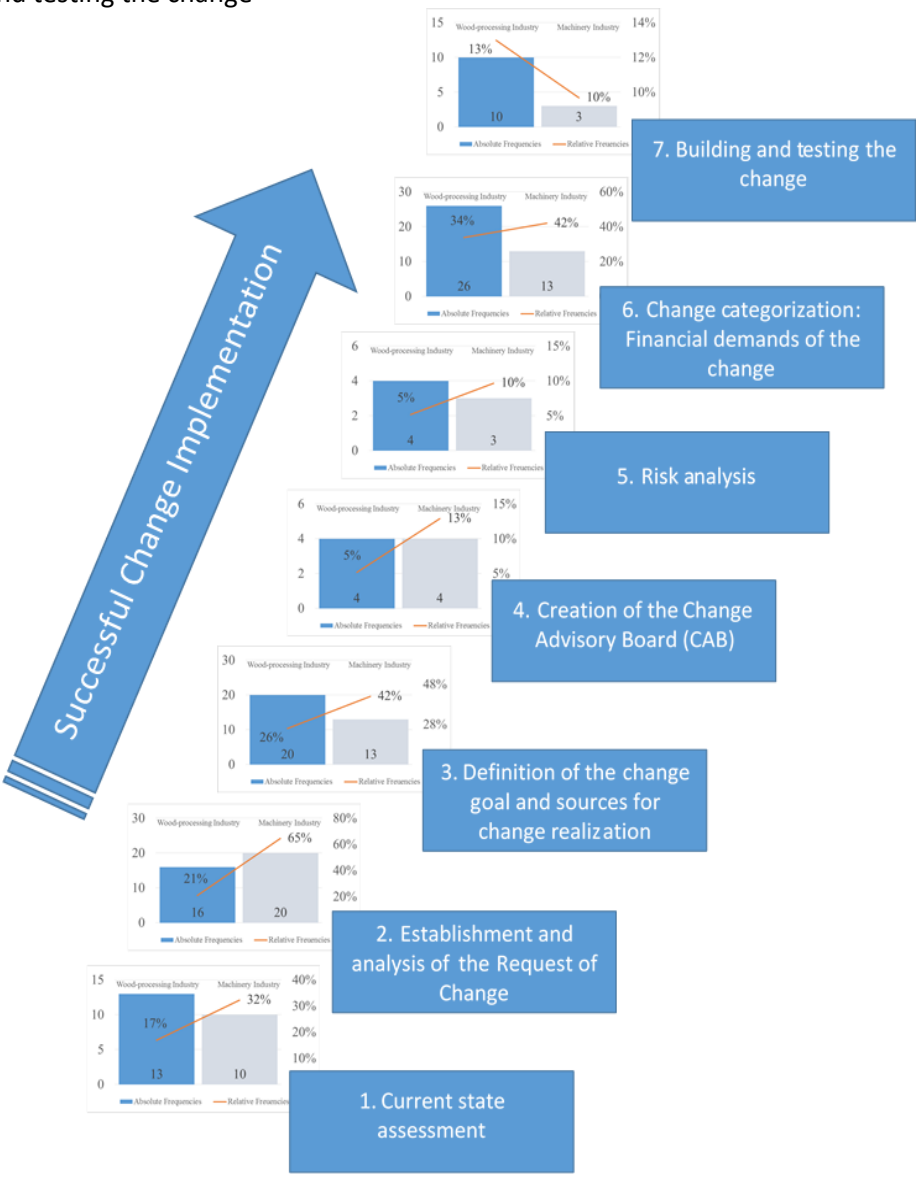

Figure 3. Successful change implementation
Source: own study

Variables were divided into two groups (ROE: up to 4.00% and over 4.00%, achieved capability maturity level: up to third and over third, taken steps of successful change implementation: up to one and over one, cost analysis: yes it is performed and no it is not performed/it is performed partially). P-values of all is presented in Table 2.

Table 2. P-values of chi-square test

	Wood-processing	Machinery
ROE and CMM level	0.08120	0.79085
ROE and steps of change management (CM)	0.25424	0.05586
ROE and cost analysis	0.02553	0.62323
CMM level and steps of CM	0.86314	0.76336
CMM level and cost analysis	0.81861	0.51680
Steps of CM and cost analysis	0.00815	0.00798

Source: Own study.

Null hypotheses were verified and rejected in three cases. Therefore it could be stated that:

- A value of ROE depends on the Cost Analysis execution in wood-processing industry.
- It exist significant dependence between indicator ROE and Cost Analysis execution in the wood-processing industry.
- It exist significant dependence between indicator ROE and Cost Analysis execution in the machinery industry.

4. Conclusion

Most of the wood-processing enterprises (84.42%) use only traditional methods for cost accounting. In comparing with machinery industry it could be stated that this industry is benchmark in utilisation of the modern costing methods. However the hypothesis about significant difference between indicator ROE in the wood-processing industry and the machinery industry could not be accepted.

Business Process optimisation is necessity for improving enterprise competitiveness. According CMM all enterprise processes could be classified at 5 levels: Initial, Managed, Defined, Quantitatively Managed and Optimising. However, value of ROE does not depend on level of CMM. On the other hand CMM level is connected with The Change Management. Value of ROE depend on taken steps of the successful change implementation. In addition, based on the research results the hypothesis about dependence between execution of the Cost Analysis and indicator ROE has been accepted.

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