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DEVELOPMENT METHODS OF CONFLICTS IDENTIFICATION AND EVALUATION

Abstract. It has been elaborated the method for quantitative evaluation of level and structure of the interpersonal management conflicts that prevail over the other conflicts in the machine-building enterprises functioning. According to the reasons of appearance investigated interpersonal management conflicts were divided into the following types: informational, behavioral, structural, conflicts of relationships and values. The method was developed due to the usage of conjoint analysis that allows to evaluate simultaneously both the structure of the conflict and its level according to the priorities system, which has increased the credibility of gained results. Calculated values have shown that the prevailing conflicts in the structure of machine-building enterprises management conflict are informational ones that are related to poor information support of companies' administrators. The behavioral and relationship conflicts are also rather significant. They have different appearance nature and require special methods for their solution.

Dynamics of the environment, complexity of organization and communication structures, increase of the competition level, uncertainty in a number of market spheres, growth of the negative crisis outcomes, struggle between countries for markets and resources, active political confrontation especially in the developing countries are causing the general increase of the number of conflicts and conflicts levels. All the stated above factors of conflicts lie beyond the limits of enterprises influence on them, which is why they require the constant monitoring and appropriate adjustment on the part of the organization. However, it is not less important to consider the subjective component of conflict appearance – lack of desire to see the mutual advantage of cooperation, possibility to avoid conflicts with minimal losses, confidence in the accuracy of one's objectives, principles and convictions, asymmetry and monocentricity of corporate culture, managers indifference towards the occurrence of conflict situations, which leads to irreversibility of negative effects and significant losses caused by conflicts activity.

Hereby the task for enterprises managers is to identify the potential conflict situations actively, sometimes to provoke their appearance in order to resolve the management problems, to evaluate their level, to influence their course and to try to receive functional results.

Key words: interpersonal management conflicts, machine-building enterprise, conflict identification, conflict evaluation.

Analysis of recent studies and publications. The problems of identification and quantitative evaluation of management conflicts in the enterprise functioning have been researched by both domestic and foreign scientists, including: A. J. Antsupov (2009), S. L. Boehm (1974), P. P. Gornostay (1997), S. Yerina (2002), H. Cornelius and C. Fair (1992), T. A. Polozova (2007), I. Sivchuk (2012), K. Smith (1993). All the methods of estimation process can be divided into usage of qualitative evaluation criteria and quantitative identification indicators and into determination of the conflicts level.

An interesting method of conflict identification that is called mapping was suggested by Australian scientists H. Cornelius and S. Fair (Cornelius and Fair, 1992: 250–268). The key point of this technique consists in the development of identifying map that contains the following elements: the parties of conflict management, their needs and concerns. According to the authors of this method such maps are very effective in preparation for ensuring negotiations and business contacts, negotiations that have no logical development, resources allocation, avoiding the tension inside the team and personnel risk (in particular staff turnover), implementation of innovations and changes etc.

S. I. Yerina has suggested diagnostic scale of management role conflicts. The approach designed by her makes it possible to identify and evaluate management conflict that arises in the work of lower level management (Yerina, 2002: P. 203–207).

Another method has been developed by Russian psychologist T. A. Polozova to study relationships between team members, in particular, to evaluate and identify interpersonal conflicts inside of certain administrative groups (Polozova,

2007). The method of A. Y. Antsupov "modular methods of interpersonal conflicts diagnosis" is similar to the previous one (Antsupov, 2009: 200–220). Except qualitative criteria I. I. Sivchuk has also proposed quantitative methods of conflicts identifying and measuring taking into consideration the corporate enterprise culture (Sivchuk, 2012].

Remaining parts of the problem. While evaluating the level of conflicts it is essential to identify the structure within the complex of all management conflicts. To do this, a certain system and dominant features of homogeneous management conflicts structure formation have to be chosen. From the standpoint of an effective conflict management system construction it is very important to identify the root causes of conflict appearance, which will give an opportunity to develop a set of measures aimed at avoiding or reducing the dysfunctional effects of conflicts activity. Therefore, it is rather important to choose the criterion that structures conflicts according to their reasons and factors of appearance. Moreover, it is essential to elaborate specific quantitative indicators of conflicts structure detection and conflicts levels.

The purpose of the study. The research purpose is to develop the method of quantitative identification and evaluation of the interpersonal management conflicts structure and levels in the machine-building enterprises by using modern economically statistic tools.

Summary of the basic material. Before the development of conflicts identification and evaluation methods the structure of the conflicts should be determined. Thus, in relation to appearance reasons Lincoln suggests dividing all kinds of conflicts into informational, behavioral, structural, conflicts of relations and values.

To identify and evaluate conflicts it was proposed to apply the method of conjoint analysis. Sequence of conjoint analysis usage is shown in Figure 1.

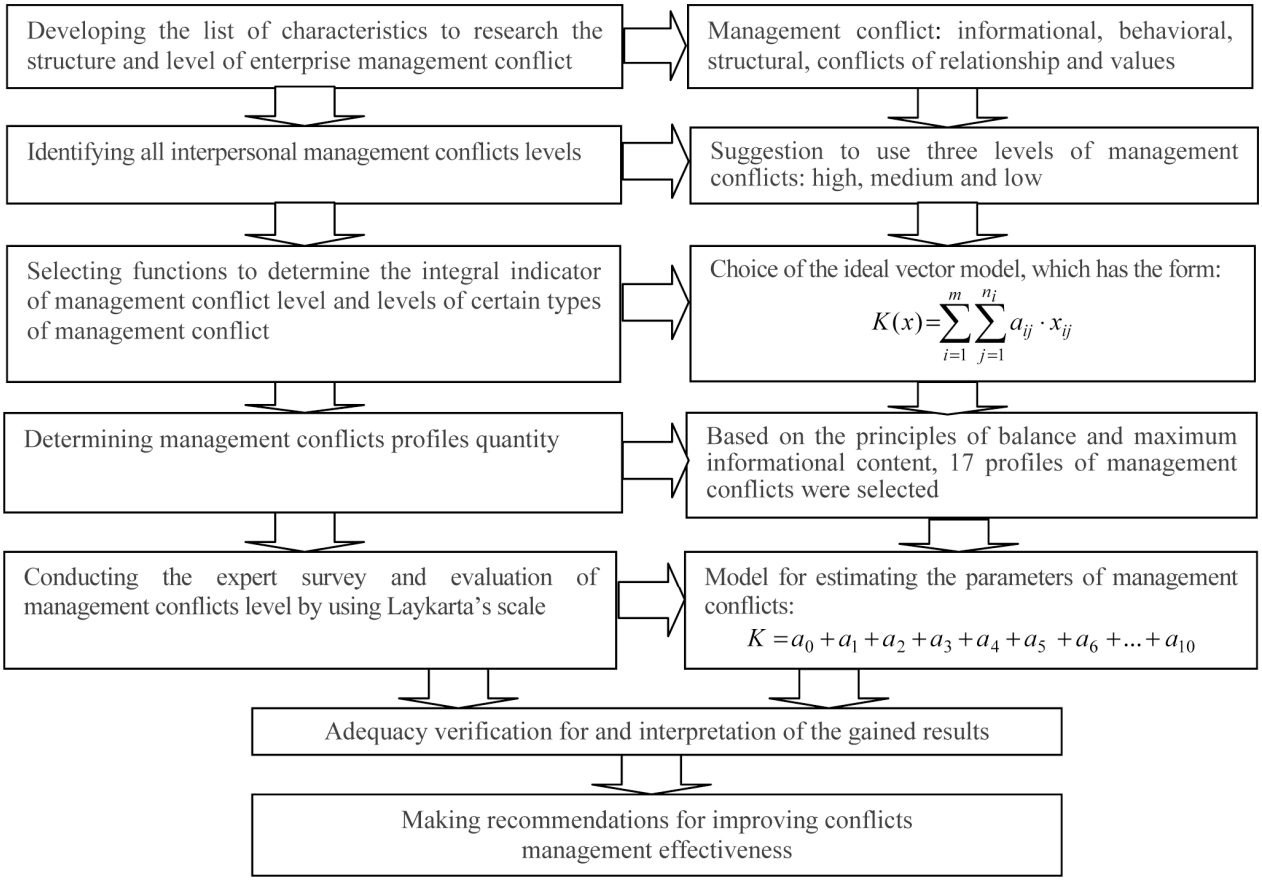

Fig. 1. The sequence of conjoint analysis application to evaluate the level of interpersonal management conflicts

Note: elaborated by authors

Model for evaluation of the management conflict level and identification of its structure has the form (Malhotra, 2002):

$$K(x)=\sum_{i=1}^{m}\sum_{j=1}^{n_i} a_{ij}\cdot x_{ij}\,, \qquad (1)$$

where $K(x)$ – integral evaluation of management conflict level at the enterprise; x_{ij} – evaluation of certain types of management conflict at the enterprise; a_{ij} – parameter of the independent variable that corresponds to the *j*-th level ($j\in\overline{1,n_i}$), *i*-th type of conflict; *n* – number of evaluation levels; *m* – number of management conflicts.

To receive the most adequate and credible results of the management conflict level evaluation all possible profiles combinations should be determined. In practice, however, the amount of all profiles is limited on the basis of detection of correlative connections between the profiles by using orthogonal method. In our research it is reasonable to evaluate 17 profiles that do not correlate with others; to be more specific, the correlation coefficient is minimal between the profiles (Table 1).

Based on the number of selected management conflicts and their levels, the formula for estimating the parameters will have the following form:

$$K=a_0+a_1x_1+.....+a_{10}x_{10}\,, \qquad (2)$$

where K – integral management conflict level indicator; a_1-a_{10} – variables, different management conflicts of enterprises.

Practically, we create a common multifactorial correlative-regressive model with fictitious variables that take the value of either 0 or 1. Calculation of equation parameters is carried out by using the method of the least squares, where the respondents evaluation is the dependent variable and formed combinations of management conflict are independent variables.

Therefore the calculated model for the joint venture "Sferos Electron" has the following form:

$$\begin{aligned} K_1 = {} & 3,32312+2,03231x_1+0,89795x_2- \\ & -0,5493x_3-0,801x_4+0,21768x_5- \\ & -0,1496x_6-0,1564x_7-0,3027x_8- \\ & -0,3486x_9-0,4132x_{10}. \end{aligned} \qquad (3)$$

Table1

An average value of interpersonal management conflicts profiles evaluation at the machine-building enterprises

The average level of conflicts at the enterprises		Profiles of interpersonal management conflicts									
		Informational		Behavioral		Relationship		Values		Structural	
JV "Sferos Elektron"	LLC "Robitnia"	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}
2	2,25	0	0	0	1	0	0	0	1	0	1
1,714286	2,375	0	0	1	0	0	1	0	1	0	1
2	3,375	0	0	0	1	1	0	0	1	0	1
3,142857	2,875	0	1	1	0	0	1	1	0	0	0
3,428571	2,875	0	1	0	1	1	0	1	0	0	0
2,714286	2,875	0	1	1	1	0	0	1	0	0	0
3,714286	3,5	1	0	0	1	1	0	1	0	1	0
4,571429	2,625	1	0	1	0	0	1	1	0	1	0
3,714286	3,5	1	0	0	1	0	0	1	0	1	0
2,571429	2,5	0	0	1	0	1	0	0	1	0	0
2	2,375	0	0	0	1	1	0	0	1	0	1
3	2,625	0	1	1	0	0	1	1	0	0	1
2,714286	2,25	0	1	0	1	0	1	1	0	1	0
4,142857	3,75	1	0	0	1	0	0	0	1	1	0
4,428571	2,75	1	0	1	0	0	0	0	1	0	0
3	2,875	0	0	1	0	1	0	1	0	0	0
3,142857	2	0	1	1	0	0	0	1	0	1	0

Note: generated on the basis of expert surveys

Furthermore, having considered the input data of LLC "Robitnia", the conjoint analysis models parameters have been calculated for research of the interpersonal management conflicts structure and levels. The formula is the following:

$$K_2 = 2,48976 + 1,0536x_1 + 0,19196x_2 - \\ -0,0138x_3 + 0,42215x_4 + 0,44828x_5 + \\ +0,07998x_6 - 0,215x_7 - 0,3859x_8 - \\ -0,389x_9 - 0,0354x_{10}. \quad (4)$$

The received regressive models contain only the values of 10 levels of different management conflicts types. Therefore, we should find the values of the other 5 levels of management conflicts and identify the prevailing management conflicts in the structure of conflicts that arise in the machine-building enterprises functioning (Table 2).

Having applied the formulae for determining the fixed weight of management conflicts in the overall structure of interpersonal conflict at the machine-building enterprises, we have got the results presented in Table 3.

In order to interpret management conflict patterns at the machine-building enterprises the appropriate graphs have been formed (Fig. 2 and Fig. 3).

Table 2

Characteristics of interpersonal management conflicts levels and partial weight of these levels

Management conflicts	Levels	Partial weights	
		JV "Sferos Elektron"	LLC "Robitnia"
Informational conflicts	High	1,05556	0,638464
	Medium	-0,07879	-0,223236
	Low	-0,97676	-0,4152
Behavioral conflicts	High	-0,09914	-0,149958
	Medium	-0,35085	0,286056
	Low	0,45017	-0,136098
Relationship conflicts	High	0,195012	0,27219
	Medium	-0,172335	-0,096105
	Low	-0,022675	-0,17609
Values conflicts	High	-0,0034	-0,0147
	Medium	-0,14964	-0,18563
	Low	0,15306	0,20033
Structural conflicts	High	-0,09467	-0,24755
	Medium	-0,1593	0,10605
	Low	0,25397	0,14149

Note: calculated by authors

Table 3

Results of the fixed weight of management conflicts

Management conflicts	Relative fixed weights of management conflicts		Interpretation of received results	
	JV "Sferos Elektron"	LLC "Robitnia"	JV "Sferos Elektron"	LLC "Robitnia"
Informational conflicts	1	1	The most significant conflict	The most significant conflict
Behavioral conflicts	0,28811	0,074964	The second place in terms of conflict significance	The third place in terms of conflict significance
Relationship conflicts	0,184899	0,093335	The third place in terms of conflict significance	The second place in terms of conflict significance
Values conflicts	0	0	The least significant conflict	The least significant conflict
Structural conflicts	0,063927	0,004613	The forth place in terms of conflict significance	The forth place in terms of conflict significance

Note: calculated by authors on the basis of conjoint analysis

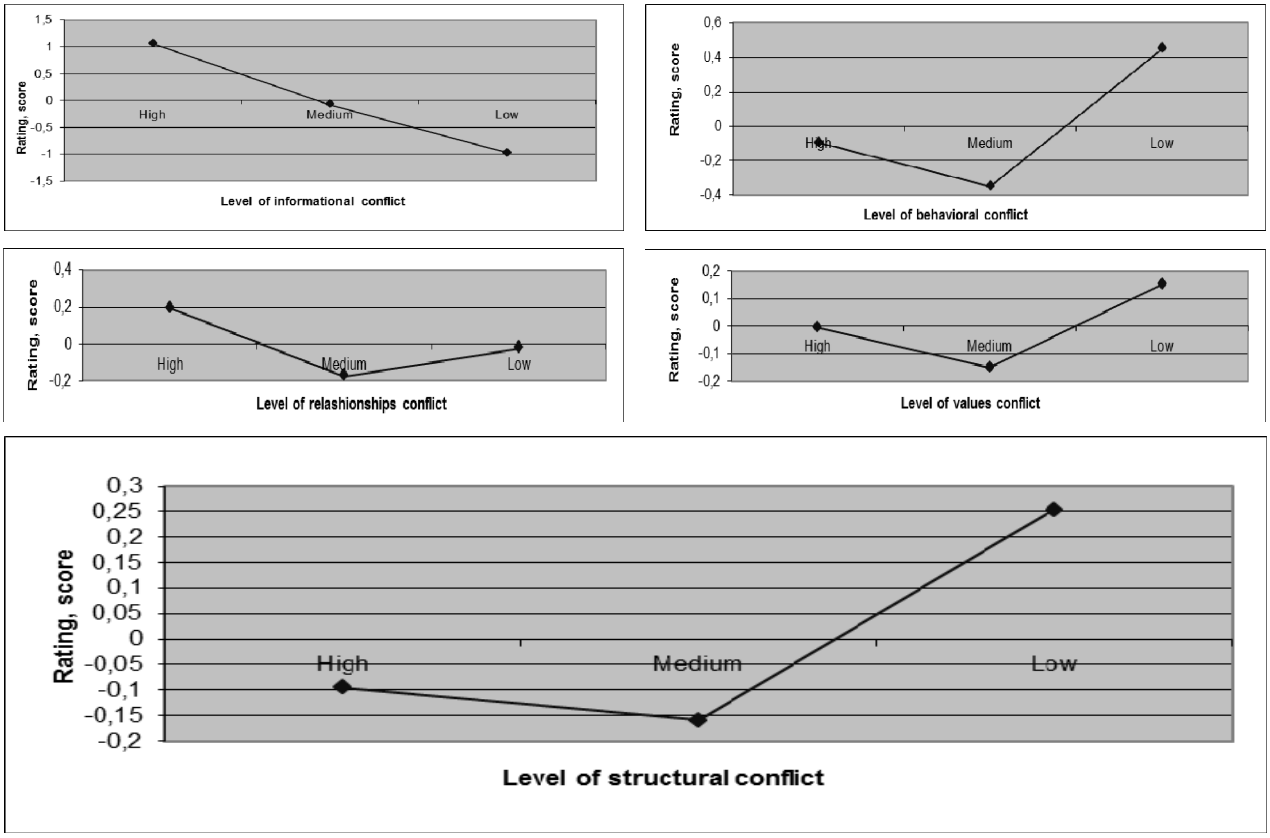

Fig. 2. The structure and level of management conflicts in the functioning of JV "Sferos Electron"
Note: elaborated by authors using the conjoint analysis method

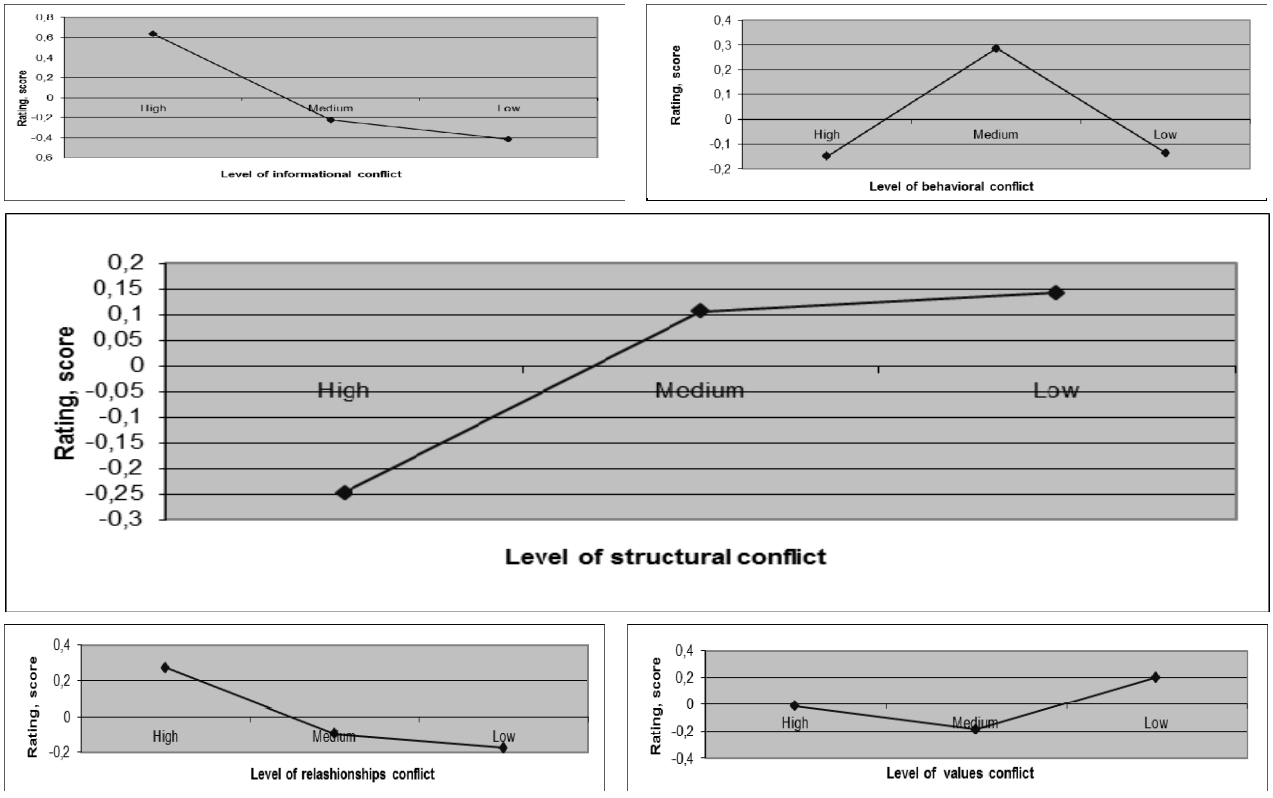

Fig. 3. The structure and level of management conflicts in the functioning of LLC "Robitnia"
Note: elaborated by authors

Conclusions and prospects for further research. The structure of management conflicts in the functioning of machine-building companies is quite similar. The research has made it possible to detect that in the structure of management conflict the dominant ones are informational conflicts that are related to poor information support from the companies' administrators. Hereby the level of informational conflicts is rather significant. Experts draw attention especially to the unsatisfactory level of information support of management decision-making process, lack of information about changes in the environment, asymmetry of information in the various stakeholder groups. Therefore, the main recommendation for elimination of the conflict's dysfunctional consequences for the company is the necessity to direct resources at the improvement of communication channels and to take measures regarding the management decision–making process information support development.

For the functioning of the JV "Sferos Electron" behavioral management conflicts are rather essential. The main reasons for their occurrence at the investigated enterprise are dominance of private arrangements, nepotism, active influence of informal organizations that sometimes can prevail over rationality and efficiency in management decision-making. The settlement of such conflicts is possible by implementing definite standards of behavior and decision-making process and absolute adherence to those standards.

For the LLC "Robitnia" the second place in terms of significance in the structure of the enterprise management conflict is taken by relationships conflicts that display a high level of dynamism and, thus, bring turbulence and uncertainty into the activities of administrative management subsystem. According to the experts, the reason for the appearance and dominance of behavioral conflicts in the enterprises functioning is the lack of power balance in the relationships between the leaders.

As for the JV "Sferos Electron", the management conflict of relationships takes only the third place in terms of significance. Interestingly, the level of relationships conflict is as high as for the previous enterprise. Consequently, both companies should take measures to improve the relationships between managers by developing corporate unity programs.

In the third place in terms of dominance in the structure of general management conflict at the "Robitnia" enterprise there are behavioral conflicts, while structural conflicts take the penultimate place. In addition, it was discovered that the level of all structural conflicts that occur in both mentioned above companies is quite low. Thus, the objective circumstances of conflicts appearance that cannot be changed are not significant in terms of conflicts occurrence. In the structure of the management conflict in the functioning of both companies the least important one is the conflict of values.

Further research should be focused on developing result-based methods that would help to reduce and avoid interpersonal management conflicts in the machine-building enterprises functioning.

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