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DIFFERENCES IN THE LEVEL OF WORKERS' MOTIVATION IN REPAIR AND MAINTENANCE SERVICE ENTERPRISE IN THE RAIL TRANSPORT

The time when the only job of a manager was to delegate work to employees is over. At the present time, an ability to motivate employees is considered an essential skill for managers. It is complex and systematic effort of a manager to create a working environment and atmosphere supporting the inner needs and interests of employees affecting their behaviour and stimulating the performance positively. Differences in the level of workers' motivation in repair and maintenance service enterprise in the rail transport was defined using the sample set of almost 1,000 respondents and ANOVA and Duncan test. Following the results, it can be stated that the structure of motivation factors, as well as their importance, changed significantly in repair and maintenance service enterprise in the rail transport over the observation period.

Keywords: human resource management, employee motivation, rail transport, ANOVA, Duncan test

1 Introduction

The entrepreneurial environment is influenced by globalisation of these days [1-2]. Because of tough competition preferred in the market economy, businesses are forced to improve enterprise effectiveness [3-4]. The pressure is put on developing effective strategies to succeed in a highly competitive environment [5-7]. If enterprises do not want to stagnate, they have to place the emphasis on modernisation, improving the quality, the effectiveness of activities in order to maintain and improve their competitiveness on the market [8-11]. This way, human resource management is a strategic and logical approach to managing the most valuable asset the companies possess, i.e. people hired by enterprises, contributing to their viability and competitiveness [12-15].

2 Literature review

One of the most serious problems of managers in the business environment is employee motivation [16-18]. Employee motivation affects the work results directly [19-22]. It results in enterprise effectiveness and development [23-25]. It is a process reflecting the intensity, movement and efforts of an individual resulting in a goal directed behaviour of employees [26-27]. Motivation can be understood as a sequence of reactions when requirements and goals, causing some pressure, occur as a result of feelings and needs [28].

Motivation is one of the most important elements in human resource management. In order to affect employees positively, managers must recognise employees' needs and

ways of effective motivation. That can lead to motivation programme covering the needs of enterprises, as well as employees. The presumption that motivation is only about money is not correct. Following the research [29-31], it can be stated that the effect of money on motivation is decisive, however the issue is much more complex because of various employees' goals, needs and goal directed behaviour, as well [32]. Their gender, age, education, status, family background, experience and abilities, etc. are different, therefore they can be motivated by different factors. Some employees want to be successful, recognised, expect career advancement, other employees consider relationships, working conditions, job position or job security to be more important [33-35]. For others working environment, management, training and professional development, salary, workplace, team work and relationship to co-workers [36], or healthy working conditions, career opportunity, supportive boss, unambiguous and definite goals, competitive compensation, interesting job, high prestige, good performance evaluation, pleasant working atmosphere, peaceful private life, competent leadership, appreciation, participation in decision-making and fringe benefits can be important, as well [37]. The aim of the paper is to define the differences in the level of workers' motivation in repair and maintenance service enterprise in the rail transport.

3 Methodology

The level of motivation was investigated using the data collected in the questionnaire asking about thirty motivation factors. Data were processed in the programme

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STATISTICA 12. The differences in the level of blue-collar workers' motivation in repair and maintenance service enterprise in the rail transport were defined using the statistical analysis. The research did not differentiate employees by occupation, but focused on object research as a whole and followed the development of changes in motivation factors according to years 2003, 2009, 2016, 2019 and 2020. Position of the rail transport within the transport system in Slovakia is very specific. It is considered supporting, mass and ecological means of transport [38].

The research was carried out in repair and maintenance service enterprise in the rail transport over the years 2003, 2009, 2016, 2019 and 2020. Total of 968 respondents participated in the research. Composition of the sample set is given in Table 1.

Taro Yamane method was used to verify representativeness of the basic sampling unit [39]:

$$n = \frac{N}{1 + N(e)^2}, \quad (1)$$

where:

n - size of the sample set,

N - size of the basic sampling unit (population)

e - permissible error/ level of precision.

Following the results, the representativeness of sampling units could be stated.

ANOVA test and Duncan test were conducted at the level of significance $\alpha = 5\%$ and 95% confidence to determine the hypothesis is true [40]. Following hypotheses were tested:

WH_1 : we suppose that the workers' motivation in repair and maintenance service enterprise in the rail transport will be different in structure.

WH_2 : we suppose that the workers' motivation in repair and maintenance service enterprise in the rail transport will be different in terms of importance.

4 Results and discussion

In the first step, the level of motivation in repair and maintenance service enterprise in the rail transport was defined. Results are presented in Table 2.

Due to the fact that the level of motivation in enterprises has changed over time, subsequently, the order of importance of motivation factors in the year 2020 was defined. Five most important motivation factors (career advancement, atmosphere in the workplace, good work team, self-actualization, job security) were investigated in more detail. Results are presented in Table 3 and Table 4.

Effect of years on the motivation factor "career advancement" is presented in Figure 1. The most significant decrease occurred in the year 2009 when there was a crisis in the Slovak economy and the employee motivation decreased in general. This effect was observed in the case of all the investigated motivation factors. Statistically significant differences were noticed in the year 2020,

comparing to all the other years, besides 2003 when the effect on the career advancement was the same.

Effect of years on the motivation factor "atmosphere in the workplace" is shown in Figure 2. As in the case of the previous motivation factor, there were significant differences in the year 2009 in comparison to all investigated years (Table 5). Significant differences were confirmed also in the year 2019, comparing to all the investigated years.

Results of statistical testing of the third most important motivation factor "good work team" are presented in Table 6 and Figure 3. The importance of the investigated motivation factor has increased since the year 2016. Effect of the years 2009 and 2020 was statistically significant in comparison to other investigated years.

Importance of the motivation factor "self-actualization" is illustrated in Figure 4. In the years 2003, 2016 and 2019, approximately similar level of the motivation factor was observed, i.e. there was no significant effect of the years. On the other hand, statistically significant effects were confirmed in the year 2009 and 2020 (Table 7).

Statistically significant differences in the motivation factor "job security" observed in the years 2009 and 2020 are presented in Table 8 and Figure 5. At the same time, there were the most significant differences in the evaluation of the mentioned motivation factor.

Following the obtained results, it can be stated that there were statistically significant differences in perceiving the most important motivation factors (career advancement, atmosphere in the workplace, good work team, self-actualization, job security) in the investigated years (2003, 2009, 2016, 2019 and 2020).

Figures of arithmetic means and reliability (Figures 1 - 5) show that there was a significant decrease in selected motivation factors in the year 2009, especially due to the fact that the year 2009 was considered special because of a dramatic decline in economy by approximately 5%. Slovak economy suffered the consequences of a decline in global demand resulting in a decrease in industrial production, in demand for transport services, in wholesale revenues and subsequent fall in demands in retails and services, as a result of making the staff redundant. Mentioned changes in economy affected running of the repair and maintenance service enterprise in the rail transport when the financial and economic crisis in 2009 resulted in differences in requirements for the level of employee motivation. During the following years, the differences can be due to fluctuation in motivation needs of employees, not only in terms of the order of importance, but in terms of statistical significance of differences in individual factors, as well. Those differences were caused especially by the enterprise requirements for the number of staff during the individual years, resulting from the production needs, when the total number of employees changed in time. Forasmuch as the job of a human resource manager is based on communication with employees and these changes were not discussed with them, the level of motivation factors must have changed. Following the mentioned facts, it can be stated that changes in communication between

Table 1 *Composition of the sample set*

Year	2003	2009	2016	2019	2020
Number of respondents	240	190	181	197	160
Total number of workers	357	300	275	347	243

Table 2 *Average values of motivation factors*

Motivation factor	2003	2009	2016	2019	2020
Atmosphere in the workplace	4.77	3.29	4.69	4.44	4.87
Good work team	3.88	3.94	3.79	4.07	4.77
Fringe benefits (13 th , 14 th salary)	4.39	3.01	4.25	4.21	4.57
Physical effort at work	4.16	3.91	3.95	3.85	4.27
Job security	3.99	3.19	4.07	3.79	4.60
Communication in the workplace	3.68	3.09	3.23	3.91	4.55
Name of the company	4.22	3.71	4.38	3.79	4.35
Opportunity to apply one's own ability	4.95	3.31	4.58	4.26	4.53
Workload and type of work	4.19	4.36	4.33	3.86	4.33
Information about performance result	3.57	3.11	3.61	3.62	4.48
Self-actualization	4.00	3.79	3.86	3.85	4.63
Work environment	4.02	3.29	3.96	3.74	4.33
Employee performance	3.81	2.57	3.72	3.81	4.37
Career advancement	4.10	3.71	3.85	3.68	4.90
Competences	4.01	3.00	3.98	3.55	4.13
Prestige	3.86	4.10	3.76	3.53	4.20
Supervisor's approach	3.96	3.03	3.95	3.84	4.55
Individual decision-making	3.61	3.40	3.33	3.65	4.47
Working hours	4.44	2.63	4.09	3.78	4.53
Social benefits	3.94	3.03	3.68	3.62	4.33
Fair appraisal system	3.94	2.83	3.67	3.91	4.55
Stress	4.18	3.21	4.38	4.07	4.48
Mental effort	4.16	3.67	4.04	3.75	4.27
Mission of the company	4.49	3.50	4.41	4.11	4.30
Region development	2.87	3.30	2.92	3.18	4.23
Education and personal growth	4.52	3.19	4.00	4.13	4.35
Company relation to the environment	3.66	3.29	3.77	3.70	4.28
Free time	3.15	3.60	3.43	3.46	4.12
Recognition	4.41	3.07	4.50	3.87	4.42
Basic salary	3.25	3.16	3.69	3.56	4.48

managers and employees are essential for motivation factors being relatively stable.

An enterprise is a place where activities linked with its success are carried out [41-42]. All the areas of management must be in the centre of attention [43-45]. In order to succeed, an enterprise must be led by a competent person – manager [46-48]. He/she must have powers of concentration for employees as the human resources are according to actual trends, the greatest asset possessed by an enterprise [49]. Motivating staff to achieve goals is one of the most serious problems the managers have to face

in the business environment [22, 24, 50-51]. The issue of employee motivation is considered to be one of the most important facts in the area of human resource management. It reflects a general approach of people to work and their willingness to work. Internal order of employees' needs and their personalities are the decisive factors, therefore the research on employee motivation and their satisfaction or dissatisfaction is required in order to suggest effective measures associated with motivation [52-53]. Not only the situation and the environment, but also factors like the age, gender, education, affecting the needs of an individual,

must be taken into account. Personal, mental, financial as well as social factors cause the changes in employee motivation. According to Nadeem et al. [54], there are lots of variables affecting the level of motivation. The opinion of Ryan and Deci [55] is the same. They think that the levels of employee motivation differ.

Following results presented here, it can be stated that significant changes in the structure of motivation factors, as well as changes in the importance of motivation factors, occurred in the investigated enterprise over time. Five most important motivation factors (career advancement, atmosphere in the workplace, good work

Table 3 ANOVA test for five most important motivation factors

Variance analysis	SS effect ¹	DF effect ²	PS effect ³	SS error ⁴	SV error ⁵	PS error ⁶	F ⁷	p ⁸
Career advancement	92.80863	4	23.20216	408.9283	512	0.798688	29.05034	0.000
Atmosphere in the workplace	343.6109	4	85.90272	320.1961	513	0.624164	137.6285	0.000
Good work team	111.5843	4	27.89607	240.9563	513	0.469700	59.39120	0.000
Self-actualization	113.4335	4	28.35837	297.5800	513	0.580078	48.88717	0.000
Job security	208.3348	4	52.08371	305.3273	513	0.595180	87.50917	0.000

Notes: ¹SS effect - sum of squares, ²SV effect - degree of freedom, ³PS effect - intergroup variance, ⁴SS error - sum of squares, ⁵SV error - degree of freedom, ⁶PS error - within group variance, ⁷F - F-test, ⁸p - level of significance (5%)

Table 4 Duncan test for the motivation factor Career advancement

Year	2003	2009	2016	2019	2020
2003		0.000003*	0.050843	0.001898*	0.368147
2009	0.000003*		0.000011*	0.000009*	0.000004*
2016	0.050843	0.000011*		0.208377	0.006050*
2019	0.001898*	0.000009*	0.208377		0.000078*
2020	0.368147	0.000004*	0.006050*	0.000078*	

Note: Single asterisk (*) indicates statistically significant differences at the level of significance $\alpha = 5\%$

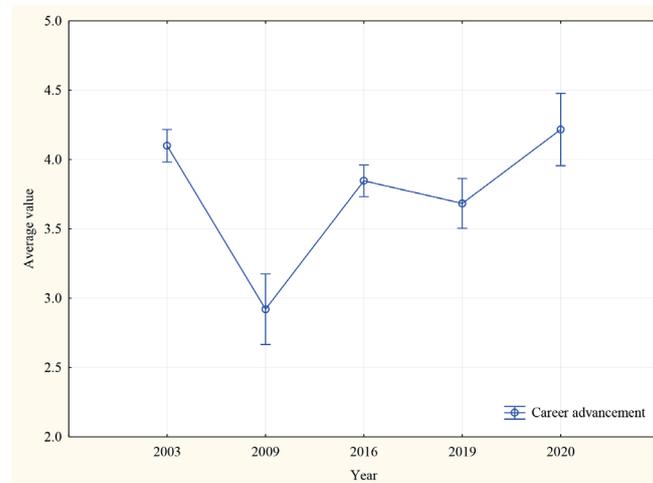


Figure 1 Arithmetic means and confidence interval for the motivation factor Career advancement

Table 5 Duncan test for the motivation factor Atmosphere in the workplace

Year	2003	2009	2016	2019	2020
2003		0.000003*	0.497061	0.004742*	0.405392
2009	0.000003*		0.000011*	0.000009*	0.000004*
2016	0.497061	0.000011*		0.024314*	0.154783
2019	0.004742*	0.000009*	0.024314*		0.000327*
2020	0.405392	0.000004*	0.154783	0.000327*	

Note: Single asterisk (*) indicates statistically significant differences at the level of significance $\alpha = 5\%$

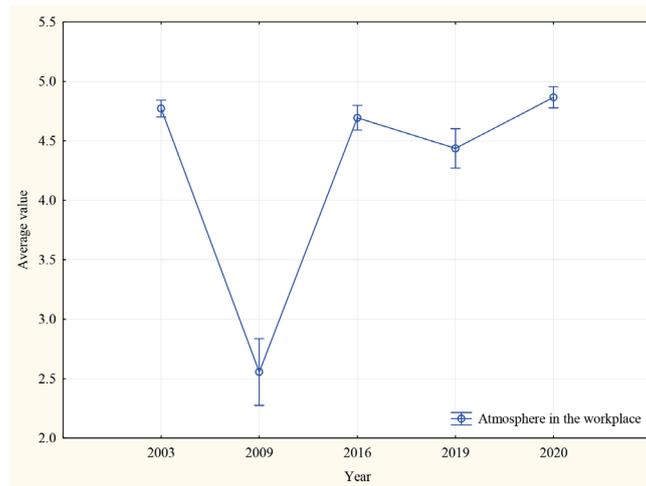


Figure 2 Arithmetic means and confidence interval for the motivation factor Atmosphere in the workplace

Table 6 Duncan test for the motivation factor Good work team

Year	2003	2009	2016	2019	2020
2003		0.000011*	0.387662	0.055939	0.000011*
2009	0.000011*		0.000009*	0.000003*	0.000004*
2016	0.387662	0.000009*		0.007652*	0.000003*
2019	0.055939	0.000003*	0.007652*		0.000009*
2020	0.000011*	0.000004*	0.000003*	0.000009*	

Note: Single asterisk (*) indicates statistically significant differences at the level of significance $\alpha = 5\%$

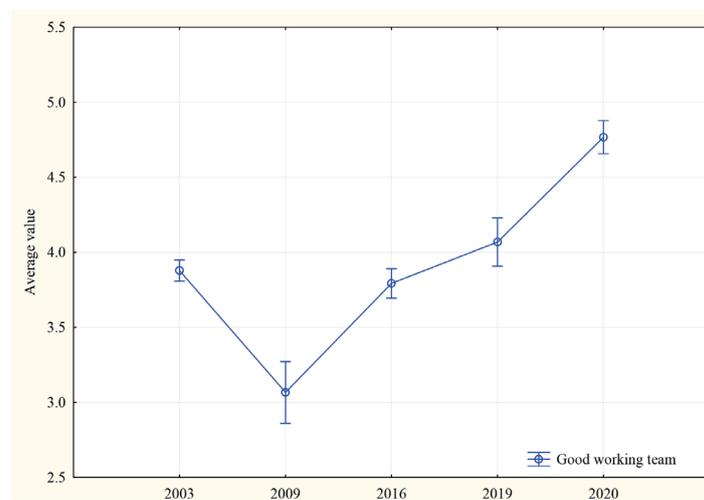


Figure 3 Arithmetic means and confidence interval for the motivation factor Good work team

Table 7 Duncan test for the motivation factor Self-actualization

Year	2003	2009	2016	2019	2020
2003		0.000003*	0.191458	0.190006	0.000009*
2009	0.000003*		0.000011*	0.000009*	0.000004*
2016	0.191458	0.000011*		0.929945	0.000011*
2019	0.190006	0.000009*	0.929945		0.000003*
2020	0.000009*	0.000004*	0.000011*	0.000003*	

Note: Single asterisk (*) indicates statistically significant differences at the level of significance $\alpha = 5\%$

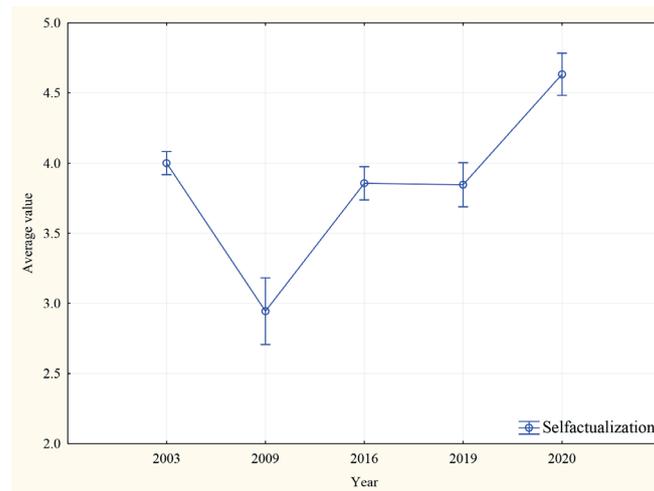


Figure 4 Arithmetic means and confidence interval for the motivation factor Self-actualization

Table 8 Duncan test for the motivation factor Job security

Year	2003	2009	2016	2019	2020
2003		0.000011*	0.439757	0.087749	0.000011*
2009	0.000011*		0.000003*	0.000009*	0.000004*
2016	0.439757	0.000003*		0.017696*	0.000011*
2019	0.087749	0.000009*	0.017696*		0.000003*
2020	0.000011*	0.000004*	0.000011*	0.000003*	

Note: Single asterisk (*) indicates statistically significant differences at the level of significance $\alpha = 5\%$

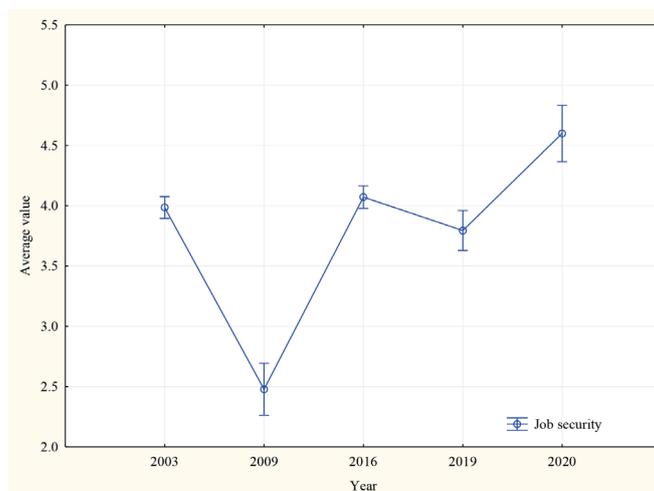


Figure 5 Arithmetic means and confidence interval for the motivation factor Job security

team, self-actualization, job security) changed. The order was determined following the order of importance in the year 2020. The results of the research, carried out by the questionnaire in the years 2003, 2009, 2019, 2019 and 2020, showed the parts of employee motivation in which new measures resulting in their improvement must be taken. Following the findings, the hypotheses: the workers' motivation in repair and maintenance service enterprise in the rail transport will be different in structure and the workers' motivation in repair and maintenance service enterprise in the rail transport will be different in terms of importance, were confirmed.

5 Conclusions

Human resources are the essential factor determining the enterprise performance. Therefore, they must be in the centre of our attention. Employees can have abilities, skills, however if they are not willing to work, they do not achieve the required level of performance [56-57]. At this point, the employee motivation has to be taken into account as an important element affecting the employee performance. The main role of motivation is to ensure that the employees will be willing to work and achieve the greatest performance. Requirements for their performance

are not as important as the needs to meet their personal requirements. General knowledge of theories associated with employee motivation is accepted in the research on motivation needs of employees and it is considered as the first step necessary for creating the motivation programme of an enterprise. Following the knowledge together with methods used in psychological and sociological research, the state-of-the-art of the human resources in an enterprise can be evaluated. Strength and weaknesses of the management and their impact on motivation can be defined this way as well.

The process of motivation is one of the most important elements of the human resource management [58]. Satisfaction of employees' needs affecting their behaviour and performance in positive way must be provided in order to have a required effect. Motivation programme covering the requirements of an enterprise and employees must be created. During the creating of a motivation programme, the most important motivation factors and their impacts on employees must be identified and modified to achieve the required effect.

The analysed enterprise can be recommended to carry out an analysis of the motivation factors in the course of twelve months. It should be aimed at defining the changes in the structure of motivation factors after implementing the measures to improve the motivation climate in the enterprise. In the case of further significant changes, the

motivation programme must be modified to reflect the changes in employees' needs.

Employee motivation provided by supervisors - managers should ensure that the work covers not only existential needs of employees but also makes the employees happy and satisfied. Managers must be aware of the fact that employees are human beings with their personal demands, wishes and goals. Therefore, each company should implement employees' needs, wishes and goals in the motivation factors and motivation programme. In this way, the motivation can result in satisfied and especially high performing staff that meet their personal needs in the workplace and at the same time they will fulfil the business goals. The main role of motivation is to ensure that employees are identified with their tasks at work and their personal goals are identical with those of the enterprise. Each enterprise should be aware of this fact and therefore turn more attention to employee motivation.

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