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COMPARATIVE ANALYSIS OF RESEARCH ON WORK-RELATED PROBLEMS OF OCCUPATIONAL SAFETY SPECIALIST IN CROATIA AND SERBIA

SAFETY SPECIALISTS WORK-RELATED PROBLEMS¹

SUMMARY

The paper deals with comparative analysis of research on work-related problems of independent occupational safety specialist in the medium-sized business organizations in Croatia and occupational safety and health specialist in companies in Serbia. The research contains comparison of obtained results according to seven hypotheses. Questionnaire with 93 exam questions has been used as the research instrument. Frequency, percentage, summation, average, standard deviation, population variability coefficient, chi-square test, Pearson correlation coefficient, regression analysis etc. are statistic methods used for the research processing and review.

The results of the research are up-to-date and usable for those who deal with this subject matter. The results have shown that both in Croatia and Serbia workers are aware that physical increase of hired occupational safety and health specialists is not the main cause for the improvement of their work and state of safety in companies. They are aware that for something like this, it is necessary to plan and conduct competence training, acquire knowledge related to management in this area and obtain larger technology support with the corresponding financial allowance for their work.

Key words: *occupational safety specialist, occupational health and safety management, safety at work, state of safety*

INTRODUCTION

Occupational safety and health implies accomplishing work conditions in which certain measures and activities are taken in order to protect life and health of the employees. Accomplishing the highest level of occupational safety and health, minimizing professional diseases and work-related diseases and injuries at work to the lowest possible degree i.e. creating work conditions in which an employee, while doing his professional assignments, would feel satisfied are general interests of the society, all subjects and an individual itself.

The term occupational safety implies: the system of legislative, social-economic, organizational, technical, sanitary, educational and other measures which are used for accomplishing employee's health protection and protection of other people entitled to occupational safety. Occupational safety is a well-organized activity whose objective is to protect life and health of the employees from hazard at work by conducting certain measures i.e. to protect employees from injuries and professional diseases. Occupational safety is reduced to those matters that are the object of technical, hygienic and social security.

Occupational safety, however, does not include only protection from hazards and professional diseases but also wider protection of the work environment. Occupational safety measures include work conditions such as: working hours, conditions necessary for work in certain fields, salary, holidays, food, transport and other conditions. Occupational safety includes special protection of certain categories of people such as: children and youth, women, physically challenged, and people employed in certain fields

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(sailors, fishermen etc.). Work conditions imply salary, which lies at the core of economic and social protection and is a ground for creating organizational culture [1, 2].

According to Cingula [3] "occupational safety is made of measures, methods and procedures whose aim is to prevent injuries at work, professional diseases and work-related diseases and preservation of work ability". In contemporary conditions, the concept of safety is widely understood, as absence of military, political, economical and ecological threats with regard to the state of protection of interests that are vitally important in order to satisfy needs and ensure possibilities of progressive development of an individual, state and society [4].

Although we claim that the change of term "Law on Occupational Safety" into "Law on Occupational Safety and Health" is not debatable, from the scientific and linguistic point of view, we cannot accept the explanation that "safety" is wider and more modern term, and "protection" more narrow and older one, which is very often presented in practice. According to Anđelković [4], the concept of "safety" implies "the state" and the term "protection" implies methods and procedures conducted in order to accomplish that state (safety).

Consequently, implementation of occupational safety itself is more professional area and field whereas occupational protection, as the protection in general and wider sense, is possible to be defined in a scientific field. According to Kacian [5], "occupational safety represents interdisciplinary and multidisciplinary scientific field. It is interdisciplinary because it comes out of the domain of the existing system of fundamental science and deduced scientific disciplines, and it is multidisciplinary since it is the part of the new field in which multiple scientific disciplines exist which correlate and make interdisciplinary and multidisciplinary area of occupational safety and health and material goods' protection". That field is made of: work organization, technology, occupational medicine, occupational safety law, ergonomics, anthropology, pedagogy and adult education, psychology, ecology, sociology, economics etc.

Owing to achieve occupational safety as good as possible in any industrial society, Šokčević [6] establishes "profound starting points for organization, arrangement and practicing occupational safety" and these are: regulations; work process organization and implementation; employer responsibility; general principles of occupational safety; estimating hazards; employers' written forms on occupational safety (employers' autonomous files).

The need for implementing occupational safety is based on the existence of certain risks. Risk at work is probable as well as the intensity of possible harmful event related to work, employees, work place and work environment. The term risk implies probable injury, disease or health damage due to hazard. In our country, there is no adequate difference between the terms hazard and harm, but the term hazard implies sudden physical, mechanical impact which leads to injuries, diseases and the term harm implies impact of constant influences to a man and can lead to diseases [7].

Regulations of the manner and procedures for estimating risks at work place and environment [8] categorize hazards and harms into following groups:

Hazards:

Mechanical hazards that occur while using work equipment;
Hazards and harms related to the characteristics of a working place;
Hazards that occur while using electricity.

Harms:

Harms that occur or that are the result of the work process;
Harms that are the result of psychological or psycho-physiological effort that are causally related to the working place and occupations that an employee performs;
Harms related to work organization;
Other harms that occur at a working place.

The state of occupational safety, or efficiency and effectiveness of preventing injuries at work or professional diseases, depends on how successful occupational safety is practiced in relation to the existing work risks. In this way, the key precondition for planning and practicing occupational safety is the professional evaluation of work risks.

OCCUPATIONAL SAFETY MANAGEMENT

The indicators of the occupational safety condition in most cases are expressed by using statistic data of work injuries and professional diseases both in Serbia and around the world. According to the official data in Serbia, from January to December 2010, 1,322 injuries have been registered altogether, 35 of which are death at work or related to work, 1,026 of which are severe injuries, 29 collective and 232 minor injuries [9]. In this way, apart from human and social factor, the economic factor of occupational safety is expressed, which causes the need for management, that is, for managing safety according to contemporary management rules. The basic definition of "occupational safety as the state that enables normal way of business processes and functioning of industrial societies, as well as better business results" and the position of the organization in "Compes" safety shield goes in favor of that [10]. In broader context of management theory, it should be emphasized that Fayol (Administration Industrielle et Generale, 1916) has divided the industrial society activities into six basic groups: technical, commercial, financial, safety, accounting and managerial [11]. Petersen, a contemporary occupational safety management theoretician, in his systematic approach to safety management, with "human approach to safety management" [12], connects scientific methods and management techniques into safety management techniques, and on the basis of safety management concept according to the objectives, establishes "measures for tracking safety performance" for the purpose of analyzing effectiveness of the safety system in compliance with economics and management rules [13].

As Markič [14] points out "traditional view of occupational safety as a profession or science should gradually allow space to new approaches which are expected to create new type of professional occupations that will be based on the occupational safety management, health care and environmental safety as general aspect of managing industrial society, i.e. an organization". Occupational safety management becomes the obligatory part of contemporary concepts of socially responsible businesses and social enterprises [15].

The necessity of occupational safety management is seen in: the long-term viable way of decreasing frequency and seriousness of risks at work; establishing preventive activities in an organized way - distribution of responsibilities in occupational safety and health area at all levels; integration of OHSAS activities into business system and decision-making in companies; changing attitudes towards occupational safety and health – employees' participation in defining and following occupational safety and health objectives [16].

Implementation and certification of occupational safety and health management system according to the international directives OHSAS 18001 demonstrate the need and acceptance of systematical occupational safety management in business practice [17].

RESEARCH METHODOLOGY

The problem of this research is deficiency of current knowledge on the status of occupational safety and health specialists in companies in Serbia, in accordance with obligations under the Occupational Safety and Health Law, as well as lack of knowledge on current issues of independent occupational safety specialist in medium-sized companies in Croatia.

The aim of the research

The aim of the research is to determine current knowledge on the status of occupational safety and health specialists in companies in Serbia and work issues of independent occupational safety specialist in medium-sized companies in Croatia.

A comparative analysis of results on problems related to work of the independent occupational safety specialist in medium-sized companies in Croatia and occupational safety and health specialist in companies in Serbia was performed. The research includes a comparison of the results obtained by the following hypotheses: H1: In most (more than 50%) medium-sized companies in Croatia, which are liable to work organization of occupational safety specialists, in accordance with Article 20 of Law on

Occupational safety [18] and Law on Occupational Safety and Health [19], this legal obligation is undertaken by a company to employ at least one occupational safety specialist. H2: Number of employees responsible for occupational safety and health depends, statistically, on the number of employed workers, state of occupational health and safety and the level of hazard at work in this company. H3: In all medium-sized companies that have introduced a system of managing health and safety at the international guideline OHSAS 18001, there is a significant improvement in safety and health at work and work of occupational safety specialist in these companies. H4: Occupational safety specialist in medium-sized companies only work in the field of occupational health and safety and do not work in other areas of protection. H5: Among occupational safety specialists in medium-sized companies the majority (over 50%) is consisted of specialists with qualifications in the field of safety. H6: Occupational safety specialists in medium-sized companies evaluate their own work, on all aspects with at least a very good grade (at least 3.5 on a scale rating from 1-5). H7: Occupational safety specialist in medium-sized companies evaluate proposals for improving their work on all aspects with at least a very good grade (at least 3.5 on a scale rating from 1-5).

RESEARCH METHODS

Given the stated aim of the research and research hypotheses, as appropriate scientific research methods were used:

Method of survey

As a main research method to collect and obtain current and original data and research findings, the survey method was used. With this method, subjective opinions and assessments of the respondents - safety and health specialists were explored.

As a research instrument a questionnaire that contains 93 exam questions was used.

Statistical methods

For processing and presentation of the research, the following statistical methods have been used: frequency, percentage, summation, average, standard deviation, population variability coefficient, chi-square test, Pearson correlation coefficient, regression analysis, etc.

Sample

In Serbia, the sample was composed of 1,075 safety and health specialists in companies.

In Croatia, the sample was composed of 338 safety and health specialists in medium-sized companies.

RESEARCH RESULTS AND DISCUSSION

The average grade of occupational safety and health specialists' performance in companies is 3.84 (with standard deviation of 0.94 and coefficient of variability 24.56%) and it is placed in the initial area of a very good grade (more than 3.5 and less than 4.00). In regard to the Croat research, whose average grade is 3.68, with standard deviation of 0.97 and coefficient of variability of 26.36, the average grade in Serbia is statistically higher. The span of individual average grades is from 3.47 (which is the only one in the area of good grade) up to 4.15. Thus, the span of grades is lower than in Croatian research. The satisfaction with occupational safety and health specialists' earnings has the lowest average grade (3.47), and the tracing and analyzing data related to the injuries at work and professional diseases has the highest average grade (4.15). These two issues have the extreme grades in Croatian research, too. Sixteen questions have lower average grades from average grades of all assessments of occupational safety and health specialists in companies and 15 questions have higher average grade. It has already been mentioned that only the question on Satisfaction with occupational safety and health specialists' earnings has lower grade than

lower limit of a very good grade, whereas in Croatian research even 8 questions have grades in the area of a good grade.

The average grade of occupational safety and health specialists' cooperation with external participants from the occupational safety system is 3.76 (with standard deviation of 0.95 and coefficient of variability 25.30) and it is placed in the initial area of a very good grade (it is higher than 3.5 and lower than 4.00). In regard to the research in Croatia, whose average grade is 3.54, with standard deviation of 0.98 and coefficient of variability of 27.81, the average grade in Serbia is higher but it is not statistically relevant. The span of individual average grades is from 3.44 up to 4.17. Thus, the span of grades is lower than in Croatian research. The valuation of occupational safety as an economic factor by the whole economic system and perception and valuation of occupational safety as a social value by the public and society (this question is with the lowest grade in Croatian research) have the lowest average grades (3.44) and cooperation with bodies in charge of labour inspection-occupational safety has the highest average mark (4.17). In Croatian research, cooperation with occupational medicine specialists has the highest grade. Six questions have lower average grades than the average grades of cooperation between occupational safety and health specialists and external participants from occupational safety system, and 5 questions have higher average grades. Three questions have lower grade than lower limit of a very good grade, and in Croatian research even 6 questions have grades in the area of a good grade.

The average grade of specific suggestions for improving occupational safety and health specialists' performance is 3.76 (with standard deviation of 1.05 and coefficient of variability 27.91%) and it is placed in the initial area of a very good grade (higher than 3.5 but lower than 4.00). This grade is a bit higher than the grade which is obtained in Croatian research in which the average grade is 3.65 with standard deviation of 1.08 and coefficient of variability of 29.64. The span of individual average grades is from 3.40 up to 3.92. The span of grades is lower than in the research in Croatia. The question which relates to suggestion for increasing the number of employed occupational safety and health specialists has the lowest average grade (3.40), and the highest average grade (3.92) is given to suggestion for increasing salary and other benefits in order to synchronize with other employers' services. In Croatian research the lowest grade was given to the question-suggestion no. 73, and the highest grade was given to the question-suggestion no. 76, which relates to additional schooling and professional training of occupational safety and health specialists. Three questions have lower average grade than the average grades of specific suggestions for improving occupational safety specialists' performance, and five questions have higher average grades. Only one question has lower grade than the lower limit of a very good grade, the same as in Croatian research, but in Croatia that grade is 2.99.

The average grade of all grades for general suggestions for occupational safety and health specialists' performance improvement is 3.86 (with standard deviation of 0.96 and coefficient of variability of 24.91) and it is placed in the initial area of a very good grade (more than 3.5 and less than 4.00). In Croatia, the average grade has the same value, with standard deviation of 0.96 and coefficient of variability of 24.91. The span of individual average grades is from 3.74 up to 3.95. The span of grades is lower than in Croatia. The question which relates to the suggestion of compulsory chamber organizing of occupational safety and health specialists as a class in the system of unique chambers for occupational safety and health has the lowest average grade (3.74), and the highest average grade (3.95) is given to questions-suggestions for Obligations of continuous professional training for occupational safety and health specialists, Obligations of professional training in knowledge and management skills (organization planning, leading, control etc.) for these people, and Improvement of information-sharing between specialists and external participants from occupational safety system via the internet. In Croatian research, the question of more efficient inspection surveillance over application of occupational safety and health regulations and obligation of determining occupational safety and health specialists' work has the lowest grade, and no. 89 has the highest grade, the same as the one of three with the same average grades in Serbia. The average grades of all suggestions in our research are very homogenous, but the lower average grade than the average grade for general suggestions for improving occupational safety and health specialists' performance is given to six questions, and five questions have higher average grade. There are no questions with lower grade from the lower limit of a very good grade, the same as in Croatian research. The average grade of occupational safety and health specialists' performance in a company is 3.84, and it is higher than the grade for cooperation between occupational safety and health specialists and external

participants from occupational safety system (3.76), and both are in the area of a very good grade. The average grade of total average grades of specific suggestions (3.76) is lower than the total average grade of general suggestions (3.86) for performance improvement of occupational safety and health specialists. The average grade of total average grades for suggestions for improving occupational safety and health specialists' performance (3.81) is insignificantly higher than the average grade of all average grades of occupational safety and health specialists' performance assessment (3.80) and both are in the area of a very good grade. Therefore, the average grade of all average grades (grades for performance assessment and grades for suggestions) are in the area of a very good grade and it is 3.81 with standard deviation of 0.98 and coefficient of variability of 25.62. All quoted average grades are of higher value in comparison with average grades from Croatian research.

CONCLUSION

By this empirical research, with fulfilling set tasks and confirming suitability of selected scientific research methods, the set aim of the research has been achieved. Current facts on work issues for occupational safety and health specialists in Serbian companies are established, and based on result analysis of the conducted research, they are reflected in acceptance or rejection of the set research hypotheses and comparison of results was made with the results of the research work of independent occupational safety specialist in Croatia.

H1: *In majority of companies in Serbia, in accordance with the Law, the employer is obliged to have an occupational safety and health specialist.* The hypothesis is accepted.

In vast majority (58.51%), companies implement legal obligation to employ an occupational health and safety specialist. Also, in vast majority (72.19%) medium-sized companies in Croatia which are liable to occupational safety specialist work organization, in accordance with the Law on Occupational safety, this legal duty is performed in a way that company employs at least one independent occupational safety specialist. In line with this, it can be concluded that the need and possibility for employing occupational safety and health specialists is reasonable and the persons will successfully perform occupational safety and health activities with their own expertise and constant engagement in their company.

H2: *The number of hired occupational safety and health specialists depends on the number of employees, occupational safety situation and the level of hazards in that company.* The hypothesis is partially accepted.

Model of multiple linear regression analysis, based on the results of survey research, shows that the number of occupational safety and health specialists in the company statistically depends on two or three independent variables: number of employees and level of risk at work in the company. The correlation is positive, so the number of employed experts is higher in larger companies with more employees and higher level of risk at work. Number of employed experts does not depend significantly on the safety condition in a company. Bearing that in mind, there is evident need to develop methods for assessing safety situation in a company, particularly in terms of efficiency and achieved results of occupational safety, including the economic factor of occupational safety, so it could be completely and correctly valued and could have an impact on business decisions. The results match the results of research in Croatia.

H3: *In all companies that have implemented occupational safety and health management system according to an international guideline OHSAS 18001, occupational safety and health situation is essentially improved as well as activities of occupational safety and health specialists.* The hypothesis is rejected.

Occupational health and safety management system has been introduced and certified, according to researchers, in 13.67% of companies according to international standard OHSAS 18001, while in Croatia the percentage is 6.21%. Among companies that introduced OHSAS 18001 standard, vast majority (78.23%) has significantly improved occupational safety situation and activities performed by occupational

safety and health specialists, while a positive mark is lacking in 21.77% of respondents. Among the companies in Croatia which have introduced OHSAS 18001 system, the condition of occupational safety and occupational safety specialists' work have significantly improved in the vast majority (80.95%), but not in all, while such a positive assessment failed at 19.05% of respondents. According to this, it is evident that it is necessary to engage more specialists responsible for occupational safety and health in these companies and to implement standards consistently in order to achieve positive effects. Additionally, there is an extremely significant interest (43.26%) of occupational safety and health specialists that are planning to introduce this standard in the company where they work.

H4: *Occupational safety and health specialists only work in the field of occupational safety and health and do not work in other safety areas.* The hypothesis is rejected.

At only 30.51% of companies, which is statistically a large minority, occupational safety and health specialists perform activities only in the field of occupational safety. Also, the hypothesis is rejected in the research in Croatia, where in only 7.10% of companies, a large minority, occupational safety specialists perform activities only in the field of occupational safety in their business practices. Based on this, there is a real need for establishing integral safety as a set of activities for occupational safety and health specialists, where they are real professionals in a company.

H5: *Among occupational safety and health specialists, majority of them are specialists with professional qualifications the field of safety.* In Serbia, the hypothesis is accepted, while in Croatia it is rejected. Experts with professional qualifications in the field of safety make as much as 60.84% (in Croatia 33.73%) of all occupational safety and health specialists in companies. This is certainly a consequence of the existence of educational institutions specializing in education and scientific activity in this area - Faculty of Occupational Safety.

H6: *Occupational safety and health specialists in companies evaluate their own work, in all aspects with at least a very good mark (minimum of 3.5 on a scale from 1 to 5).* The hypothesis is partially accepted, while in Croatia it is rejected.

The average grade (mean) of all individual evaluations by occupational safety and health specialists is 3.82 (scale 1-5), which is a very good grade. The average grade that includes only evaluation of performance of occupational safety and health specialists in a company is a very good grade 3.84, and the average grade that includes only evaluation of performance and collaboration with external participants from the occupational safety system is 3.76, also a very good grade. The highest average grade between all the grades evaluating performance of occupational safety and health specialists (4.15) has the grade which evaluates the role of these persons in the monitoring and analysing data related to work-related injuries and occupational diseases. The lowest individual average grade (3.47) - the only one below 3.5 (a good grade) is the one evaluating satisfaction with earnings and valuating occupational safety as a social value by the public and society. The highest average grade among the individual grades evaluating co-operation of occupational safety and health specialists (4.17) has cooperation with the bodies responsible for Labor inspection - occupational safety. The lowest individual average grades (3.44) - belong to Evaluation of occupational safety as an economic factor by the entire economic system and Evaluation of perception and value of occupational safety as a social value by the public and society, which beside Cooperation with professional associations (3.46) are the only grades in the area of a good grade. Therefore, the four grades are in the area good grades (in Croatia 14).

On the basis of all stated above, we can give a very good grade to occupational safety and health specialists in the company, as well as to their co-operation with external participants in occupational safety system, but the existence of four grades that are below a very good grade show the need for further improvement of occupational safety and health specialists.

H7: *Occupational safety and health specialists assess proposals for improving their own work in all aspects with at least a very good grade (minimum 3.5 on a scale from 1 to 5).* The hypothesis is partially accepted. The average grade (mean) of all individual evaluations of proposals for performance improvement of

occupational safety and health specialists is 3.81 (on scale 1-5), which is a very good grade. Thereby, the average grade that includes only specific proposals for improving performance of occupational safety and health specialists in companies is 3.76, which is a very good grade, and the average grade that includes only general proposals for improving performance of these individuals is 3.86 - also a very good grade. In Croatian research the average grade (mean) of all individual evaluations of proposals for improving the work of occupational safety specialists (total of 21 scores) is 3.77 (on scale 1-5), which is a very good grade.

The average score that includes only the assessment of specific proposals for improving the work of occupational safety specialists related to the company is 3.65, which is a very good grade, and the average score that includes only the assessment of proposals for improving the work of occupational safety specialists related to external safety system is 3.86, also a very good grade. The highest individual average grade of specific proposals (3.92) is given to a grade for proposal of salary increase and other benefits for occupational safety and health specialists, in order to adjust them with the other employer services. The lowest individual average grade (3.40) is given to the proposal for increasing the number of people responsible for occupational safety and health. This is the only grade which evaluated the proposal with a lower average grade than the lower limit of a very good grade (3.50). In Croatian research the highest individual average grade (4.10) has a grade of proposals for the enhancement of the information-sharing between occupational safety specialists in a company and external participants from occupational health and safety system using the Internet. The lowest individual average grade (2.99) is given to the proposal for increasing the number of people responsible for occupational safety in company. This is the only grade which evaluated the proposal with a lower average grade than the lower limit of a very good grade (3.50). Based on such results of grading proposals for performance improvement of occupational health and safety specialists, which have been given by the specialists themselves, it can be concluded that they are aware that increase in the number of employed occupational safety and health specialists is not the main condition for improving their performance and safety conditions in the company. Also, they are aware that what is needed primarily is professional training, acquiring knowledge in the area of occupational safety management and increasing IT support, with adequate financial compensation for their work.

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