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## MODEL FOR THE OCCUPATIONAL SAFETY AND HEALTH IMPROVEMENT IN SMALL AND MEDIUM ENTERPRISES IN SERBIA

**Abstract:** *Given the occurrence of a large number of accidents and injuries at work, occupational diseases and work-related diseases in small and medium enterprises (SMEs) in Serbia (as evidenced by statistics), improving the occupational safety and health of workers (OSH) in these companies is essential importance. Improving OSH (through the implementation of preventive measures, increasing investment in OSH programs, continuous training/education of employers and employees, etc.) reduces injuries at work and occupational diseases, detects and eliminates or reduces hazards that can endanger life, safety and worker health.*

*The main goal of the paper is to emphasize the specifics of occupational safety and health management in SMEs, to point out the most common problems that occur in small and medium enterprises in Serbia, to emphasize the importance of improving OSH in these companies.*

*The paper proposes a complex model of OSH improvement with four basic dependent variables (level of organization safety and health, occupational injuries and occupational diseases, economic consequences of occupational injuries and occupational diseases and business results) and several variables that have a direct impact on these four variables.*

**Key words:** *Occupational safety and health, OSH model, Small and medium enterprises, workplace safety improvement*

### 1. INTRODUCTION

Modern companies that perform activities in accordance with the principles of world-class production strive to achieve the highest level of safety and health at work, minimize injuries at work, occupational and work-related diseases and provide safe working conditions in which employees would be undisturbed performed work activities and had a sense of satisfaction when performing professional tasks. The application of proactive and preventive technical, organizational, health, psychological and other measures detects and eliminates or reduces hazards that may endanger the safety and health of workers and thus improves the safety and health of workers.

Small and medium enterprises (SMEs) are considered to be the main drivers of economic growth and development of the national and world economy, the greatest potential for self-employment and generators of new jobs [1]. In the countries of the European Union (EU-28), small and medium enterprises cover 99.8% of all enterprises and employ 66.8% of the total number of employees [2]. In Serbia, the SME sector comprises 99.8% of all enterprises and generates 64.8% of employees, 65.4% of turnover and 56% of gross value added [3].

Employees in small and medium enterprises in Serbia are generally more often exposed to dangers, injuries at work (in the form of burns, blows, bone fractures, internal injuries, head injuries etc.), occupational diseases and work-related diseases, unlike workers in larger companies. Also, injuries at work and occupational diseases are more common in SMEs in developing countries, where workers do not have adequate health and social protection. The reason for that can be found in the fact that in small and medium enterprises, workers are exposed more often to physical hazards, chemical and biological hazards.

Injuries at work and occupational diseases in small and medium-sized enterprises can have catastrophic consequences. Injuries at work cause a decrease or loss of working ability and a decrease in life activities. Absence from work causes an increase in costs and expenses due to sick leave, additional hiring new workers. Even small accidents can cause long-term absence from work due to occupational disease and recovery [4] and experienced and skilled workers in these companies cannot be easily and quickly replaced. Also, serious injuries can lead to a drop in productivity and interruptions in production. Personal injury at work in these companies comes due execution of the operations on unsafe manner and unsafe working conditions.

Given the large number of accidents and injuries at work and the more frequent occurrence of occupational and work-related diseases in small and medium enterprises in Serbia and taking into account the fact that injuries at work and occupational diseases negatively affect economic indicators, improve safety and health workers in these companies is essential.

Improving safety and health at work, reducing deaths, injuries at work and occupational diseases, improving ergonomic conditions in the work environment and achieving full physical, mental and social well-being of employees is a legal obligation of all small and medium enterprises. The paper is structured as follows: after the introduction, the paper points out the specifics and basic characteristics of OSH management in SMEs and points out the basic problems of OSH management in SMEs. In the next part of the paper, a complex integrated model of OSH management in SMEs is presented and explained. In the concluding part, concluding remarks are given.

## **2. SPECIFICS OF OCCUPATIONAL SAFETY AND HEALTH MANAGEMENT IN SMALL AND MEDIUM ENTERPRISES IN SERBIA**

According to the European Agency for Safety and Health at Work [5], the challenges in managing the safety and health of workers in small and medium-sized enterprises are increasing given that workers in those enterprises are due to unsafe and risky working conditions and non-compliance with procedures, non-application of preventive measures, inadequate use of equipment exposed to higher risks of injuries at work and occupational diseases than workers in larger companies. Also, in SMEs there is a problem related to poor work organization, inadequate assignment of workers and redeployment of workers from one job to another without professional training (especially from the practical part) and training for safe work [6]. The occurrence of injuries at work is greatly contributed by the performance of activities under the influence of alcohol or psychoactive substances.

Workers in SMEs are most often exposed to noise, vibrations, strong light, extreme temperatures, radiation, which causes the appearance of numerous occupational diseases. Also, workers in these companies are exposed to chemical hazards - gases, dust and toxic fumes. Workers in SMEs most often suffer from high blood pressure, cardiovascular disorders and diabetes and mental illness (depression and anxiety). Due to lifting and carrying heavy loads,

frequent non-ergonomic and repetitive movements (for example, pushing and pulling), workers suffer from musculoskeletal diseases. Work pressure and stress to which workers in these companies are exposed cause fatigue, decreased attention and concentration, and lead to errors during activities.

The most common problems that occur in small and medium enterprises in Serbia are related to the large number of non-permanent workers (compared to larger enterprises). In SMEs, employees are hired without employment contracts, mostly on a part-time basis or work overtime (weekends or night shifts), do not have adequate expertise and experience and are not sufficiently trained to perform activities. All this contributes to the increased risk of injuries at work and occupational diseases. Also, the SMEs does not keep records on the correctness of machines and electrical installations, and that can further cause accidents and injuries at work.

In SMEs in Serbia, there are problems when keeping records of injuries at work and the occurrence of occupational diseases. Statistics on injuries at work and occupational diseases are the basis for the implementation of programs for the prevention of injuries at work and occupational diseases. The data differ because there is no single register for keeping injuries at work and occupational diseases.

In addition to the underdeveloped awareness of the importance of safety and health at work, the reason for the greater number of injuries at work and occupational diseases in SMEs in Serbia lies in the lack of time and inability to provide financial resources needed to implement laws and bylaws in this area and to respect international norms and standards. The specifics of SMEs in Serbia are reflected in: inadequate management of safety and health of workers and lack of necessary documentation. Also, small and medium enterprises in Serbia, unlike SMEs at the EU level, are characterized by unsafe conditions in which workers perform professional tasks and inadequate use of personal protective equipment, etc [7].

Unlike SMEs at the EU level, where the importance of improving safety and health at work is recognized, in SMEs in Serbia, the necessary attention was not paid to safety and protection at work, legislation was applied selectively or not applied at all. The focus of SMEs in Serbia is focused on solving the problem of financial survival and not on the implementation of preventive measures, timely elimination of the causes of injuries at work and occupational diseases and prevention of their consequences.

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### 3. MODEL FOR THE IMPROVEMENT OCCUPATIONAL SAFETY AND HEALTH IN SMALL AND MEDIUM ENTERPRISES IN SERBIA

Figure 1. presents an integrated model for occupational safety and health improvement in small and medium enterprises that points to a causal link between four dependent variables: the level of occupational safety and health, occupational injuries, the economic consequences of occupational injuries and work-related illness,

and business results. The level of safety and health of workers in SMEs is affected by: leadership and commitment of management, OSH awareness, value system in the organization, OSH policy and compliance with regulations and procedures in this area, training/education of employees and management, workorganisation, workplace characteristics and workers characteristics.

Increasing safety levels contributes to reducing the number of injuries at work, occupational diseases and work-related illnesses. The greatest responsibility for improving OSH in SMEs is taken by the employer and management, although to a large extent workers take responsibility for the safe implementation of activities and the implementation of OSH interventions [8]. Employers are obliged to provide employees with safe conditions in the work environment and the necessary equipment and means for personal protection in accordance with the requirements of the workplace and regular conduct of systematic examinations.

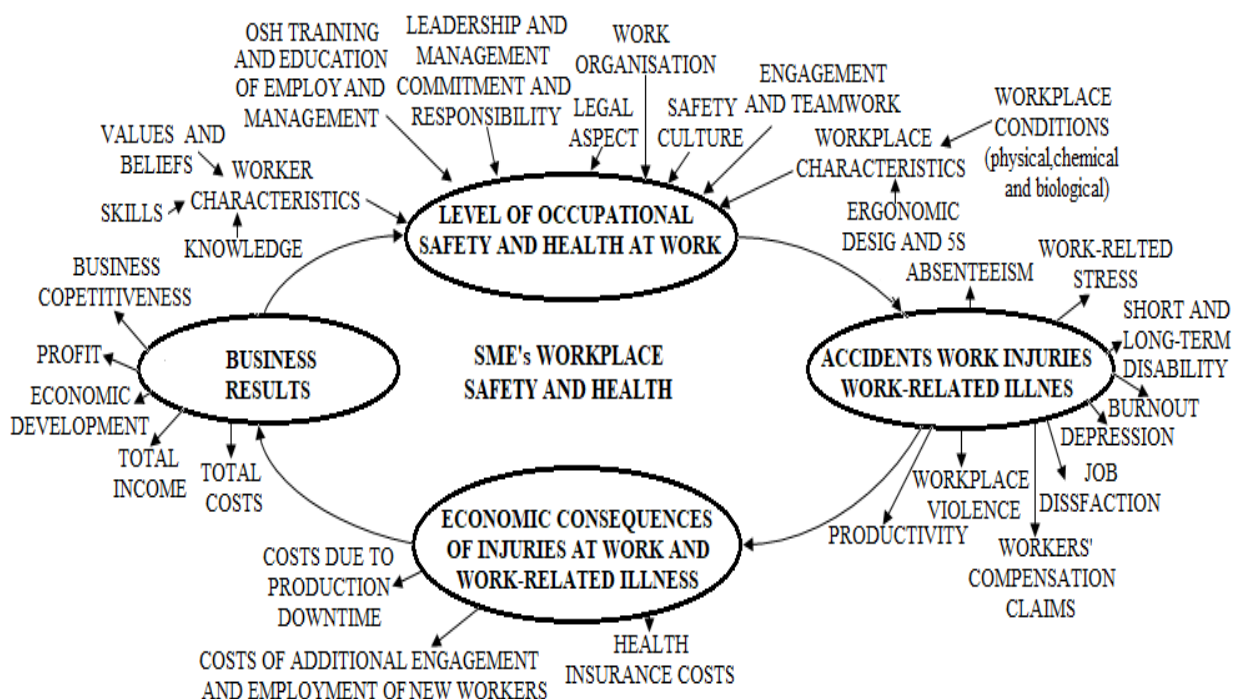


Fig. 1. Model for the occupational safety and health improvement

The employer is obliged to ensure that the activities performed by workers are adjusted to the physical and mental abilities and capabilities of workers. The management of the company is obliged to systematically monitor and eliminate all potential hazards in the workplace. If an incident occurs, the employer is obliged to visit the location where the incident occurred, collect the necessary data, statements of participants and eyewitnesses,

responsible persons and experts in the field of OSH and make records of the event itself.

Management is also responsible for motivating employees to perform activities in a safe manner and applying best safety practices. Managers must ensure that all employees are instructed in occupational safety and health regulations. Top management is required to show leadership and commitment and take responsibility for preventing injuries at work or impairing health, eliminating

hazards and harms in the workplace. SME employees take responsibility for the safe handling of equipment and have an obligation to report to the employer and top management if a problem arises that could jeopardize their safety.

The increase in injuries at work and occupational diseases causes an increase in costs in the company (OSH costs, costs of production downtime, costs related to hiring a new worker, etc.). An increase in these costs leads to an increase in total costs in the company and a decrease in profits and this further leads to a decrease in the investment of financial resources in OSH program. The ISO 45001 standard promotes the importance of implementing preventive measures and programs in order to eliminate or reduce injuries at work, occupational diseases and work-related diseases. Improving OSH in SMEs in Serbia can be achieved by implementing proactive measures, increasing the investment of financial resources in OSH programs, continuous education of employers and employees in this field, etc. In this way, hazards will be eliminated or reduced and the safety, health and well-being of workers in the work environment will be improved.

Continuous implementation of training and coaching of workers will contribute to the prevention of reckless and unsafe performance of activities. Setting clear instructions for safe work on machines and equipment will prevent injuries at work. Providing personal protective equipment and encouraging employees to use it minimizes the risk of injuries at work and occupational diseases.

Improving the safety and health of workers is based on a legal framework. Safety and health at work is determined by the conventions of the International Labor Organization (ILO), European Union directives and the Lisbon Treaty. The area of safety and health at work in Serbia is regulated by the Law on Safety and Health at Work and bylaws.

#### 4. CONCLUSION

This paper presents an integral model of OSH improvement that points to a causal link between four dependent variables: the level of occupational safety and health, occupational injuries, the economic consequences of occupational injuries and work-related illness, and business results. Improving OSH in SMEs reduces injuries at work and occupational diseases, detects and eliminates or reduces hazards that can endanger life, safety and worker health. Improving OSH in SMEs in Serbia can be achieved by implementing proactive measures, increasing the investment of financial resources in OSH programs, continuous education of employers and employees in this field.

#### 5. REFERENCES

- [1] Spicer, D., Sadler-Smith, E.: *Organizational learning in smaller manufacturing firms*, International Small Business Journal, 24 (2), 2006.
- [2] Muller, P., Caliandro C., Peycheva V., Gagliardi D., Marzocchi C., Ramlogan R., Hope, K.: *Annual report on European SMEs 2014/2015*, The European Commission, Directorate -General for Internal Market, Industry, Entrepreneurship and SMEs, 2015.
- [3] Sertić, Ž., *Report on small and medium-sized enterprises and entrepreneurship for 2014*, Belgrade: The Ministry of Economy, 2015.
- [4] Kongtip P., Yoosook W., Chantanakul S.: *Occupational health and safety management in small and medium-sized enterprises: An overview of the situation in Thailand*, Safety Science 46, 2008.
- [5] European Agency for Safety and Health at Work, available at: <http://osha.europa.eu/en/publications/reports>
- [6] *Occupational risk prevention in SMEs in Europe*-thematic report, Eurogip, 2009.
- [7] Savković M., Đapan M., Mačužić I., Todorović P., Radenković M., Vukićević A., Mijović N.: *Barriers, challenges and opportunities to improve occupational health and safety management in small and medium enterprises in Serbia: case study approach*, pp. 369-377, 13th International quality conference-quality festival 2019, Kragujevac, 29 May - 1 June 2019.
- [8] Lansdown T., Deighan C., Brotherton C.: *Health and safety in the small to medium sized enterprise*, Heriot Watt University for the Health and Safety Executive, 2007.

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