



SAFERA

*Coordination of European Research on Industrial Safety
towards Smart and Sustainable Growth*



This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 291812.

2nd Project Meeting

RESMOD project

RESILIENCE ENHANCEMENT MODEL

Prof. dr Vesna Spasojević Brkić, FME
UB

Prague, 7 June 2023



University of
Belgrade



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RESMOD project – Performed and planned activities by FME UB

- ▶ WP1, WP2, WP3
- ▶ Team members:

<i>Name</i>	<i>Academic Position and Degree</i>	<i>Position in the team</i>	<i>Discipline</i>	<i>Person months</i>
<i>Vesna Spasojevic Brkic</i>	<i>Full Professor, PhD</i>	<i>Team leader</i>	<i>Risk Management</i>	<i>3 (1st year) 4 (2nd year)</i>
<i>Mirjana Misita</i>	<i>Full professor, PhD</i>	<i>Team member</i>	<i>Management Information Systems</i>	<i>1 (1st year) 1 (2nd year)</i>
<i>Zorica Veljkovic</i>	<i>Associate Professor, PhD</i>	<i>Team member</i>	<i>Applied Statistics</i>	<i>1 (1st year) 1 (2nd year)</i>
<i>Martina Perisic</i>	<i>Assistant, MSc, PhD student</i>	<i>Team member</i>	<i>Production Engineering & Industry 4.0</i>	<i>2 (1st year) 1 (2nd year)</i>



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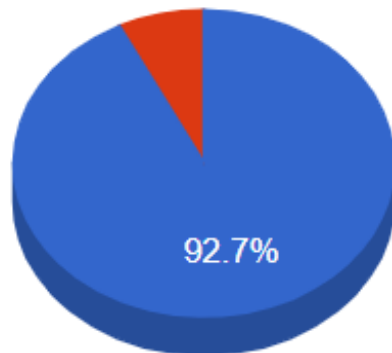
QUESTIONNAIRE

- ▶ General data (Industrial sector, Company size, Job title, Educational background, Age, Gender, Work experience, Previous injuries at work / Accidents involvement)
- ▶ SURVEY ON THE STATE OF SAFETY AT WORK DURING COVID 19 PANDEMICS
- ▶ Questions taken from previous research such as Haghani, M., Bliemer, M. C., Goerlandt, F., & Li, J. (2020). The scientific literature on Coronaviruses, COVID-19 and its associated safety-related research dimensions: A scientometric analysis and scoping review. *Safety science*, 129, 104806. ; Bragatto, P., Vairo, T., Milazzo, M. F., & Fabiano, B. (2021). The impact of the COVID-19 pandemic on the safety management in Italian Seveso industries. *Journal of Loss Prevention in the Process Industries*, 70, 104393.; Lin, S. H., Tang, W. J., Miao, J. Y., Wang, Z. M., & Wang, P. X. (2008). Safety climate measurement at workplace in China: A validity and reliability assessment. *Safety Science*, 46(7), 1037-1046.

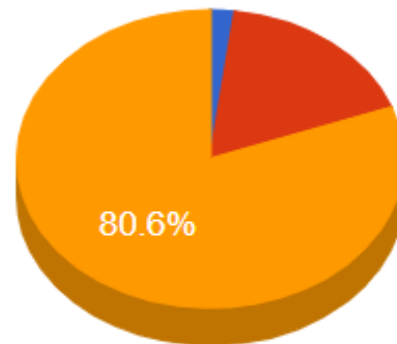


SAMPLE

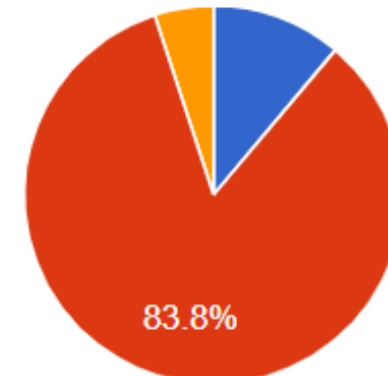
- ▶ The average age of respondents is 41.63 years with a standard deviation of 2.628 years with 11.15 years years working in the same industrial sector with a standard deviation of 2.036 years;
- ▶ 28.46% of respondents had previous injuries at work or participated in accidents, while the remaining 71.54% had not
- ▶ Job titles: Excavator driver, Locksmith, Dumper driver, Operator – Electrician, Electrical engineer, Engineer, Crane operator, Storekeeper, Mechanical operator, Operator, Manager, Overconcentration operator, Foreman, Handler, Executive manager, Excavator manager, Maintenance manager, Chief of the shift, Sampler, Welder



● Male ● Female



● MSc ● BSc ● Other



● managers ● drivers/operators ● others



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RESULTS

- ▶ Importance and Current state rating on all constructs and its dimensions
- ▶ Descriptive statistics – Mean, Median, Min, Max, Percentile 5, Percentile 95, Range, Standard Deviation, Coefficient of Variation
- ▶ Depending on type of variable (parametric vs non parametric) statistical tests Kolomogorov and U* Mann Whitney are used to test the differences
- ▶ Comparison of dimensions of importance and current state: It is evident that participants understand the importance, but current state does not have similar value on all dimensions beside SC2-1, SC4-3, SC5-2, SC9-2, SC9-3, SC9-4, SC11-1, SC11-2, SC11-3, SC11-4 and SC11-5 – there are significant differences found – there is the highest match level on rules and procedures SC9 and safety performances construct SC11
- ▶ Comparison of constructs – differences found on all constructs (Lowest p level on safety performances SC11)



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RESULTS

Importance rating				z*	p-value	Sign.
SC4-7 When procedures changes and improvements are needed, management approaches the problem with interest	Managers	v.s.	Operators and drivers	2.1019	0.0356	<0.05
Current state rating				z*	p-value	Sign.
SC8-1 I am familiar with our occupational safety and health policy, including health and business continuity plan	Managers	v.s.	Operators and drivers	-2.57239	0.010100	<0.01
SC10-2 Management takes care of whether employees are satisfied at work	Managers	v.s.	Operators and drivers	2.059931	0.039406	<0.05
SC10-3 I am satisfied with the cooperation with colleagues and superiors	Operators and drivers	v.s.	Others	2.281251	0.022534	<0.05
Importance × Current state rating				z*	p-value	Sign.
SC8-1 I am familiar with our occupational safety and health policy, including health and business continuity plan	Managers	v.s.	Operators and drivers	-2.98419	0.002844	<0.05
SC9-3 Safety improvements are always implemented as soon as possible	Operators and drivers	v.s.	Others	2.601027	0.009295	<0.01
SC10-2 Management takes care of whether employees are satisfied at work	Managers	v.s.	Operators and drivers	2.442574	0.014583	<0.05





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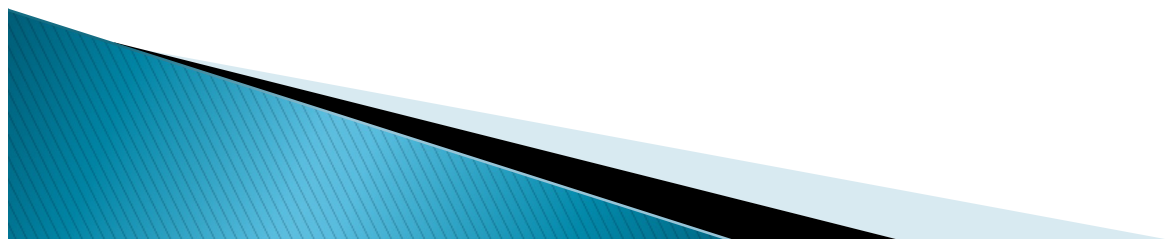


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RESULTS

Importance rating					z*	p-value	Sign.
SC8	Policy	Managers	v.s.	Operators and drivers	2.176829	0.029494	<0.05
Current state rating					z*	p-value	Sign.
SC1	Safety awareness and competence	Managers	v.s.	Others	2.309591	0.020911	<0.05
SC8	Policy	Managers	v.s.	Operators and drivers	-2.99973	0.002702	<0.01
SC10	Job satisfaction	Managers	v.s.	Others	2.562559	0.010391	<0.01
Importance × Current state rating					z*	p-value	Sign.
SC5	Risk assesment	Operators and drivers	v.s.	Others	2.025407	0.042826	<0.05
SC8	Policy	Managers	v.s.	Operators and drivers	-2.90343	0.003691	<0.01





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RESULTS

- When all questions are taken into account, the following differences in favor of managers are found

Importance rating				z^*	p-value	Sign.
	Managers	v.s.	Operators and drivers	2.262960	0.023639	<0.05

- Average values of answers on current state differ by organizational levels in favor of higher level, too

Organizational level	Average
Operative	3,46
Strategic	4,11
Tactical	3,56



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RESULTS

- Table below shows the summarized results of average grades of respondents classified according to the organizational level. The lowest average grades in the observed category are indicated in red, while the highest grades are marked in green.

	Safety awareness	Safety communication	Organization environment	Management support	Risk assessment	Safety measures and Prevention	Safety training	Safety policy	Safety Procedures	Job Satisfaction	Safety Performances
Operative	3,97	3,92	2,81	3,00	2,88	3,46	3,55	3,40	3,34	3,71	3,67
Tactical	3,93	3,58	3,00	3,22	3,10	3,47	3,83	3,72	3,49	3,56	3,94
Strategic	4,30	4,88	2,17	4,21	2,50	4,25	5,00	4,50	4,13	4,50	3,83



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University of Belgrade

Faculty of Mechanical Engineering

THANK YOU FOR YOUR KIND ATTENTION!

