PRODUCTION MANAGEMENT MODEL IN SME'S IN SOME SOUTH-CENTRAL EU COUNTRIES DURING PANDEMIC

14th INTERNATIONAL SCIENTIFIC CONFERENCE **WOODEMA**

Authors

Denis Jelačić, Darko Motik, Andreja Pirc Barčić,
Leon Oblak, Petra Grošelj, Matej Jošt

Koper, Slovenia, *June 16th - 18th 2021*

1. INTRODUCTION

Small and medium enterprises (SMEs) play a key role in the economy of the European Union.

There were **more than 25 million SMEs in EU-28 in 2018**, which accounted for **99.8% of all enterprises in non-financial business** sector. They were generating 56.4% of value added, and 66 % of jobs.

In Croatia, 149.541 SMEs represent 99.7% of all enterprises. They employ 68.9% of all persons employed and generate 59.4% of value added.

In Slovenia, 145.996 SMEs represent 99.8% of all enterprises. Slovenian SMEs employ 72.0% of all persons employed and they generate 64.5% of value added.

In Croatia and Slovenia both, most of the SMEs, especially those in wood processing (C16) and furniture manufacturing (C31) are situated in rural areas, so they play important role in social cohesion and development of rural areas.

Any kind of crisis could have a large impact on small and medium enterprises because of their size and structure. Especially if that crisis cause major problems within supply chain, such as Covid-19 pandemic caused by period of lockdowns on different levels for different countries.

The aim of this research was to investigate the current situation in small and medium enterprises in wood processing and furniture manufacturing regarding driving parameters of business and production management system in the time of disturbed situation on the market caused by Covid-19 global pandemic.

2. RESEARCH METHOD

- A survey was provided to the company managers of micro/small and medium enterprises in C16 and C31 in **Croatia and Slovenia**;
- The questionnaire in the survey consisted **of five questions on company characteristics related to manufacturing program, size of the company, type of production and technology in the company, and management model;**
- The main part of the questionnaire was a ranking of seven driving parameters of the business and production management system;
- The survey was conducted in late 2020 and early 2021;
- **a total of 867 questionnaires were sent to enterprises**, of which 246 in Croatia and 621 in Slovenia;
- A total of **212 questionnaires were completed**, with the **response rate of 43,3 % in Croatia and 21,1 % in Slovenia**;

3. RESULTS

Company profile – Production program

	CRO	SLO
Sawmill products	**42%**	18%
Materials for furniture manufacturing	22%	14%
Kitchen furniture	26%	43%
Living room furniture	27%	**45%**
Bedroom furniture	23%	44%
children room furniture	20%	42%
Upholstered furniture	4%	9%
Tables and chairs	11%	11%
Joinery - Windows	14%	8%
Joinery - Doors	22%	27%
Parquets and floors	17%	3%
Equipment for different spaces	28%	36%
Garden furniture	4%	9%
Machines and tools for wood processing	1%	1%
Transport equipment	9%	2%
Other	21%	27%

16 groups of products from the wooden boards to final products such as furniture or joinery

Company profiles – size of the enterprise, type of production process

	CRO	SLO	all
Response share	38.2%	61.8%	100.0%
Less than 10 employees (micro)	29.6%	59.5%	48.1%
Less than 50 employees (small)	40.7%	32.1%	35.4%
Less than 250 employees (medium)	29.6%	8.4%	16.5%
Individual production	35.8%	61.8%	51.9%
Small series production	39.5%	27.5%	32.1%
Serial production	24.7%	10.7%	16.0%

Company profiles – type of technology used in the production, production management model process

	CRO	SLO	all
Mostly computer aided technology	23.5%	11.5%	16.0%
Mostly classic technology	22.2%	19.1%	20.3%
Mostly hand tools and machines	9.9%	11.5%	10.8%
A combination of all of the above	44.4%	58.0%	52.8%
Work for a known customer	**63.0%**	**74.8%**	**70.3%**
Work for an unknown customer (showrooms and retail stores)	0.0%	1.5%	0.9%
A combination of work for a known and an unknown customer	37.0%	23.7%	28.8%

The second part of the questionnaire sent to companies consisted of **the seven driving parameters of business and production management, which company owners or top managers should have ranked according to their perception of the importance of each parameter.**

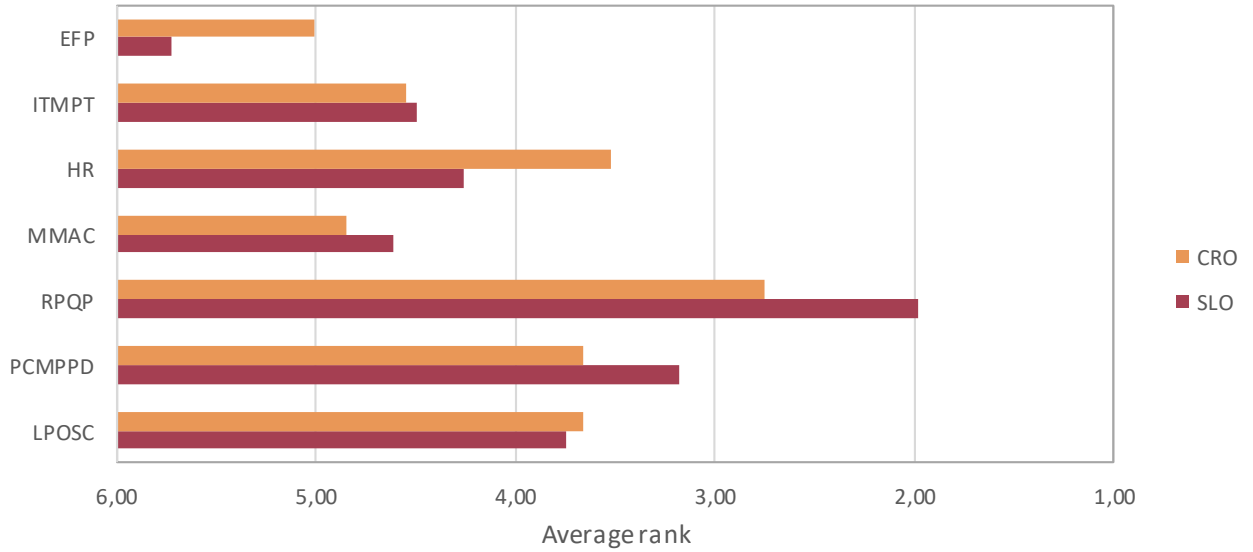
Parameters given in the survey were:

- **LPOSC**–Leadership, Policy, and Organizational Structure of the Company
- **PCMPPD**–Process Culture, Management Processes, and Production Deadlines
- **RPQP**–Range of Products and Quality of Products
- **MMAC**–Marketing and Market Activities of the Company
- **HR**–Human Resources
- **ITMPT**–Information Technology and Modern Production Technology
- **EFP**–Environmentally friendly production.

Ranking of driving parameters of business and production management system by mean ranks from survey

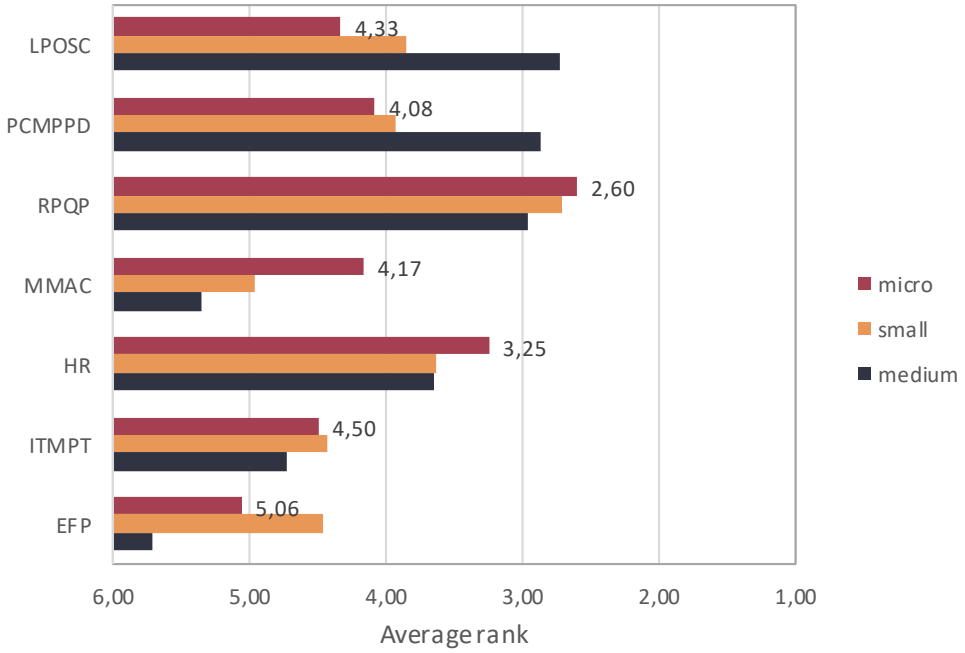
	LPOSC	PCMPPD	RPQP	MMAC	HR	ITMPT	EFP
Mean rank	3.7	3.4	2.3	4.7	4.0	4.5	5.5
Ranks	3	2	1	6	4	5	7

LPOSC—Leadership, Policy, and Organizational Structure of the Company; PCMPPD—Process Culture, Management Processes, and Production Deadlines; RPQP—Range of Products and Quality of Products; MMAC—Marketing and Market Activities of the Company; HR—Human Resources; ITMPT—Information Technology and Modern Production Technology; EFP—Environmentally friendly production; 1= the most important

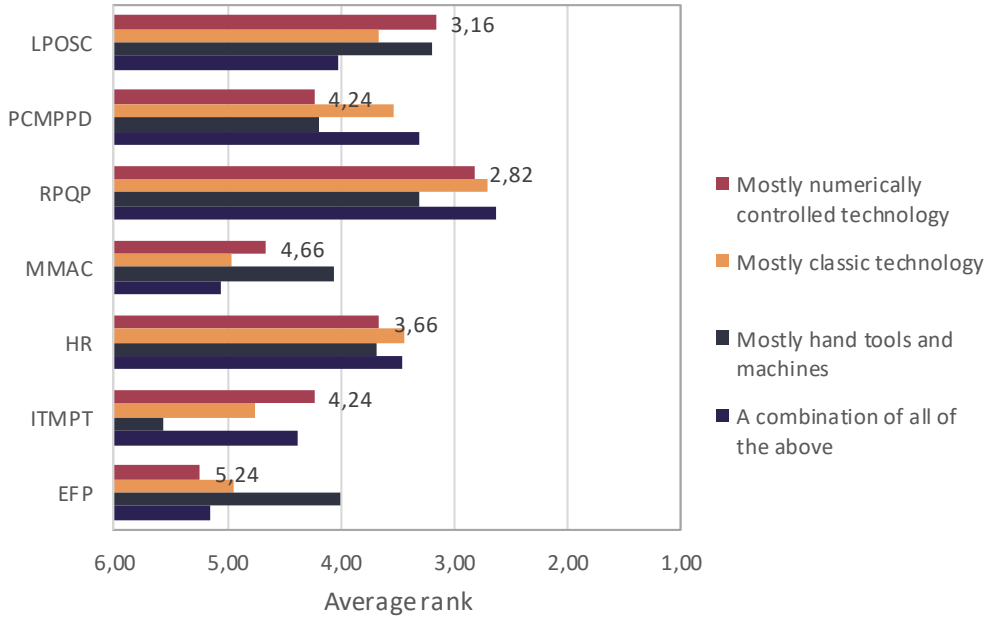


LPOSC—Leadership, Policy, and Organizational Structure of the Company; **PCMPPD**—Process Culture, Management Processes, and Production Deadlines; **RPQP**—Range of Products and Quality of Products; **MMAC**—Marketing and Market Activities of the Company; **HR**—Human Resources; **ITMPT**—Information Technology and Modern Production Technology; **EFP**—Environmentallyfriendly production

Average ranks regarding the size of the companies

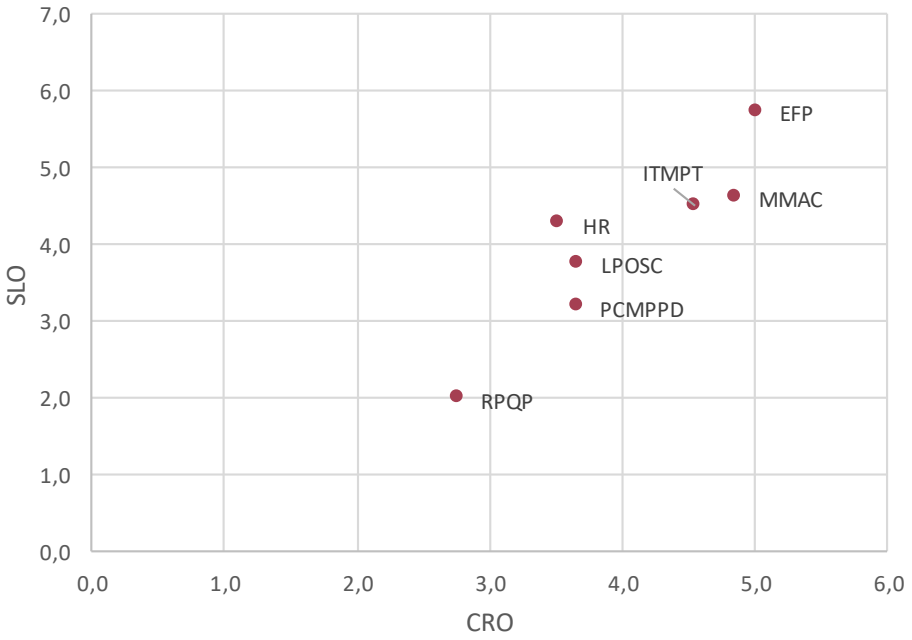


Average ranks regarding the type of the production technology



LPOSC—Leadership, Policy, and Organizational Structure of the Company; **PCMPPD**—Process Culture, Management Processes, and Production Deadlines; **RPQP**—Range of Products and Quality of Products; **MMAC**—Marketing and Market Activities of the Company; **HR**—Human Resources; **ITMPT**—Information Technology and Modern Production Technology; **EFP**—Environmentallyfriendly production

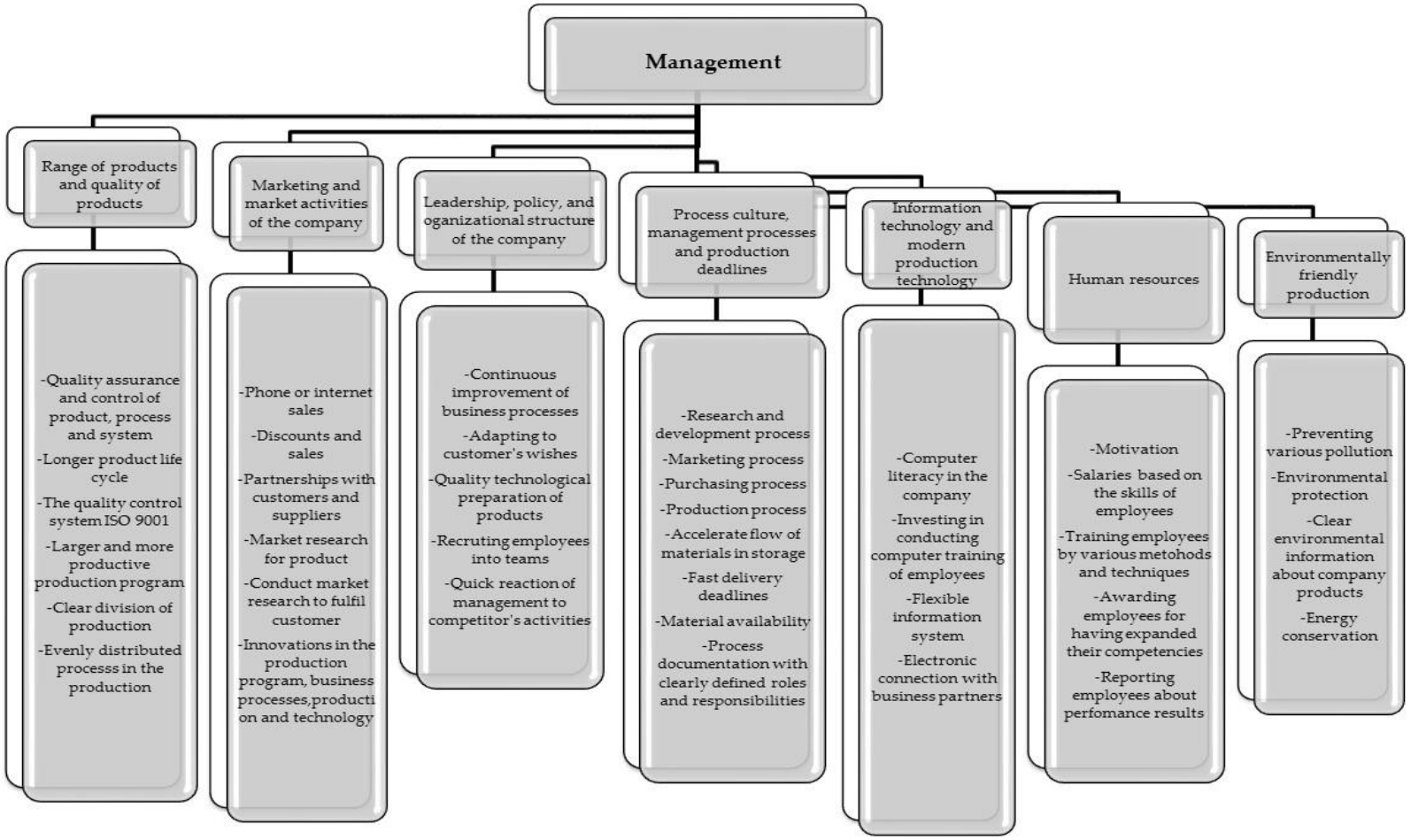
Correlation between the mean ranks of Croatian and Slovenian enterprises



A positive correlation ($r_S(7) = 0.883$, $p = 0.008$) between the mean ranks of Croatian and Slovenian companies. Both Croatian and Slovenian companies evaluated RPQP as the most important driving parameter

A positive correlation ($r_S(7) = 0.714$, $p = 0.071$) between the mean ranks of micro and small companies and between small and medium companies ($r_S(7) = 0.679$, $p = 0.094$). Micro and small companies evaluated RPQP as the most important driving parameter

Organization management model for small and medium enterprises



1.) The model is flexible and if the company management makes a decision to go into the innovations in information technology or in human resources, it could bring particular group of parameters up front in the model and make the decision-making process easier, faster and more effective.

2.) Small and medium companies usually do not have enough personnel to deal with all those issues at the same time and discuss them during meetings or otherwise. That is especially relevant to small and micro companies, where one or two persons have to make decisions on all issues. Therefore, they need some kind of model which will give priorities to some issues over the other and make the whole decision-making process easier and faster.

A business and production management model for SMEs in C16 and C31 in Croatia and Slovenia was proposed

CONCLUSION

According to results of this research, it can be observed that entrepreneurs and managers in SMEs, because of the disturbances in supply chain caused by lockdowns mostly, but because of the other market conditions caused by the pandemic crisis, turn more to assets they have and to those which are reachable, so they turn to quality of the product and changes in the production program, to innovations in leadership and organizational structure of the company instead of modern production and information technology or human resources.

According to given situation with the Covid-19 global pandemic, and according to the results achieved with this research, the second aim was to create the applicable business and production management model for SMEs in C16 and C31 in Croatia and Slovenia, which can help make decision process in a company easier, faster and which could meet the requirements of the turbulent and ever-changing market for wood products and furniture.

The model is flexible and if the company management makes a decision to go into the innovations in information technology or in human resources, it could bring particular group of parameters up front in the model and make the decision making process easier, faster and more effective.

THANK YOU

Denis Jelačić
Darko Motik
Andreja Pirc Barčić
Leon Oblak
Petra Grošelj
Matej Jošt

PHONE NUMBER

djelacic@sumfak.unizg.hr
dmotik@sumfak.unizg.hr
apirc@sumfak.unizg.hr
leon.oblak@bf.uni-lj.si
petra.groselj@bf.uni-lj.si
matej.jost@bf.uni-lj.si

http://www.woodema.org/