DOCUMENT TITLE:

CRITICAL FACTOR SME DIAGNOSIS REPORT FOR SLOVENIA

Project: Improving RD and business policy conditions for transnational cooperation in the manufacturing industry

Acronym: Smart Factory Hub

Work package	WP3: Benchmark and RIS3 based SFH model definition
Activity	A 3.2: Regional mapping and classification
Deliverable	D 3.2.2: Critical factor SME Diagnosis Report (SDR)
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RE	Restricted to a group specified by the consortium	
CO	Confidential, only for members of the consortium	

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TARGET GROUP ASSESSMENT

Has this deliverable addressed any of the target group indicated in the application form?

Yes / No

If yes, please describe the involvement of each individual target group in the table below.

Target group	Number reached by the deliverable	Description of target group involvement
SME	*25*	SMEs have provided their answers to the questionnaire
Regional public authority		
National public authority		
Higher education and research		
Business support organisation		

CONTENT

1 Introduction

Survey for Slovenia has been conducted from 16th of March until end of May 2017. Mainly we have been targeting smaller production oriented SME's from the eastern Slovenia. Close to 100 SME representatives entered the survey, while the success rate was close to 25%, which means that we finally managed to receive 25 completed questionnaires.

Response rate (?) Base: Entered intro

Status	Frequency	State
Entered intro	98	100%
Entered first page	42	43%
Started responding	31	32%
Partially completed	31	32%
Completed	25	26%
Unit usability (50%/80%)		
Usable units	25	100%
Partially usable units		0%
Unusable units		0%
Breakoffs		
Introductory breakoffs	67	68%
Questionnaire breakoffs	6	6% (neto 19%)
Total breakoffs	73	74%

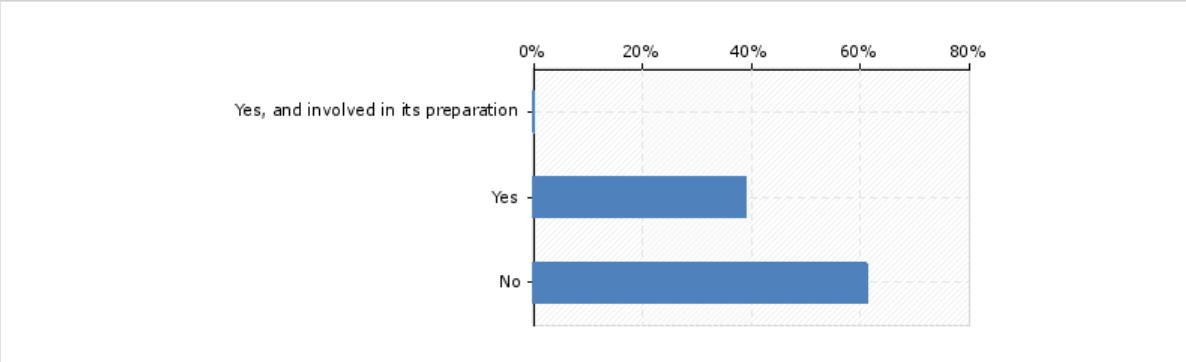
Below we are providing the analysis of the results based on the key questions set out in the questionnaire development.

2 Survey results for Slovenia

2.1 KEY QUESTION 1: How well are SMEs familiar with the Smart Specialization strategy or related policy and what was their involvement in creating it?

With this measure, the share of SMEs, who are familiar with the Smart Specialization strategy is provided, alongside with the share of SMEs involved in preparing it. Moreover, by summarizing the answers, we are able to determine the share of SMEs involved in preparation of Smart Specialization strategy.

Q3 - Are you familiar with the national Smart Specialization strategy* or related policy initiative defining Smart Manufacturing? *Also known as Smart manufacturing policy, RIS3 strategy, Industry 4.0 policy, Regional Innovation Strategy for Intelligent specialization, Smart Factory.



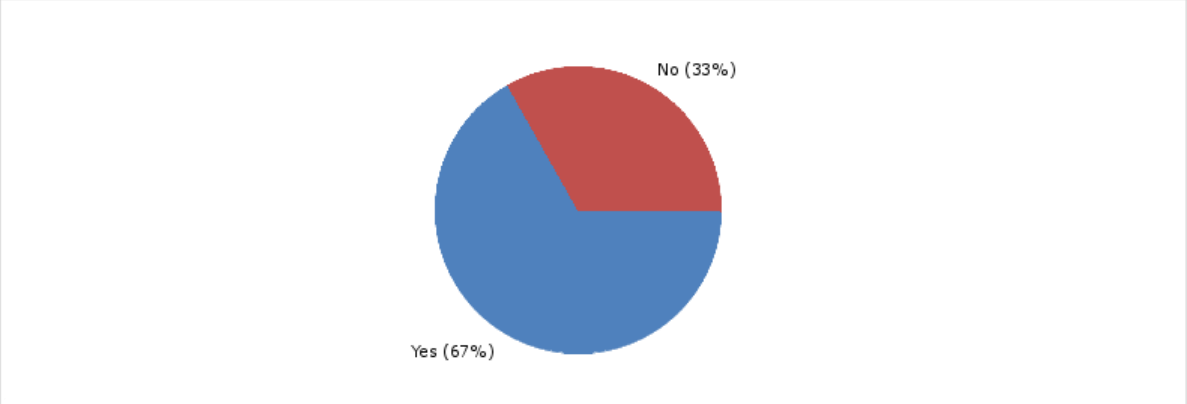
Based on answers to the first question we are able to conclude that 60% of companies are not familiar with the Smart Specialization strategy. On other hand, 40% of companies are familiar with the strategy, but it is interesting to know that none of them was involved in its preparation.

KEY MESSAGE:
SMEs have mainly not been involved in development of the Smart Specialization strategy, while also the Strategy is not well recognised by the SMEs.

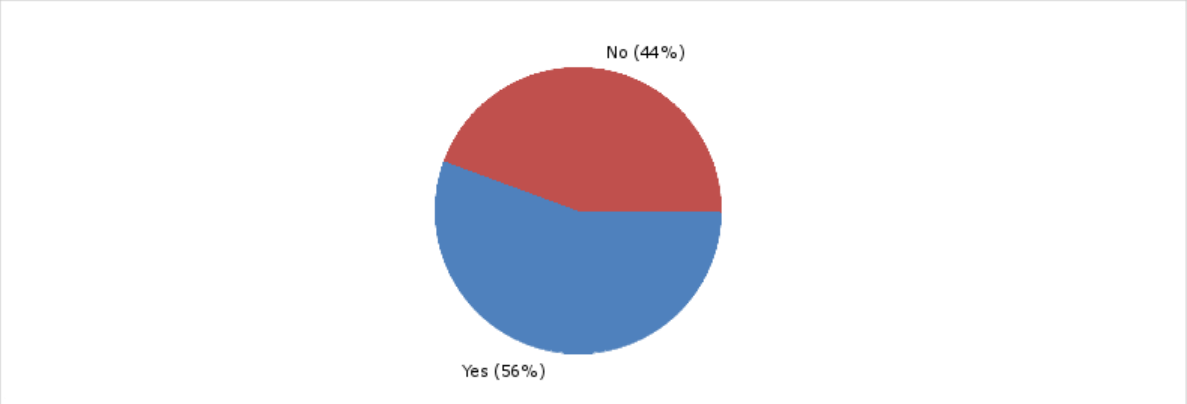
2.2 KEY QUESTION 2: How well is Smart Manufacturing perceived at strategic and spread at operational level (maturity of Smart Manufacturing in the SMEs)?

This measure will give us the answer to the question about how well is Smart Manufacturing understood at strategic level, by giving us the share of SMEs that understand the impact of Smart Manufacturing for their organisation. The second measure is used for determining how well the Smart Manufacturing is implemented in targeted region, by giving us the share of SMEs that currently use Smart Manufacturing systems/solutions in their organisations.

Q4 - Do you understand what are benefits/impacts of ''Smart manufacturing'' for your organization?



Q6 - Do you currently use Smart Manufacturing systems/solutions in your organisation?



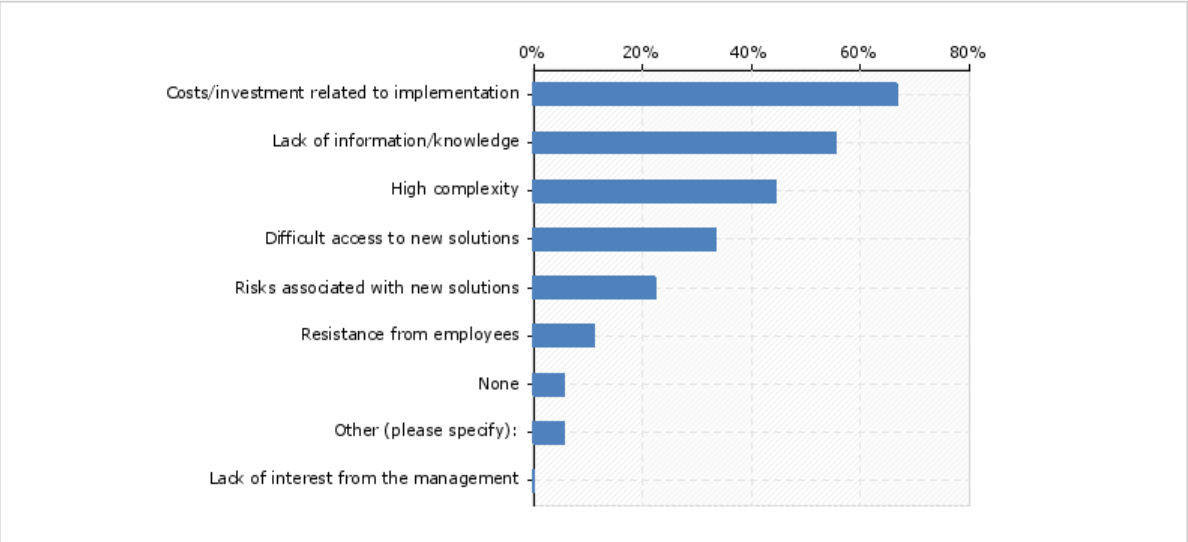
Based on answers to the question 4 we are able to conclude that 67% of companies understand the benefits of Smart manufacturing for their organization, while 33% have difficulties understanding the benefits brought by the Smart manufacturing systems/solutions. On the other hand, 56% of SMEs currently use the Smart manufacturing systems/solutions in their organization.

KEY MESSAGE:
From the technical view (systems and solutions) the Smart manufacturing is well perceived among Slovenian SMEs, with more than 50% of them using Smart manufacturing systems/solutions at the operational level.

2.3 KEY QUESTION 3: What kind of challenges are SMEs facing in implementing Smart Manufacturing technologies and solutions?

This measure is one of the most important ones and will provide information on different challenges and obstacles SMEs are facing in implementing Smart Manufacturing technologies and solutions.

Q7 - What challenges are you facing in implementing Smart Manufacturing technologies?



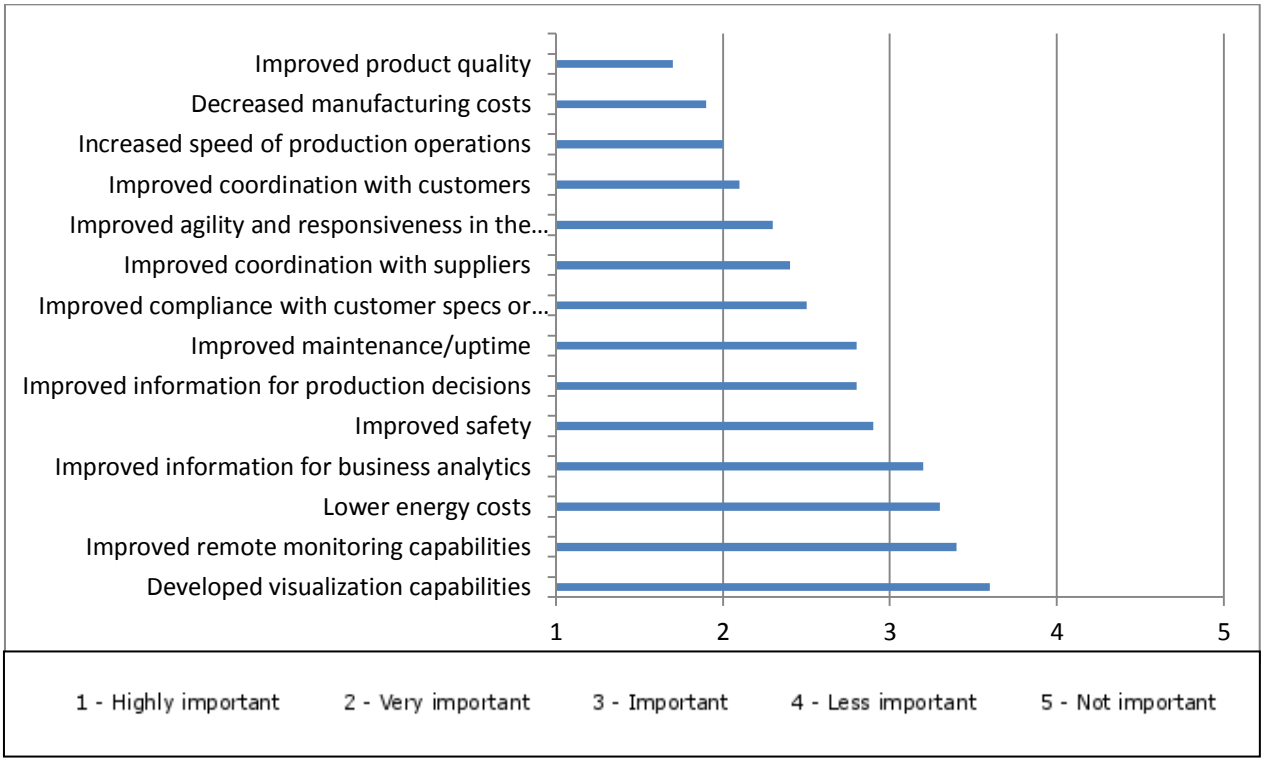
The most organizations (65%) believe that the biggest challenge for implementing Smart manufacturing technologies and solutions is in the Costs/investments related to implementation, which is followed by the lack of information/knowledge (55%) and high complexity linked to Smart manufacturing (45%). SMEs is some occasions also believe that it is difficult to access new solutions (35%), while risks associated with new solutions (25%) are rather low. It is interesting to see that there is absolutely no lack of interest at the management level.

KEY MESSAGE:
SMEs are facing variety of challenges when it comes to the implementation of Smart manufacturing technologies, but the most important two are related to investments and lack of information/knowledge.

2.4 KEY QUESTION 4: Which areas influenced by the Smart Manufacturing are most important for increasing the competitiveness of SMEs.

This measure is providing the overview of areas, influenced by the Smart Manufacturing, for which SMEs believe, will be essential for their competitiveness in the next three to five years.

Q8 - How much do you think the following areas of improvement will be essential for your company's competitiveness in the next three to five years?



From all the answers received, we are able outline that SMEs pointed out few areas which will be of a special importance to them in the years to come. The most important area will be the improved product quality and decreased manufacturing costs, which is followed by increased speed of production operations and improved coordination with customers. These results show that the most important focus for SME's competitiveness will be: product quality, production costs and speed, customers, while areas like suppliers, maintenance, safety, energy, and business analytics are of less importance. Areas like monitoring and visualization are least important.

KEY MESSAGE:
The most influential areas for increasing SME's competitiveness in the future are (i) product quality, (ii) manufacturing costs, (iii) speed of production and (iv) coordination with customers.

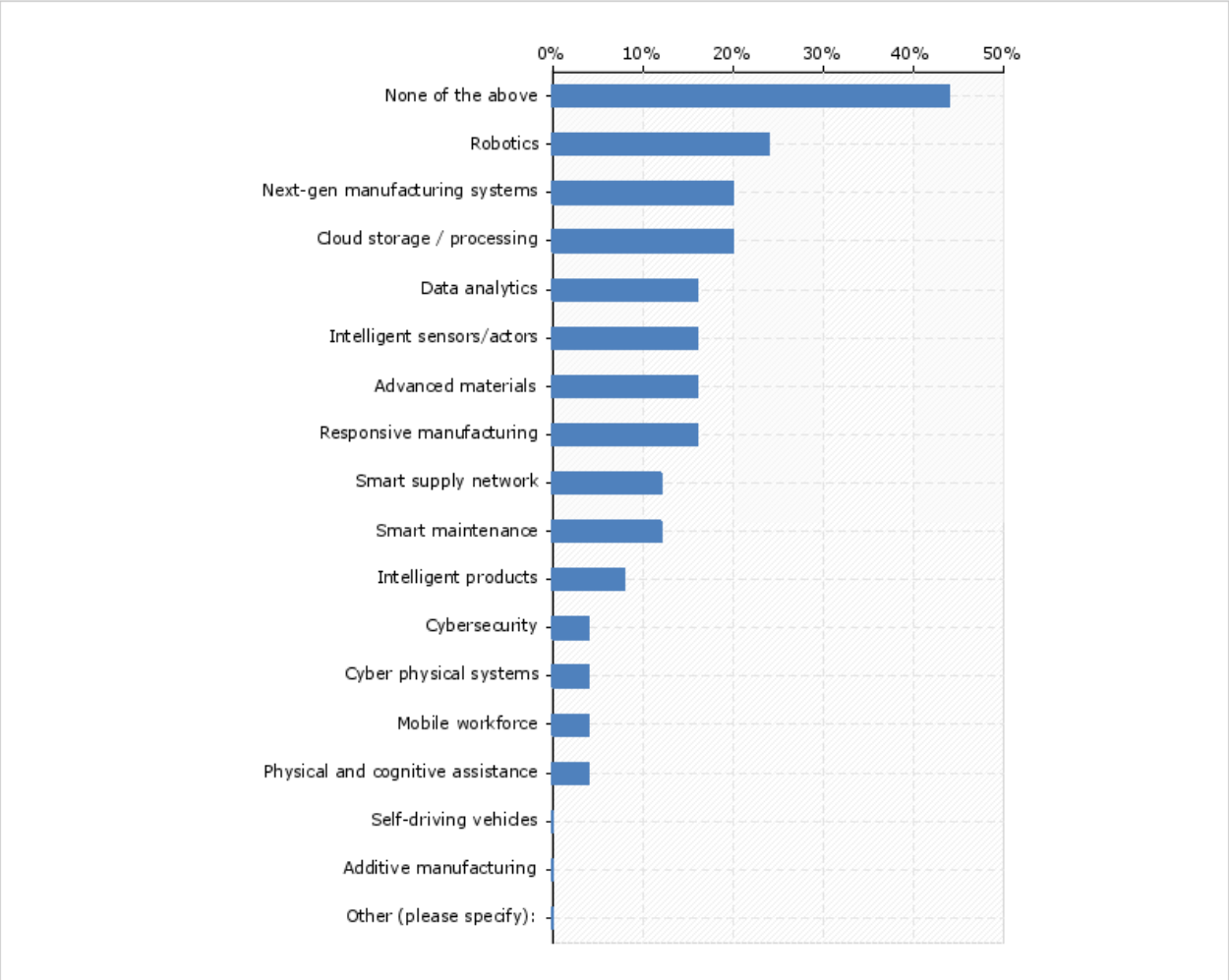
2.5 KEY QUESTION 5: What are the current state-of-art and future plans/strategic orientation for implementation of SMEs in relation to all three areas of intervention?

This measure gives in-depth overview of SMEs current state-of-art and future plans/strategic orientation for implementation in relation to:

- *Novel technologies*
- *Production processes*
- *Human resource management*

This will provide insight and mapping possibility between the existing technologies solutions and good practices and future areas of interest.

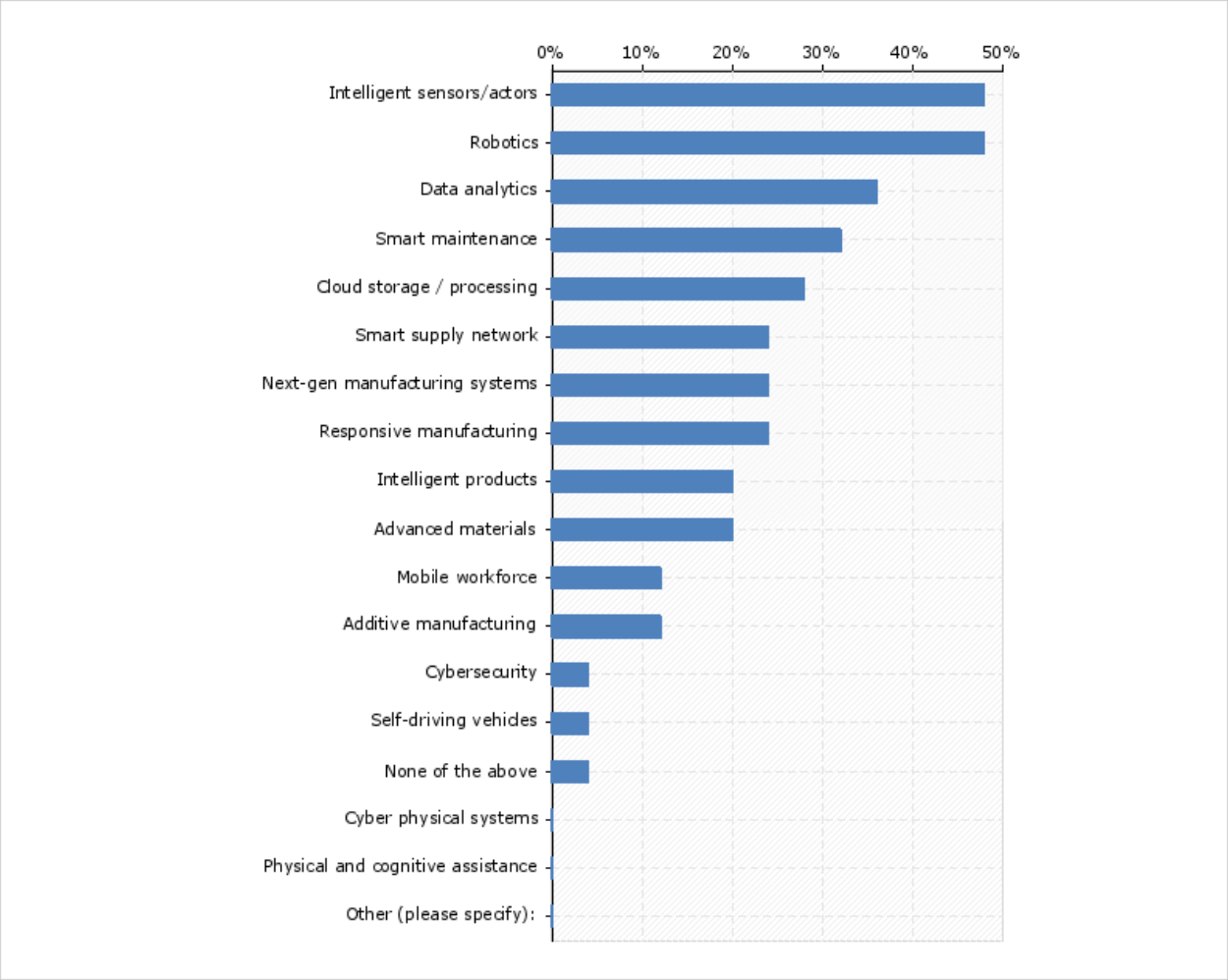
Q10 - What kinds of novel technologies are currently implemented in your company?



As seen above, 45% of SMEs are currently not using any smart manufacturing systems/solutions in their production, which shows that Slovenian SMEs are not very advanced in implementation of novel technologies. The ones, who do use smart manufacturing technologies, answered that they are using robotics, next-gen manufacturing systems, advanced materials and responsive

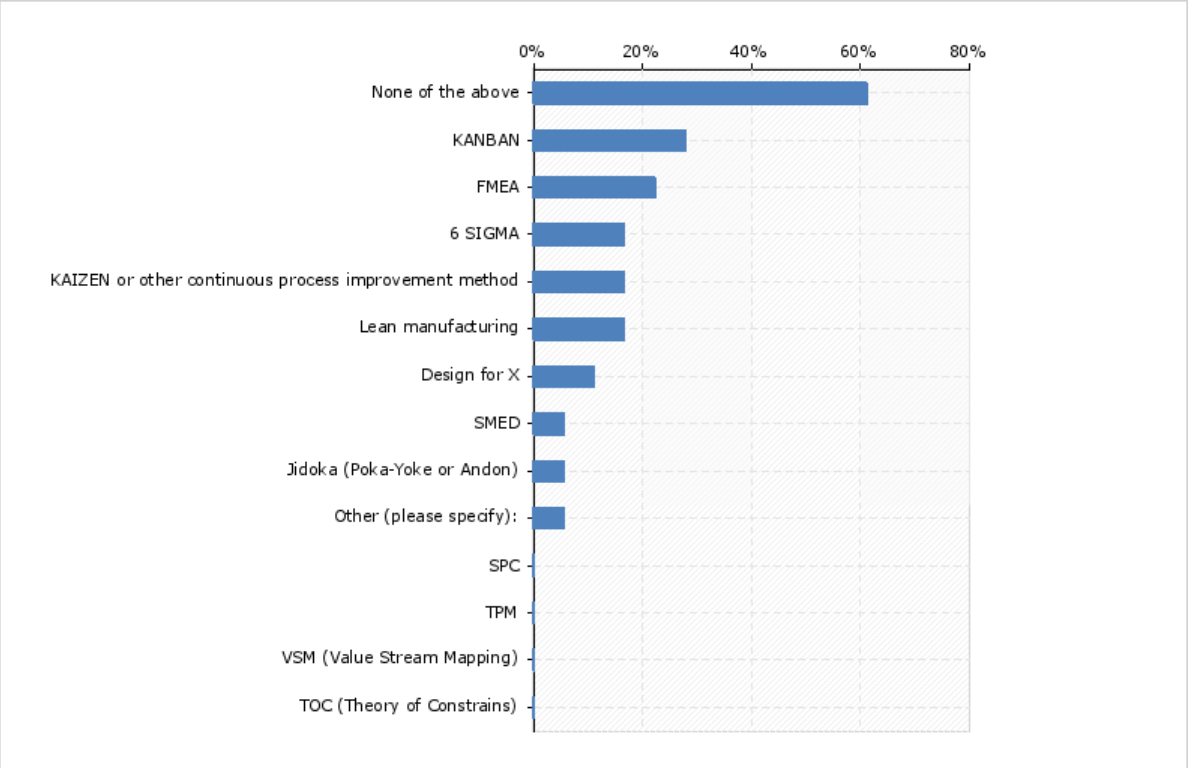
manufacturing. Those solutions are used by more than 20% of organizations while others are used less. It is interesting to see however that none of the SMEs replied with Additive manufacturing and Self driving vehicles.

Q11 - What kinds of novel technologies are relevant and/or planned to be implemented in the future?



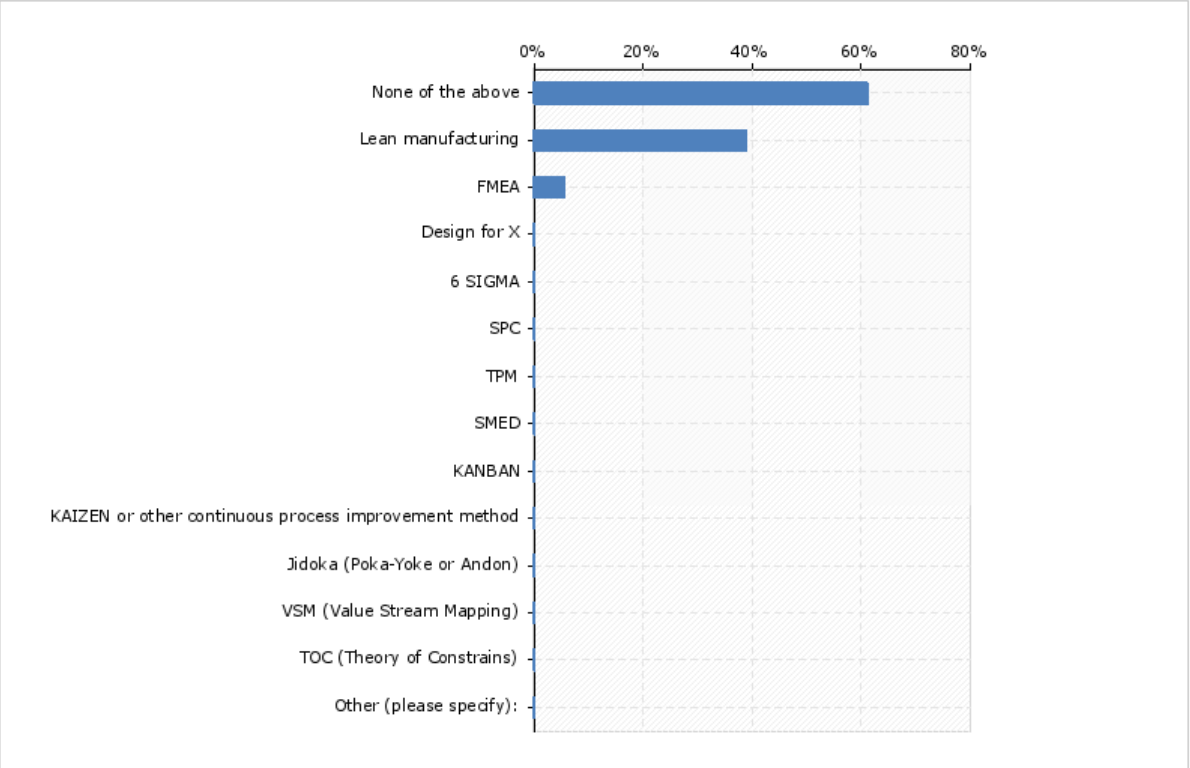
Almost all organizations answered that they are willing to implement at least some new technologies in the future. The most organizations (50%) are planning to implement technologies related to intelligent sensors, which is followed by the data analytics and robotics (40%). Those three areas are in the upfront of all the answers from the organizations and should be the main orientation for the mapping possibilities in the future.

Q13 - What kinds of solutions/methods related to production processes are currently implemented in your company?



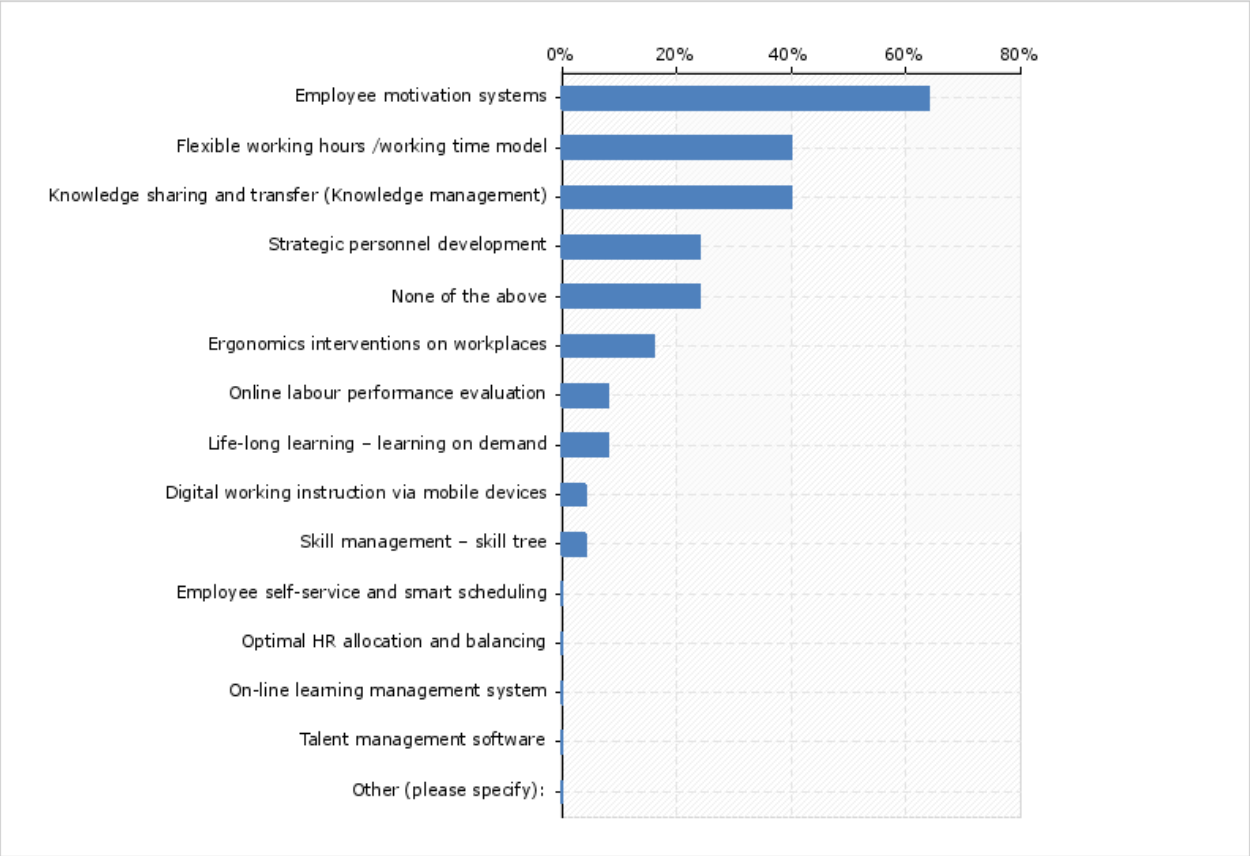
Same as technologies, also solutions/methods related to the production process are currently not implemented in around 60% of organizations. The ones who have implemented new methods choose the KANBAN method (30%), followed by the FMEA (25%). Less than 20% have implemented 6 SIGMA, KAIZEN and Lean manufacturing, while others were chosen by less than 10% of organizations.

Q14 - What kinds of solutions/methods related to production processes are planned to be implemented in the future?



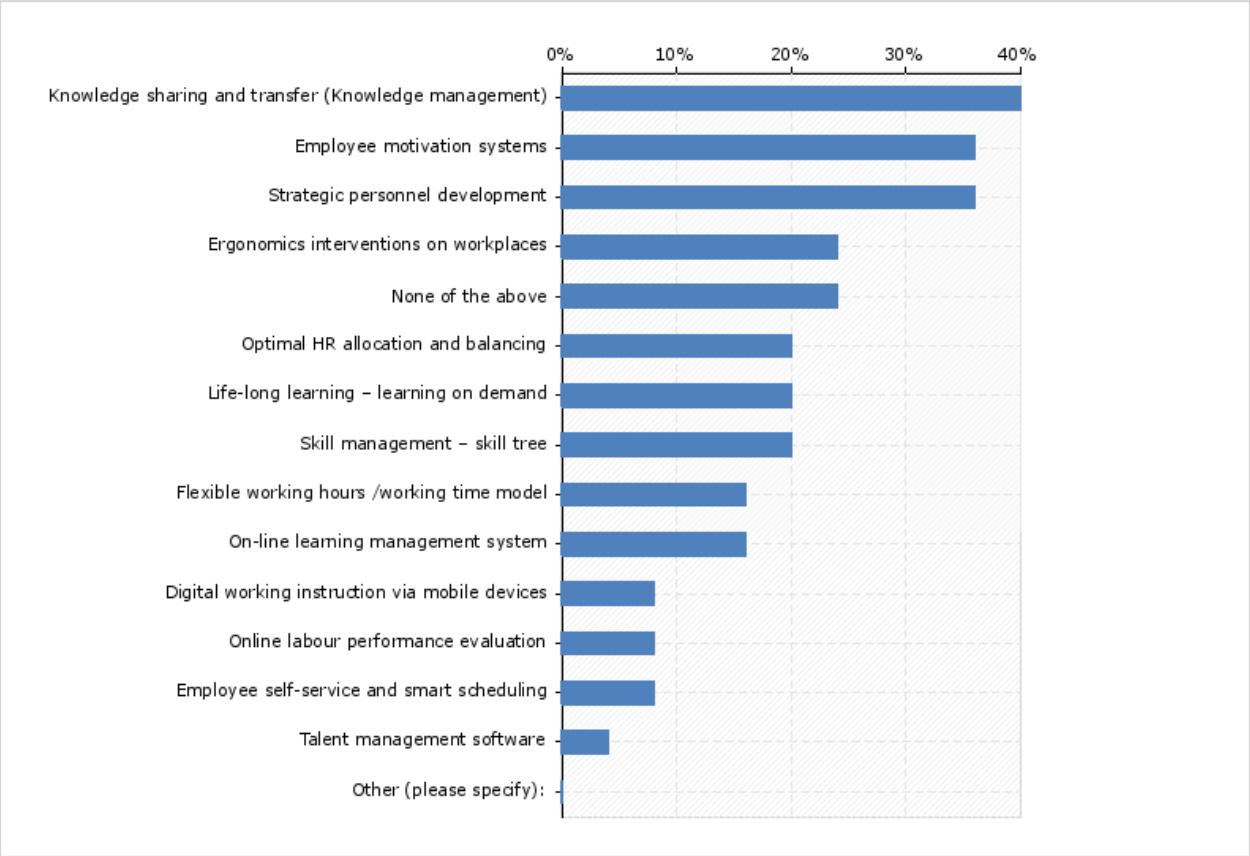
The future plans from organizations are very modest, as majority of them answered that they won't be implementing new solutions/methods for the production process (60%). The ones, who will implement new methods, have chosen the answer Lean manufacturing (38%) and FMEA (2%).

Q16 - What kinds of solutions/methods related to human resource management are currently implemented in your company?



Unlike technologies and production processes, human resource management is already implemented in many SMEs. The most used is employee motivation system (65%), followed by Knowledge sharing and transfer (40%) and flexible working hours (40%). There are still around 30% of SMEs who do not use any of the solutions/methods related to the human resource management.

Q17 - What kinds of solutions/methods related to human resource management are planned to be implemented in the future?



In the future, SMEs will be mostly looking to implement Knowledge sharing and transfer (40%), strategic personnel development (35%) and Employee motivation system (35%). Due to the fact that many organization already have implemented different solutions/methods for human resource management, the answer none of the above is selected by the 35% of organizations.

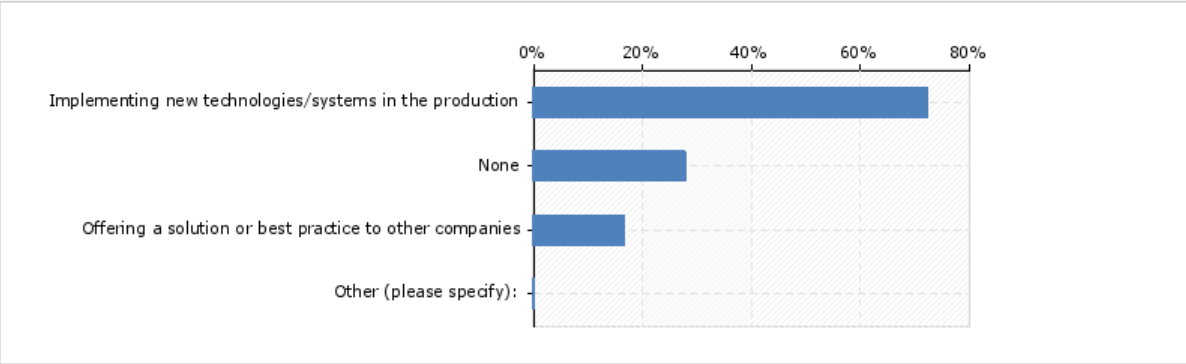
KEY MESSAGE:

Around 50% Slovenian SMEs are currently not implementing any smart manufacturing novel technologies or solutions/methods related to production processes or HR management. On the other hand, SMEs do have plans to become more active in the future, with Data analytics, Intelligent sensors and Robotics being the top three areas of interest. Lean manufacturing is considered the most favourite production process optimisation systems, while Employee motivation system is the most selected HR management system to be implemented in the future.

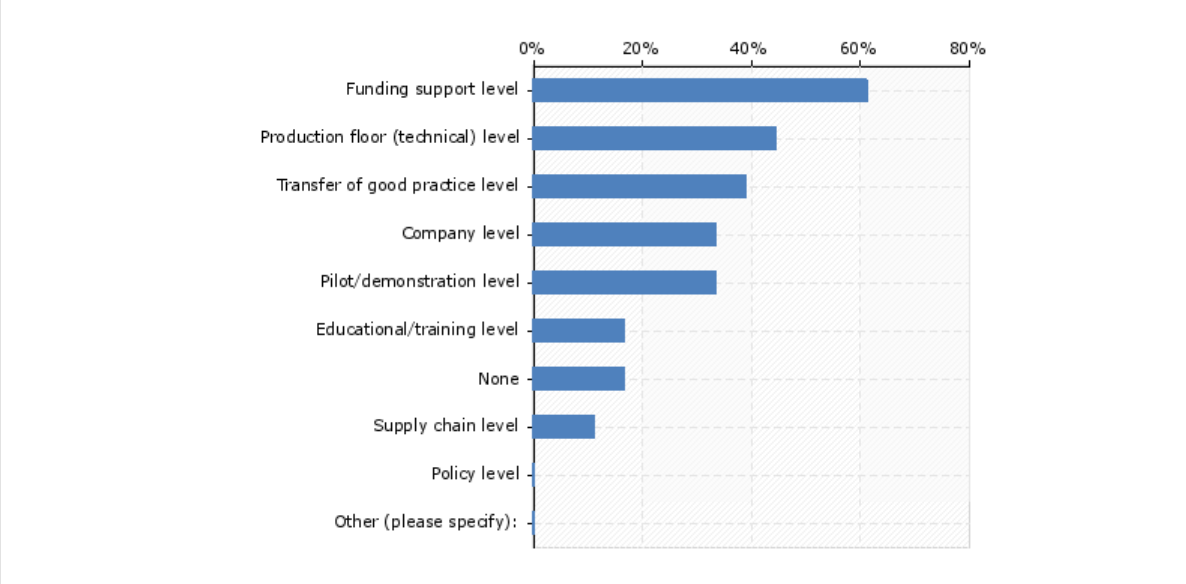
2.6 KEY QUESTION 6: Would SMEs be willing to cooperate, in which areas and at what levels?

This measure will give a share of SMEs that would be willing to cooperate in implementation of Smart Manufacturing technologies and solutions. Moreover, the measure will provide in-depth view on which are the most favourable areas and levels of cooperation.

Q19 - In which cooperation area would you be interested?



Q20 - At what level would you be interested in cooperation?



It is interesting to see that most of the organizations are production oriented companies who are willing to implement new technologies/systems in the production (70%), while close to 30% answered that they are not interested in such cooperation. Less than 20% answered that they would like to become the solution provider or best practice showcase to other companies.

The other possible level of cooperation was proposed to SMEs, who responded more positively, with less than 20% answering negatively. It is very evident that majority of SMEs would appreciate cooperation on funding support level (around 60%), which shows clear need for

additional funding when it comes to smart manufacturing. In addition, Production floor (technical level), transfer of good practices are also preferred ways of cooperation.

KEY MESSAGE:
More than 70% of Slovenian SMEs are willing to cooperate in the future, predominantly acting as ''receivers'' of new technologies and systems. They are mostly interested in the funding support or concrete technical cooperation at the production floor.

3 Conclusion

SMEs in Slovenia were mostly not involved in preparation of the Smart specialization strategy, however around 40% of them are aware of the existence of such strategy at the policy level. They find Smart manufacturing (in general) beneficial for their company and what matters even more, they are familiar with new trends in the industry and are starting to use the smart manufacturing solutions, technologies and methods. Close to 70% already understand the benefits of this, while around 50% of SMEs are already implementing technologies, solutions or methods related to smart manufacturing.

There are still difficulties related to the implementation, since many consider costs related to implementation challenging, while others have troubles with lack of information and high complexity of novel technologies and solutions. On the other hand, Slovenian SMEs are still very interested in introduction of new technologies and think that the most important fields for their competitiveness are improved product quality, decreased manufacturing costs and increased speed of production, therefore it is important to focus on relevant technologies and solutions.

Current state-of-art shows that around 50% of SMEs are still not implementing novel technologies related to smart manufacturing, while there is somehow better trend when it comes to the human resource management, where only 25% is not implementing any of the modern trends. On other hand we are very glad to see that almost all the respondents are willing to implement different technologies, solutions or methods in the future.

All this shows that Slovenia has a very solid ground when it comes to current or future implementation of smart manufacturing technologies or solutions. More than 70% of respondents are willing to cooperate in the future either through implementation of new technologies/systems in the production or by offering solutions or best practice to other companies. The most respondents are interested in getting additional financial resources for the implementation, which is why it was expected that most of them are willing to cooperate on the funding support level. On the other hand, respondent are also willing to cooperate on the production floor level or transfer of good practice to their companies, which shows their desire to be very concrete when it comes to following new trends in production and raise of their competitiveness.