

DOCUMENT TITLE:

CRITICAL FACTOR SME DIAGNOSIS REPORT FOR AUSTRIA

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

Acronym: Smart Factory Hub

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PP	Restricted to other Programme participants	
RE	Restricted to a group specified by the consortium	
CO	Confidential, only for members of the consortium	

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	38	38 Institutes have provided their answers to the questionnaire
Regional public authority		
National public authority		
Higher education and research		
Business support organisation		

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1 Introduction

Survey for Austria has been conducted from 16th of March until mid of June 2017. Mainly we have been targeting smaller production oriented SME's from Upper Austria, Lower Austria and Styria. Close to 200 SME representatives entered the survey, while the success rate was close to 20%, which means that we finally managed to receive 38 completed questionnaires.

Response rate (?)		Base: Entered intro
Status	Frequency	State
Entered intro	193	100%
Entered first page	101	52%
Started responding	73	38%
Partially completed	73	38%
Completed	38	20%
Unit usability (50%/80%)		
Usable units	43	59%
Partially usable units	5	7%
Unusable units	25	34%
Breakoffs		
Introductory breakoffs	120	62%
Questionnaire breakoffs	35	18% (neto 48%)
Total breakoffs	155	80%

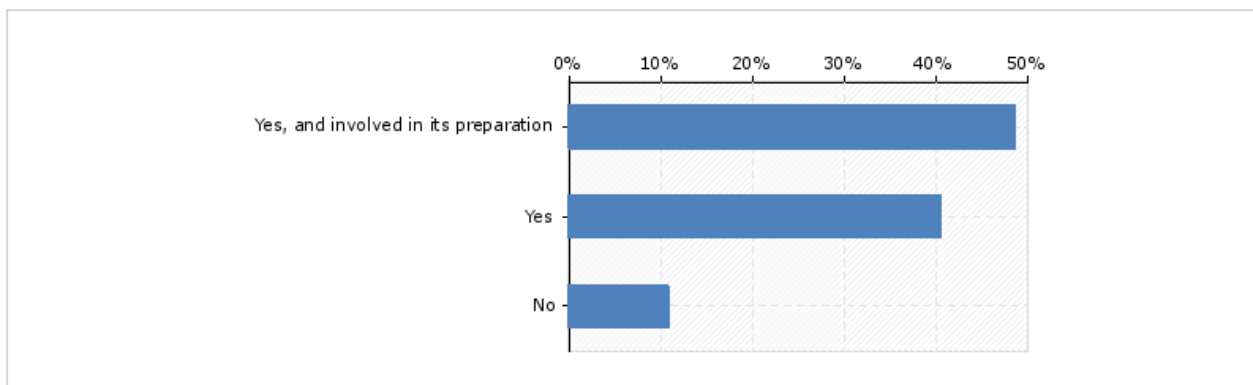
Below we are providing the analysis of the results based on the key questions set out in the questionnaire development.

2 Survey results for Austria

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 almost half of the companies were involved in the preparation of the national smart specialization strategy. And 40 % are informed about the national smart specialization strategy. These numbers show that the involvement worked well and that the strategy is wide spread. One important impact factory could be that companies invited have research activities in this field and work together with PROFACTOR.

Only 10 %of companies are not familiar with the Smart Specialization strategy.

The high number of Institutes which are involved in the preparation or which are knowing the strategy is a good attest for a strong connection between companies, policies and research. One fact may also be that PROFACTOR is in close contact with companies and acts as a transfer institute for the strategy.

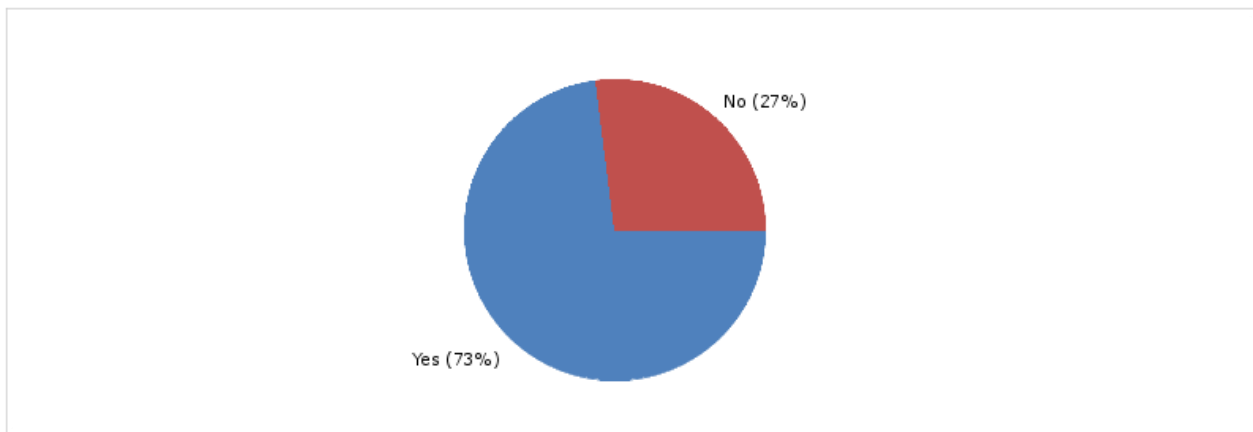
KEY MESSAGE:

SMEs have manly been involved in development of the Smart Specialization strategy, while also the Strategy is well recognised by the SMEs

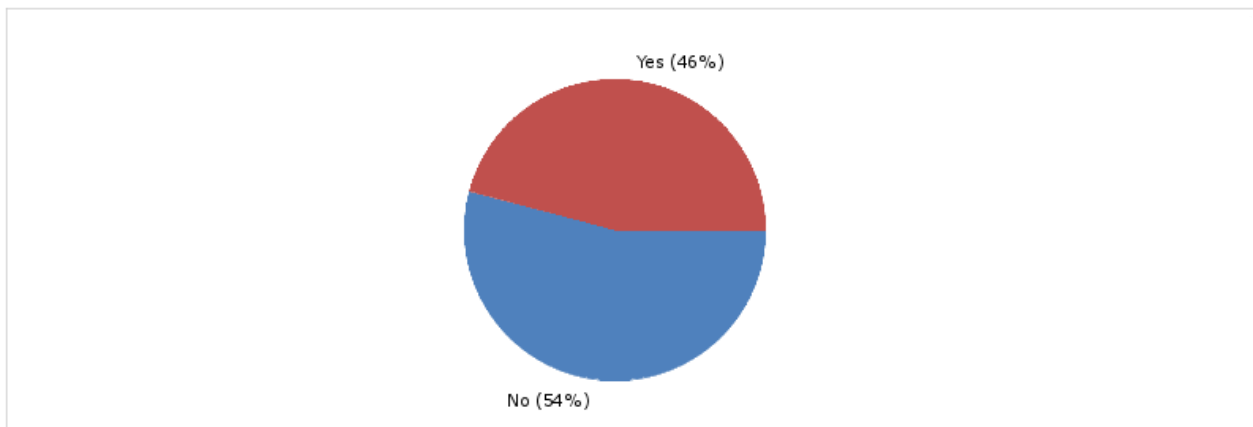
2.2 KEY QUESTION 2: How well is Smart Manufacturing perceived at strategic and spread at operational level (maturity of Smart Manufacturing in the SMEs)?

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 73% of companies understand the benefits of Smart manufacturing for their organization, while 27% have difficulties understanding the benefits brought by the Smart manufacturing systems/solutions. On the other hand, 46% of SMEs currently use the Smart manufacturing systems/solutions in their organization.

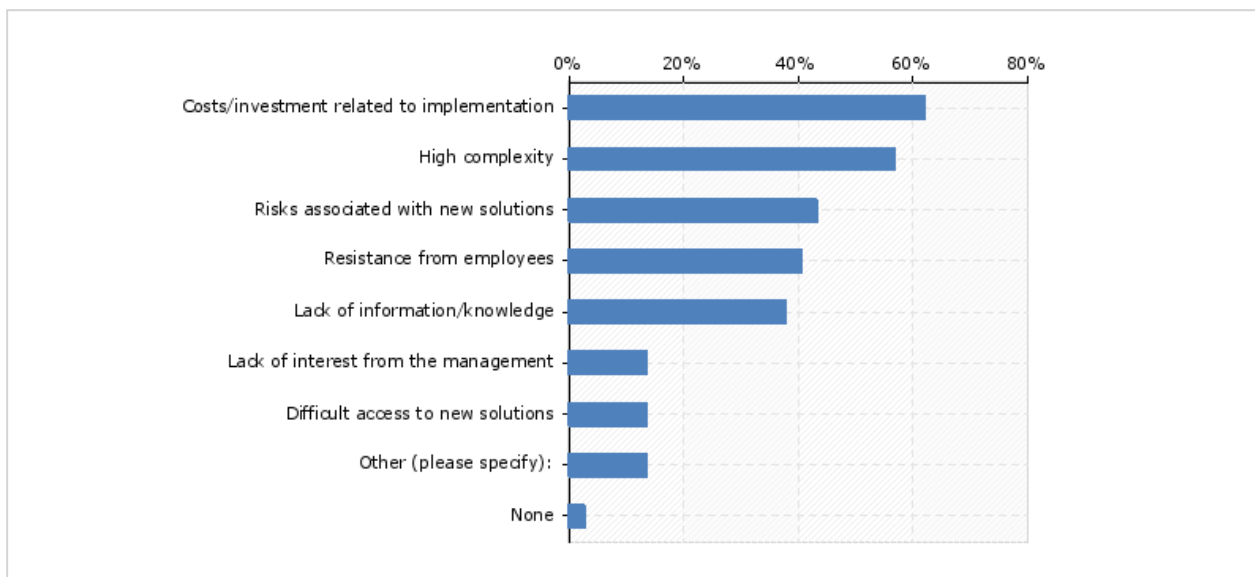
KEY MESSAGE:

From the technical view (systems and solutions) the Smart manufacturing is well perceived among Austrian SMEs, with 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 (62%) 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 high complexity linked to Smart manufacturing (55%) and risks associated with new solutions (45%). SMEs is some occasions also believe that the resistance from employees (40 %) and lack of information/knowledge (38%) are a challenge, while the lack of interest at the management level and difficult access to new solutions are rather low.

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 high complexity.

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 agility and responsiveness in the production process and coordination with customers, which is followed by improved product quality and increased speed of production operations. These results show that the most important focus for SME's competitiveness will be: agility, 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) agility and responsiveness in the production process, (ii) coordination with customers (iii) product quality and (iv) speed of production.

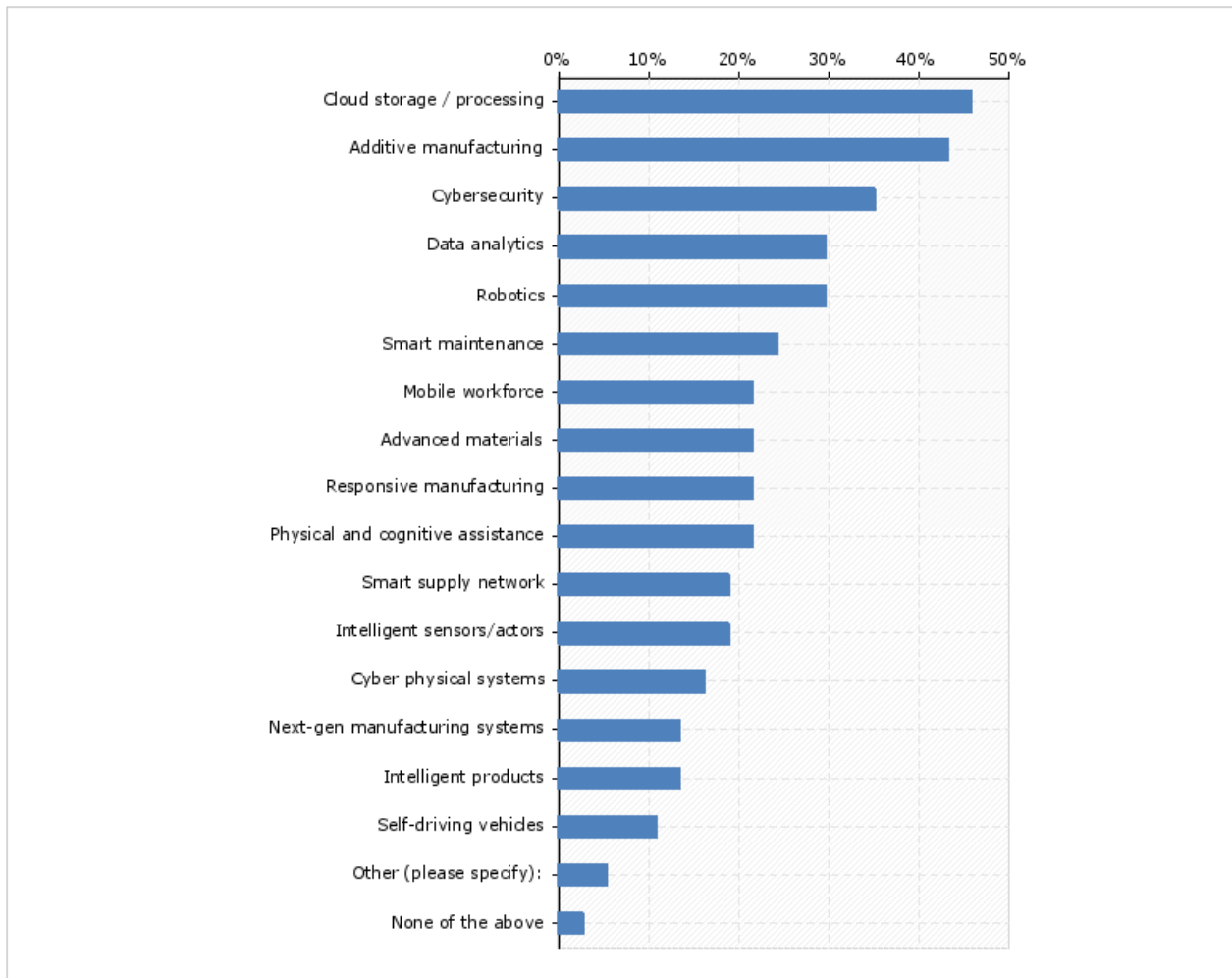
2.5 KEY QUESTION 5: What are the current state-of-art and future plans/strategic orientation for implementation of SMEs in relation to all three areas of intervention?

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?

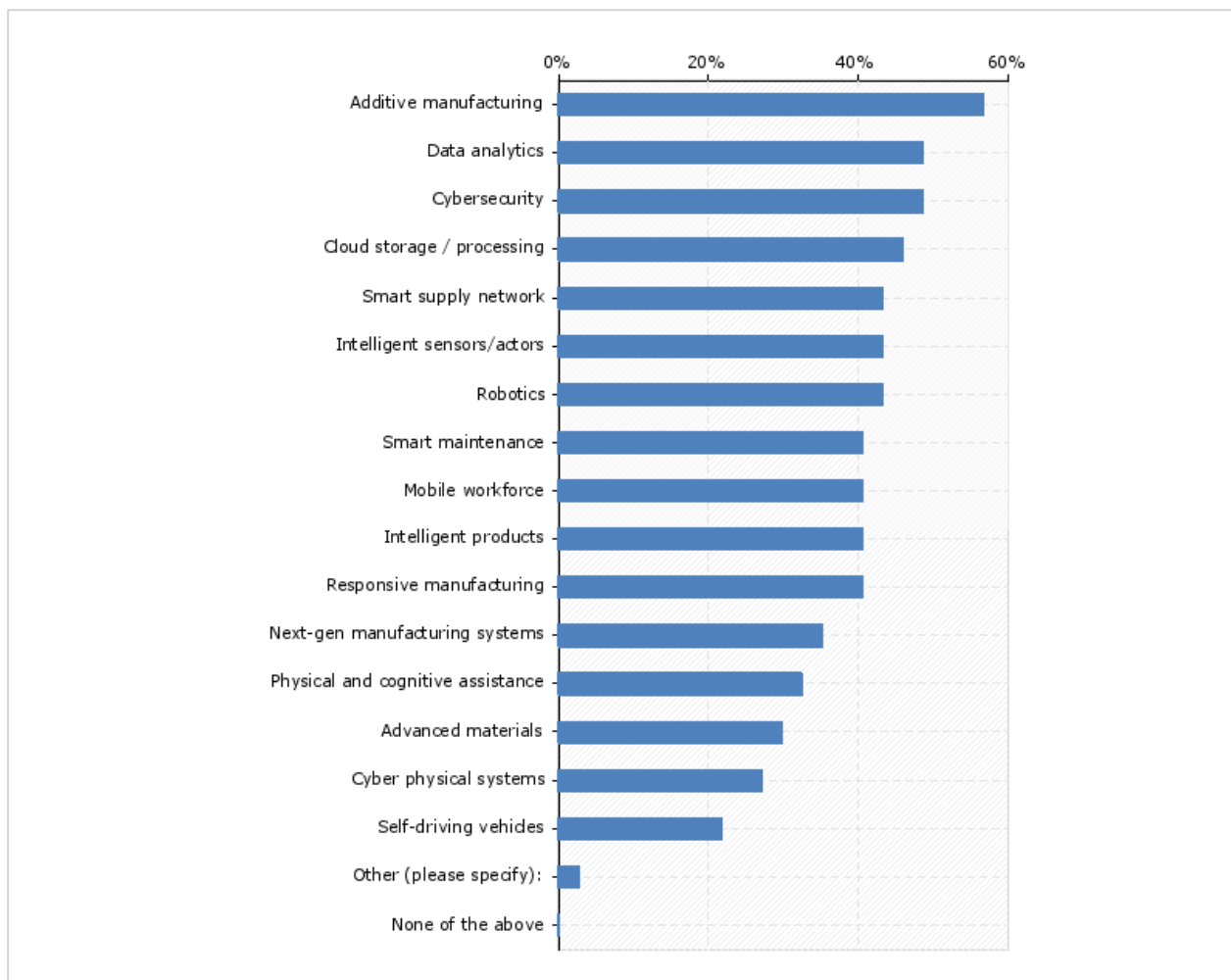


As seen above, more than 40% of SMEs are currently using cloud storage / Processing and additive manufacturing. Additionally they implemented cybersecurity (35 %), data analytics (30 %) and robotics (30 %), which shows that Austrian SMEs are advanced in implementation of novel

technologies. Solutions such as Smart Maintenance, mobile workforce, advanced materials, responsive manufacturing and physical and cognitive assistance are used by more than 20% of organizations while others are used less.

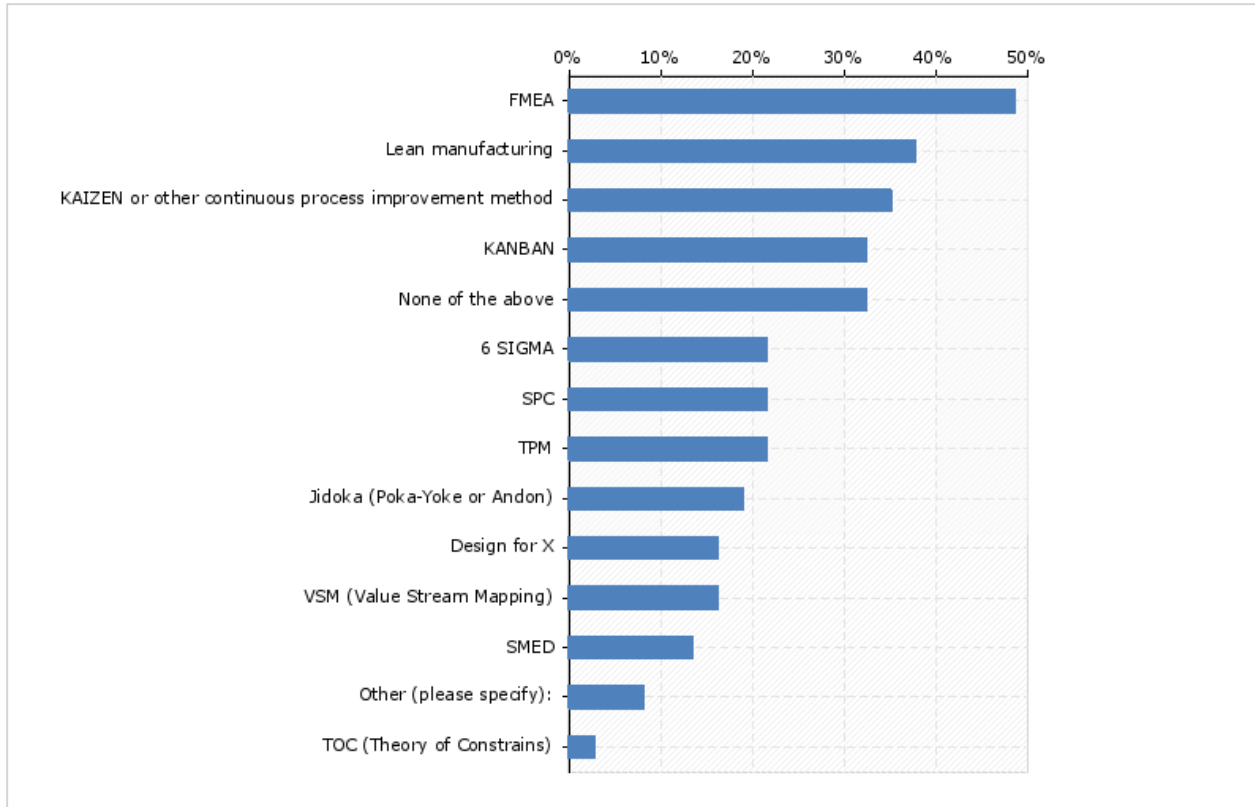
It is interesting to see however that less than 5 % are currently not using any of any smart manufacturing systems/solutions in their production

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



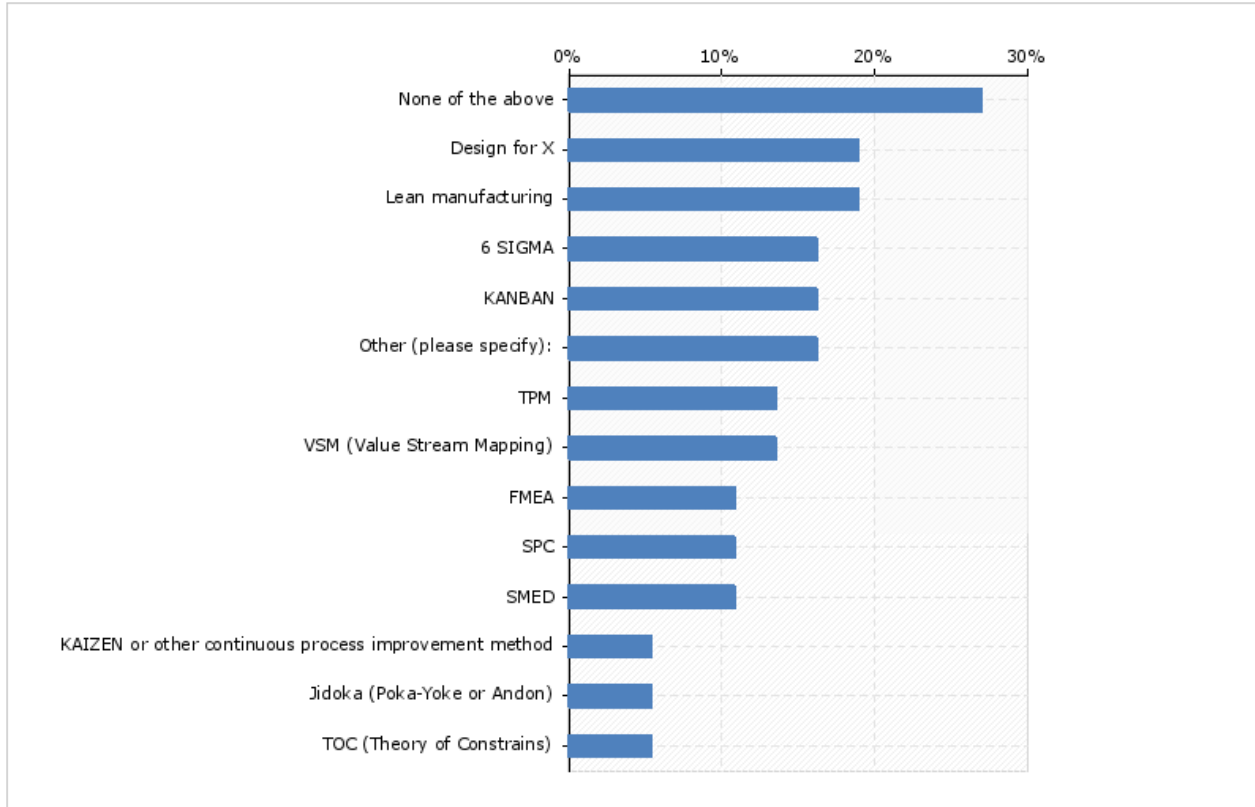
Almost all organizations answered that they are willing to implement at least some new technologies in the future. The most organizations (58%) are planning to implement technologies related to additive manufacturing, which is followed by the data analytics and cybersecurity (50%). Those three areas 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?



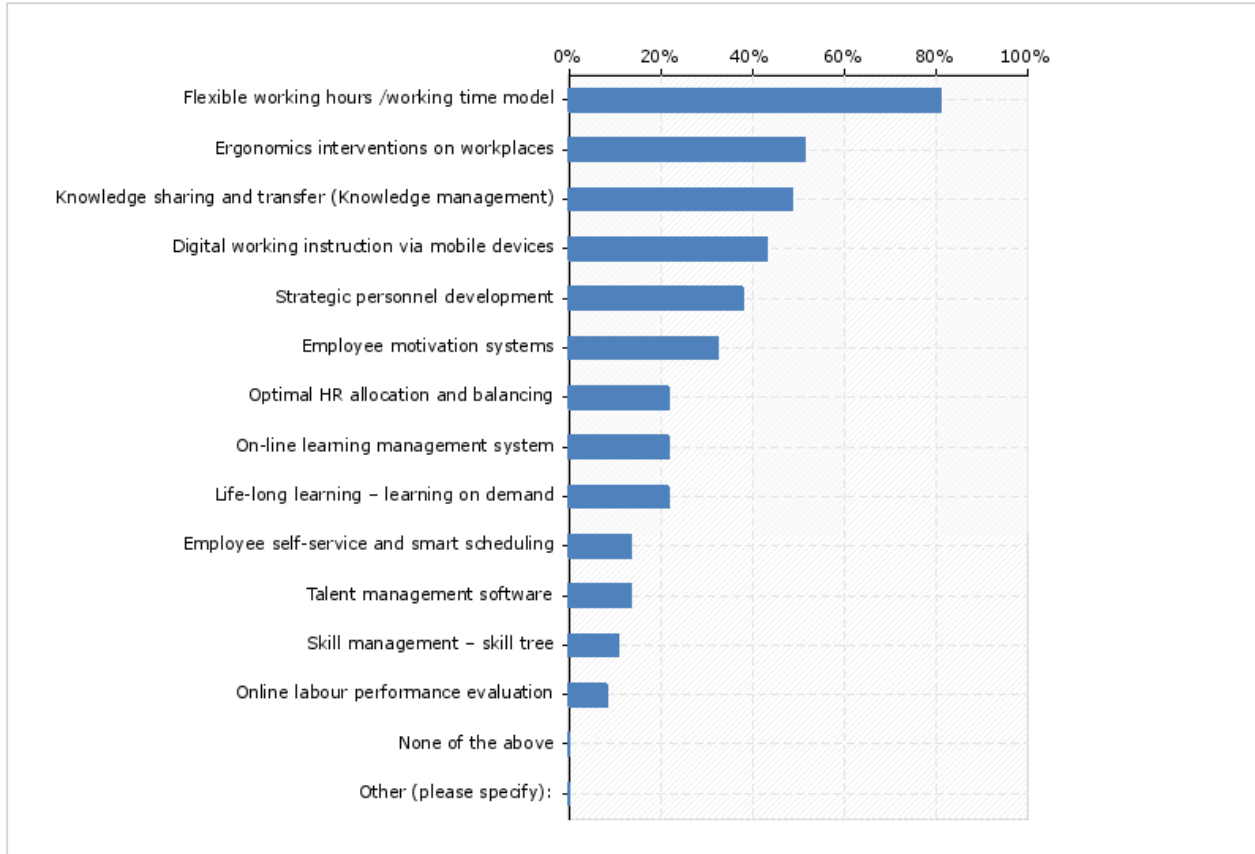
50 % of organization already implement FMAE. Other implemented solutions/methods related to the production process are lean manufacturing (38%), Kaizen (35 %), KANBAN (33 %). However, solutions/methods related to the production process are currently not implemented in around 33% of organizations. Around 20% have implemented 6 SIGMA, SPC and TPM and Jidoka, while others were chosen by less than 15% of organizations.

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



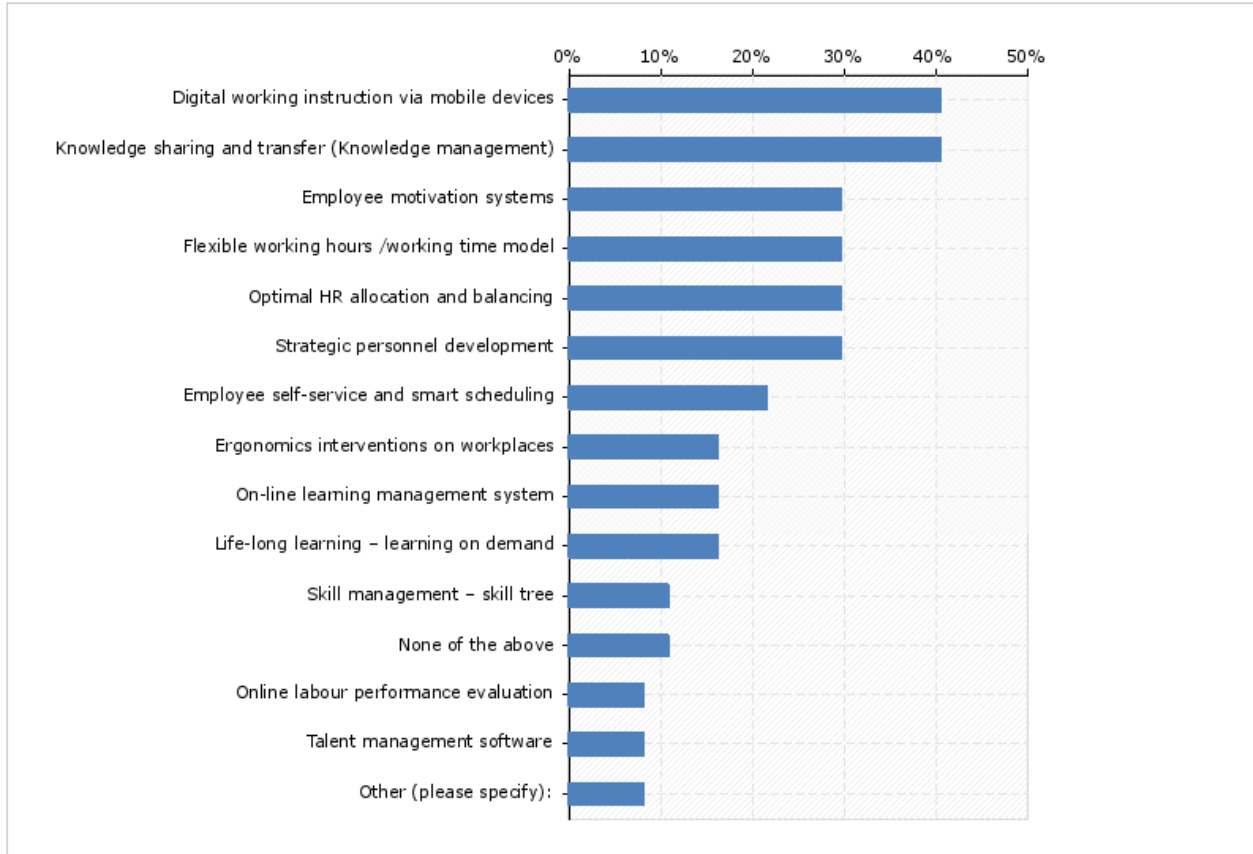
The future plans from organizations are very modest, as one third of them answered that they won't be implementing new solutions/methods for the production process (28%). The ones, who will implement new methods, have chosen the answer Design for X (20 %), Lean manufacturing (20%) and 6 Sigma and KANBAN (15%).

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



Additional to technologies and production processes, human resource management is already implemented in many SMEs. The most used is flexible working hours (80%), ergonomic interventions (50%), knowledge sharing and transfer (45%), and digital working instruction (50%). There are no organization 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 Digital working instruction and Knowledge sharing and transfer (40%), Employee motivation system (30%) and flexible working hours (30%). 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 10% of organizations.

KEY MESSAGE:

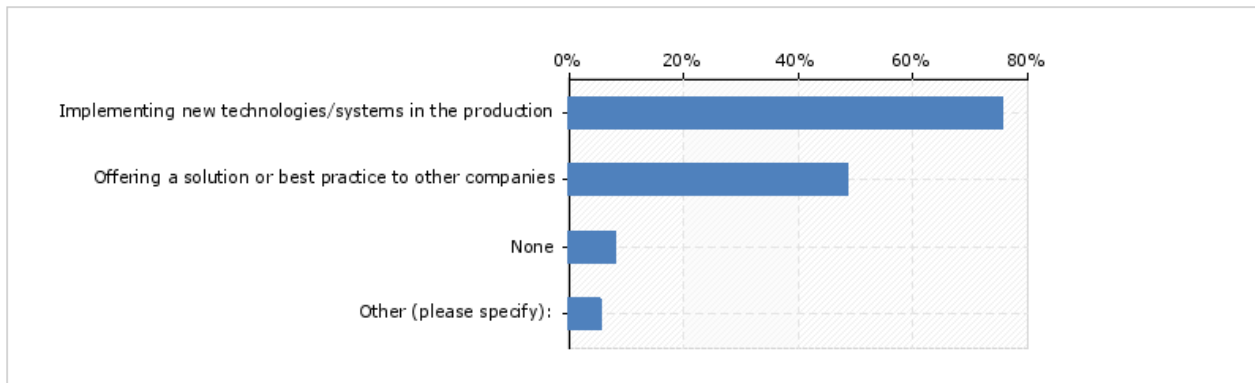
Austrian SMEs currently implemented smart manufacturing novel technologies or solutions/methods related to production processes or HR management. SMEs do have plans to become more active in the future, with additive manufacturing, data analytics and cybersecurity being the top three areas of interest.

Lean manufacturing and Design of X are considered the most favourite production process optimisation systems, while digital working instruction and knowledge sharing/transfer are the most selected HR management system to be implemented in the future.

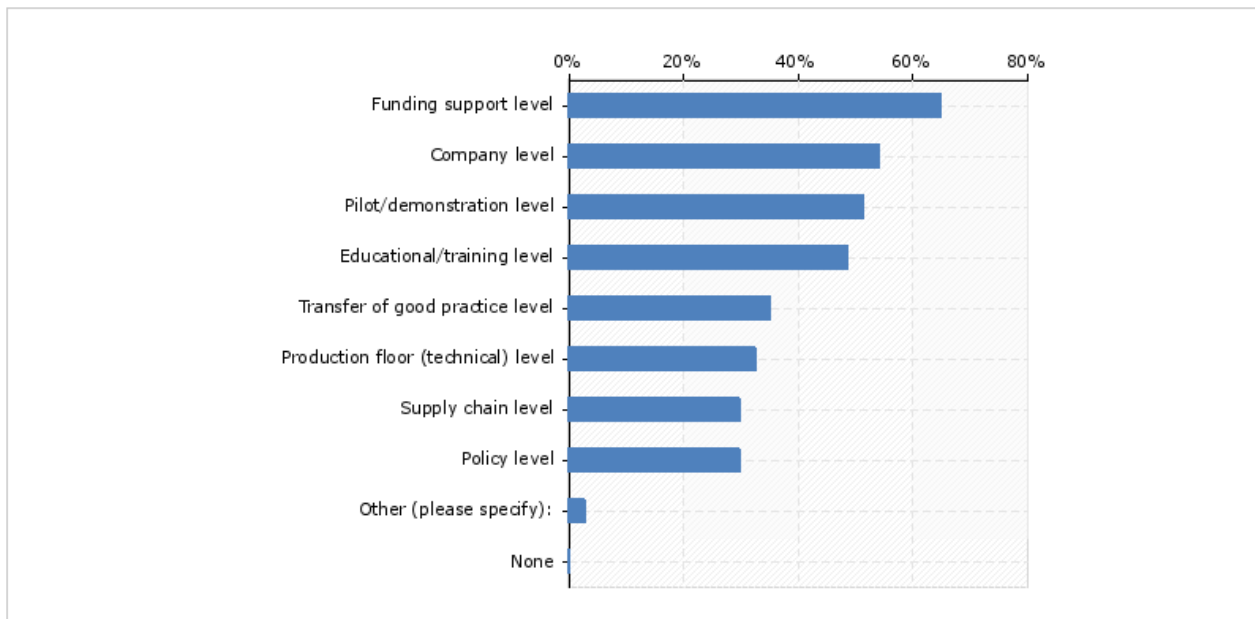
2.6 KEY QUESTION 6: Would SMEs be willing to cooperate, in which areas and at what levels?

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 (almost 80%), while only close to 10% answered that they are not interested in such cooperation. Almost half 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 very positively, with less than 1% 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, company level, pilot/demonstration level and educational/training level are also preferred ways of cooperation.

KEY MESSAGE:

Almost 80% of Austrian SMEs are willing to cooperate in the future, predominantly implementing new technologies and systems but also offering solutions. They are mostly interested in the funding support or company level, pilot and demonstration level.

3 Conclusion

SMEs in Austria were involved in the preparation of the national smart specialization strategy. And 40 % are aware of the national smart specialization strategy.

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 using 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 high complexity of novel technologies and solutions and the risk associated with them. On the other hand, Austrian SMEs are still very interested in introduction of new technologies and think that the most important fields for their competitiveness are improved agility and responsiveness in the production process, coordination with customers and improved product quality and increased speed of production, therefore it is important to focus on relevant technologies and solutions.

Current state-of-art shows that SMEs are implementing novel technologies related to smart manufacturing and are willing to implement new technologies. SMEs do have plans to become more active in the future, with additive manufacturing, data analytics and cybersecurity being the top three areas of interest. Lean manufacturing and Design of X are considered the most favourite production process optimisation systems, while digital working instruction and knowledge sharing/transfer are the most selected HR management system to be implemented in the future.

All this shows that Austria has an advanced 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 through implementation of new technologies/systems in the production and 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 company level or pilot/demonstration level

or educational/training level, which shows their desire to gain more knowledge when it comes to following new trends in production and raise of their competitiveness.