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Evaluation of the Online Survey

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Executive Summary

This report discusses the related survey on the current digitalisation processes of SMEs in the Alpine Space.

The first survey was hosted in April 2017 but only received little feedback. After a while, it was decided among partners, to shorten the Survey by 1/3 of the question to increase the participation of companies. Though, it still was quite hard to find motivated SME's due to several parallel initiatives going on, asking about the same content.

Information on the state of knowledge, the companies' expectations and requirements, their approach to Industry 4.0, future plans to invest and new business models is requested. Thereby required hard- and software for the digitalisation is addressed equally.

The essence of all collected answers is that the overall knowledge level is relatively high, but the digitalisation process is not realised as fast as could be expected because of various inhibitors and uncertainties.

The biggest inhibitors are a lack of clear digital vision/strategy, a lack of necessary skilled people and unclear economic benefits coming from digital investments.

Eventually required measures can be deduced from the results. To support the companies, trainings and coaching, various tests or help with investment strategies should be offered increasingly.

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1. Introduction

The superior aim is to improve the competitiveness of SMEs in the Alpine Space with the help of Smart Technologies.

Therefore, as one of the first activities both an analysis of SMEs' needs and awareness campaigns with regional events opened to all SMEs are developed. These increase the companies' knowledge on digital technology potentialities, the added value for their innovation processes and the entrepreneurial opportunities from their application. The online survey collects information on SMEs' needs, checks SMEs' attitude to smart technologies and the involvement within the project with a special focus on the selected industrial sectors.

(P8 coord; PPs inv.)

2. Objective of investigation/objective of the deliverable

As part of the activity on "Smart Technologies to improve AS SMEs competitiveness" (A.T1.2), the objective of this delivery is to collect input about the SMEs' needs, knowledge and attitude to use digital technologies. Further, the feedback shall be evaluated and summarized for future usage.

Thereby lack of knowledge, expectations, advance, different approaches and inhibitors will become apparent and reveal, where support or trainings are necessary.

3. Applied approach/methodology adopted

First, the responsible PP (PP8 – University of Applied Sciences Rosenheim) sent out instructions and the link to the online survey to all PPs. The PPs were invited to spread the survey amongst SMEs in their region.

For a better understanding the participants are able to choose between 5 languages (French, Italian, German, English and Slovenian).

In the beginning the companies should provide a variety of crucial information about themselves like their name, e-mail address, respective PP, number of employees, business sector and annual turnover for the statistical analysis afterwards.

In order to be able to provide standardized results suitable for a proper comparison, a variety of predefined responses was given to each question.

The covered topics are: the current approach, employee management, technology and hardware, technology and operations and products in Industry 4.0.

At the end of each topic there is a question asking if it is already implemented or how high the knowledge level is and whether there are any plans on investing in this field.

After their completion the results were evaluated by PP8. For a detailed consideration, they can be filtered and analysed e.g. by language, or business sector.

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4. Results

This evaluation of the survey should present the general and overall situation in the AS of all nations and business sectors.

Altogether and at the current status, 181 responses to the survey could be obtained.

The participants from France, Italy, Slovenia Austria and Germany were assigned to the respective PPs and can be identified in the following chart. Participants listed in "other" are participants who did not connect with one of the partners but can be identified by the area.

LP01	PP02	PP03	PP04	PP05	PP06	PP07	PP08	PP09	PP10	PP11	PP12	Other
23	10	7	32	2	1	20	19	14	24	6	2	24

The business sectors are represented in the following descending order: Metal Processing, Machine Engineering, Wood Processing & Furniture Manufacturing, Plastic Processing, Food and Beverage Processing, Textile manufacturing, Chemical Industry. Those, which could not be assigned to any of the given options, chose "other".

Another important and interesting aspect is the number of employees of the companies. One third stated a number of 10 or less and two thirds less than 50 employees with an annual turnover of mostly 10 Million Euros or less.

The summarized results of the different topics of the survey are presented in the following subchapters.

4.1 Current Approach

In the first specific part the state of knowledge, expectations of Industry 4.0 and the current approach were inquired.

It became apparent that the given typical technologies and innovations of Industry 4.0 are mostly well known with the companies. Connectivity, digital factory image, predictive analytics, cloud computing, autonomous systems, customer interaction and new business models were mostly known and also connected with I4.0.

According to the companies' expectation, I4.0 can support them in various upcoming challenges. These are, for example, globalisation and future markets, handling complexity due to increased individualisation, handling labour / material and energy costs, creating new business models, mass customization, the need to increase flexibility or the need to minimize defects in the supply chain.

However, many do not have a strategy towards I4.0 yet or are still working on it.

Reasons for this are inhibitors like the lack of a clear digital vision/strategy, the lack of necessary talent/skilled people or unclear economic benefits coming from digital investments.

To eliminate or at least to minimize the effect of these inhibitors, various forms of coachings, trainings or tests can be executed. Useful measures would be showing the advantages and economic benefits from digital investments, offers for online learning and employee trainings, giving roadmap examples of implementations or resolving questions regarding data security, privacy and ownership.

4.2 Employee Management

Another important factor in the digitalisation process is the employee management. To support and encourage the staff and to be able to offer suited trainings, it is inevitable to know their level of knowledge.

The survey showed, that the level of knowledge of the companies' employees in the key fields is ordinary. Mainly, there already is a certain level of knowledge, the aim should be, though, to improve this and raise it as high as possible.

The requested knowledge fields were:

- IT-infrastructure,
- data analysis,
- data and IT safety,
- automation and robotics,
- using assistance systems (handhelds / smart glasses),
- additive manufacturing,
- advanced digital technologies (cloud, Big Data) and
- possibilities in simulation.

Except for (the relatively old topic) IT-Infrastructure, very few would describe their employees' knowledge level as high.

However, most of the businesses are ambitious to improve their employees' knowledge and skills. That is why they support workers to participate in training courses or give them access to electronic learning platforms. Some even implemented Virtual Reality systems, which can be adjusted to the skill level on the shopfloor.

Nevertheless, it should be considered a basic objective to boost the staff as it is one of the most important factors of a company. Offering different trainings and coachings for all the employees on the required topics or doing tests on and implementing new technologies together with the concerned members of staff are ways to encourage the understanding of I4.0.

4.3 Technology and Hardware

Collecting machine and process data is a initial step towards a connected production.

Therefore it is severe that $\frac{1}{3}$ of the companies does not collect any machine and process data at all. And over 40% said, they do collect data, but no specific information. Only a small percentage purposefully collects specific information everywhere.

In line with this, over 50% of the businesses state the collected data is used, but not all of it. Often it is not used at all or they are unsure if and how to use it. Here also very few are using the machine and process data for a specific purpose.

Despite the fact that in most cases there could be a huge advance by implementing such a system, there are not that many investment plans both for collecting and using machine and process data. About $\frac{2}{3}$ say, they see the advantage, but do not plan to invest or do not know how or where. Only $\frac{1}{4}$ is already investing with a strategy.

IT systems as ERP, MES, MDL, CRM, CAD and CAM are rather scarce at present. Even if they are already in place, they are mostly not connected with the leading system. The most unfrequently used systems are MES, MDL or CAM, whereas ERP and CAD software is more common.

It can be seen as a positive trend that there is a wide willingness to introduce such IT systems or there already is an investment with a strategy.

Robotics and technologies for additive manufacturing, on the other hand, are hardly used, many do not see the advantage in investing and even those, who do see it, mainly have no investment plans.

4.4 Technology and Operations

Horizontal and vertical integration is another important indicator of the digitalization process of a company and its surroundings.

The discussed business areas of the survey are: research and development, production, purchasing, logistics, sales, finance, services, IT and human resource.

Most areas are integrated either vertically (hierarchical) or horizontally (up and down the supply chain), but in some companies even both ways.

However, the percentage with no integration of each area is considerably and should be reduced to promote the digitalization process. Additionally, there are few companies, which are investing, many have no plans or do not know how to start.

Connectivity systems and cloud services are very helpful to process big data. These are not used as frequently as could be expected. Many are aware of software services, calculating capacities, storage space and data safety but do not use them. The offered services are respectively used by 40-50% of the surveyed companies.

Using the collected and analysed data, more and more predictive operations become possible. Predictive statements about maintenance, quality, analysis, automated warehousing and logistics, utility and energy management and decision making are available much easier. According to the businesses, they most commonly are aware of these operations and possibilities but do not use them. For decision making and performance analysis they are more often (partially) in use, though.

Nevertheless, fewer have current investment plans or are open to the idea than those who do not have any plans in this field or do not even see the advantages.

4.5 Products in Industry 4.0

The different methods for object identification are relatively wide-spread by now. However, over $\frac{1}{3}$ of the companies still do not use any of the given options like 1D/2D Barcodes, RFID or Photo ID. The most frequently used identification method is the traditional 1D Barcode, which is applied in about $\frac{1}{3}$ of the businesses.

Mostly there are no investment plans currently or the advantages of an investment are not obvious.

A great chance for companies are new business models and opportunities for customized products. Despite that, almost half of the surveyed use neither individual configurators or modular design principles nor cooperated design with customer interaction. The latter is (with $\frac{1}{3}$) the most popular service, but also the least advanced.

A lot of companies have realised, that customization is inevitable and are investing in individual products. But there is a huge discrepancy as nearly the same percentage does not see an advantage in investing.

Aftersales services as monitored maintenance contracts or pay per use possibilities are also an opportunity to improve the competitiveness. It seems that businesses are already very developed in this field, over half of them have such services in place.

The percentages of those who have investment plans towards data driven services and those who do not see the advantage or those who simply do not have any plans in this directions are rather balanced.

5. Evaluation transnational added value

With the help of these results, now it should be obvious, where SMEs in the AS have a lack of knowledge and what their needs regarding I4.0 are.

It should be the next step to work on a strategy to support the companies so they can increase their competitiveness on an international market.

6. Outlook and sustainability

Mostly businesses which implement digital technologies are more efficient and successful than those which keep up their traditional methods and processes. Thus it is essential to use effective strategies to remain competitive in a more and more globalized world. Especially for companies in the Alpine Space it is unavoidable to sustainably assert oneself on the market as rival products from low-cost countries and remote locations will also stay a threat in the future.

7. Annexes

For a detailed consideration the evaluated survey as well as the specific results filtered by the selected language are attached.