DT.1.2.2. CERIS3 & DIH Institutional Needs Assessment Report

FINAL VERSION

03/2020

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1. Introduction

1.1. Project Overview

S3HubsinCE aims to utilise the model of the digital innovation hub, and linkages between these hubs created through collaborative exchange on smart specialisation thematic priority areas, to create a common transnational support structure. This structure has a goal to generate stronger connections between RIS3 stakeholders to promote value creation and enhanced competitive advantage in Central Europe.

Ultimately it creates and tests a common method to help regional and national strategy-responsible institutions understand how RIS3 value-creation can be fostered through a connected network of Digital Innovation Hubs. The project focuses on:

- Transnational innovation network to enhance collaborative RIS3 exchange and identify RIS3 Champions
- DIH alignment through a common pilot-program, to promote market-focused RIS3 Excellence and RIS3 Value- Creation
- Future-orientated policy learning with closer-to-market activities.

1.2. Scope of the document and summary

The document provides a summary of the main evidences of the institutional needs assessment. It identifies the major needs referred to digitalisation in our project partner regions. The institutional needs assessment has been done via interviews with various stakeholders in the program area. Every project partner (10) was required to conduct at least 10 institutional interviews with their stakeholders within their region. Therefore, all in all, 100 institutional interviews have been conducted by the partners, and the current assessment report shall describe the results of these interviews on partnership level.

The questionnaire itself was drafted by FB Partner and then it was jointly developed and updated with the contributions of all partners. **The finalised questionnaire**, as a template, can be found in the *Annex 6.1* in the finalised version of the previous deliverable (namely ***D.T1.2.1- Needs Assessment Handbook***, finalised by FB). All 100 stakeholders involved in the survey, filled in this questionnaire between December 2019 and February 2020.

1.3. Audience

This document is directed at all project partners (full and associated). The document should be used also by Crew Members as a relevant input for their Strategies and Action Plans (T2).

1.4. Change control procedure & structure

The Deliverable Responsible, PBN, created this report-based on the replies of 100 institutional stakeholders on partnership level-, and it is under standard project change control, whereby Partners are requested to give feedback on the stated definition or tools in writing to the Deliverable Responsible in a timely manner (within 10 days of document circulation).

As per normal procedure, at any time partners believe a deliverable should change, the request should be brought to PBN (Deliverable Responsible lead) and IMECH (Work Package Leader), to consolidate feedback from other partners, and integrate and disseminate the final agreed changes.

2. Overview of the results

2.1. Interviewed institution players

Institutional players that have been involved in the assessment interview include a wide range of typologies. Project partners, based on their stakeholder network involved the following types of stakeholders into the interviews: SME; Education/Training centres & schools; Business Support Organisations; (later abbreviated as BSOs) Large Enterprise; (later abbreviated as LEs) Higher Education and research centres, as well as start-ups. It was up to each project partner which type of players they involve, but a wide distribution of type of actors were advocated.

 Every partner has conducted 10 institutional interviews with their stakeholders, and Figure 1 shows the distribution of different types of institutions on partnership level. Figure 1 presents, that **the majority of the involved stakeholders were SMEs, (54%),** and the rest of the involved stakeholders were divided into Large Enterprises (16%), Higher Education and Research centres (14%) BSOs (7%), Education /Training centres and schools, (6%) and apart from the already mentioned institutions, 3 start-ups also took part in the interview survey.
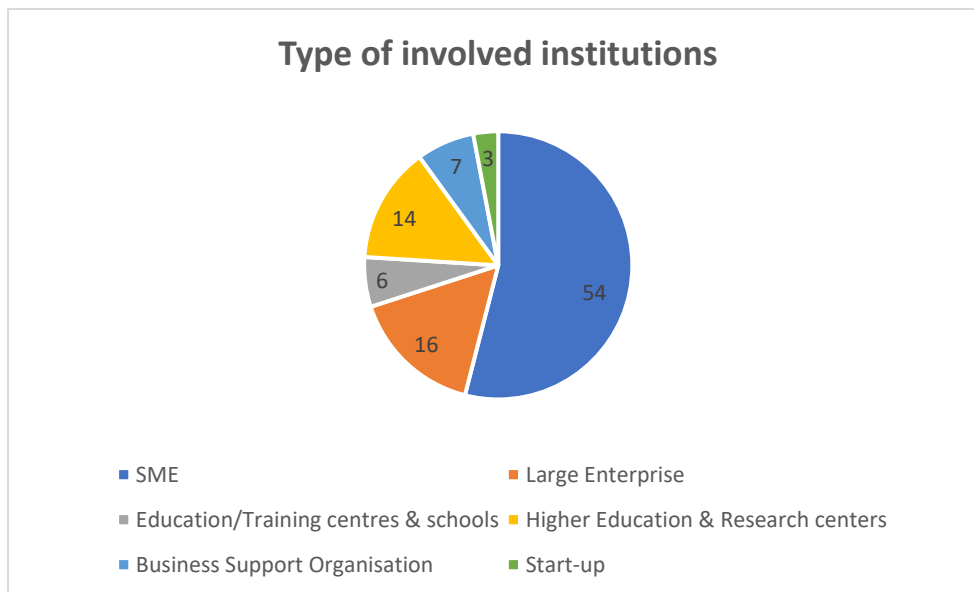
Interreg
CENTRAL EUROPE
European Union
European Regional
Development Fund
S3HubsinCE

Figure 1: Type of involved institutions

2.2. The greatest benefits of digitalization in the organizations- Question 1

The first question of the common questionnaire asked stakeholders that in their opinion what are the greatest benefits of digitalization in their organization.

At this point the following possible answers were listed, but stakeholders had the opportunity to define further elements. (*Reduce costs; Increase quality; Renew business models; Acceleration of innovations; Improve customer knowledge and relationships, Take advantage of digital distribution channels, Tapping new revenue streams with new digital offerings, and increase competitiveness*;)

Stakeholders were allowed to choose more than one answer at this question. Figure 2 demonstrates, the results on partnership level. According to Figure 2, at least half of the involved companies (min 50) indicated that **increasing quality (58), increasing competitiveness (54), acceleration of innovations, (51) as well as reducing costs (50**) **belong to the greatest benefits of digitalisation in their institutions.** Besides, it is also worth mentioning that 22 institutions have chosen the "Other" answer and indicated the followings mostly: "Speed up company procedures", "optimization of resources" "increasing crew efficiency".
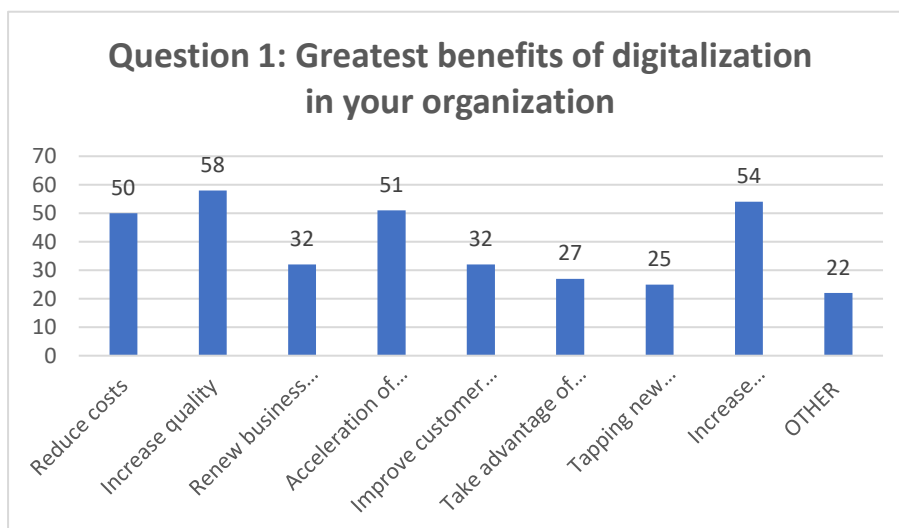
Figure 2: Greatest benefits of digitalisation in the organisation

2.3. Self-assessment of digitalisation level-Question 2

In the second question of the interview, stakeholders were asked to self-assess the status of digitalisation in their organization in general on a 1-5 Scale where 1 means that digitalisation is not available, and 5 means the level of digitalisation is very pronounced. Figure 3 demonstrates the results on partnership level. It is important to note that the Slovenian institutions (involved by TECOS partner) indicated qualitative answer, and no exact level was given from their side, so their results could not be compared quantitatively, therefore their results do not appear in Figure 3, and thus only 90 results are shown on the Figure instead of 100. It has to be also mentioned that some companies indicated their results between two exact numbers, so in these cases their results were considered as 2.5, 3.5 or 4.5. Taking everything into consideration, according to Figure 3, no institution has chosen Level 1, and the majority of the actors (35) classified themselves as Level 3 on digitalisation level scale. Following that, 29 institutions claimed that they are on Level 4 in case of digitalisation. **Based on the results, it can be stated that 49 (out of 90) companies belong to maximum Level 3, and 41 institutions' digitalisation level exceeds Level 3**.
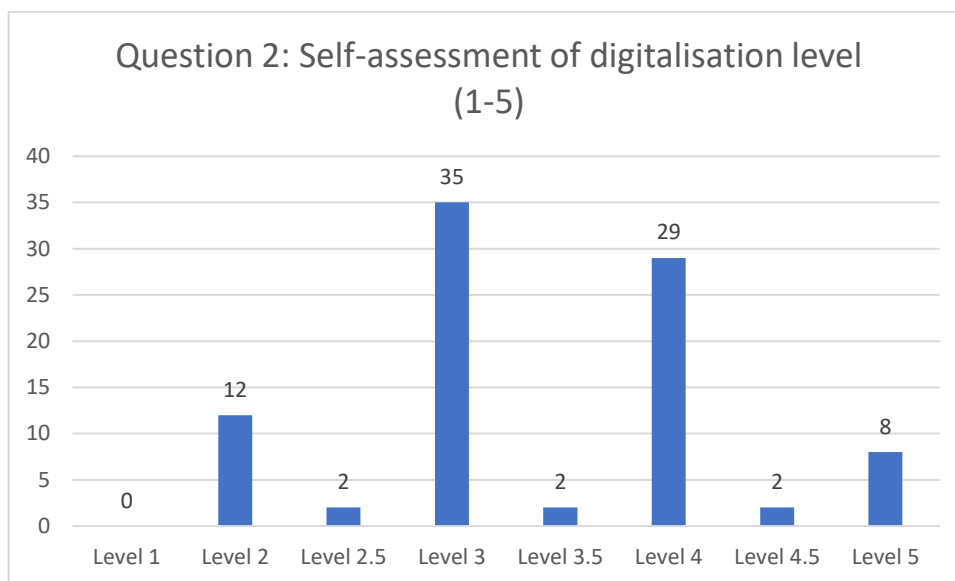
Figure 3: Self-assessment of digitalisation level of institutions (1-5 Scale)

2.4. Priorities in connection with digitalisation-Question 3

At this Question interviewees were asked to list their priorities in connection with digitalisation.

Since these answers were up to each actor, (no possible answswers were listed) the replies could not be compared quantitatively, however a general overview can be concluded, and the most interesting priorities are highlighted in this subchapter.

When we scrutinise the given asnwers, it is important to mention that 20 institutions did not respond to this question at all or they have not identified any priorities yet, so 80 qualitative replies are being summarised here. **Several answers given to this question are Navigation Crew specific (like application of AI solutions, Predictive Maintenance and data analysis**). **Establishing a fully digital (paperless) office, were also highlighted as priorities by several institutions. Besides, establishing or developing an efficient corporate governance system in the company like CRM/ERP was also listed as priorites by numerous institutions** in order to monitor the production results/customer profiles/logistics in a more efficient way. Apart from the already listed priorities many actors would like **to take part and benefit from digitalisation related projects, as well as they prioritise enhancing automation within their institutions.**

2.5. Priorities connection with Navigation Crews-Question 4
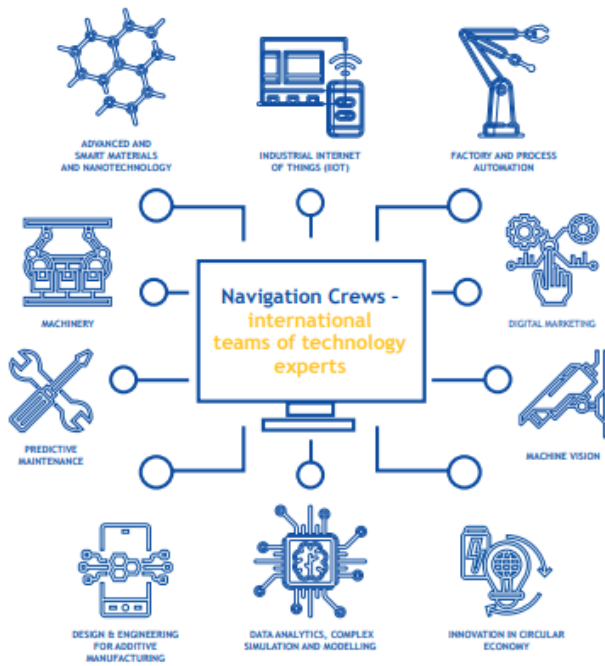
At this part respondents were asked to choose specific technology domains which are linked to the priorities listed at Question 3. At this point the technology areas of the established 10 Navigation Crews (Figure 4) were also shared with the interviewees, and they can check how they fit with their defined priorities.

Figure 4: Navigation Crews and their technology areas

When we started to analyse the answers of this question, it has turned out that **25 institutions did not reply to this question at all**, hereby, **75 institution replies** (also indicated Navigation Crew areas**) were analysed** at this section. Figure 5 reflects the results of the players on partnership level, and according to the summarised results, the **vast majority of the institutions (45) are interested in Data Analytics, Complex Simulation and Modelling Navigation Crew,** and/or their defined priorities fit with this technology area. Following this interest, it has to be also **highlighted that Digital Marketing (30) and Industrial IoT (29) also belong to the interest of relatively high number of institutions.**
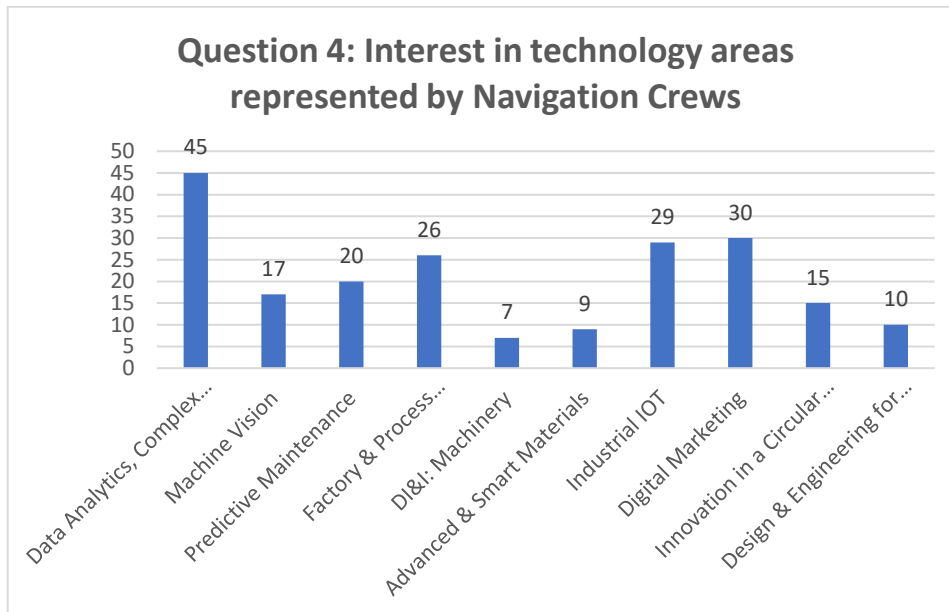
Figure 5: Interest in technology areas represented by Navigation Crews

Apart from the defined Navigation Crews' technology areas, several companies listed additional technology domains which they prioritise and are interested in. It is important to check and find thematic synergies with the below listed areas defined by institutions:

- **Advanced customer service**

- **Cybersecurity**

- **Data integration**

- **Artificial Intelligence**

- **Cloud Services**

- **Smart infrastructures**

- **Establish/Develop/ Integration of CRM and ERP systems**

- **Automation in production, commercial and logistics processes**

- **Robotization of production and transport**

- **Development of courses on digitisation**

- **Development in participation with/for the provincial governments**

2.6. Plan to address the priorities-Question 5

Similarly to Question 3, the answers given to this question could not be compared quantitatively, since the replies were dependent upon each institution.

Since these answers were up to each actor, (no possible answsers were listed) the replies could not be compared quantitatively, however a **general overview can be concluded**, and the most interesting priorities are highlighted in this subchapter.

In the framework of Question 5, interviewees were asked whether they have any plans to address the priorities described at the previous questions. In case they have such a plan, they were also required to shortly describe them at this point.

Before we scrutinise the plans of the institutions, it has to be highlighted, that **40 institutions did not respond (skip) to this question, therefore 60 replies shall be concluded** at this sub-chapter.

According to the qualitative summary of this question, the most occurred plans to address the priorites have been the followings:

- **Improvement of online communciation, (CRM and/or ERP development)**

- **Establish working groups, define milestones of the activities**

- **Extend the connection with stakeholders (universities, external experts, service providers)**

- **Action plans are being/shall be developed to define the actions and their timeframe step by step**

- **Obtain new fundings**

- **Enhance e-learning, new and updated curricula in Industry 4.0 topics (AI, Data Analytics..)**

- **Digitalisation of production**

2.7. Internal manager for digitalisation priorities and/or external support available-Question 6-7

At Question 6 and Question 7 institutions replied whether they have an internal manager responsible for digitalisation goals (Q6) and whether external actor is available or not (Q7) to support these activities.

Figure 6 illustrates **that at the majority of the institutions (54) separate internal unit or manager is available who is in charge of digitalisation priorities**, as well as the majority of the **companies indicated (59) that they have external consultants** (Figure 7) **who support them to reach their digitalisation needs**. Regarding internal units or managers, few companies (2) have chosen both answers, which might mean that they have an internal unit, but no manager is nominated. It is also interesting to take into account that 14 institutions did not give any answers to Question 6, and 15 companies did not respond to Question 7.
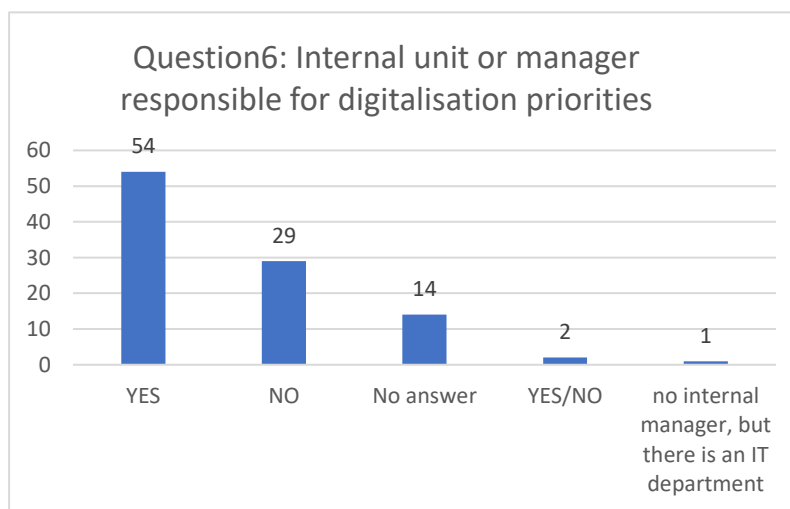

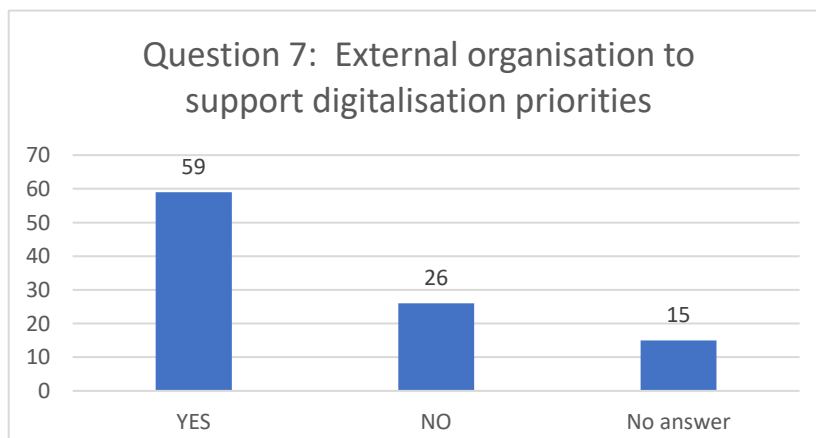**Figure 6: Internal unit or manager responsible for digitalisation priorities**

Figure 7: External organisation to support digitalisation priorities

2.8. Challenges / constraints, in relation with reaching digitalization goals-Question 8-9

At this question institutions replied what kind of challenges/constraints may prevent them from reaching their digitalisation goals. Nine different options were given (*Insufficient budget for implementation; Long decision-making processes; Data protection requirements; Unclear economic benefits; IT security requirements; Organizational structure (not appropriate); Insufficient technical equipment; Lack of adequate skills or knowledge (in-house); Lack of available support services*) and they had the opportunity to add further constraints if needed.

Originally, interviewees were supposed to choose the main 3 constraints and rank them from 1-3, but some of the stakeholders did not make ranking just choose some elements from the list.

Therefore, the ranking cannot be measured on transnational level, but the following Figure shall describe the distribution of each reply. **83 companies replied to this question**, so Figure 8 demonstrates their results. Based on the results, **more than half of the companies (51) indicated that their main constraint to reach their digitalisation goal is the insufficient budget for implementation**. Following this result, 34 institutions have marked that the **lack of adequate skills or knowledge might be considered as a main factor of not reaching the digitalisation goals**. According to Figure 8, the rest of the answers have been chosen by approximately 20 institutions, but interesting that insufficient technical equipment was not considered a main challenge in terms of reaching digitalisation goals.
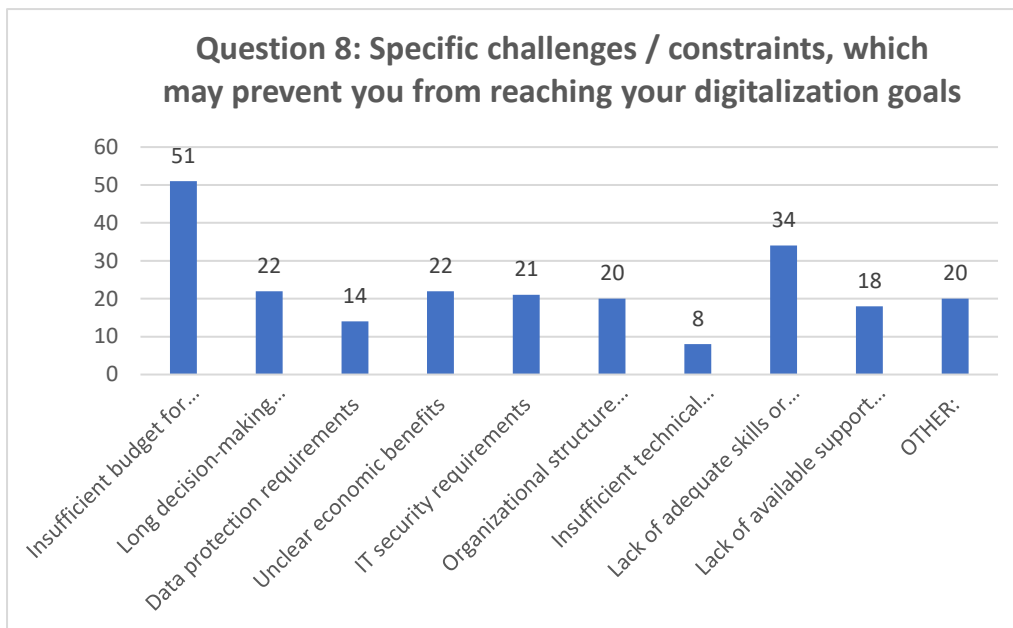
Figure 8: Specific challenges in relation with reaching digitalisation goals

If we scrutinise the results per partner(country) the following results are remarkable and worth highlighting:

It can be claimed that the insufficient budget for implementation option have been chosen by stakeholders from every region. Based on the results, long decision making process is a remarkable constraint at the Italian institutions (involved by ECIPA+IMECH) as well as Croatian institutions, involved by HGK (7+4+5 stakeholders have chosen this as a constraint). Data protection requirements were mainly chosen by BWCON's interviewees (5 out of 10). Lack of adequate skills or knowledge in house was marked by 7 IMECH stakeholders, whereas lack of available support services was mainly chosen by Hungarian (PBN) stakeholders (8 out of 10).

Apart from the listed constraints, some stakeholders also mentioned additional challenges, and the following constraints occurred in most cases:

- **Lack of available employees/adequate skills on the market**
- **Lack of training opportunities for employees**
- **Difficulty in finding open source solutions**
- **Lack of time and motivation of the employees**
- **Needs and willingness of partner companies**
- **Priorities of the country have to be respected and followed**

- **Young talents and solutions needs financial and other support to upgrade their skills and be able to develop them to the selling level, market ready level. Thus, infrastructure needed for prototyping and testing is extremely important**
- **Digital innovation in healthcare is a sensitive**

In conclusion, at this question it can be stated that i**nsufficient budget for implementation can be considered as the main challeng**e for the involved stakeholders to reach their digitalisation goals, nevertheless further constraints have to be handled as well.

2.9. Awaraness of the concept of the Digital Innovation Hub-Question 10

At this question the involved institutions were asked whether they are familiar with the concept of Digital Innovation Hub or not. Involved stakeholders could choose simply YES or NO replies, and all participants replied to this question, and one company has chosen both answer opportunities.

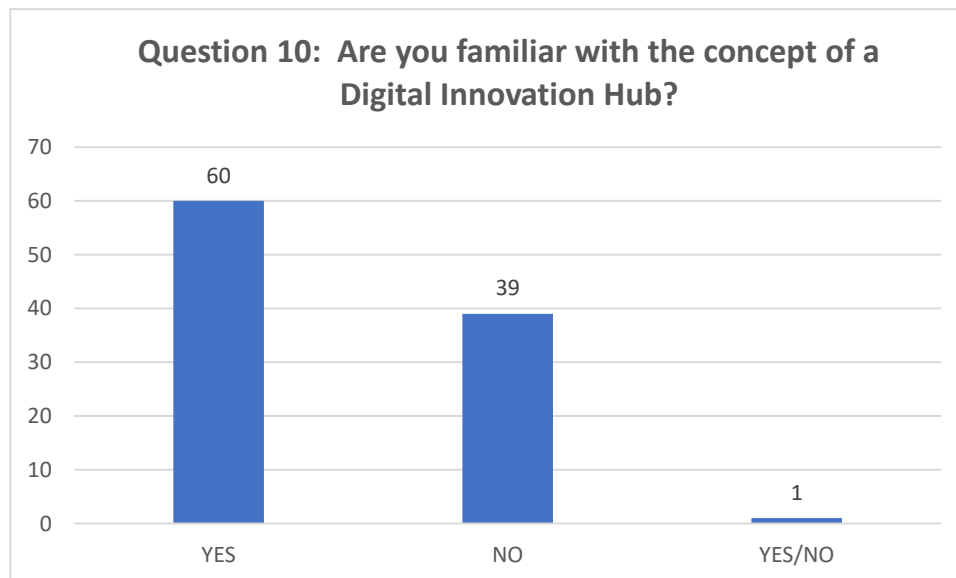Figure 9 reflects that **the majority (60) of the stakeholders are aware of the concept of DIH**.

Figure 9: Awaraness of the concept of the Digital Innovation

2.10. Connection with DIHs-Question 11

Question 11 was divided into to further sub-sessions: Firstly, interviewees were asked to choose whether they have had already connected DIHs or not and in the second part of Question 11 institutions players were asked what kind of DIH services they know. Regarding the services, some options have been given, (Table 1) and they could choose more than one answer, and they also had the opportunity to complete the given service list with additional elements

Services	Examples
Awareness	Roadshow, Factory tour, Videos of best practices, spreading information
Diagnosis	Online maturity diagnosis, consultancy, benchmarking
Transformation plan	In-depth audit, definition of a transformation plan
Realisation	Transformation plan (Specialised activities, strategic support, technological support), Training (Industry 4.0 training)
Growth	Internationalisation, Promotion of Champions, Increased visibility
Financing	Vouchers Industry 4.0 and digital transformation, Digital Hub
Innovation	Demonstrators, Startups booster, Specialised workshops, living labs, creative hubs, Fablabs, Roadshow best practice
Other	

Table 1: Listed DIH services at Question 11

Regarding the connection with DIHs in general, Figure 10 points out that **11 institutions did not respond to this question at all, so 89 answers could be summarised**. According to Figure 10, the **majority of the involved stakeholders have not had any connections with DIH yet**, but it is very important to mention, that within this **group high number of stakeholders are interested in being**

connected with DIHs in the future. The Figure also reflects that approximately one-third of the involved stakeholders (31) have already connected a DIH in the past.

Question 11: Have you ever contacted a DIH in the past?
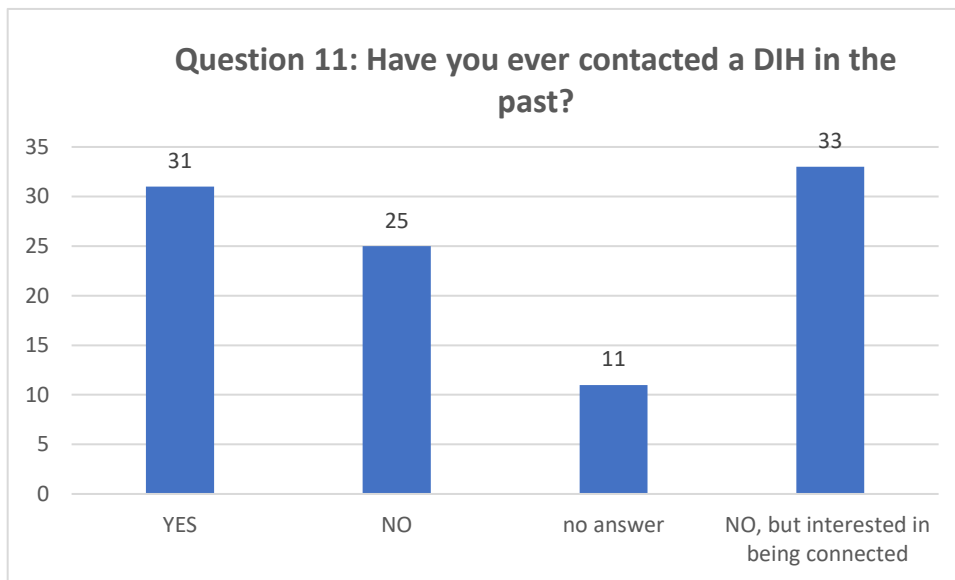

Figure 10: Contact with DIHs

As far as the known services of DIHs are concerned, **65 stakeholders did not choose any options at this sub-question, so merely 35 institutions' replies could be analysed and summarised**. Figure 11 illustrates that the majority of the stakeholders (who answered this question) are aware **of Awareness and Innovation services of Digital Innovation Hubs, but Realisation and Diagnosis** services of DIHs are also well-known by involved stakeholders.
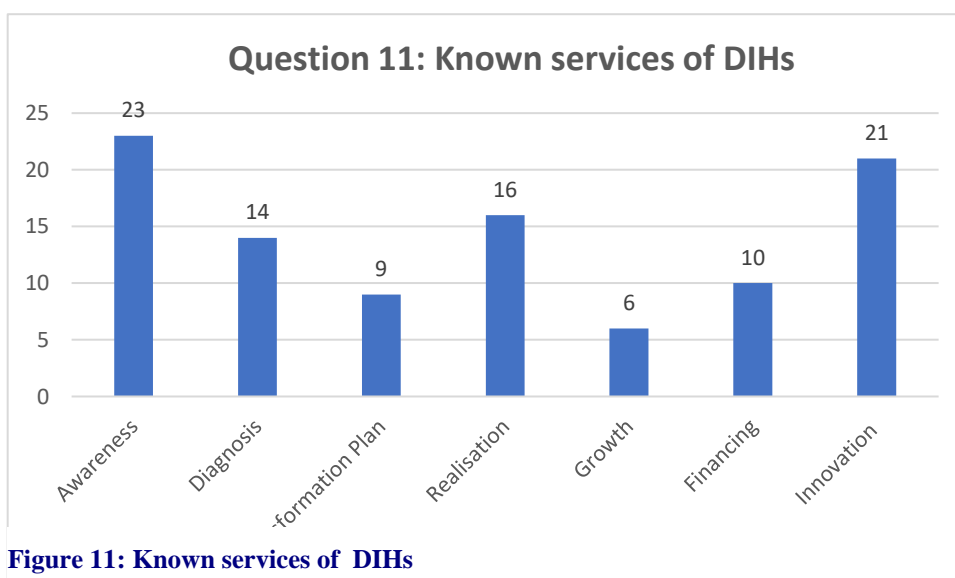
Question 11: Known services of DIHs

Figure 11: Known services of DIHs

2.11. Interest in being informed about S3HUBS / support measures/ connections with other stakeholders-Question 12

Question 12 of the interviewee was divided into four separate sub-question. First of all, involved stakeholders were asked whether they are interested in being informed about the activities. Secondly, they were asked whether have any specific support measure in mind that they would like to receive. In the last two questions of Q12-and in the whole questionnaire- referred to the willingness of connection with other stakeholders. On the one hand, participants were asked whether they are willing to discuss their priorities with other companies / organizations, on the other hand, institutions were asked whether they are open to invite other players to come and see what they are doing.

When we analyse the replies of Question 12 separately, it can be stated that the **majority of the involved stakeholders (82) are interested in future activities in the S3HubsinCE project,** (Figure 12) which result is really beneficial from future stakeholder involvement in the envisaged activities of the project.
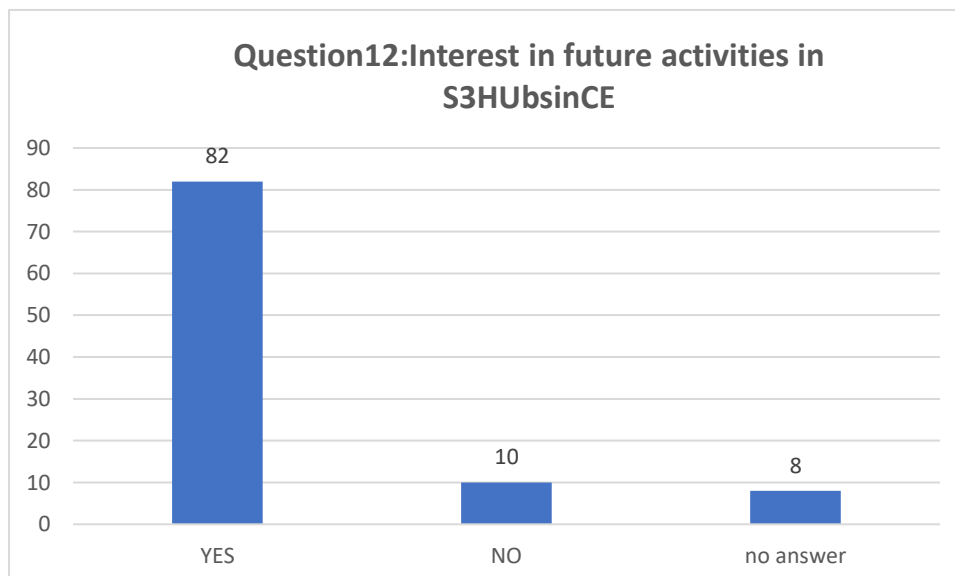

Figure 12: Interest in future activities of the project

As far as the **support measures to be received**, are concerned, **44 stakeholders did not respond to this question at all,** or they did not define any support measures, therefore the **remaining 56 stakeholder replies shall be pointed out at this sub-chapter**:

Since it was a qualitative question, and no preliminary options have been given, stakeholders had free choice to reply this question, up to their priorities and interest. According to their replies, the most occurred support measures are the followings:

- **Calculation of comprehensive business cases**

- **International networking, cooperation, B2B meetings with other stakeholders**

- **Exchange of experience with DIHs, service providers**

- **Workshops, trainings best practices, study visits,**

- **Benchmark on best practices,**

- **Develop pilot actions, mobility actions**

As Figure 13 illustrates that a **little bit more than two-third (68) of the institutions are willing to discuss priorities with other companies**. Approximately the same distribution is true when we scrutinise the results regarding the openness of invitation of other stakeholders to the organisation, **since 64 institutions have replied that they are open to invite other representatives to see what they are doing. (**Figure 14)
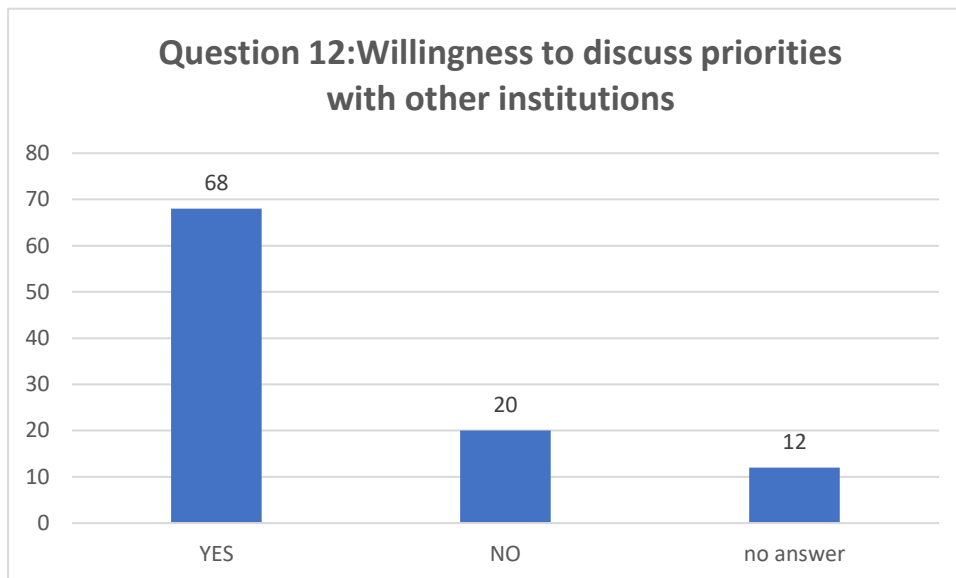
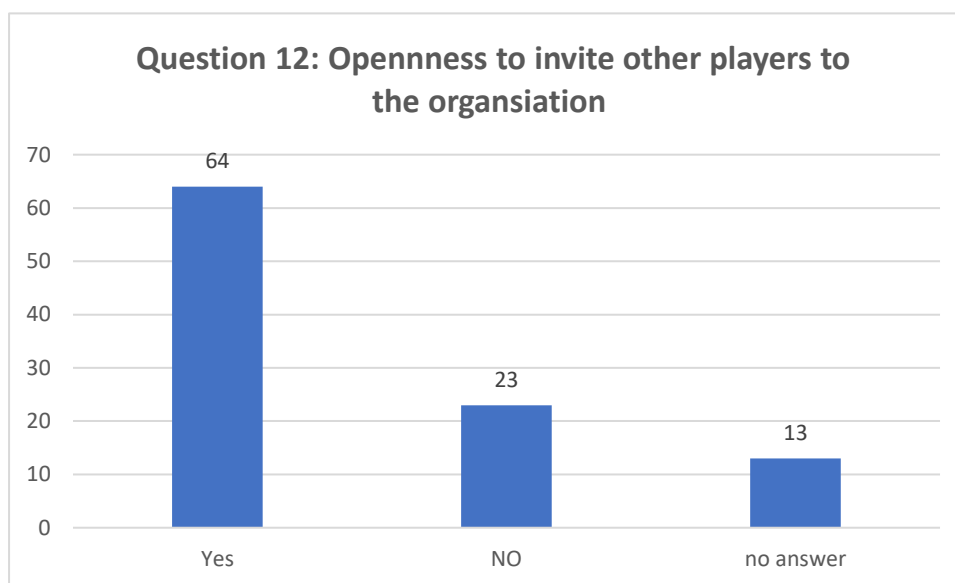**Figure 13: Willingness to discuss priorities with other institutions**

Figure 14: Openness to invite other players to the organisation

3. Conclusions, main evidences

The current Institutional Assessment Report provides a summary of the main evidences of the institutional needs assessment. It aims at identifying the major needs referred to digitalisation in our project partner regions.

Taking everything into consideration, based on the answers provided (100 institutional interview results) the major evidences of institutions that could be addressed by the S3HubsinCE project may be summarized as follows:

- Regarding the result of the self-assessment digitalisation level (1-5 Scale) **49 companies belong to maximum Level 3, and 41 institutions' digitalisation level exceeds Level 3**.

- As far as the **digitalisation related priorities** are concerned, some priorities **correspond to the established Navigation Crew technology areas**. Besides**, establishing a fully digital (paperless) office**, were also highlighted as priorities by several institutions. In addition, **establishing or developing an efficient corporate governance system in the company like CRM/ERP** was also listed as priorites by numerous institutions. Apart from these, **taking part and benefitting from digitalisation related projects** are also relevant as well as **enhancing automation within their institutions** was also considered as priority by institutions.

- In terms of Navigation Crews, the **vast majority of the institutions (45) are interested in Data Analytics, Complex Simulation and Modelling Navigation Crew,** and/or their defined priorities fit with this technology area. Following this interest, it has to be also **highlighted that Digital Marketing (30) and Industrial IoT (29) also belong to the interest of relatively high number of institutions.**

- When it comes to challenges and constraints in relation with reaching digitalisation goals, **more than half of the companies (51) indicated that their main constraint to reach their digitalisation goal is the insufficient budget for implementation**. Following this result, 34 institutions have marked that the **lack of adequate skills or knowledge might be considered as a main factor of not reaching the digitalisation goals.** Apart from these**, lack of training**

opportunities for employees as well as **lack of time and motivation of the staff** were considered as main challenges too.

- It is true that **the majority (60) of the involved stakeholders are aware of the concept of DIH, but the majority of them have not contacted a DIH yet, but they are interested in doing so, so the aim is to extend the number of institutions who are aware of the DIH concept and use their services.**

- **The project has to benefit from the general interest of the vast majority of institutions towards S3HubsinCE project, and the aim is to contribute to the digitalisation support measures listed at Question 12, as well as to enhance the exchange networks between different institutions.**