DIGITAL TRANSFORMATION MANAGER

[DELIVERABLE TITLE]:

D2.4.a – Skills fine-tune final report

VERSION 2

[WORK PACKAGE 2]:

WP2 - Skills needs fine-tune

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CONTEXT

Grant agreement	601011-EPP-1-2018-1-ES-EPPKA2-SSA
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Project starting date	01/01/2019
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Project work package	**WP2 - Skills needs fine-tune**
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1 Introduction

The aim of this document is to summarizes and concretize the outcomes of the DITRAMA ***Fine-tune Needs Survey*** and their following discussion at the DITRAMA **Experts workshop** that took place in Brussels on the 27th of June 2019 at the WOODWIZE premises. Concretely, we aim to specifically identify which are, according to survey results and the Workshop outcome, the most needed:

1) Technical and Industry 4.0 Technologies skills
2) The No-technical skills
and
3) The biggest barriers for implementing Ind. 4.0 in furniture industry

This document is the part "a" of the D2.4 – Skills fine-tune final report. The outcomes of this exercise will mainly support two future tasks related to the Digital Transformation Manager:

- The description of its occupational profile and the related tasks (D2.4.b - DTM occupational profile).
- The preparation of the Joint Curriculum of the DTM (D3.1 - Joint Curriculum of the Digital Transformation Manager)

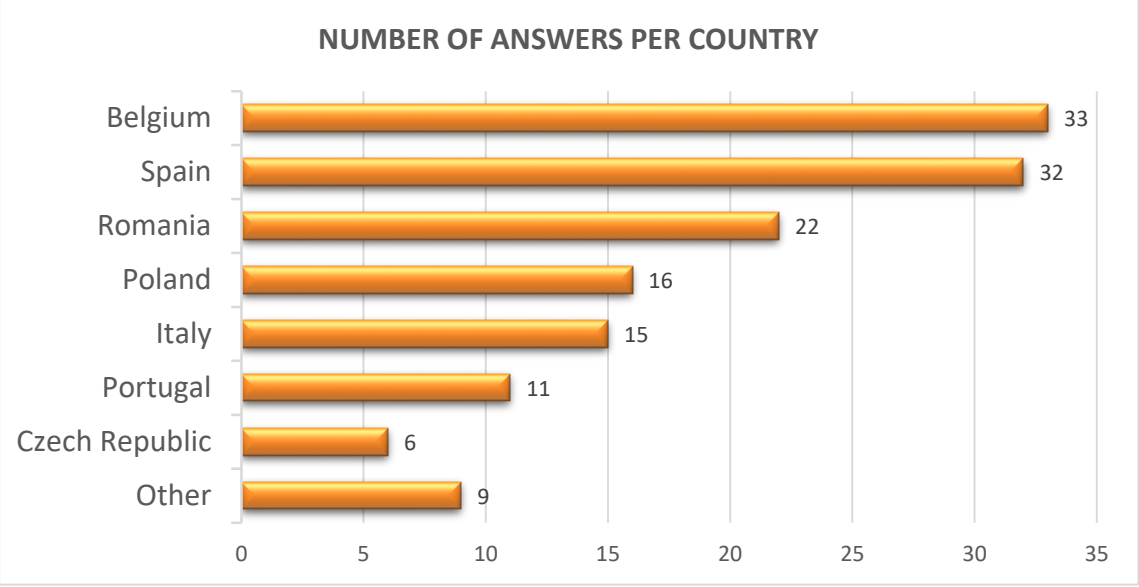
1.1 Introduction to the survey

The survey was implemented in a joint manner by DITRAMA partners. The questionnaire was addressed to professionals belonging to: i) furniture sector employers and employees, ii) VET (Vocational Education and Training) / HE (Higher Education) professionals or iii) Industry 4.0 technology experts.

1.1.1 Number of answers per country in the survey

The online questionnaire was implemented during the months of April and May 2019. In total, 144 responses were collected by project partners among professionals from several European countries with a good representation of EU countries where Furniture represents a key production sector.

Figure 1 - Number of answers per country



1.1.2 Number of answers per type of professional

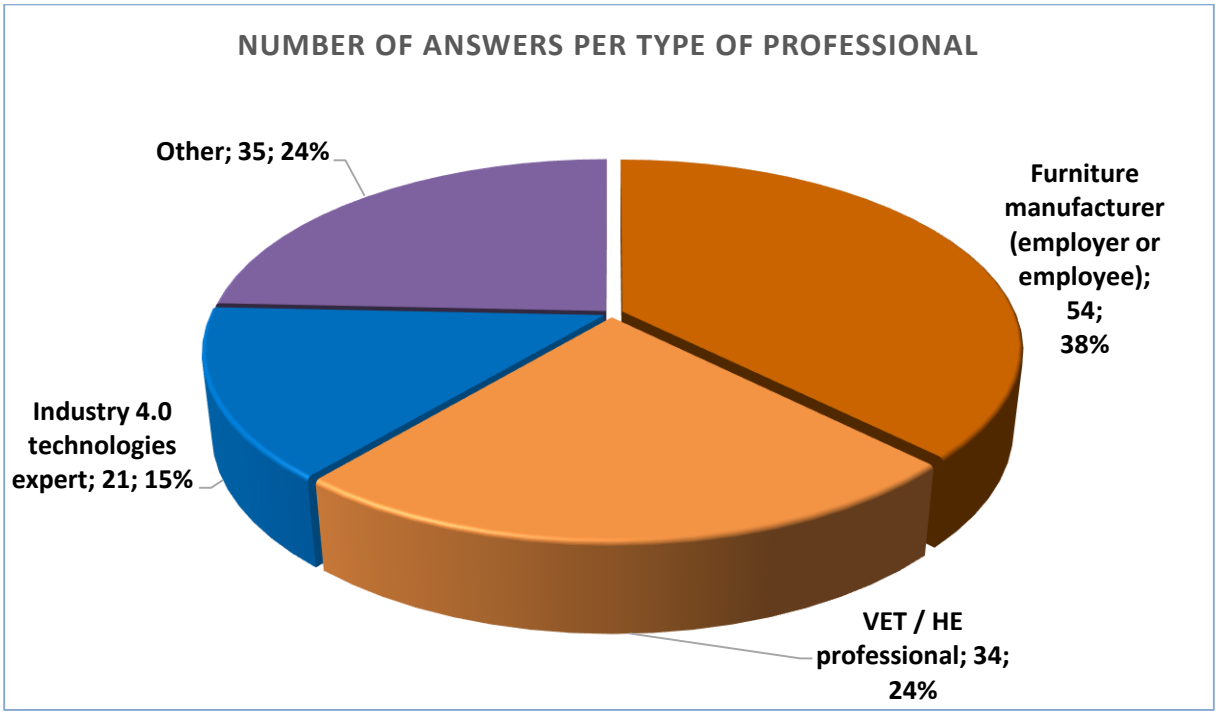
As you can see in the Figure 2 the aim of targeting the three above-mentioned groups was clearly satisfied. The selection of the three groups was mainly due to the following reasons:

- The furniture employers and the employees (38%) have provided the vision of people working within the furniture companies that have internal and manufacturing peculiarities in comparison to other sectors.
- The VET and HE professionals (24%) could provide the vision of the training providers that later on will be able to provide the training course that the DITRAMA PROJECT is going to produce.
- The Industry 4.0 and Digitization experts could provide an insight of the technological and production changes required by the digital transformation processes.

In the category "Others" different kind of professionals profiles and experts are included. They mainly come from Furniture clusters, Occupational Health and Safety experts, Furniture companies and machines suppliers, researchers, etc.

The following sections present the survey results classified according to these categories and finally in an aggregated manner.

Figure 2 - Number of answers per type of professional



1.2 Introduction to the workshop

The DITRAMA **Experts workshop** took place in Brussels on the 27th of June 2017 at the WOODWIZE premises and it involved 27 experts. They were representatives from project partners entities and external experts specifically invited to the event in order to collect their inputs. These external experts, with different backgrounds and expertise, could provide relevant inputs about the data interpretation and allowed further elaboration that will be very useful in the project following steps,

such as the definition of the Digital Transformation Manager occupational profile and tasks and the design of the related joint curriculum.

Workshop discussion was enriched by participants presentation of their personal and practical experiences. As a relevant case study, Bivolino company digital transformation was presented by the company director and Digital Transformation Manager.

Table 1 - Experts that participated to the workshop

ID	Name of the Expert	Organization
1	Albano Vasconcelos	CFPIMM
2	Alexandra De Raeve	HOGENT
3	Almudena Gonzalez Costas	METODO
4	Carlos Godínez	Universidad Politécnica de Cartagena
5	Carlos González	CETEM
6	Chiara Terraneo	FEDERLEGNO
7	Clara Ferraz	CFPIMM
8	David Pavliš	UEA
9	Gregory Pinte	Flanders Make
10	Ioan Cionca	TAPARO
11	Jeroen Doom	WOODWIZE
12	Jeroen Vancraen	Flandres Make
13	Jesús Sanz	CETEM
14	Juan Carlos Martinez	Ceei Burgos
15	Julio Rodrigo	CENFIM
16	Lidia Gurau	UTBv
17	Marc Vens	Distributor Homag in BE
18	Massimiliano Rumignani	AMIC
19	Michel Byvoet	Bivolino
20	Nicolas Sangalli	FEDERLEGNO
21	Nikolas Van Beeck	Van Hoecke NV
22	Peter Verkest	HOGENT
23	Serena Leka	AARHUS
24	Susanna Campogrande	WOOD.BE
25	Tamas Kiss	Un. Westmister
26	Uwe Kies	innovawood
27	Xavier Pi	Catalan Indutry 4.0 Commission

2 Furniture manufacturers (employers or employees)

In this chapter we analyse the answers of the 54 furniture manufactures, which include both employers and workers from the sector companies.

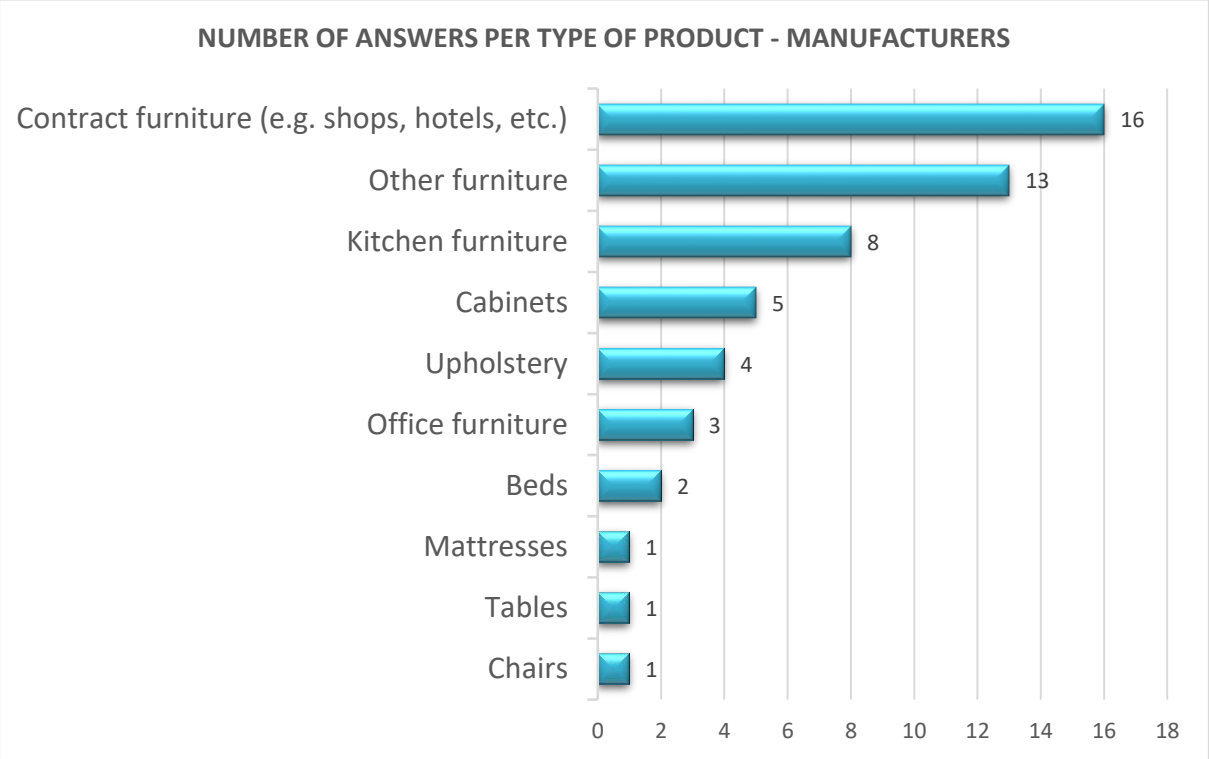
2.1 Number of answers per type of product

The first thing that we tried to understand was which kind of furniture products produce the companies that answered to this survey.

We can see that the main group is the ones of Contract furniture (e.g. shops, hotels, etc.) to which we can refer as B2B.

The presence of all the other categories allows us to say that the sample cover a good variety of the different furniture products.

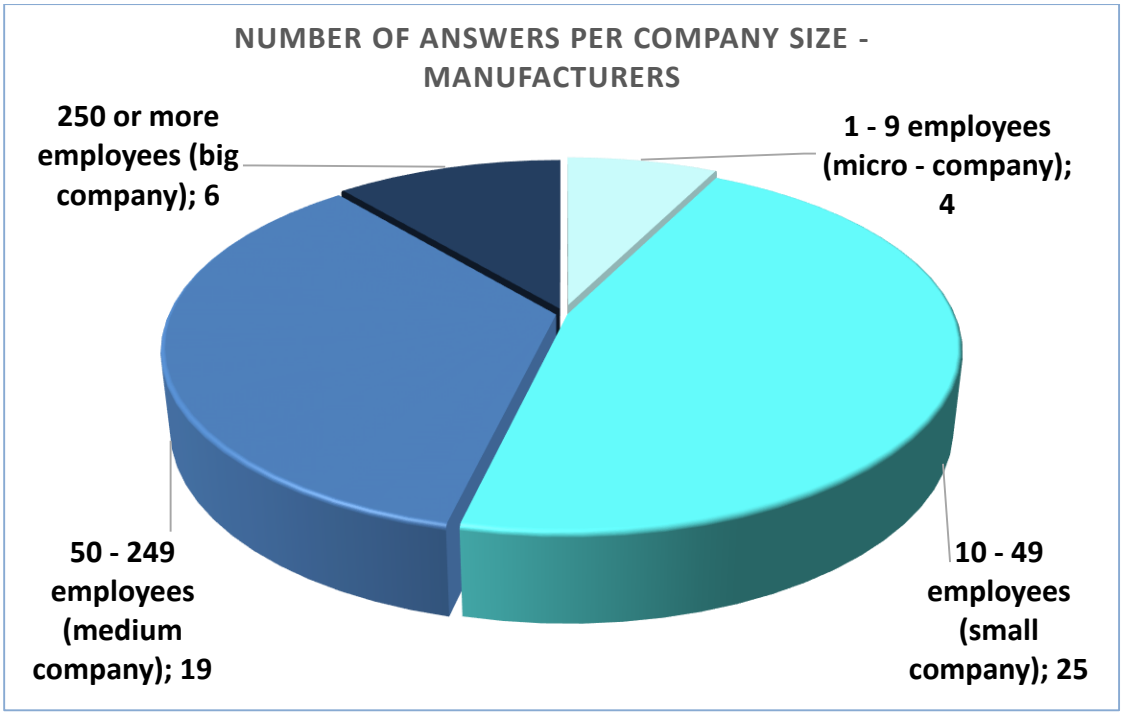
Figure 3 - Number of answers per type of product - Manufacturers



2.2 Number of answers per company size

Another aspect we wanted to take into account was the dimension of the companies involved in the survey. In figure 4, we can see that the majority of the professionals involved come from small and medium companies (SMEs). But we have also a small representation of micro and large companies.

Figure 4 - Number of answers per company size - Manufacturers

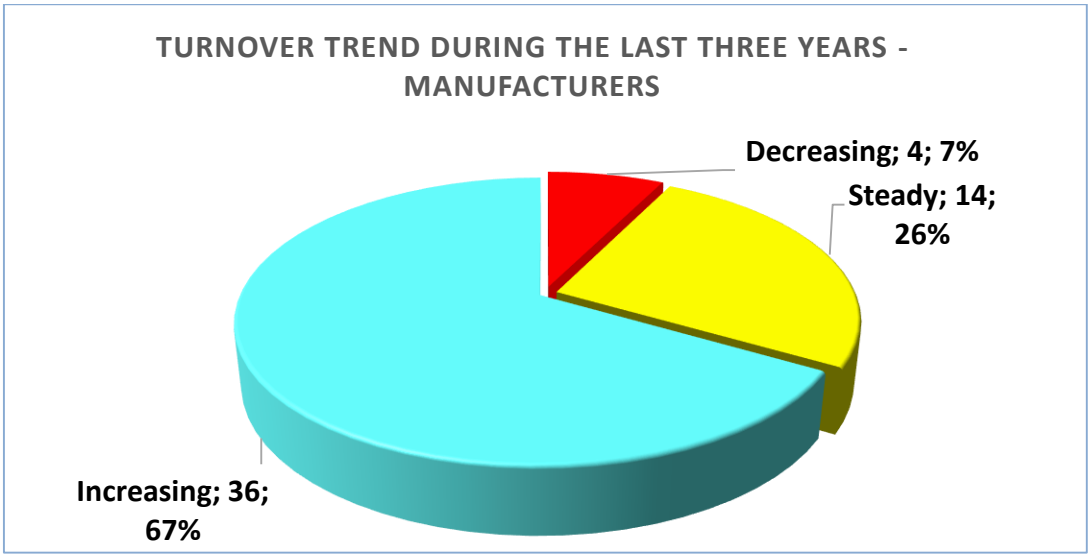


2.3 Turnover trend during the past three years

We wanted to check also if these companies were facing positive or negative sales trends. In Figure 5, we can appreciate that the majority of companies interviewed (67%) can have a quite optimistic view of their future activities as their turnover during the last three years have increased. One quart of these (26%) face a stable turnover and only few of them (7%) have seen a decrease in their turnover during the last four years.

This can suggest an optimistic vision for the sector as it is pretty clear that having an increasing turnover can facilitate the investment in new technologies as it is required by the digital transformation.

Figure 5 – Turnover trend of the companies during the past three years - Manufacturers



2.4 Technical and Industry 4.0 Technologies skills

In this key section we have asked to the respondents about the Technical and Industry 4.0 Technologies **skills**. Specifically, in the first place we asked them which was the level of **dominance** for each of them by the person in charge of the digital transformation in the company, and secondly, which was the level of **importance** they assigned to the "knowledge, skills and competences" of each of them for successfully leading the digital transformation in an integrated way in all the departments of a furniture company.

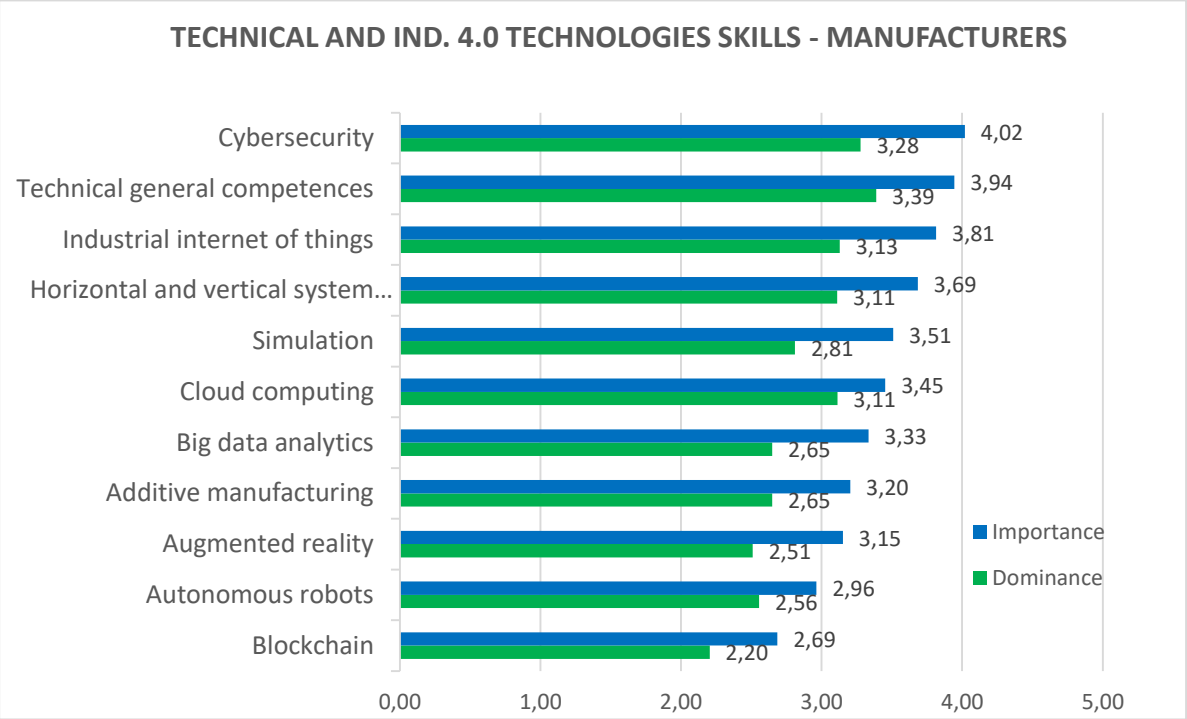
At the end of this document, in Annex I, you can find the whole survey and a short description of each of these Technical and Industry 4.0 technologies.

This graphic shows that some technologies are considered much more **important** than others for the successful implementation of a digital transformation in all departments, such as (in order of importance): Cybersecurity, Technical general competences, Industrial internet of things, Horizontal and vertical system integration, Simulation, Cloud computing and Big data analytics.

The other relevant aspect to underline is that in all cases the level of **dominance** of the different technologies is not high as its level of **importance**. This situation requires a detailed analysis of the specific training needs in the fields that in spite

of being considered important are not supported by an appropriate dominance by the sector professionals. In this framework, the graphic shows that furniture sector professionals require additional training in technologies such as Simulation, Big data analysis and Additive Manufacturing. In spite of this, the graphic shows that also the knowledge related to other technologies considered important for the successful implementation of the digital transformation require to be enhanced among sector professionals.

Figure 6 – Technical and Industry 4.0 Technologies skills - Manufacturers



2.5 No technical skills

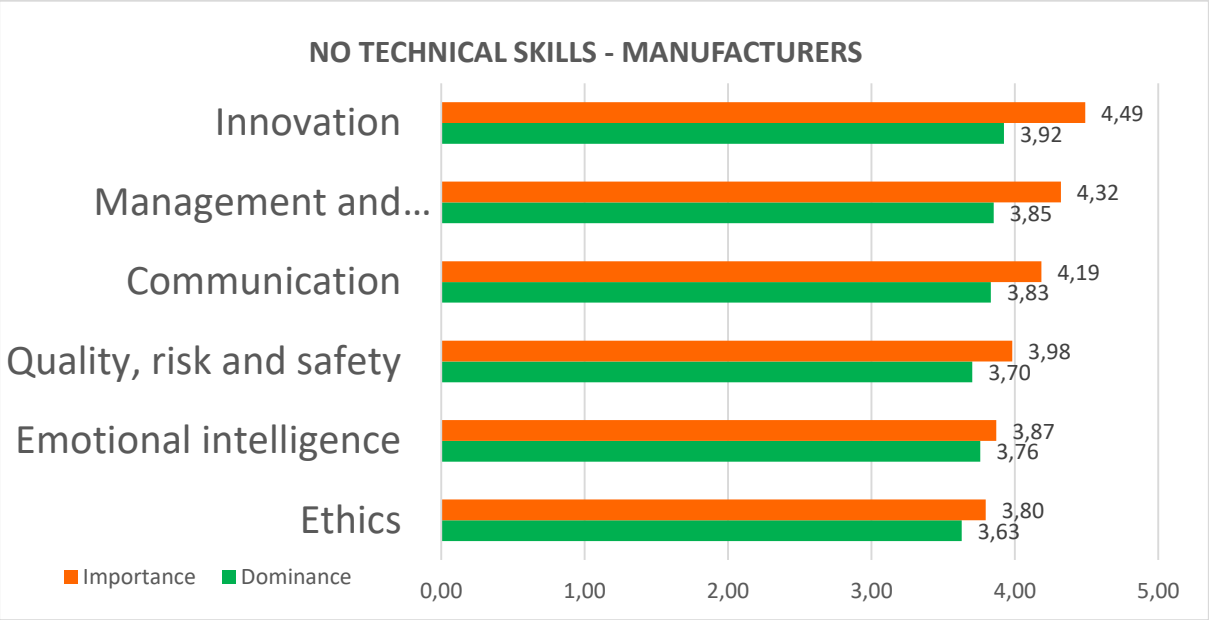
The aim of this question was very similar to the previous one, but the targets of the question were those skills with a **no technical** nature. As in the previous question, in the first place we asked them which was the level of dominance for each of them by the person in charge of the digital transformation in the company, and secondly, which was the level of importance they assigned to each of them for successfully leading the digital transformation of a furniture company.

At the end of this document, in Annex I, you can find the whole survey and a short description of each of these no technical skills.

The graphic shows us that all these no technical skills are considered very important (orange) for leading a successful digital transformation.

The average level of knowledge in these competences can be considered satisfactory, in spite of the fact that an increase in this level can be welcome.

Figure 7 – No technical skills - Manufacturers

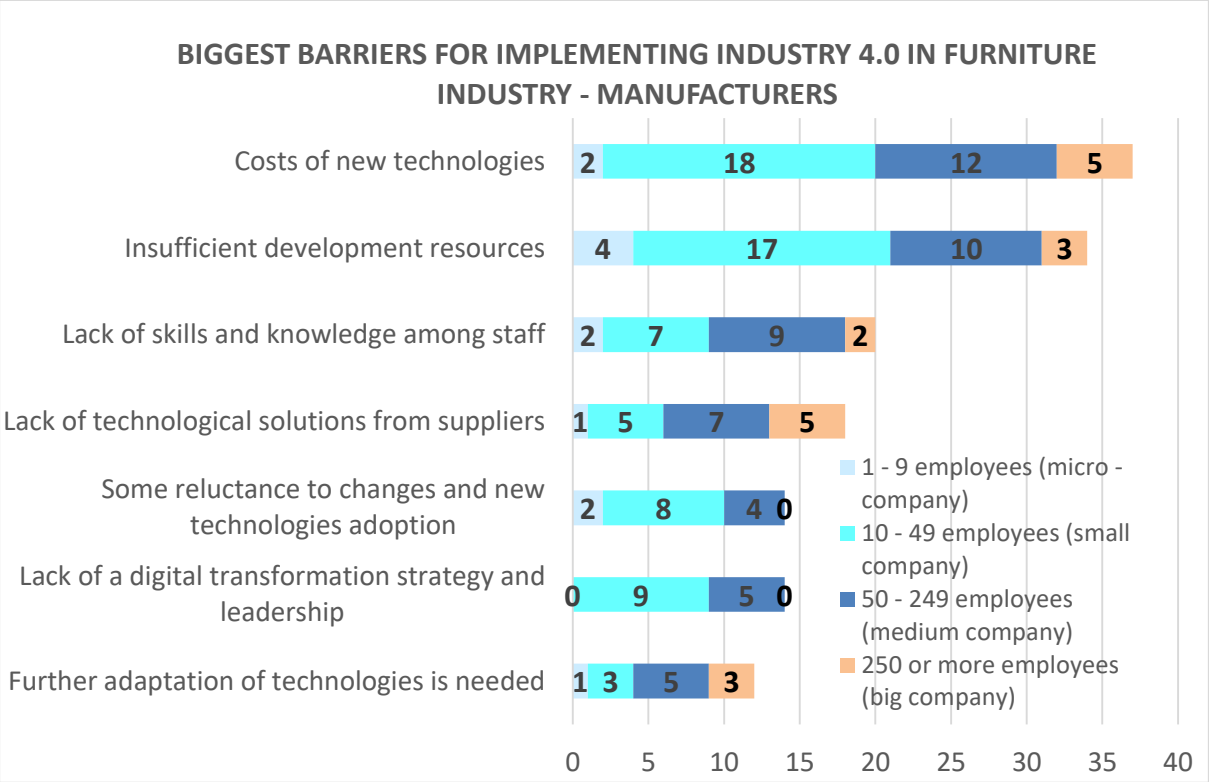


2.6 Biggest barriers for implementing industry 4.0 in furniture industry

This question tried to identified which element/conditions the furniture sector professionals consider the main barriers for the successfully implementation of the digital transformation in their companies.

As main obstacles we find the Cost of the new technologies, Insufficient development resources, Lack of skills and knowledge among staff and lack of technological solutions from suppliers. A relevant aspect is that a deeper analysis shows us that these barriers are seen as such by professionals from all companies' sizes and not only in micro or small companies.

Figure 8 - Biggest barriers for implementing Ind. 4.0 in furniture industry - Manufacturers



3 VET / HE professionals

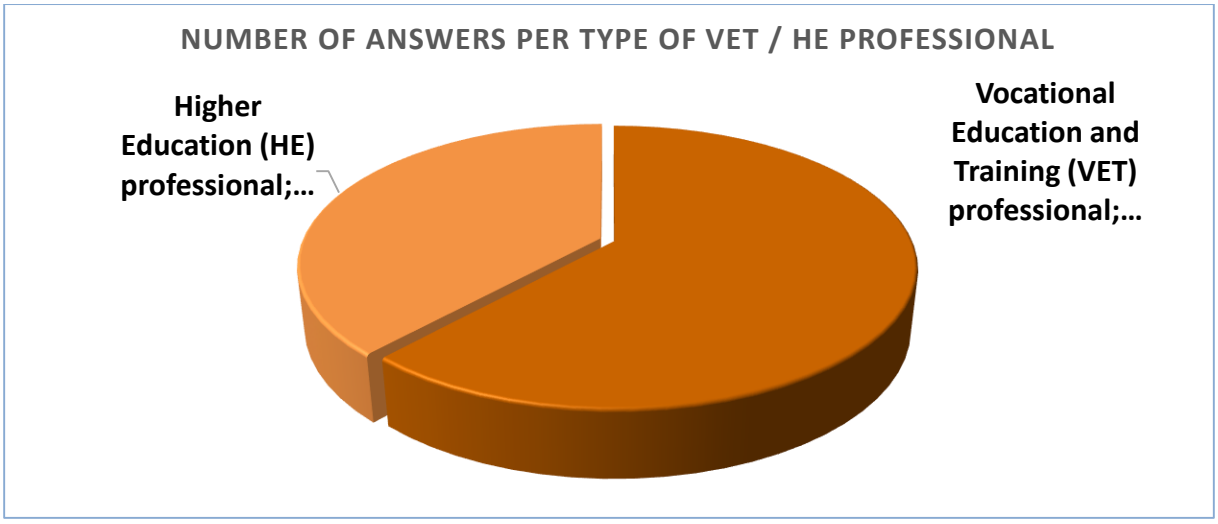
In this chapter we analyse the answers of 34 professionals coming from Vocational Educational and Training institutes and from Higher Educational entities.

3.1 Number of answers per type of professional and their field of studies

The first things that we tried to understand were which kind of professionals were answering and which were their field of specialization.

We can see that the main group that has answered the survey is the one of VET professionals.

Figure 9 - Number of answers per type of VET / HE professional



Then we wanted to see which was their field of specialization, and results show that in both groups, VET and HE professionals mainly have expertise in the field of the Furniture manufacturing sector.

Figure 10 - Field of studies / research of VET professionals

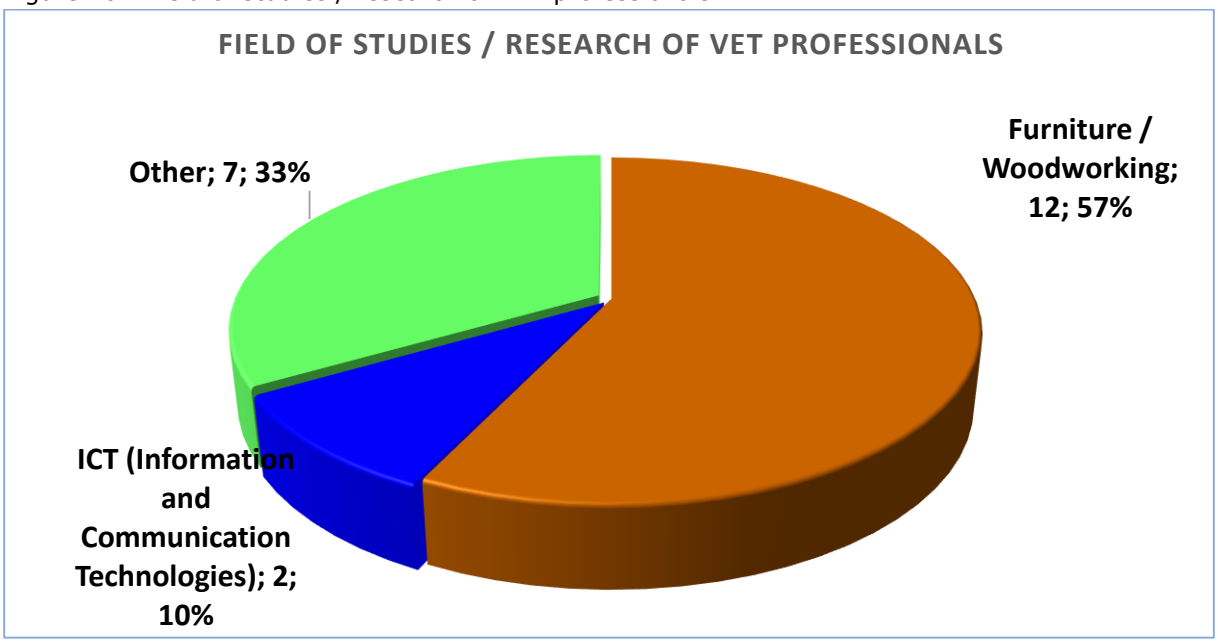
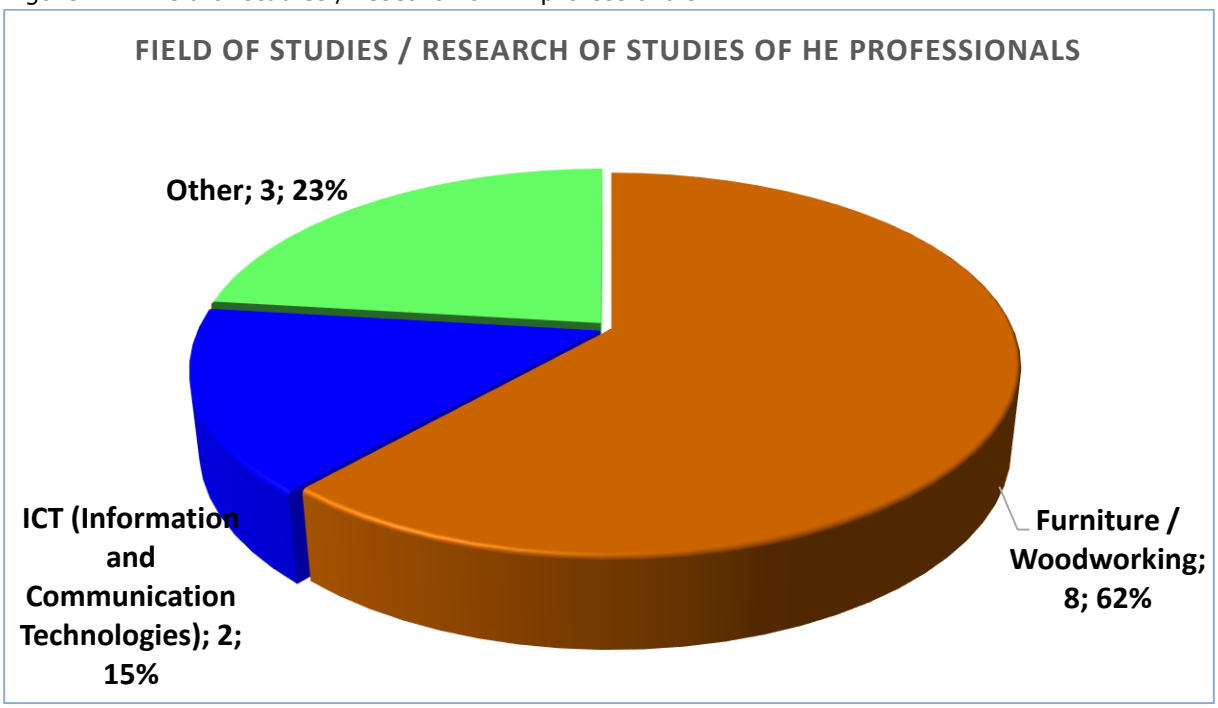


Figure 11 - Field of studies / research of HE professionals

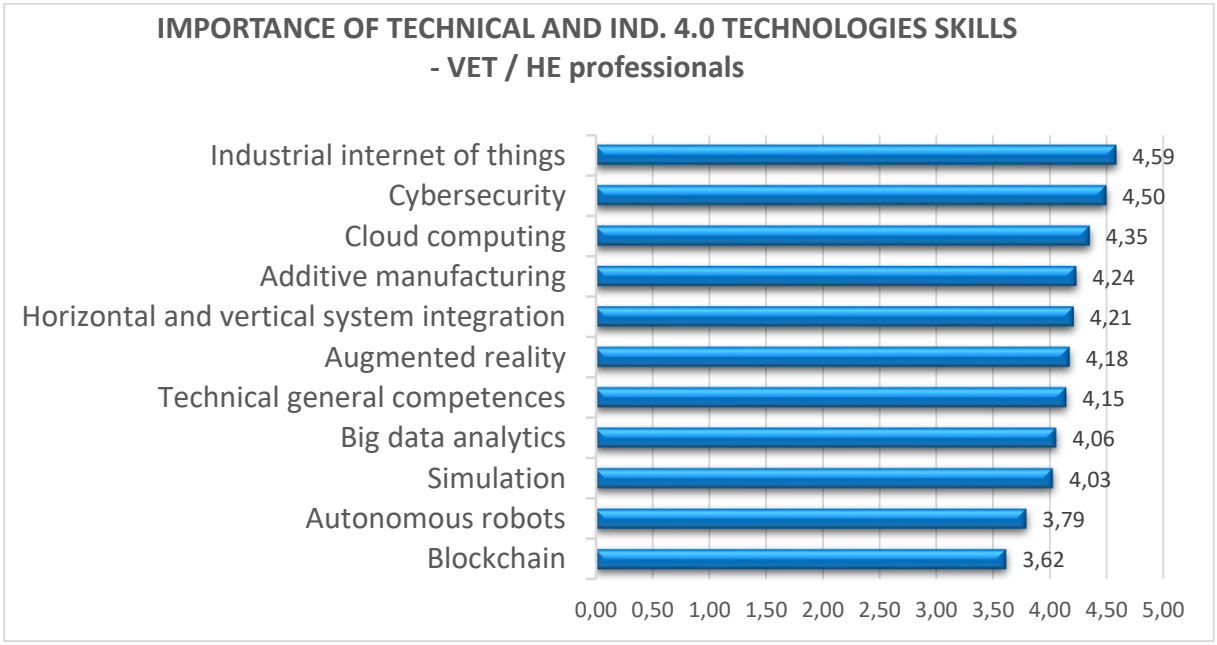


3.2 Importance of Technical and Industry 4.0 Technologies skills

In this key section we have asked to the respondents about which level of the importance they would assign to the competences in each of the following Technical and Industry 4.0 Technologies for successfully leading the digital transformation in an integrated way in all the departments of a furniture company.

This graphic shows in order of importance these technologies. The five ones they consider the most important are: Industrial internet of things, Cybersecurity, Cloud computing, Additive Manufacturing and Horizontal and vertical system integration. In spite of the differences, these results are more or less in line with the results of the answers of the Furniture professionals previously analysed.

Figure 12 – Technical and Industry 4.0 Technologies skills – VET / HE professionals

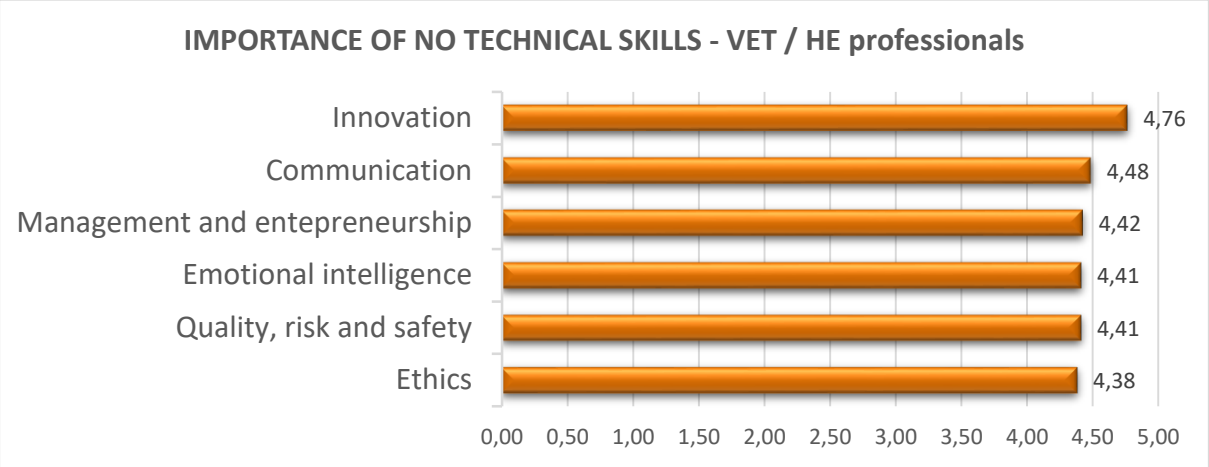


3.3 Importance of No-technical skills

The targets of the question were those skills with a No-technical nature, and we asked to the respondents about which level of the importance they would assign to the competences in each of the following No-technical areas for successfully leading the digital transformation in an integrated way in all the departments of a furniture company.

The graphic shows us that they consider all pre-selected No-technical skills very important, but the ones related to Innovation are clearly considered more important than the other ones.

Figure 13 – No technical skills – VET / HE professionals



3.4 Biggest barriers for implementing industry 4.0 in furniture industry

This question tried to identified which element/conditions the furniture sector professionals consider the main barriers for the successfully implementation of the digital transformation in furniture companies.

As main obstacles we find the Cost of the new technologies, Insufficient development resources Lack of skills and knowledge among staff and lack of technological solutions from suppliers. A relevant aspect is that a deeper analysis shows us that these barriers are seen as such by professionals from all companies' sizes and not only in micro or small companies.

Figure 14 - Biggest barriers for implementing Ind. 4.0 in furniture industry - VET / HE professionals

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4 Industry 4.0 technology experts

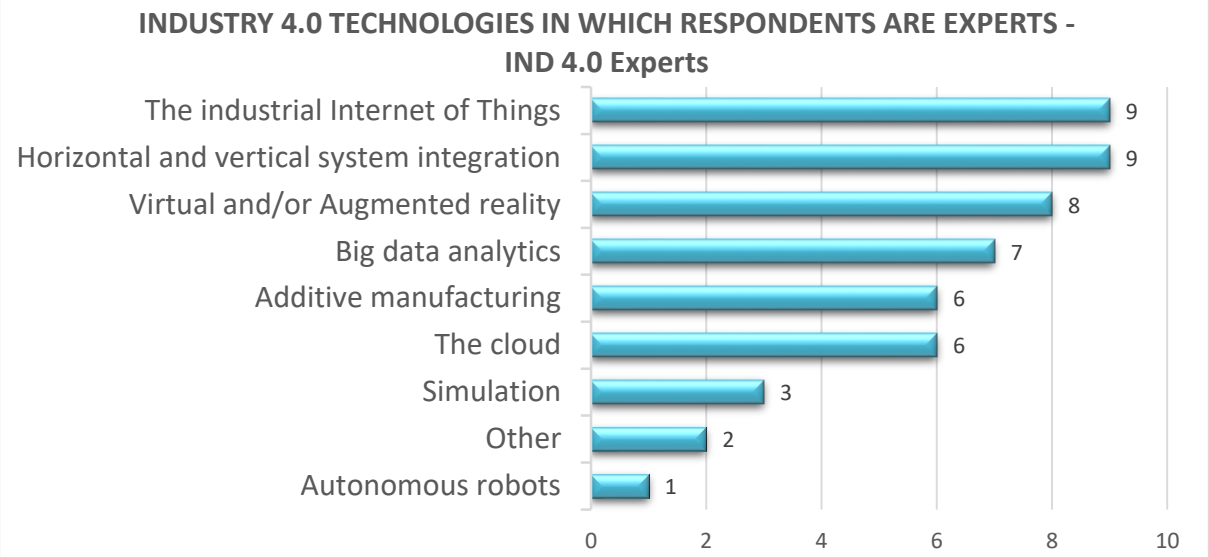
In this chapter we analyse the answers of 21 professionals which are experts in different Industry 4.0 technologies.

4.1 Technologies of expertise of Ind. 4.0 professional respondents

With this question we wanted to understand which were the specific fields of expertise of these respondents. Experts could cover more than one field of expertise.

We can see that the main fields of expertise of respondents are Industrial IoT, horizontal and vertical system integration, virtual and/or augmented reality and big data analytics.

Figure 15 - Industry 4.0 Technologies in which respondents are experts – Ind. 4.0 Experts



4.2 Importance of Technical and Industry 4.0 Technologies skills – Ind. 4.0 experts

This paragraph presents which Technical and Industry 4.0 Technologies skills the Ind. 4.0 expert respondents consider the most important for successfully leading the digital transformation in an integrated way in all the departments of a furniture company.

This graphic shows in order of importance these technologies. The six ones that they consider the most important are: Industrial IoT, Big data analytics, Cloud computing, Additive Manufacturing, Horizontal and vertical system integration and Technical general competences. In spite of some differences, these results are more or less in line with the results of previous professional groups.

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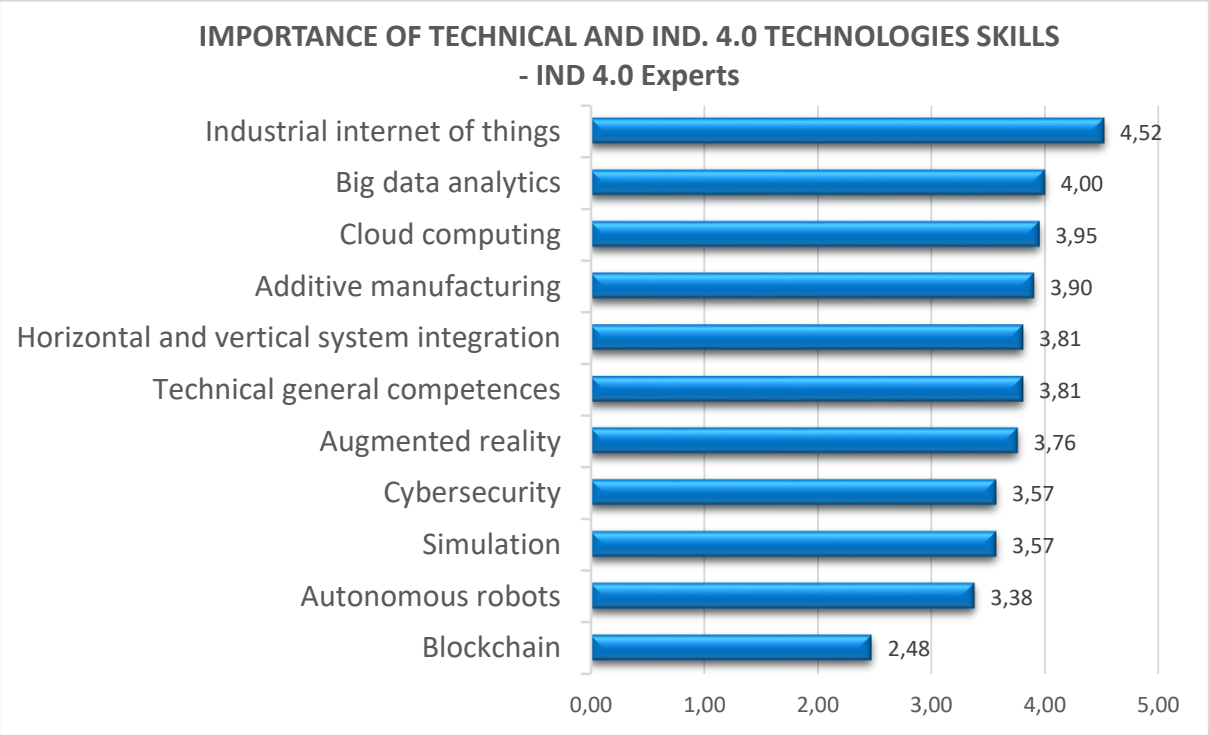
Figure 16 – Technical and Industry 4.0 Technologies skills – Ind. 4.0 Experts

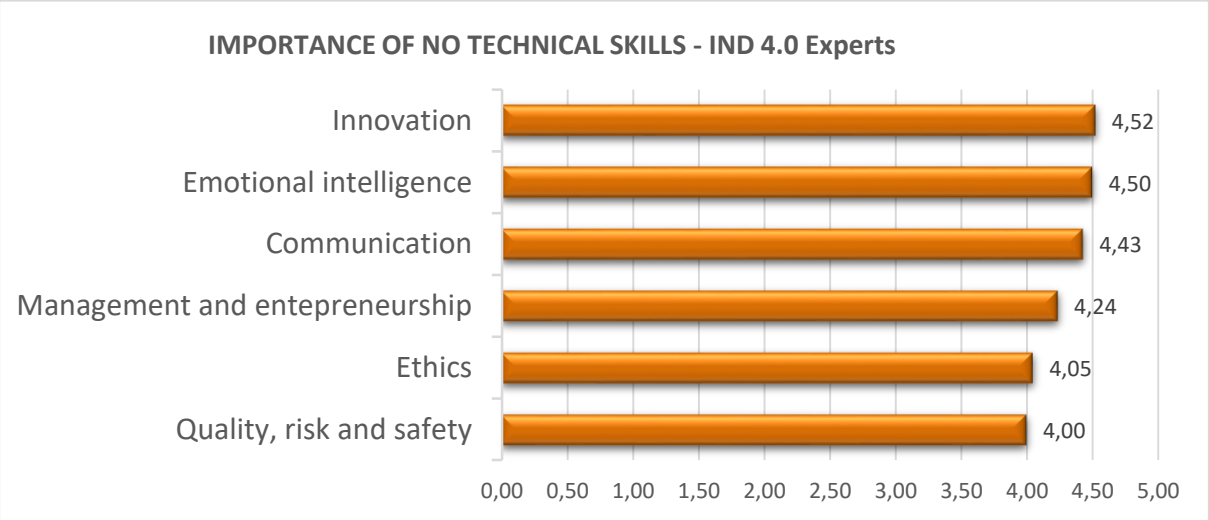


4.3 Importance of No-technical skills

The targets of the question were those skills with a No-technical nature, and we asked to the Ind. 4.0 experts which level of importance they would assign to the competences in each of the following No-technical areas for successfully leading the digital transformation in an integrated way in all the departments of a furniture company.

The graphic shows us that they consider all pre-selected No-technical skills very important, but there are three of them that are clearly considered more important than the other ones: Innovation, Emotional intelligence, and communication.

Figure 17 – No-technical skills – Ind. 4.0 Experts

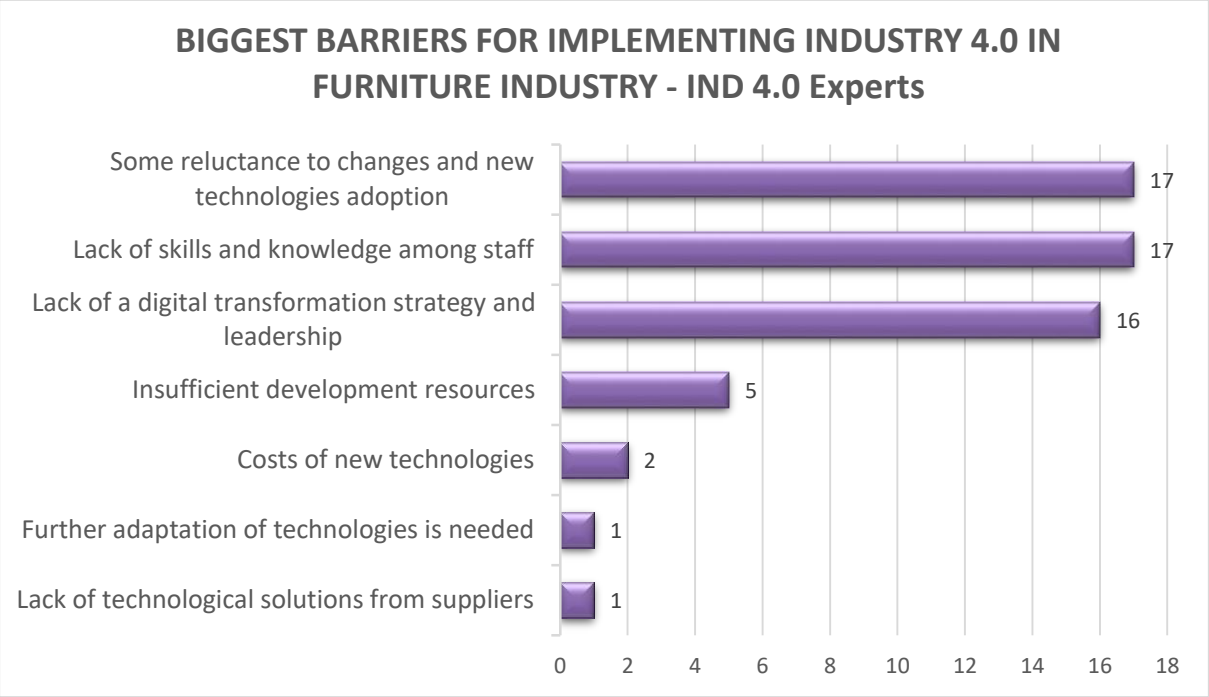


4.4 Biggest barriers for implementing industry 4.0 in furniture industry

This question tried to identified which element/conditions the Ind. 4.0 Experts consider the main barriers for the successfully implementation of the digital transformation in furniture companies.

We can see that the results differ from the ones of the previous professional groups. Three main obstacles were identified by this group: Some reluctance to changes and new technologies adoption, Lack of skills and knowledge among staff and Lack of a digital transformation strategy and leadership.

Figure 18 - Biggest barriers for implementing Ind. 4.0 in furniture industry – Ind. 4.0 Experts



5 Other professionals

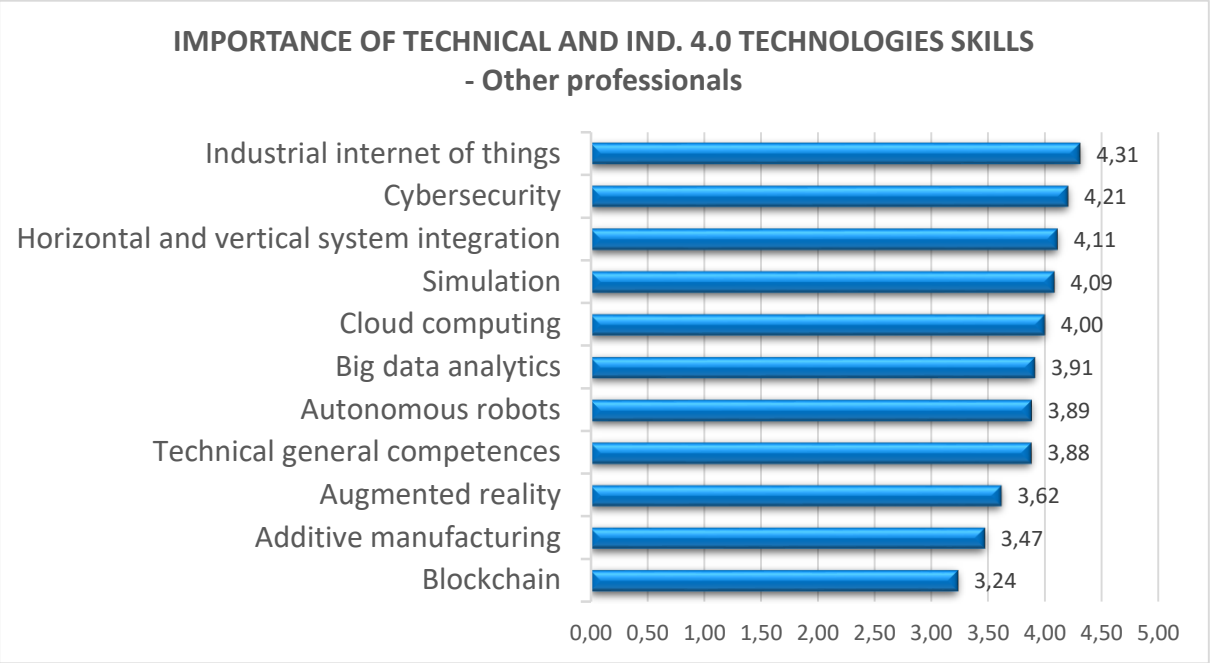
In this chapter we analyse the answers of 34 professionals that are not workers, neither experts in the previously analysed areas.

5.1 Importance of Technical and Industry 4.0 Technologies skills – Other professionals

This paragraph presents which Technical and Industry 4.0 Technologies skills the "other professionals" group consider the most important for successfully leading the digital transformation in an integrated way in all the departments of a furniture company.

This graphic shows in order of importance these technologies. The five ones that they consider the most important are: Industrial IoT, Cybersecurity, Horizontal and vertical system integration, Simulation and Cloud computing. Also in this case we see some minor differences, anyway, these results are more or less in line with the results of previous professional groups.

Figure 19 – Technical and Industry 4.0 Technologies skills – Other professionals

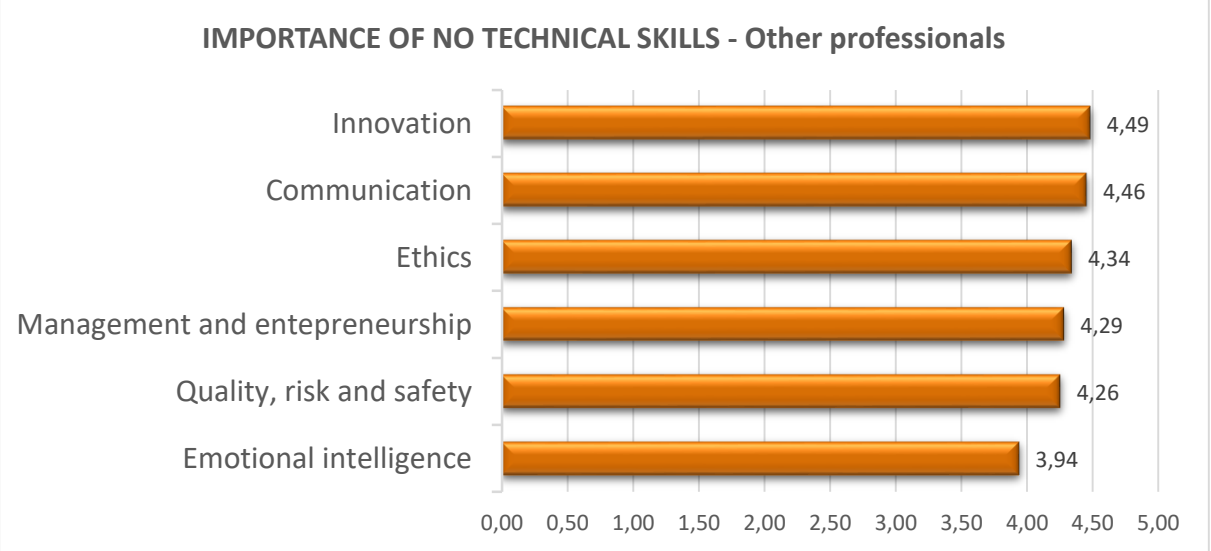


5.2 Importance of No-technical skills

The targets of this question were those skills with a No-technical nature, and we asked to the "other professional" group which level of importance they would assign to the competences in each of the following No-technical areas for successfully leading the digital transformation in an integrated way in all the departments of a furniture company.

The graphic shows us that they consider all six pre-selected No-technical skills very important, but we can see that the first five have reached e level of importance higher than 4: Innovation, Communication, Ethics, Management and entrepreneurship and Quality, risk and safety. We can see that these results, except for Innovation, show us a ranking quite different from the other groups results.

Figure 20 – No-technical skills – Other professionals



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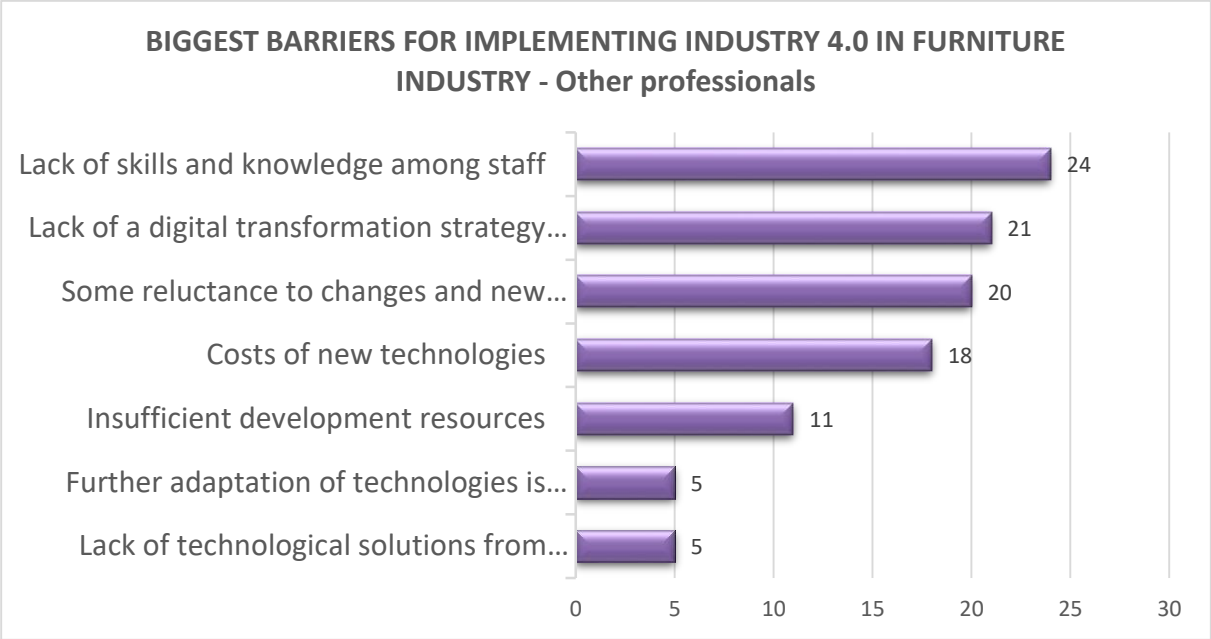
5.3 Biggest barriers for implementing industry 4.0 in furniture industry

This question tried to idenify which element/conditions the "Other professionals" consider the main barriers for the successfully implementation of the digital transformation in furniture companies.

In spite of some differences these results are quite similar to the ones on the Ind. 4.0 Experts" group. The three main obstacles, in spite of the different position in the ranking, are exactly the same: lack of skills and knowledge among staff, lack of a digital transformation strategy and leadership, some reluctance to changes and new technologies adoption.

Figure 21 - Biggest barriers for implementing Ind. 4.0 in furniture industry - Other professionals



6 Aggregated answers by all professionals

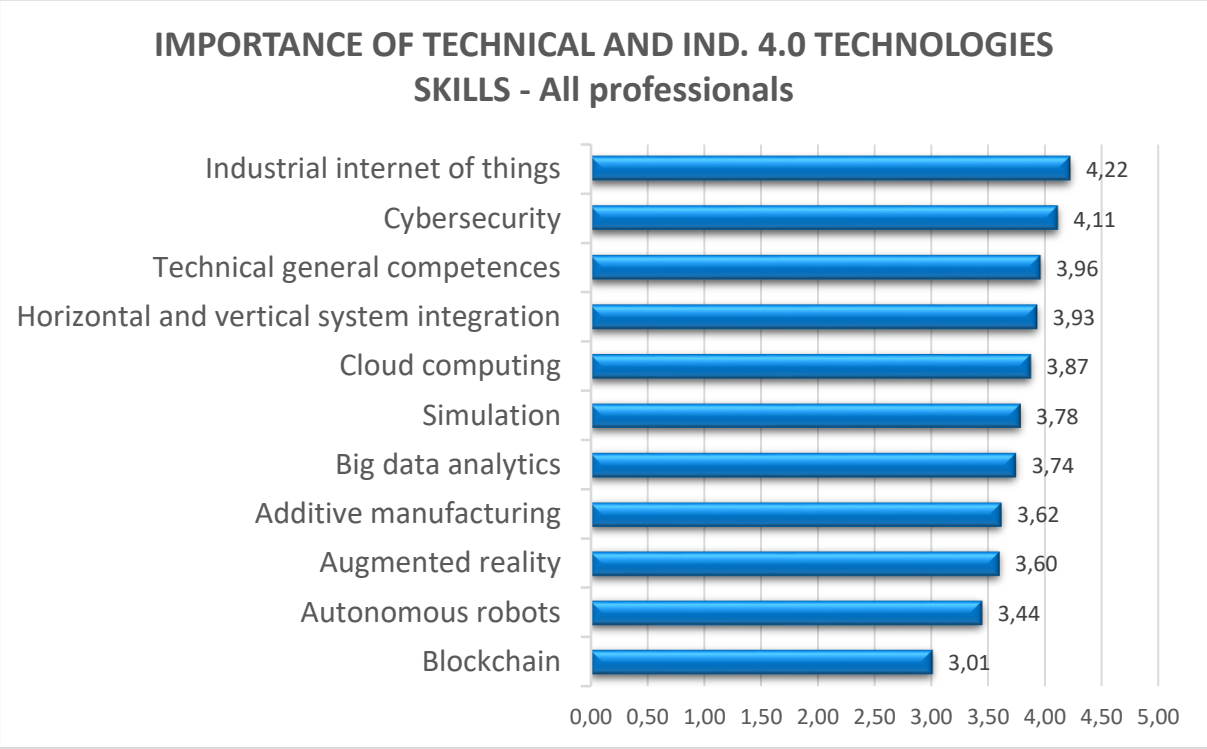
In this chapter we analyse the answers to the key main questions of all 144 professionals in an aggregated manner. We consider that this section is especially important as, finally, these results will be the most relevant for understanding the final results of the survey. They express the opinion of all stakeholders groups involved in the survey and the key beneficiaries of this project outcomes and outputs.

6.1 Importance of Technical and Industry 4.0 Technologies skills – All respondents

This paragraph presents which Technical and Industry 4.0 Technologies skills respondents consider the most important for successfully leading the digital transformation in an integrated way in all the departments of a furniture company.

This graphic shows in order of importance these technologies. In spite of making clear that all of them are very or pretty important, we can see that the importance of two of them are clearly above all the others: Industrial IoT and Cybersecurity.

Figure 22 – Technical and Industry 4.0 Technologies skills – All respondents

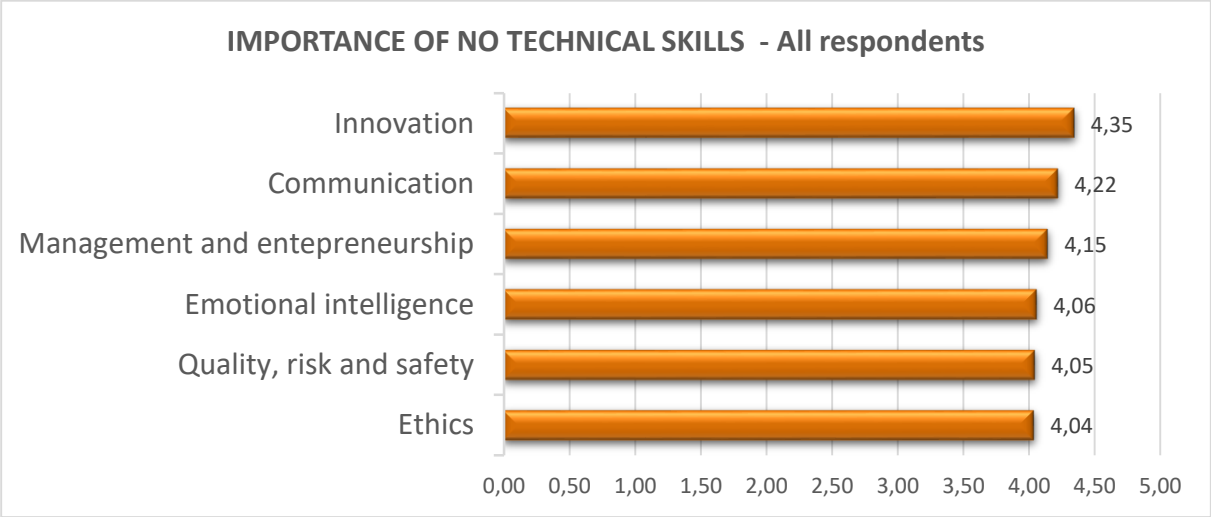


6.2 Importance of No-technical skills – All respondents

The targets of this question were those skills with a No-technical nature, and we asked which level of importance they would assign to the competences in each of the following No-technical areas for successfully leading the digital transformation in an integrated way in all the departments of a furniture company.

This graphic shows us that all six pre-selected No-technical skills are considered very important, but three of them have reached a higher level of importance: Innovation, Communication and Management and entrepreneurship.

Figure 23 – No-technical skills – All respondents

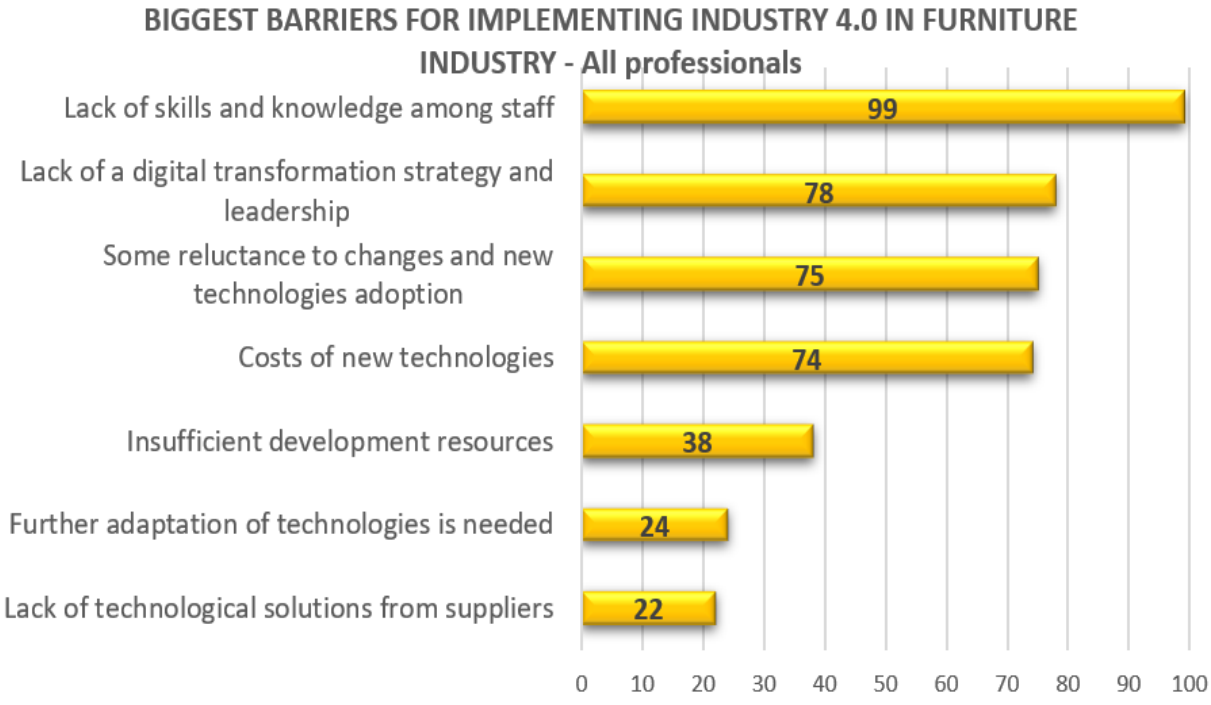


6.3 Biggest barriers for implementing industry 4.0 in furniture industry

This question tried to identify which element/conditions respondents consider the main barriers for the successfully implementation of the digital transformation in the furniture companies.

The graphic clearly identifies which are these main barriers: 1) lack of skills and knowledge among staff, 2) lack of a digital transformation strategy and leadership, 3) some reluctance to changes and new technologies adoption and 4) the cost of new technologies. One aspect that is relevant to stress is that two of these barriers, Cost of new technologies (74) and Lack of skills and knowledge among staff (46) have been selected by respondents as first of the three barriers that they could select in the survey.

Figure 24 - Biggest barriers for implementing Ind. 4.0 in furniture industry – All respondents



7 Conclusions

The aim of this chapter is to summarize and concretize the results of the DITRAMA ***Fine-tune Needs Survey*** and their following discussion at the DITRAMA **Experts workshop**. Concretely, we aim to specifically identify according to survey results and the Workshop outcomes, which are:

1) The biggest barriers for implementing Ind. 4.0 in furniture industry

And the most needed:

2) Technical and Industry 4.0 Technologies skills

3) The No-technical skills

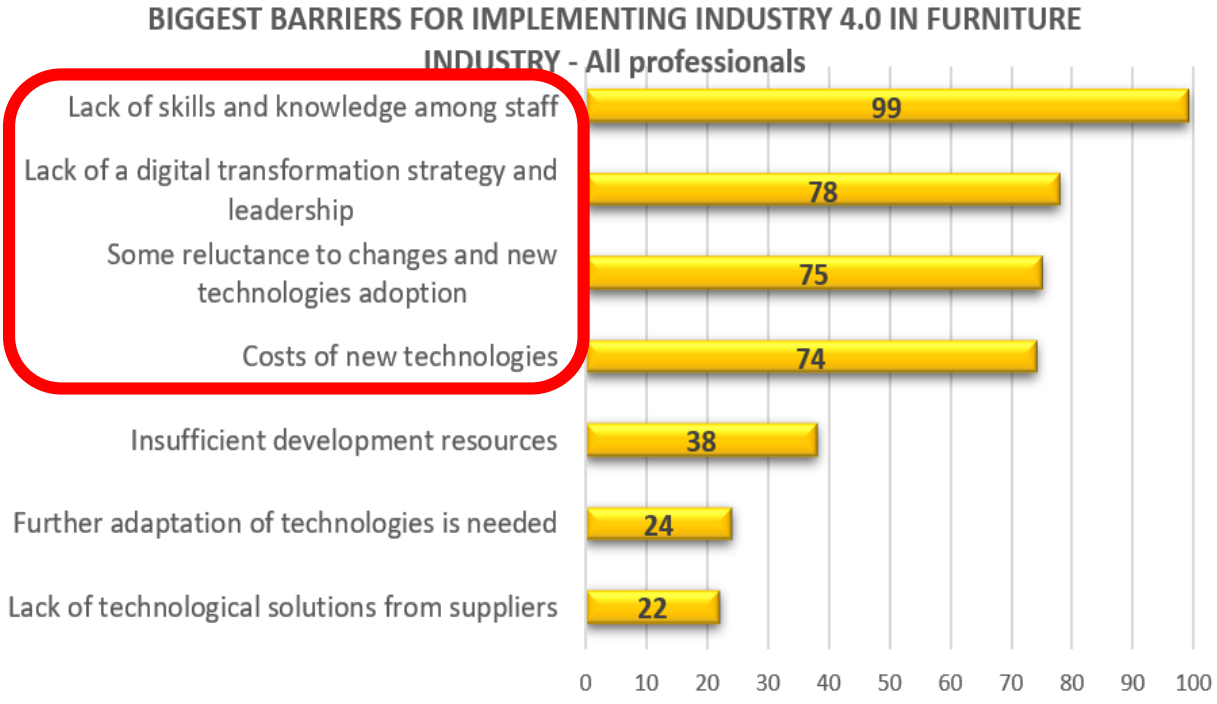
allowing the Digital Transformation Manager to successfully design and implement the digital transformation within furniture companies.

7.1 Biggest barriers for implementing industry 4.0 in furniture industry

DITRAMA partnership did a pre-selection of those situations and conditions that the DTM could face during the digital transformation implementation and that could hamper this process and put at risk the proper functioning of this transformation and the effectiveness and efficiency of the targeted furniture company.

Survey results showed that some of the pre-selected barriers were clearly considered the most important to be solved by respondents.

Figure 25 - Biggest barriers for implementing industry 4.0 in furniture industry



Experts during the workshop agreed that the first three of this list represent the key ones that need to be properly tackled and that there is clear necessity for providing the DTM with skills, knowledge, competences and instruments to deal with them.

a) **Lack of skills and knowledge among staff**

b) **Lack of a digital transformation strategy and leadership**

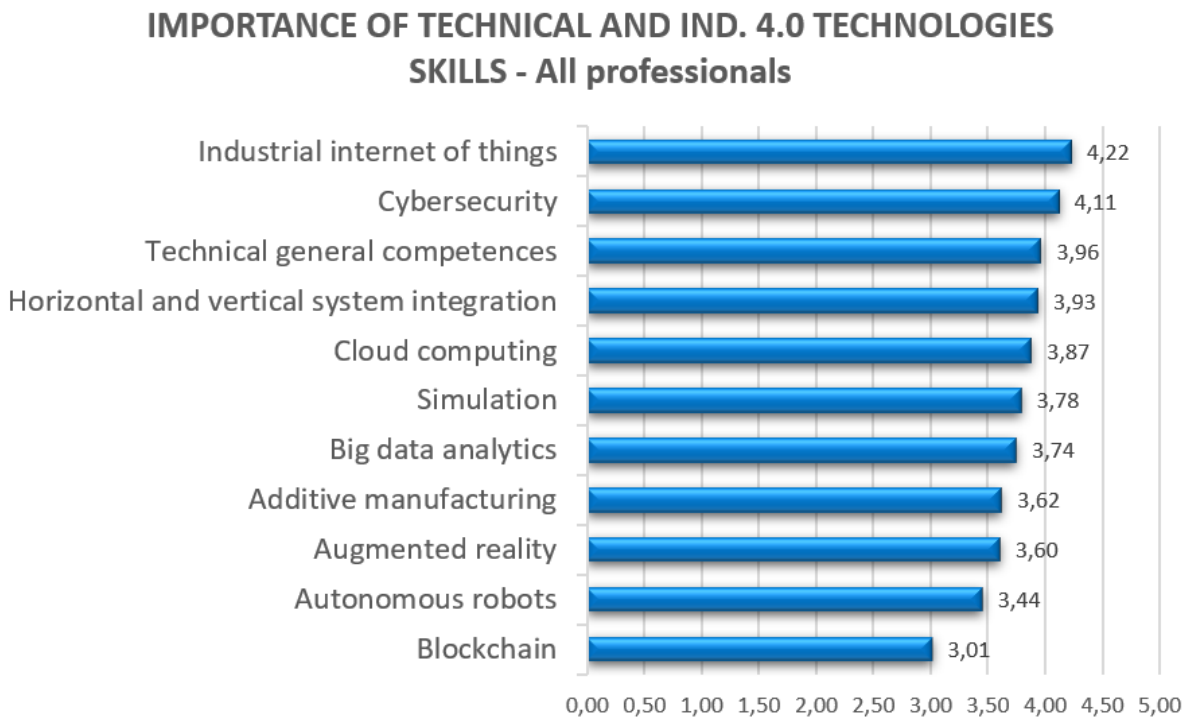
c) **Some reluctance to changes and new technologies adoption**

7.2 Technical and Industry 4.0 Technologies skills needs

DITRAMA partnership did a pre-selection of those skills related to technical and Industry 4.0 technologies that considered that could facilitate the tasks of the DTM in succeeding in implementing the digital transformation.

Respondents answers showed that some of these pre-selected skills were considered highly important (rating above 3,8 on a scale between 0 and 5).

Figure 26 - Technical and Industry 4.0 Technologies skills



Considering that all these skills rated above 3 in the survey, workshop experts agreed in considering that all these skills needs have to be covered and thus provide the DTM with the knowledge to deal with all of the challenges they represent.

They also agreed that considering the nature of these skills and the different rates received by them, the training material that the consortium will develop should take into consideration these differences and go more or less deep into them.

The complete list is the following:

a) **The industrial Internet of Things**

b) **Cybersecurity**

c) **General technical competencies**

d) **Horizontal and vertical system integration**

e) **Cloud computing**

f) **Simulation**

g) **Big data analytics**

h) **Additive manufacturing**

i) **Augmented reality**

j) **Autonomous robots**

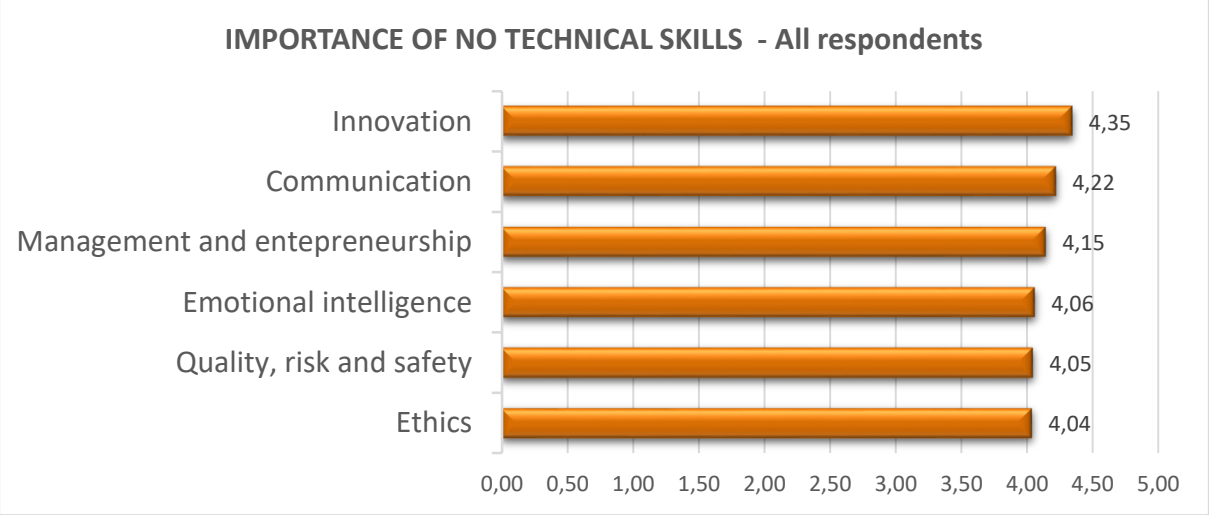
k) **Blockchain**

7.3 No-technical skills needs

DITRAMA partnership did a pre-selection of those No-technical skills that considered that could facilitate the tasks of the DTM in succeeding in implementing the digital transformation.

Answers showed that all of them are considered important by respondents for properly implementing a successful transformation strategy.

Figure 27 - No-technical skills



During the workshop, experts agreed that, in spite of the relevance of the first three to tackled the previously identified main barriers, all these pre-selected skills need to be covered. They will provide the DTM with knowledge and instruments that can facilitate the successful implementation of a proper Digital Transformation Strategy.

The complete list is the following:

a) **Innovation**

b) **Communication**

c) **Management and entrepreneurship**

d) **Emotional Intelligence**

e) **Quality, risks and safety**

f) **Ethics**

Annex I - Survey

DITRAMA - Questionnaire on knowledge, skills and competences required for the "Digital Transformation Manager" of a furniture industry.

This questionnaire is addressed to professionals belonging to: i) furniture sector employers and employees, ii) VET (Vocational Education and Training) / HE (Higher Education) professionals or iii) Industry 4.0 technology experts.

Please, complete the following questionnaire focusing on "knowledge, skills and competences" required by the person in charge of leading the digital transformation in an integrated manner across all departments of the furniture company.

This research is carried out in the framework of the Erasmus+ DITRAMA project (Digital Transformation Manager: leading companies in Furniture value chain to implement their digital transformation strategy). All questionnaire respondents will receive by email the report with the survey results and conclusions.

The answers will be treated as strictly confidential and they will be only shared with DITRAMA project partners. The questionnaire data will be only treated in an aggregate manner. For any questions, please, contact by e-mail (ditrama@cenfim.org) the people responsible for the project.

This questionnaire can be answered in 5 minutes.

Thanks for your participation !

*Required

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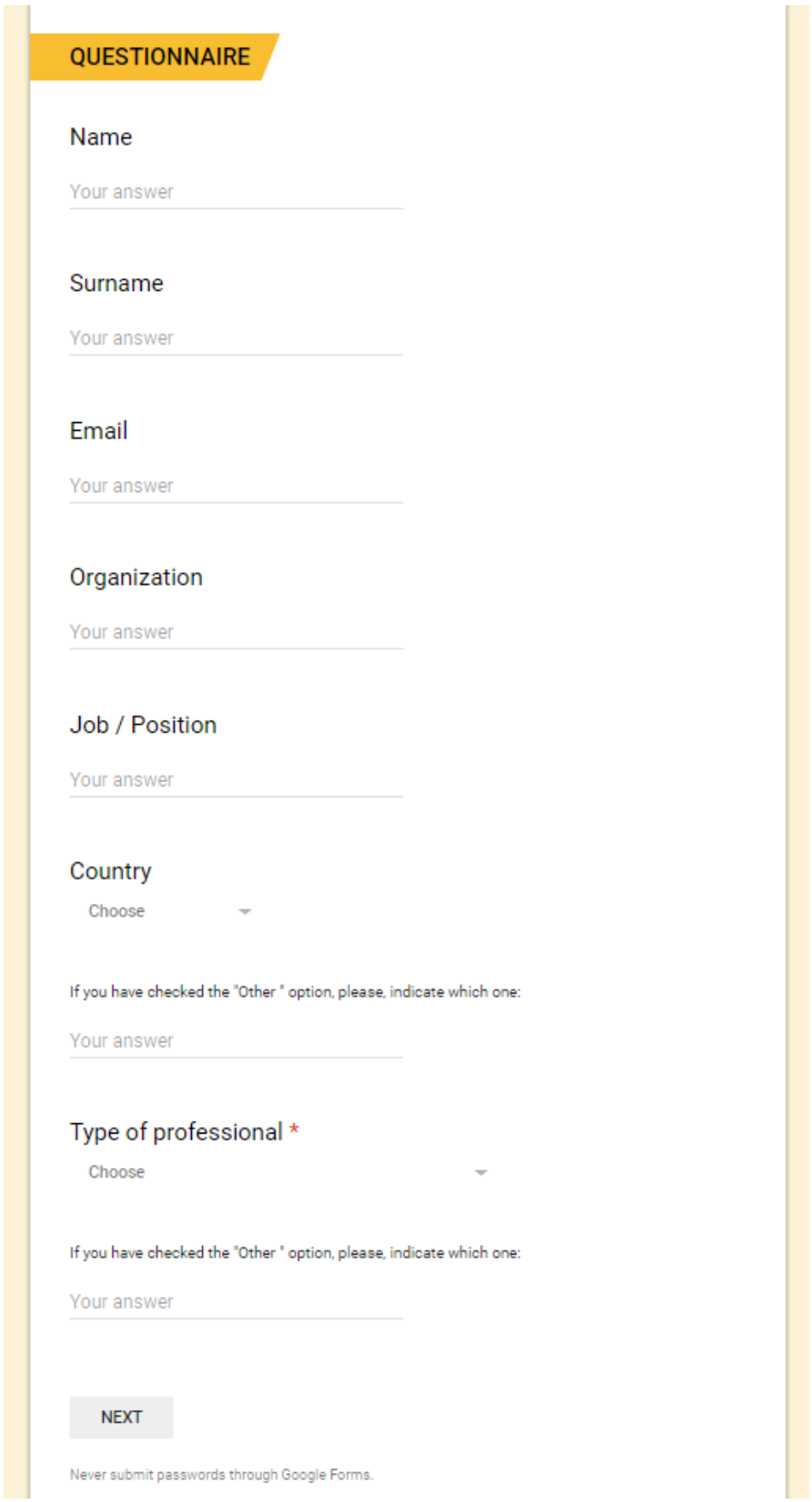
DITRAMA CONSORTIUM



QUESTIONNAIRE

Name

Your answer

Surname

Your answer

Email

Your answer

Organization

Your answer

Job / Position

Your answer

Country

Choose

If you have checked the "Other " option, please, indicate which one:

Your answer

Type of professional *

Choose

If you have checked the "Other " option, please, indicate which one:

Your answer

NEXT

Never submit passwords through Google Forms.

Furniture manufacturer (employer or employee)

Type of products

Choose

If you have checked the "Other furniture" option, please, indicate which one:

Your answer

Size of the company

Choose

The average turnover over the last three years of your company was...

Choose

VET / HE Professional

Type of professional:

Choose

Field of studies / research:

Choose

If you have checked the "Other" option, please, indicate which one:

Your answer

Industry 4.0 technologies expert

Please, select the technologies in which you are an expert

- [ ] 1) Big data analytics
- [ ] 2) Autonomous robots
- [ ] 3) Simulation
- [ ] 4) Horizontal and vertical system integration
- [ ] 5) The industrial Internet of Things
- [ ] 6) Cybersecurity
- [ ] 7) The cloud
- [ ] 8) Additive manufacturing
- [ ] 9) Virtual and/or Augmented reality
- [ ] 10) Other

If you have checked the "Other" option, please, indicate which one:

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Rate between 1 and 5 (Not Important - Extremely Important) the current level of DOMINANCE of the following "knowledge, skills and competences" by the person in charge of the digital transformation in your company and rate the IMPORTANCE of these "knowledge, skills and competences" for successfully leading in an integrated way the digital transformation in all the departments of a furniture company.

Where 1 is Not Important and 5 is Extremely Important

General technical competences for the digital transformation of furniture industry:

TECHNICAL: Competences related to practical subjects based on scientific principles (e.g. characterization, systems integration, mathematical modelling and simulation, top-down fabrication, etc.)

	1	2	3	4	5
Dominance	○	○	○	○	○

	1	2	3	4	5
Importance	○	○	○	○	○

Key industry 4.0 technologies to be adopted by furniture industries to implement their digital transformation:

BIG DATA ANALYTICS: The extraction of new information from massive amounts of data using machine learning software algorithms.

	1	2	3	4	5
Dominance	○	○	○	○	○

	1	2	3	4	5
Importance	○	○	○	○	○

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AUTONOMOUS ROBOTS: Autonomous robots and machines that are able to make their own decisions on how to operate in a particular situation.

	1	2	3	4	5
Dominance	○	○	○	○	○

	1	2	3	4	5
Importance	○	○	○	○	○

SIMULATION: Accurate predictions of how elements behave.

	1	2	3	4	5
Dominance	○	○	○	○	○

	1	2	3	4	5
Importance	○	○	○	○	○

HORIZONTAL AND VERTICAL SYSTEM INTEGRATION: The accumulated effect of the convergence of the new digital technologies accelerating the impact of the digital transformation.

	1	2	3	4	5
Dominance	○	○	○	○	○

	1	2	3	4	5
Importance	○	○	○	○	○

THE INDUSTRIAL INTERNET OF THINGS: The network communication technology providing the necessary connectivity to have access to all relevant data is referred to as the Industrial Internet of Things.

	1	2	3	4	5
Dominance	○	○	○	○	○

	1	2	3	4	5
Importance	○	○	○	○	○

CYBERSECURITY: Cyber threats can hit any part of the manufacturing chain as well as the actual smart products itself.

	1	2	3	4	5
Dominance	○	○	○	○	○

	1	2	3	4	5
Importance	○	○	○	○	○

THE CLOUD: Cloud computing is a shared pool of configurable computer system resources and higher-level services that can be rapidly provisioned with minimal effort.

	1	2	3	4	5
Dominance	○	○	○	○	○

	1	2	3	4	5
Importance	○	○	○	○	○

ADDITIVE MANUFACTURING: Additive manufacturing is any of various processes in which material is joined or solidified under computer control to create a three-dimensional object (3D printing).

	1	2	3	4	5
Dominance	○	○	○	○	○

	1	2	3	4	5
Importance	○	○	○	○	○

AUGMENTED REALITY: A live indirect view of a physical, real-world environment whose elements are augmented by computer-generated sensory input such as sound, video or graphics on top of the real world.

	1	2	3	4	5
Dominance	○	○	○	○	○

	1	2	3	4	5
Importance	○	○	○	○	○

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Blockchain: system in which a record of transactions made in bitcoin or another cryptocurrency are maintained across several computers that are linked in a peer-to-peer network. This system is used by companies to offer the traceability of their products throughout the production chain.

	1	2	3	4	5
Dominance	○	○	○	○	○

	1	2	3	4	5
Importance	○	○	○	○	○

Other (type the name):

Your answer

Non - technical competences for the digital transformation of furniture industry:

QUALITY, RISK AND SAFETY: competences related to quality, risk & safety aspects (e.g. quality management, computer-aided quality assurance, emergency management and response, industrial hygiene, risk assessment and new possible risks in industry 4.0 environments, etc.)

	1	2	3	4	5
Dominance	○	○	○	○	○

	1	2	3	4	5
Importance	○	○	○	○	○

MANAGEMENT AND ENTEPRENEURSHIP: competences related to management, administration, human resources, Intellectual Property - IP, finance and sharing economy (e.g. strategic analysis, marketing, project management, IP management, deal negotiation skills, etc.)

	1	2	3	4	5
Dominance	○	○	○	○	○

	1	2	3	4	5
Importance	○	○	○	○	○

COMMUNICATION: competences related to interpersonal communication (e.g. verbal communication, written communication, presentation skills, public communication, virtual collaboration, etc.)

	1	2	3	4	5
Dominance	○	○	○	○	○

	1	2	3	4	5
Importance	○	○	○	○	○

INNOVATION: competences related to design and creation of new things (e.g. integration skills, complex problem solving, creativity, systems thinking, etc.)

	1	2	3	4	5
Dominance	○	○	○	○	○

	1	2	3	4	5
Importance	○	○	○	○	○

EMOTIONAL INTELLIGENCE: ability to operate with own and other people's emotions, and to use emotional information to guide thinking and behavior (e.g. leadership, cooperation, multicultural orientation, stress-tolerance, self-control, etc.)

	1	2	3	4	5
Dominance	○	○	○	○	○

	1	2	3	4	5
Importance	○	○	○	○	○

ETHICS: ability to consider the ethical impact of job tasks and new technologies and applications on society.

	1	2	3	4	5
Dominance	○	○	○	○	○

	1	2	3	4	5
Importance	○	○	○	○	○

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Project starting date	01/01/2019
Project end date	31/12/2021
Project duration	36 months

PROJECT CONSORTIUM

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