D2.2 – The needs of the building and the construction sectors: survey outcomes and elaborated results

WP2 – Framing the innovation: GAP analysis of the existing qualifications and identification of the needs in the building sector

WP Leader: FLC
Task leader: IIPLE

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KA3 - Support for Policy Reform

Joint Qualifications in Vocational Education and Training (VET)

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Introduction

Project synopsis

The technological and organisational innovation and the new normative framework in the construction industry imposes the redefinition of the profiles and the training of the construction site technicians, integrating and in some cases replacing the existing knowledge, skills and capabilities. A better understanding of the current needs from an industrial point of view, of the current normative framework and of the existing vocational training and qualification offered is therefore needed.

ICARO will bridge the gap among the construction sector needs and the training offered, proposing integration and in some cases a completely new definition of the construction site technician curricula. Doing so, ICARO will assume a crucial role in relation to the revitalization of the construction industry, which needs a generational replacement, orientating young and unemployed towards qualified professions.

Moreover, ICARO will include gender issue in the construction sector since among vocational education graduates, only 10 % are women and will focus on the importance of Work Based Learning (WBL) and exchange and mobility experiences within companies into the training process, thus contributing to create higher employment possibilities. In doing so, ICARO will involve social parties and employers in the decisions regarding training quality, the effectiveness check of the WBL experience and the impact on the employment Market, thus ensuring an appropriate integration of their needs within the new curricula.

ICARO will thus generate a beneficial impact on employability of young people reducing unemployment at European level, promoting actions that facilitate a quality training that is attractive and relevant to the employment Market.

Project Task 2.2 "Survey within the construction company system"

Within this task a survey to understand technological and organizational innovation needs of construction companies and the relationships between business and professional training will be designed, distributed and analysed. Partners will collect at least 150 questionnaires from construction companies and will analyse their needs, aiming at improving the Construction site technician qualification in WP3.

This survey will be presented and discussed during the local workshops to be organised in the 3 Countries involved (Italy, Spain and Lithuania).

Deliverable 2.2: "The needs of the building and the construction sectors: survey outcomes and elaborated results" - This report will include the analysis of the results of the survey performed within Task 2.2, highlighting the main needs and gaps identified by the companies in the existing vocational trainings curricula.

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Compared to a traditional approach based on individual interviews, an assessment process based on a online survey has many positive aspects:

- Easy to use and the possibility to reach a higher number of stakeholders as the questionnaire can be filled in through computers, smartphones and tablets and can be concluded in each time of the day;
- Multiple language, the same set of questions can be submitted to different target groups in different languages;
- Immediate data collection: as it is a cloud-based software, all the answers are immediately stored. The time-consuming procedure related to the manual recording of all the answers is not needed;
- Monitoring and controlling the compilation, the web platform allows manager profiles to constantly monitor the level of compilation and to stimulate the filling in with a view of balancing the different target groups;
- Possibility of data processing, all the data are immediately stored and ready to be processed and analyse;
- Cross check data, given the possibility of collecting all data into a structured database, cross checking allows to provide a more detailed analysis

Assessment process

The assessment is following a binary approach: the first part is reproducing the national picture as resulting from the survey data elaboration whilst the second part is putting together the 3 countries scenarios on a comparative perspective centred on each single dimension.

The first part (*Survey results per country*) is again split into two pictures:

- *Companies profile* has the purpose of highlighting the main characteristics and dimensions of the sample companies to also better interpreting the survey results
- *Information on training needs* is then centred on the evaluation of current situation and expectations within the sample companies as for each single listed skill

The first part has thus the aim of understanding the companies need for innovation in the 3 partner countries, but also - and mainly - the constraints imposed by the market to which companies must necessarily adapt, focusing the GAP analysis of the existing qualification and identification of the needs in the building sector.

The second part (*Comparative perspective*) aims to directly compare the scenarios of the 3 countries with respect to each single type of competence listed, immediately highlighting the similarities and / or differences registered. Clearly the data must be interpreted in the light of regional and national territorial contexts and also of the specific characteristics of the entrepreneurial profile as it also results from the first part of the analysis (*companies profile*).

Purpose of the survey is to "understand technological and organizational innovation needs of construction companies and the relationships between business and professional training, highlighting the main needs and gaps identified by the companies in the existing vocational trainings curricula" therefore the main value is linked to the first part where comments and notes have clearly the purpose to draw some conclusion highlighting the most significant results and therefore of more effective direction for possible future actions. On the contrary the second part is addressed to better contextualise the figures resulting by the national / regional surveys on a comparative perspective which, by definition, has to keep track of all the peculiarities and individualities of the respective national / regional business scenarios.

The last chapter (*First remarks*) is then intended to provide a very first background for possible interpretation of all the collected data, being conceived just as food for thoughts as a direct result of a first reading.

To perform the survey two different web-based platforms have been used (*one for Italy and Lithuania and one for Spain*) therefore just the layout and the editing of the Spanish report present some tiny difference. Anyway all the data have been homogenized and thus together processed to produce a perfectly comparable and equable result.
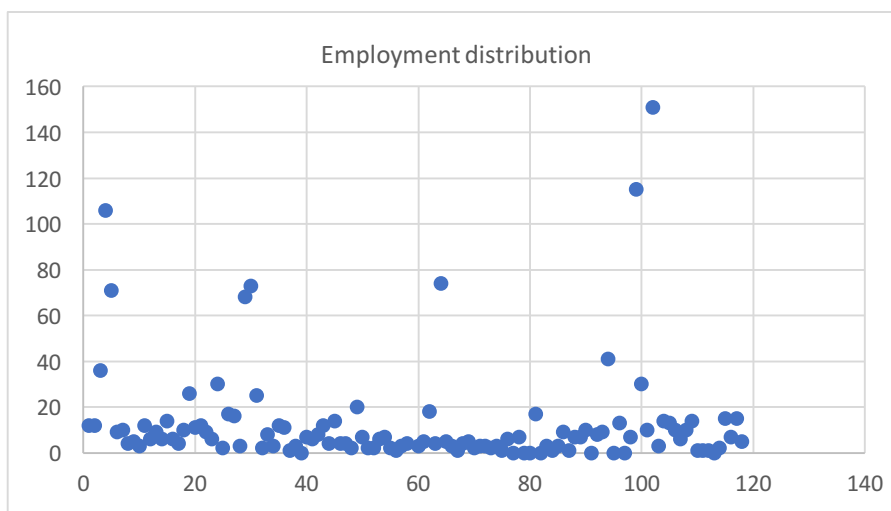
# Survey results per country

Italy

All in total <u>118 answers</u> have been collected spreading the questionnaire at national level, resulting in the picture described as follows.

COMPANIES PROFILE

The average SIZE of the companies participating to the survey is **13** employees with the size distribution resumed in the following chart: [1]

Employment distribution

Out of the total amount of employees the following charts give evidence of the number of APPRENTICES / YOUNG WORKERS and then of FEMALE EMPLOYEES in the workforce.

Number of apprentices / young workers

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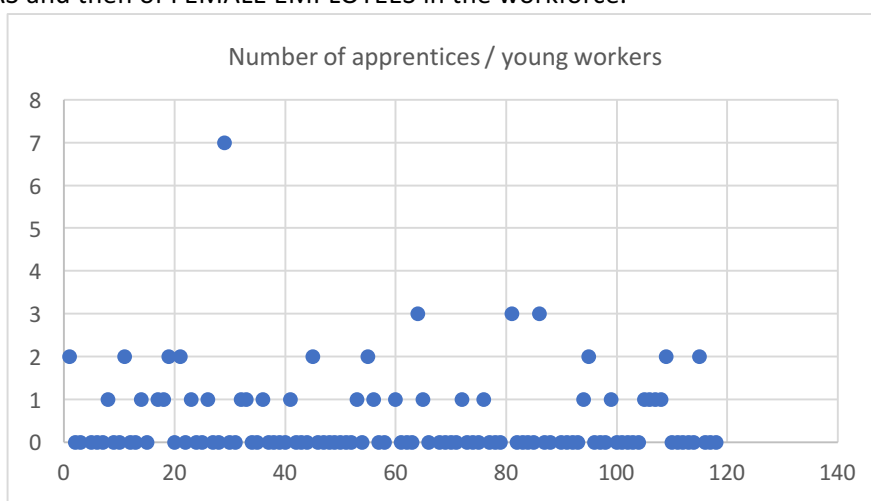
[1] The chart clearly shows that the highest <u>concentration</u> of companies is below the line of 20 employees, with just few samples above the 50s threshold. In all these charts the Cartesian coordinates are representing respectively: X axis = the progressive number of answering enterprises (*all in total 118 therefore <u>one dot represents each single answering enterprise</u>*) and Y axis the number of employees.

Number of female employees
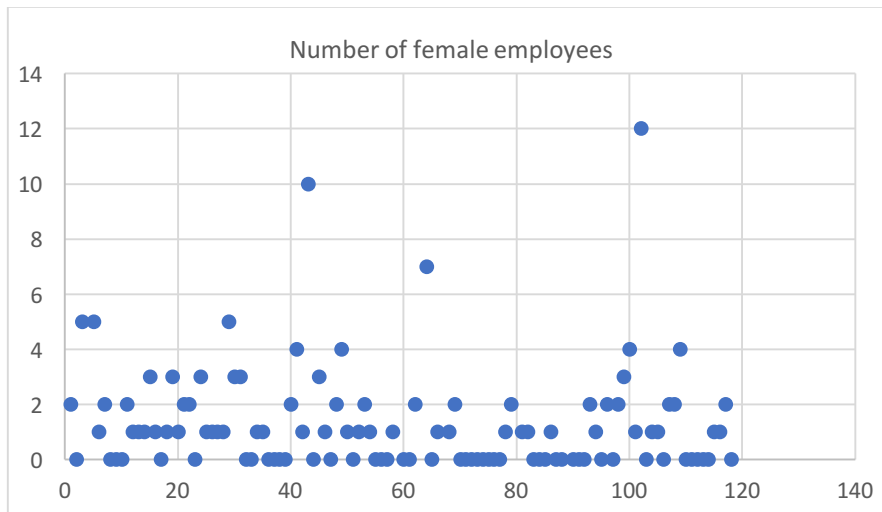
As for the female employees the average number per company is **1,3** representing only the **9,8%** of the total workforce of the target sample.

As for the SECTOR IN WHICH THE COMPANY OPERATES the highest numbers are related to the **Residential-civil work** and the **Maintenance / renovation**, with also significant relevance for the **Structural works** at the 6,8% and the **Finishing** at the 6,0%.
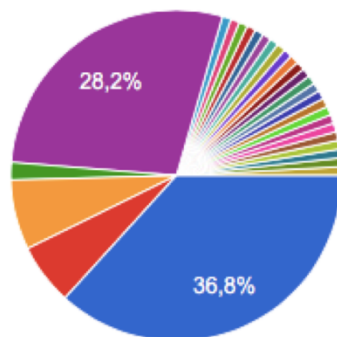

- Residential - civil work
- Finishing
- Structural works
- Installation
- Maintenance
- Industrial construction
- General maintenance
- General renovations
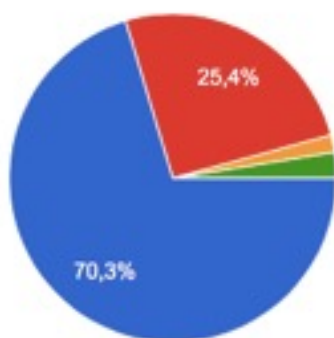
- Local
- National
- European
- International

As for the MARKET IN WHICH THE COMPANY OPERATES more than 2/3 of the companies are operating just a local level and very few of them are working abroad: only 1,7% declared to operate in the Europen market and only the 2,5% on the international one.

As for the TYPE OF COMPANY the vast majority of answers have been clearly directed to the Construction type (75,5%) with the a 4,2% referred as Architecture and Design and the others in the sample fragmented on different and various types.
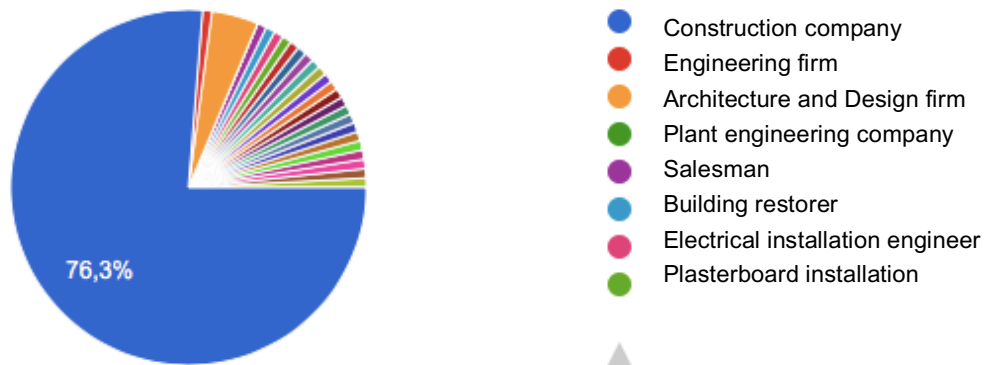
Then coming to the TRAINING habits the **88,2%** of the companies declared that in addition to compulsory training they are taking part in other training courses:[2] the **85,7%** declared to attend courses on safety in general (*a part of those already compulsory*), the **46,7%** on practical training update for bricklayers and the **33,3%** for technicians / general professionals and BIM technology. Only the **14,3**% declared that the company staff is attending transversal skill trainings.

Finally, as for the TYPE OF PROFESSIONAL PROFILES which are currently working in the company this is the picture resulting from the answers collected: [3]

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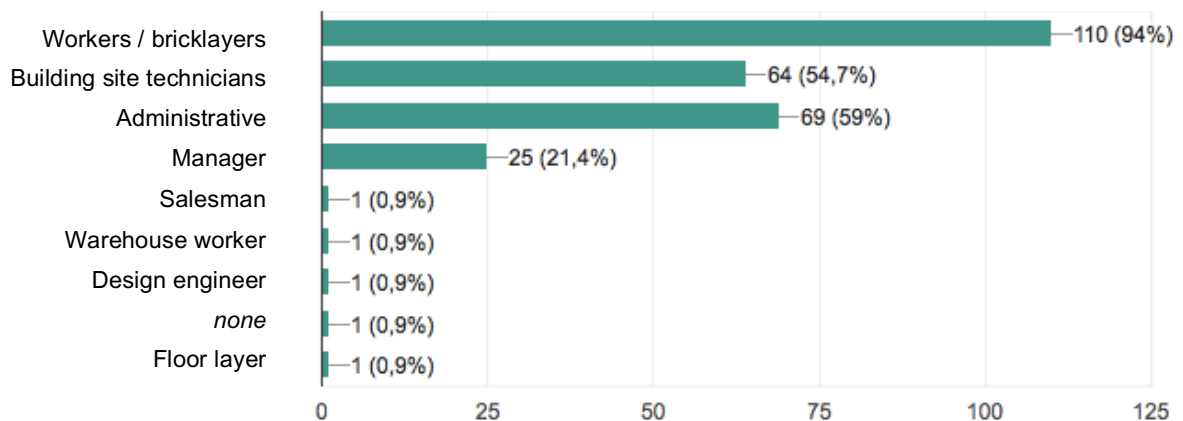
[2] Out of those who are not attending any course the 50% said that the main reason is the lacking of time and the 25% that the compulsory trainings are already sufficient.

[3] Clearly more than one answer was allowed on this question.

INFORMATION ON TRAINING NEEDS

1) CAD DRAWING

58,1% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way:

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]
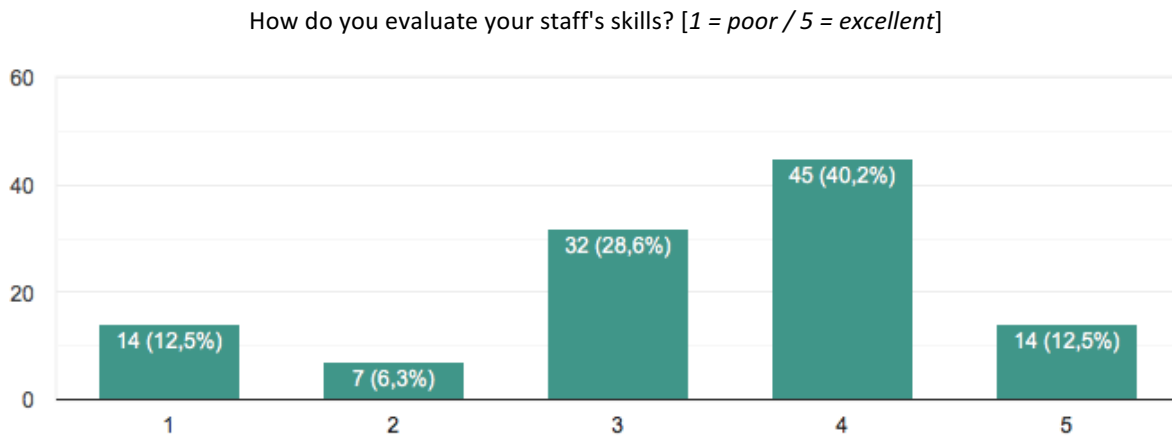
How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]
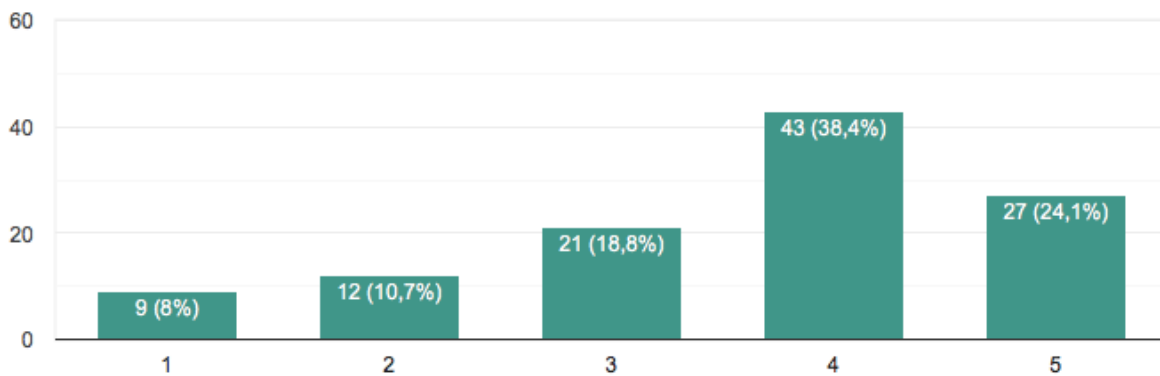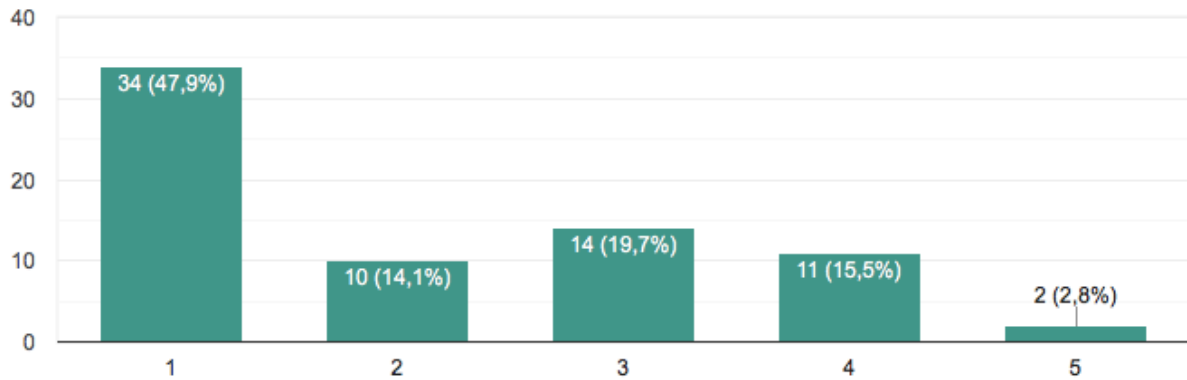

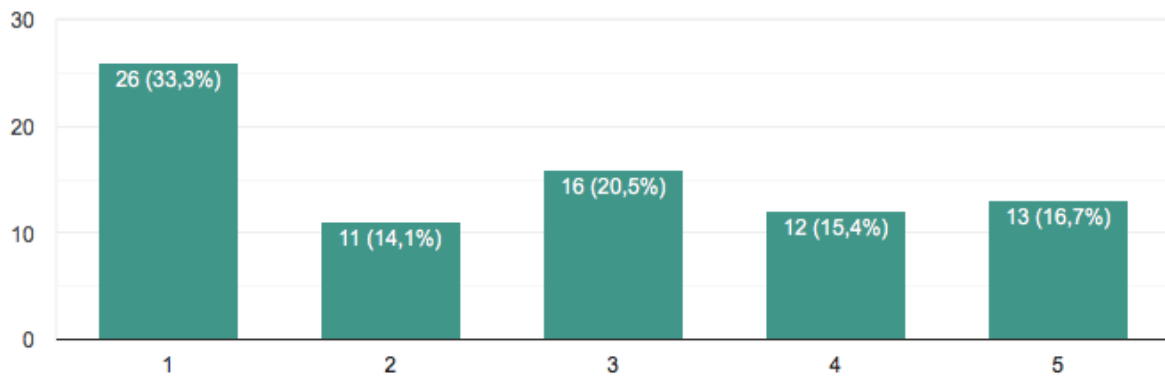### 2) BIM (Building Information Modelling)

Only the **12,8%** of the companies declared to possess this expertise within its own staff, rating its relevance in the following way: [4]

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[4] The low rate of companies having this expertise in its own staff is confirmed by the low number of answers collected for the evaluation of the relevance (*only 75 out of the 118 sample*) as well as on the own perception of its relevance (*1/3 of the companies declared this expertise not at all relevant*).

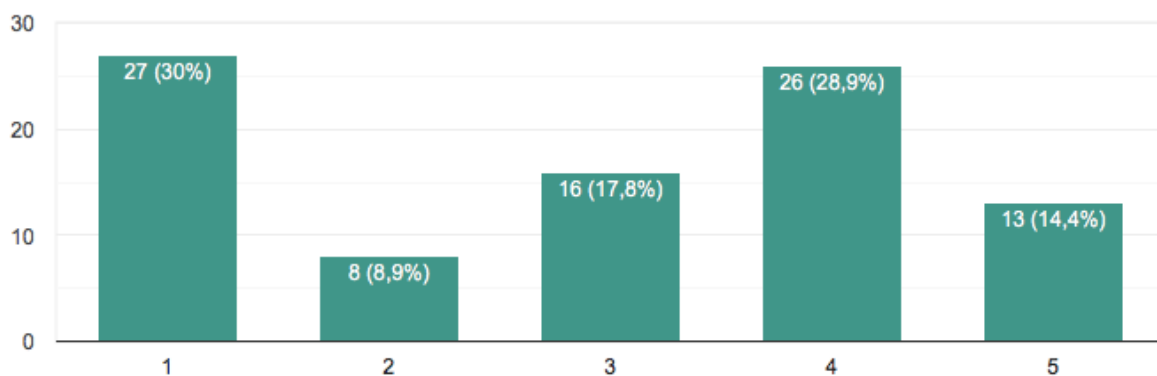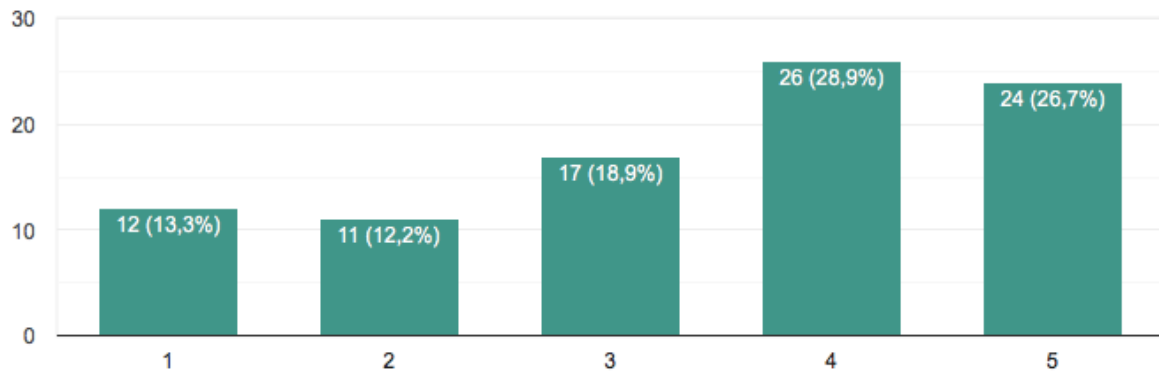How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]

How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]

3) QUALITY SYSTEM MANAGEMENT

41,9% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way:

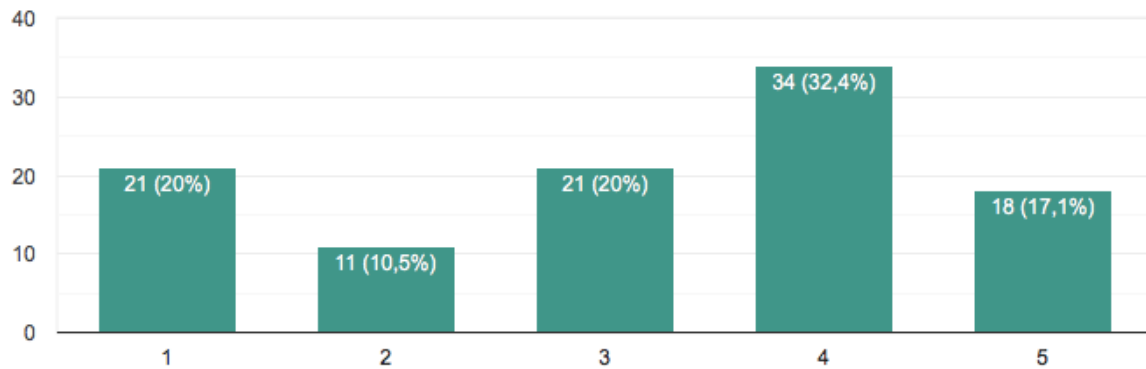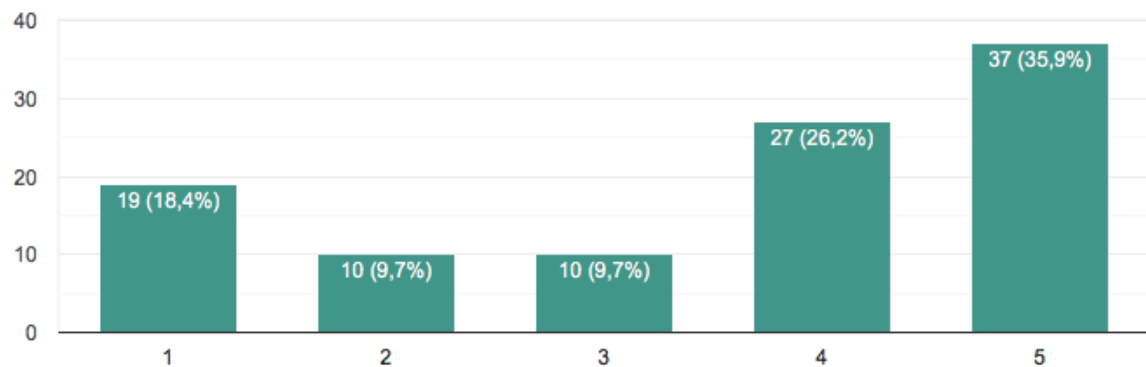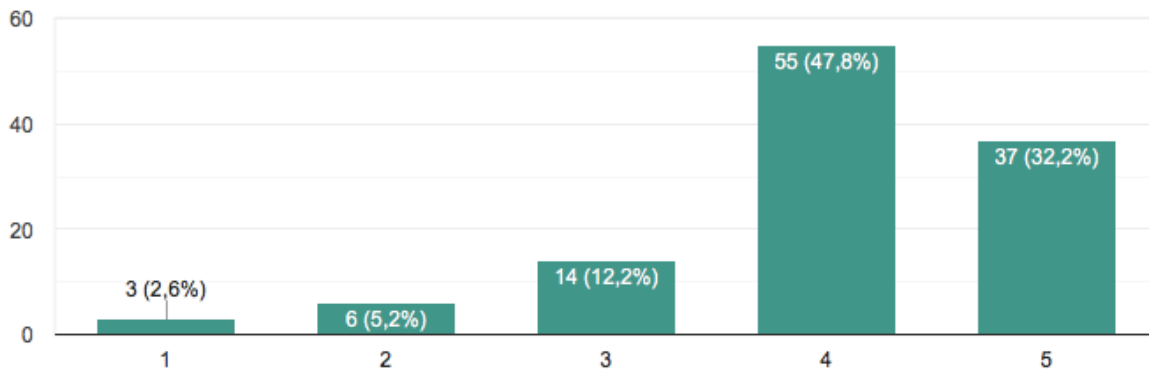How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]

How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]
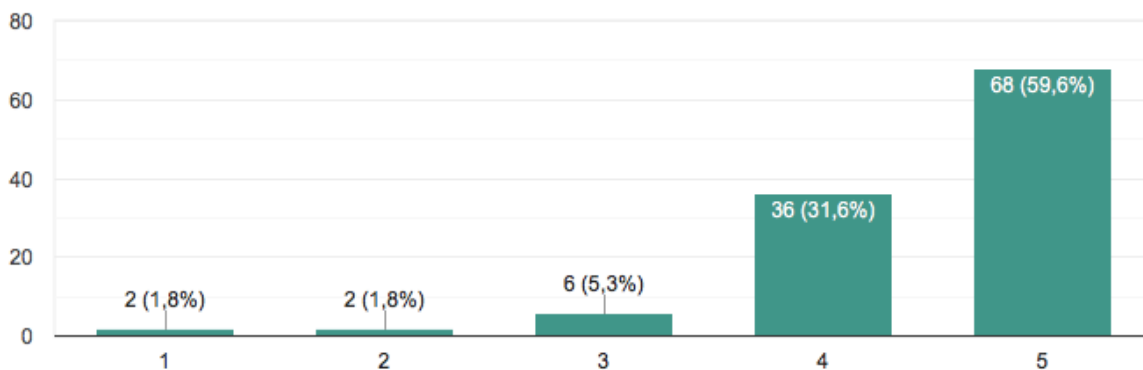

4) TENDERS AND PUBLIC PROCUREMENT MANAGEMENT

63,2% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way:

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]

How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]

5) ESTIMATES AND TECHNICAL ACCOUNTING

94,1% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way: [5]

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]

How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]
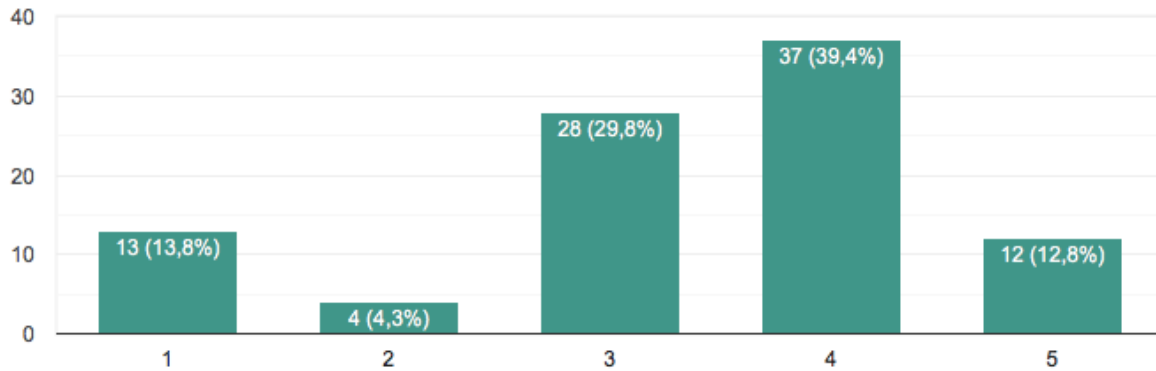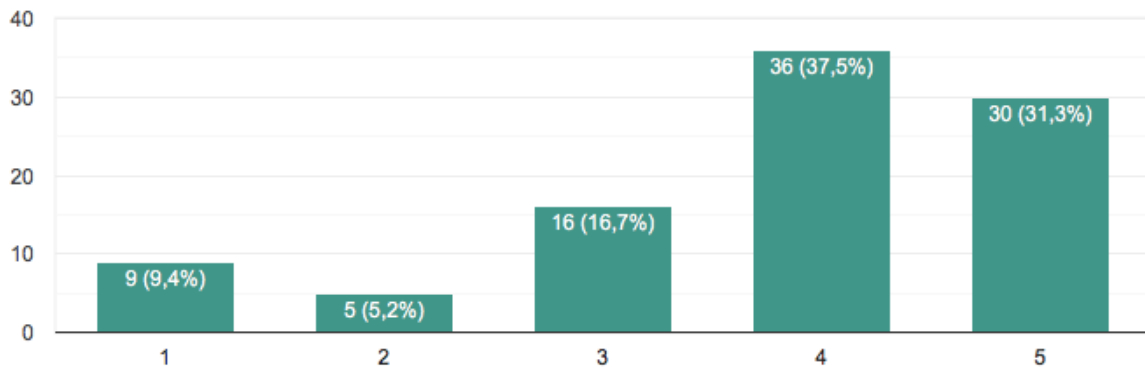

6) HR MANAGEMENT

59,8% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way:

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[5] Almost the whole sample of the companies declared to possess this expertise leading to an extremely positive evaluation of its relevance on the daily business (*almost the 60% declared this competence extremely important on the daily operations*).

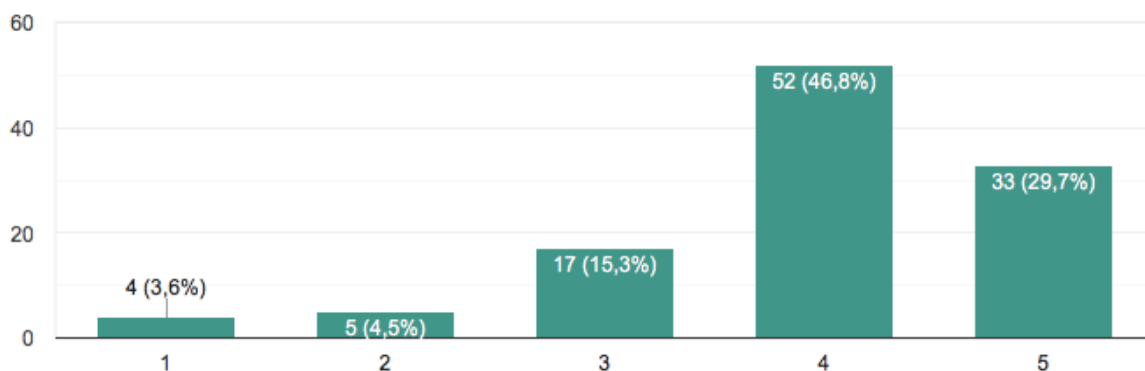How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]

How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]

7) TASKS ACCOUNTING

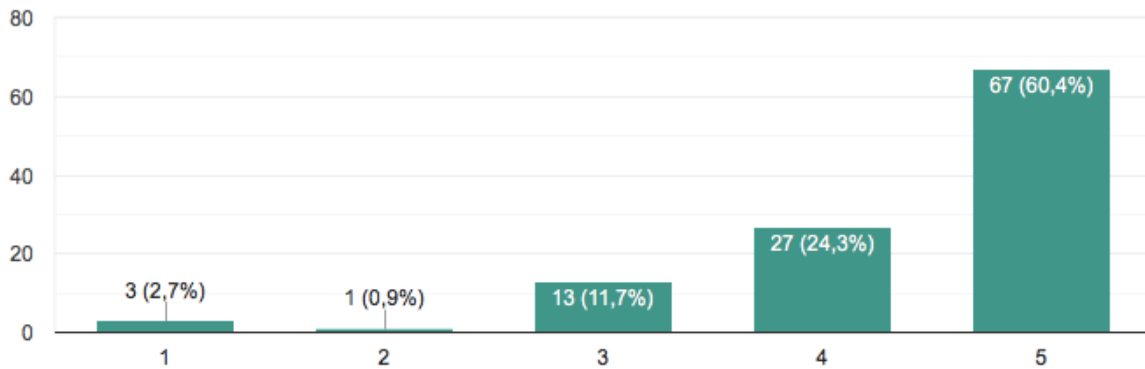**89,0%** of the companies declared to possess this expertise within its own staff, rating its relevance in the following way: [6]

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]

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[6] Again the overwhelming majority declaring to possess this expertise is reflected on the extremely positive relevance of the perception of its relevance (*the 60% rated with the maximum score*).
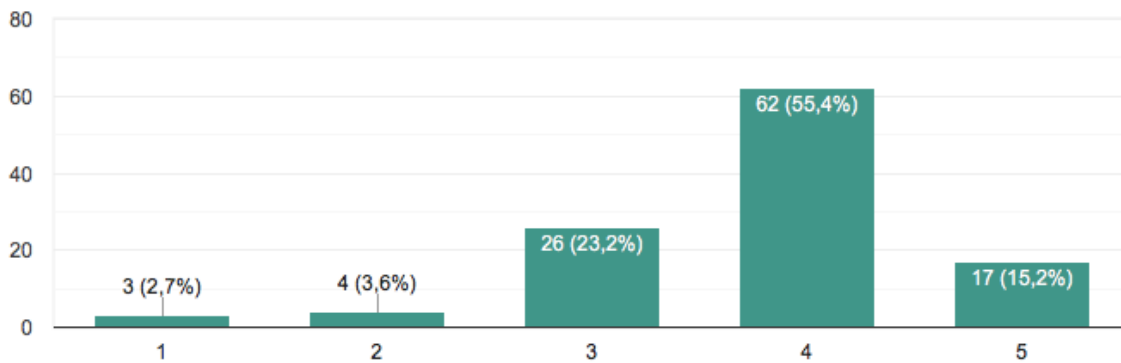
How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]
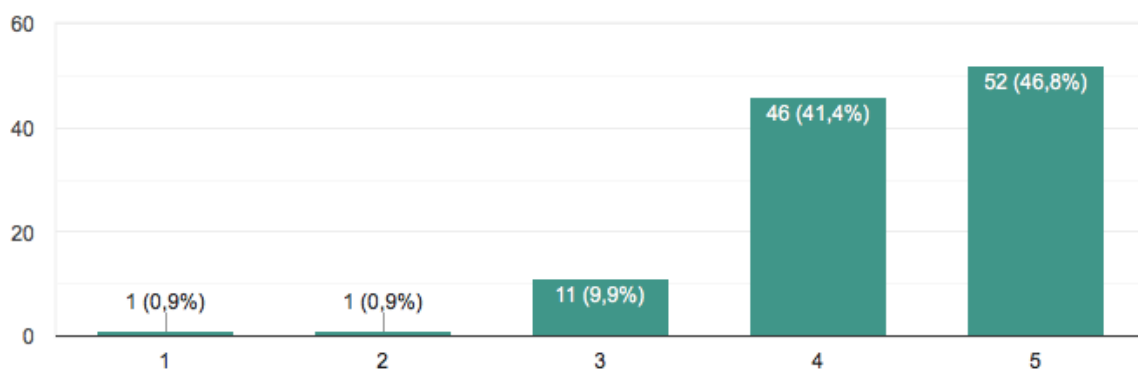

8) SAFETY MANAGEMENT

90,6% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way: [7]

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]

How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]


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[7] Even this time the overwhelming majority declaring to possess this expertise is reflected on the extremely positive relevance of the perception of its relevance (*all in total almost the 89% rated with the highest scores*).
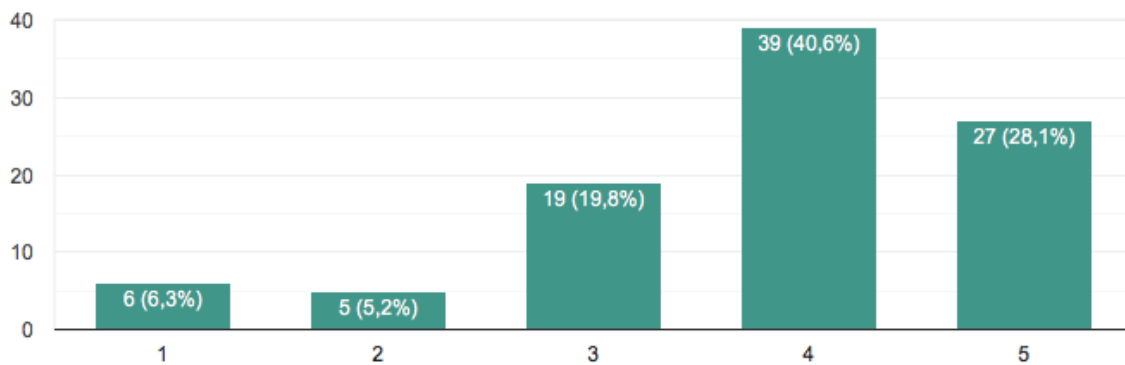
9) FACILITY MANAGEMENT

61,0% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way:

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]
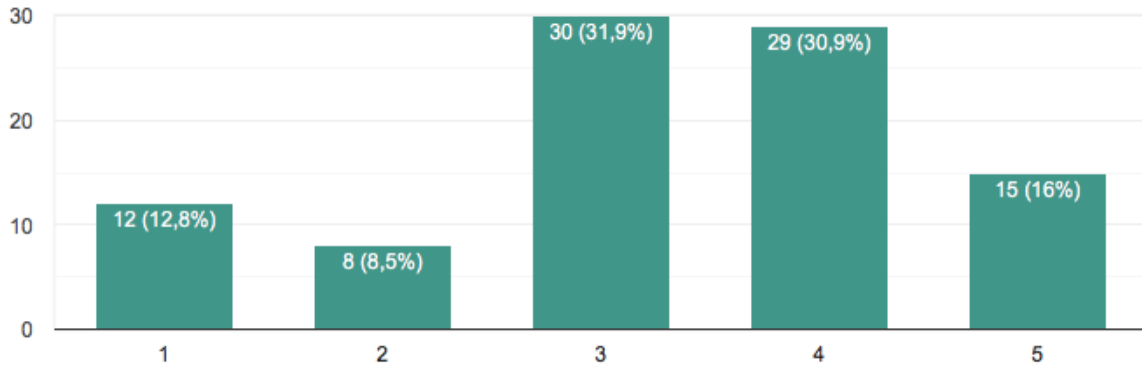
How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]
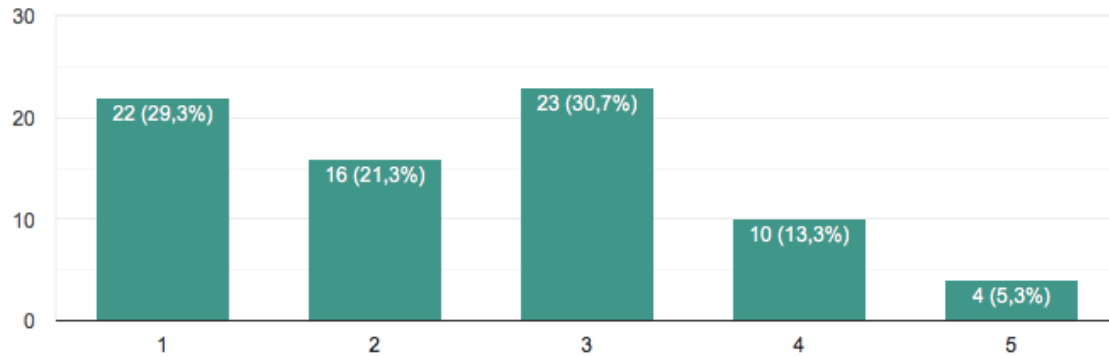

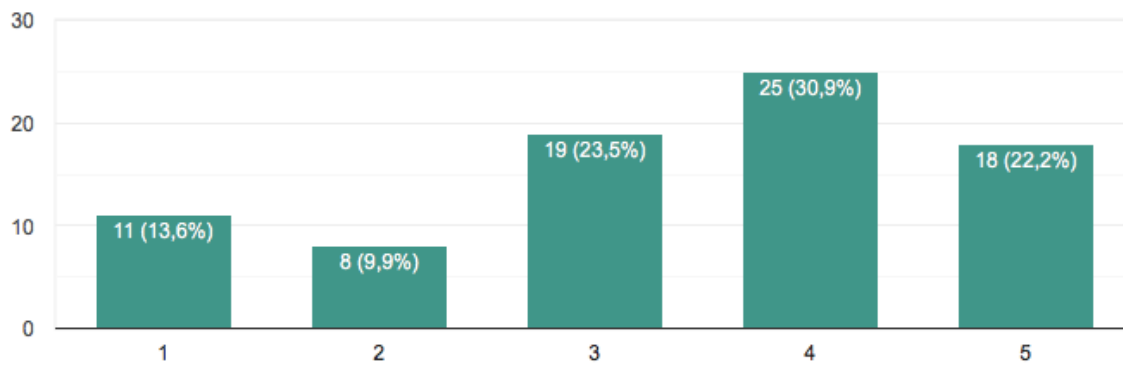## 10) ECO-SUSTAINABLE BUILDING AND GREEN BUILDING (circular economy)

Only the **26,5%** of the companies declared to possess this expertise within its own staff, rating its relevance in the following way: [8]

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[8] Again the low rate of companies having this expertise in its own staff is confirmed by the low number of answers collected for the evaluation of the relevance (*only 75 out of the 118 sample*) BUT this time the own perception of its relevance is quite remarkable (*almost the 54% of the companies declared this expertise highly relevant where only the 13,6% not at all relevant*).

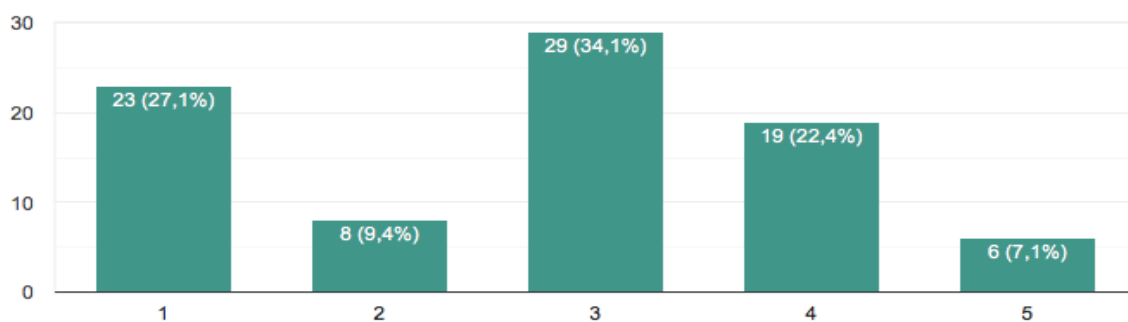How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]

How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]

11) ENERGY EFFICIENCY

40,2% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way: [9]

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]

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[9] Despite of the low level of both the possession and the evaluation of this expertise within the staff the perception of its relevance is anyway more than positive (*almost the 56% rated this competence highly important*).

How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]
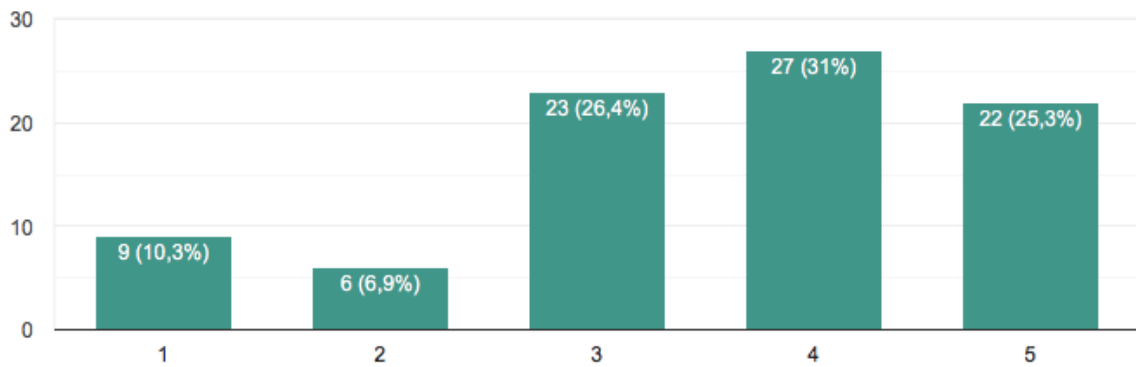

12) NEW TECHNOLOGIES / NEW MATERIALS

64,1% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way:

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]

How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]

13) TRANSVERSAL SKILLS: LANGUAGES

Only the **31,6%** of the companies declared to possess this expertise within its own staff, rating its relevance in the following way: [10]

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]

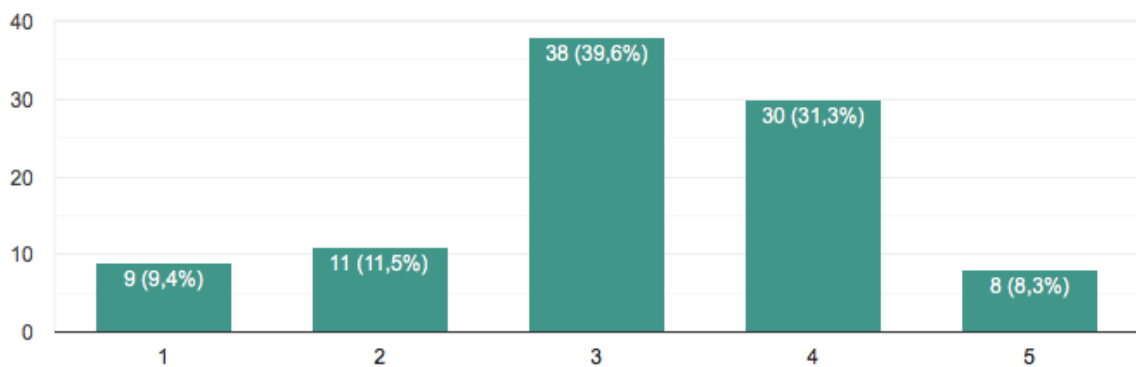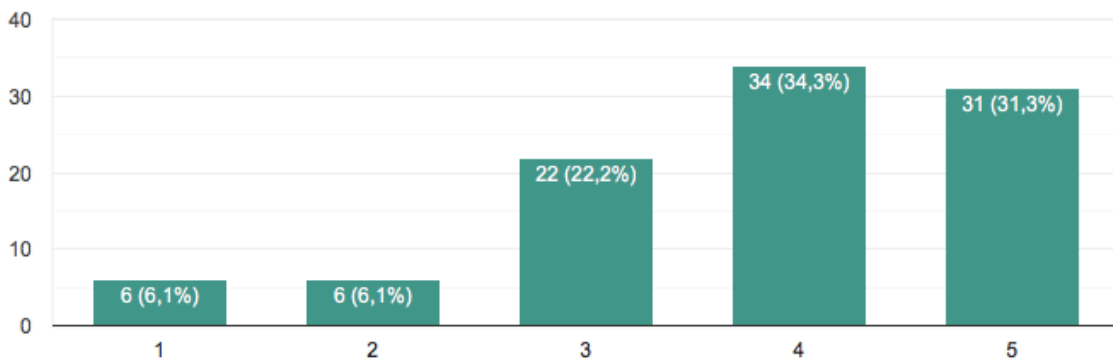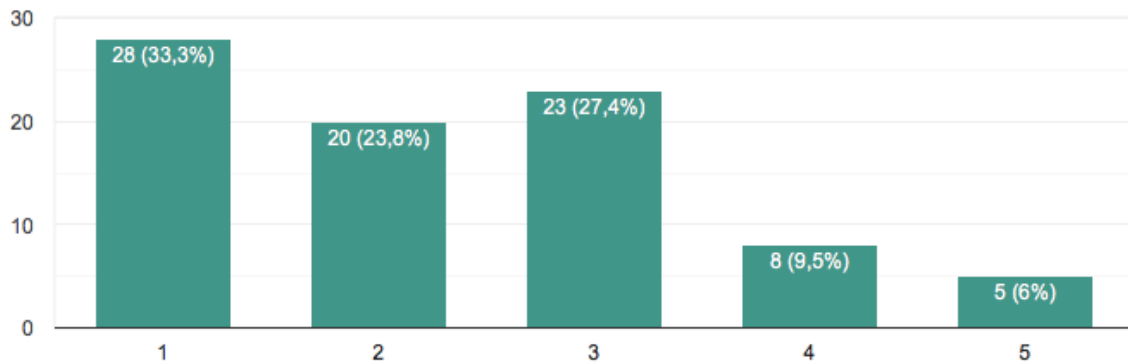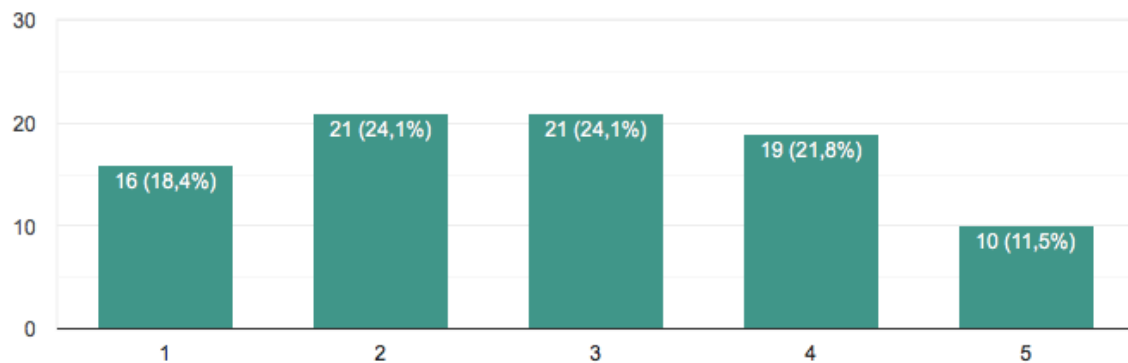**How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]**

14) TRANSVERSAL SKILLS: MANAGEMENT AND ADMINISTRATION

44,8% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way:

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[10] Again the low rate of companies having this expertise in its own staff is confirmed by the low number of answers collected for the evaluation of the relevance (*only 80 out of the 118 sample*) and the same perception of the own staff competences. As for the perception of relevance answers are ranging in the middle of the spectrum.

These data anyway have to be connected somehow with the almost insignificance of the international activity of the sample companies: only 1,7% declared to operate in the European market and only the 2,5% on the international one.

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]

How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]
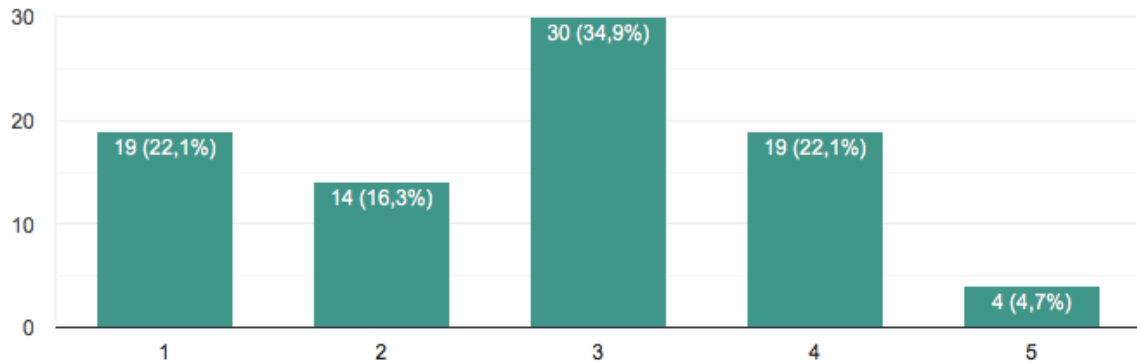

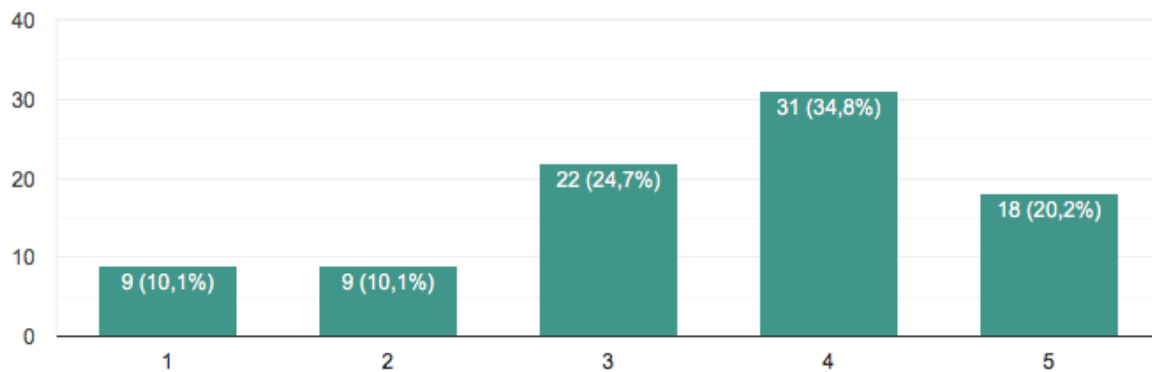### 15) TRANSVERSAL SKILLS: TEAMBUILDING, COORDINATION AND PROBLEM SOLVING

45,2% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way:

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]

How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]

16) TRANSVERSAL SKILLS: INTERPERSONAL SKILLS

72,6% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way:

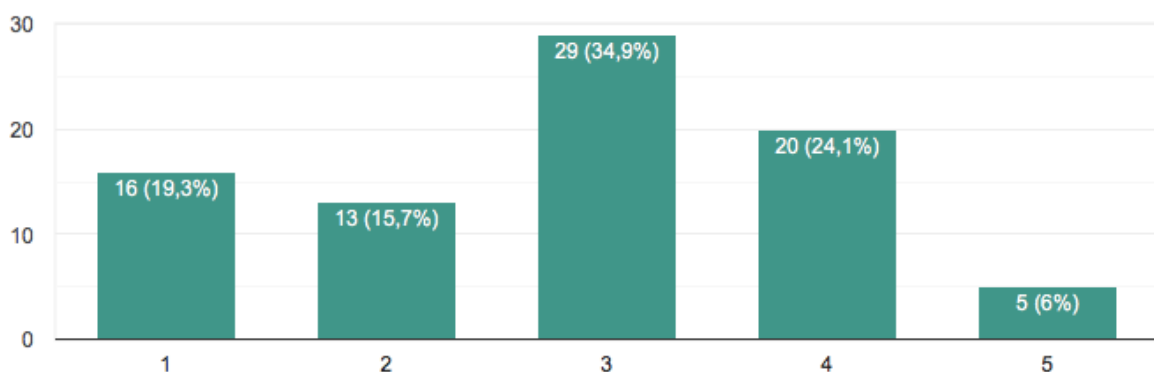How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]

How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]
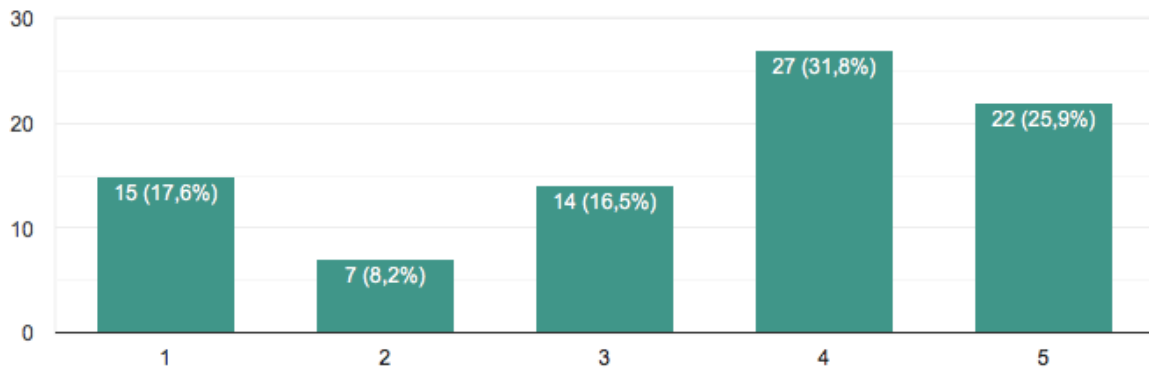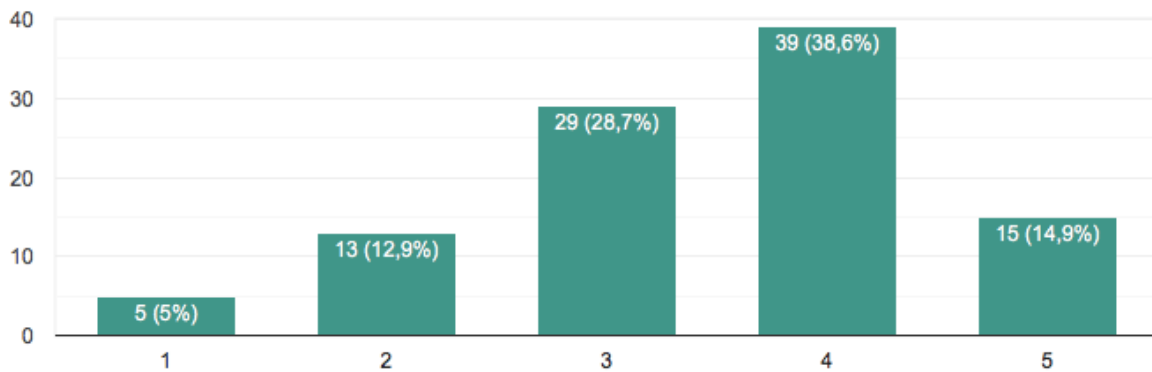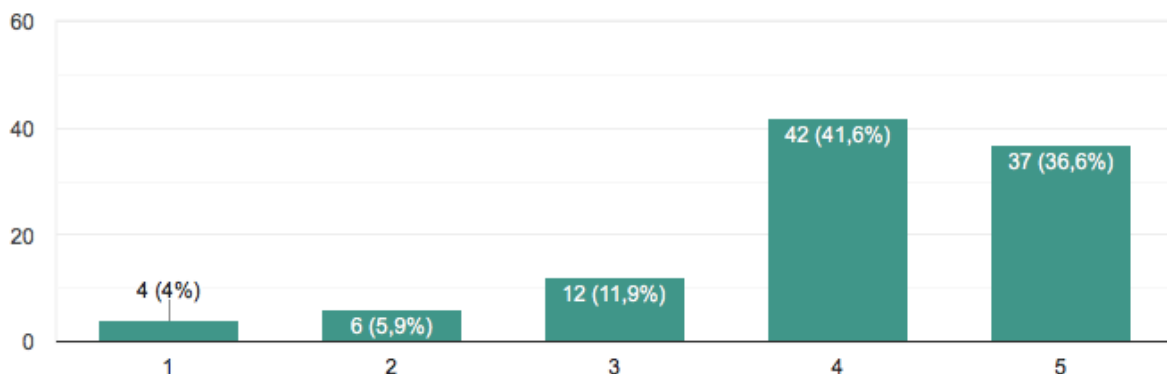
Lithuania

All in total <u>34 answers</u> have been collected spreading the questionnaire at national level, resulting in the picture described as follows.[11]

COMPANIES PROFILE

The average SIZE of the companies participating to the survey is **55,8** employees with the size distribution resumed in the following chart: [12]
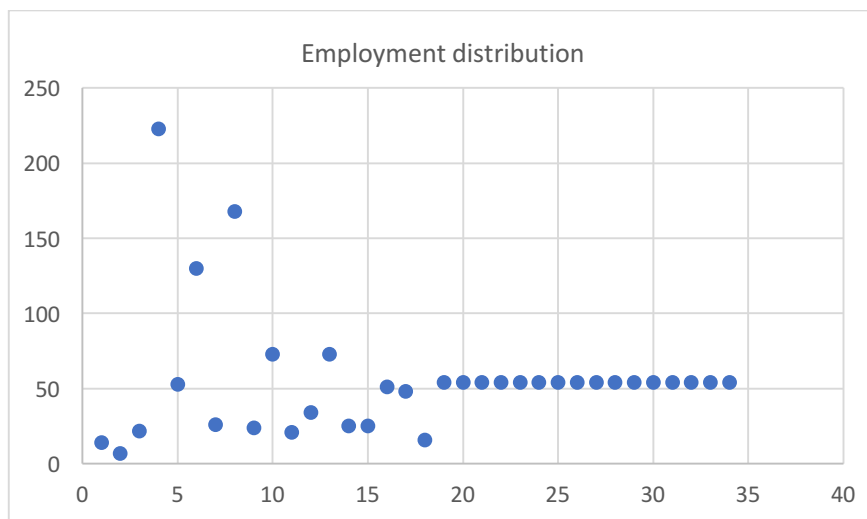
Employment distribution

Out of the total amount of employees the following charts give evidence of the number of APPRENTICES / YOUNG WORKERS and then of FEMALE EMPLOYEES in the workforce.

Number of apprentices / young workers

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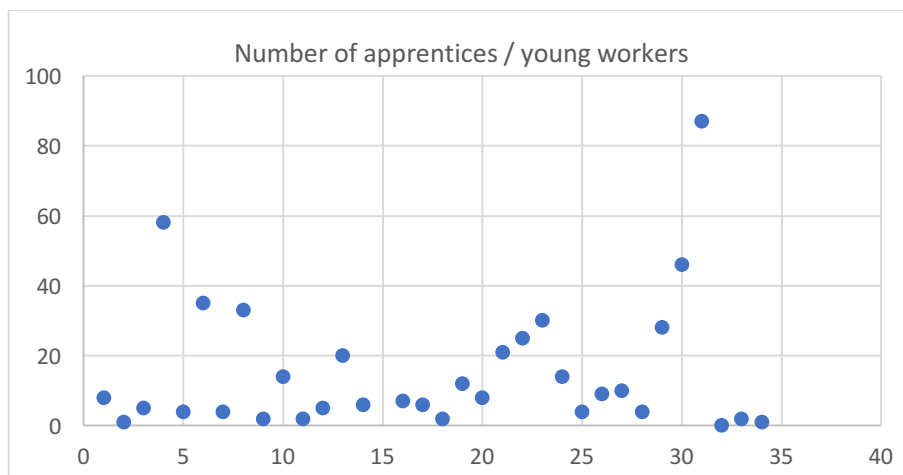
[11] Clearly the size of the sample has to take into account the general national assets comparing to the other two countries in the project, starting from the number of population and consequently of companies operating.

[12] The chart clearly shows that the highest <u>concentration</u> of companies is around the line of 50 employees, with some samples above the 100s threshold. In all these charts the Cartesian coordinates are representing respectively: X axis = the progressive number of answering enterprises (*all in total 118 therefore <u>one dot represents each single answering enterprise</u>*) and Y axis the number of employees.

Number of female employees
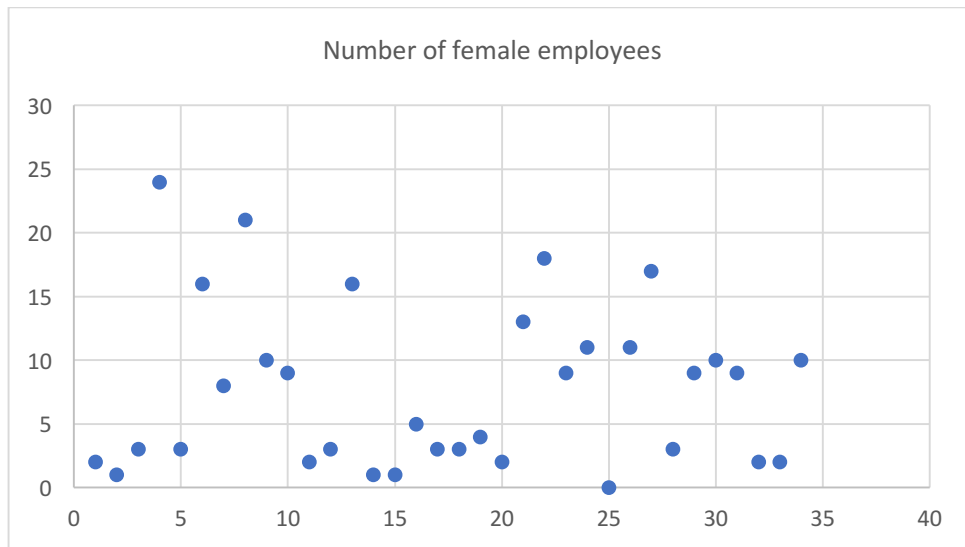
As for the female employees the average number per company is **7,7** representing only the **13,8%** of the total workforce of the target sample.

As for the SECTOR IN WHICH THE COMPANY OPERATES the highest numbers are related to the **Residential-civil work** at the 51,6%, with also significant relevance for the **Finishing** at the 16,1% and the **Architecture and design** at the 12,9%.
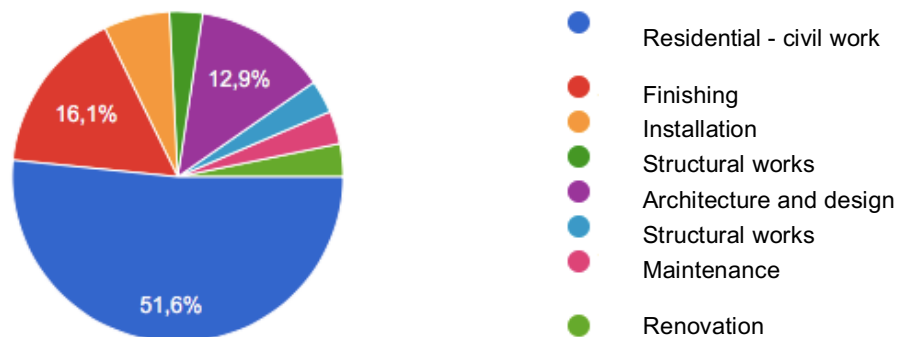
- Residential - civil work
- Finishing
- Installation
- Structural works
- Architecture and design
- Structural works
- Maintenance
- Renovation

As for the MARKET IN WHICH THE COMPANY OPERATES more than 2/3 of the companies are operating just a local level and some of them are working abroad: the 16,1% declared to operate in the European market and only the 6,5% on the international one.
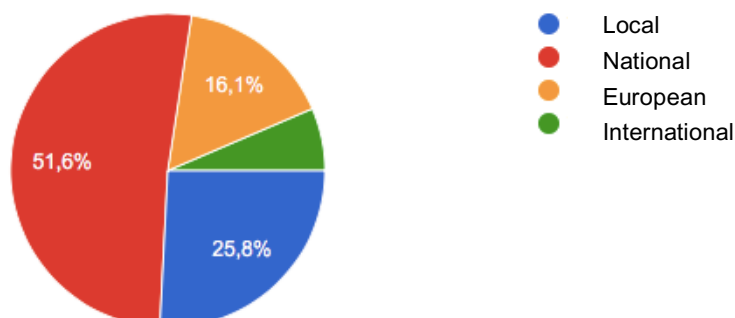
- Local
- National
- European
- International

As for the TYPE OF COMPANY the vast majority of answers have been clearly directed to the Construction type (87,1%) and the others in the sample are fragmented on different and various types.

- Construction company
- Engineering firm
- Architecture and Design firm
- Plant engineering company
- Facility management
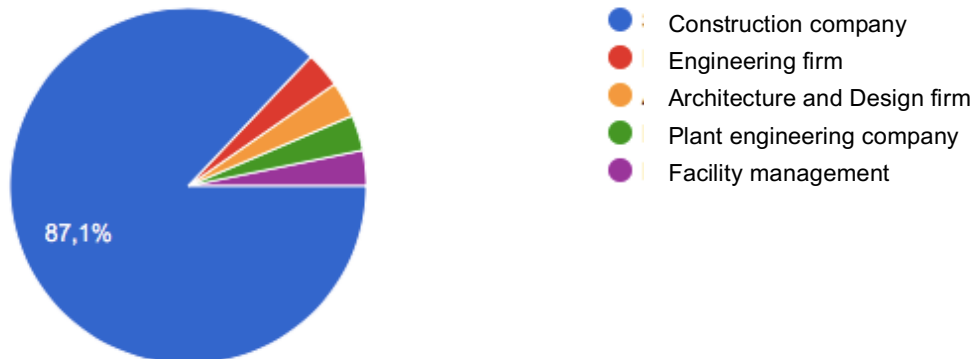
Then coming to the TRAINING habits the **83,9%** of the companies declared that in addition to compulsory training they are taking part in other training courses:[13] the **85,7%** declared to attend courses on safety in general (*a part of those already compulsory*), the **71,4%** on practical training update for bricklayers and the **64,3%** for technicians / general professionals and BIM technology. In addition the **39,3**% declared that the company staff is attending transversal skill trainings.

Finally, as for the TYPE OF PROFESSIONAL PROFILES which are currently working in the company this is the picture resulting from the answers collected: [14]

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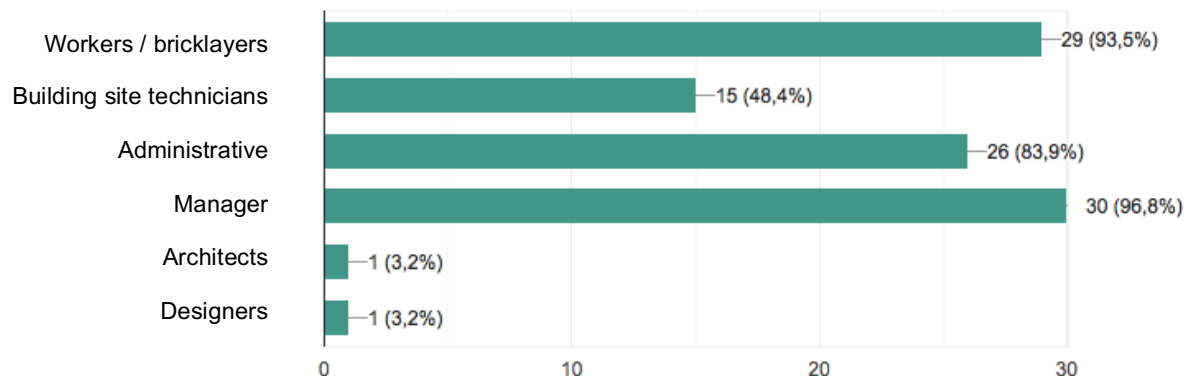
[13] The few in the sample who are not attending any course said that the main reason is the lacking of time.

[14] Clearly more than one answer was allowed on this question.

INFORMATION ON TRAINING NEEDS

1) CAD DRAWING

58,1% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way: [15]

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]
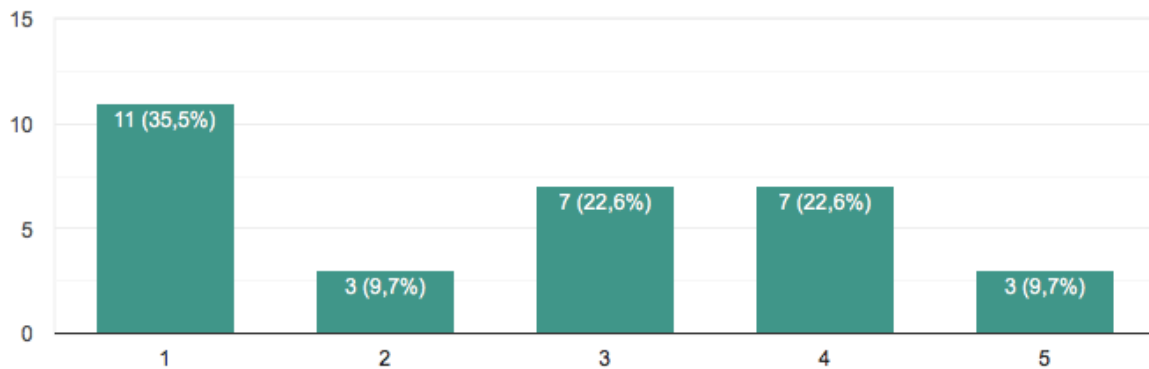
How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]

2) BIM (Building Information Modelling)

58,1% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way: [16]

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[15] It is relevant here to underline the discrepancy between the few companies declaring a significant competence within the staff and the perception of its relevance (*with almost the 55% declaring a high relevance*).

[16] Despite of the quite high presence of this expertise, confirmed also by the fact that around the 57% rated it very relevant, almost the 57% are not satisfied with the current skills of their own staff.

How do you evaluate your staff's skills? [1 = poor / 5 = excellent]

How much do you think this competence is important for your company? [1: not important at all 5: extremely important]

3) QUALITY SYSTEM MANAGEMENT
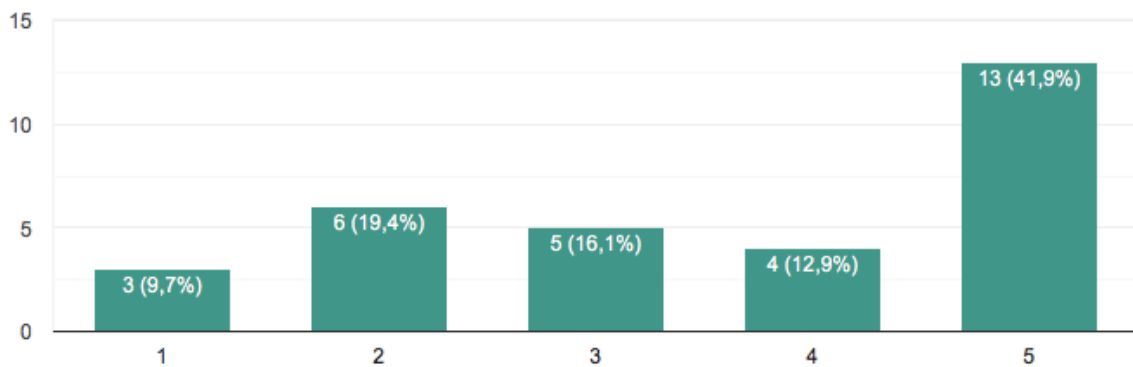
90,3% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way: [17]

How do you evaluate your staff's skills? [1 = poor / 5 = excellent]

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[17] Almost the whole sample of the companies declared to possess this expertise leading to an extremely positive evaluation of its relevance on the daily business (*almost the 74% declared this competence highly important on the daily operations*).

How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]

4) TENDERS AND PUBLIC PROCUREMENT MANAGEMENT

Almost all the companies (**96,8%**) declared to possess this expertise within its own staff, rating its relevance in the following way:

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]

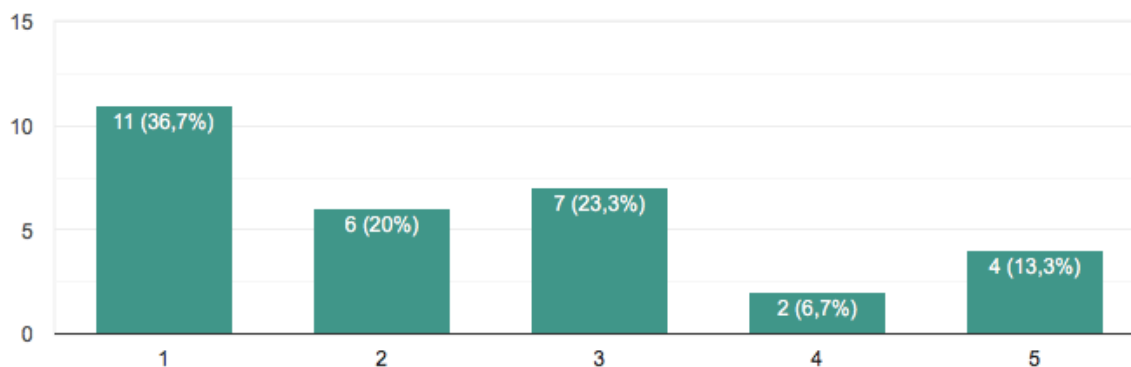How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]

5) ESTIMATES AND TECHNICAL ACCOUNTING

All the companies (100%) declared to possess this expertise within its own staff, rating its relevance in the following way: [18]
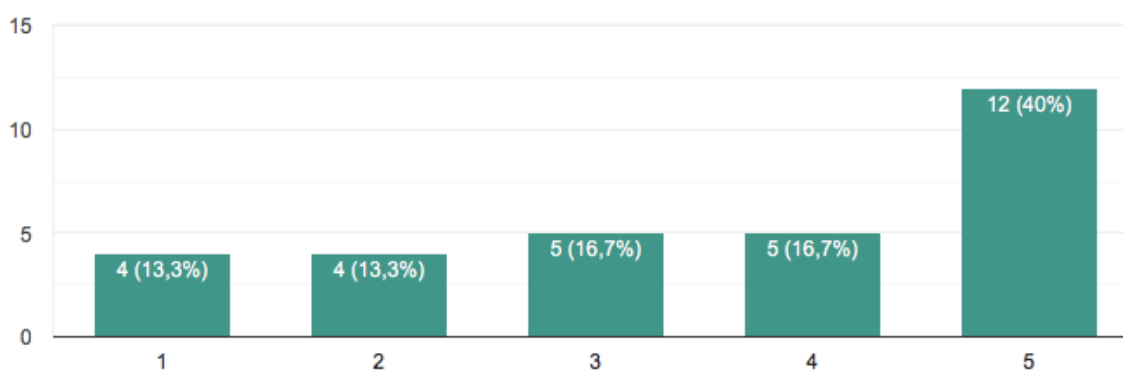
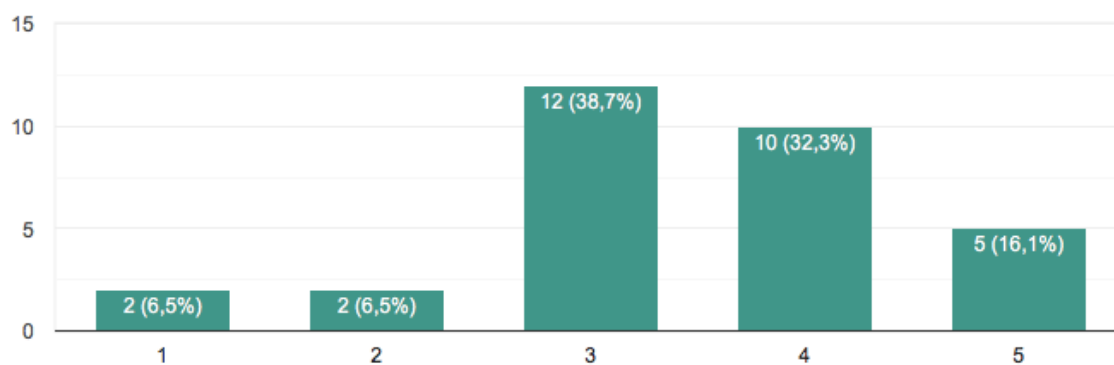How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]

How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]

6) HR MANAGEMENT

80,6% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way:

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[18] The unanimity of the positive answers is also reflected on the overall perception of the staff skills and above all on its relevance on the daily business (*the 87% declared this competence extremely important on the daily operations*).

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]

How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]
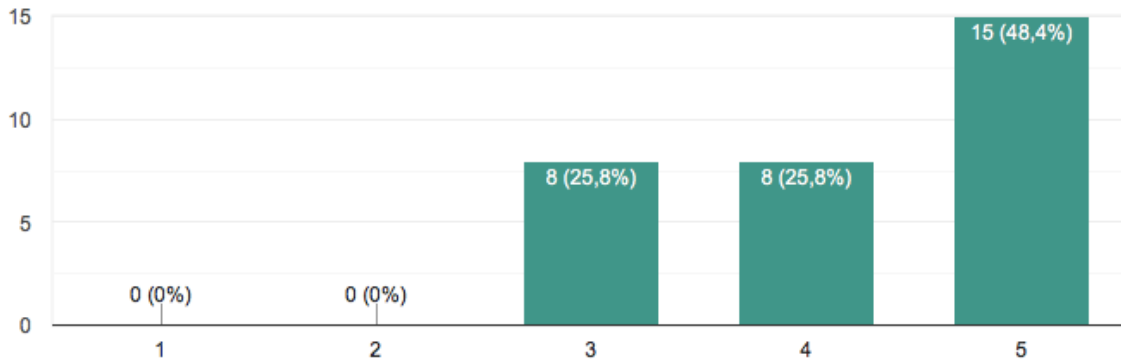

7) TASKS ACCOUNTING

90,3% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way: [19]

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]

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[19] Again the overwhelming majority declaring to possess this expertise is reflected on the extremely positive relevance of the perception of its relevance (*almost the 84% rated it highly important*).
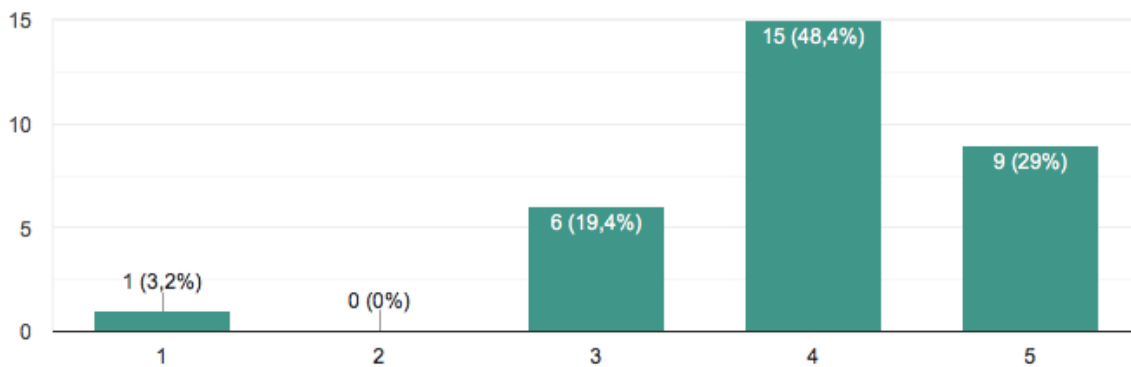
How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]

8) SAFETY MANAGEMENT
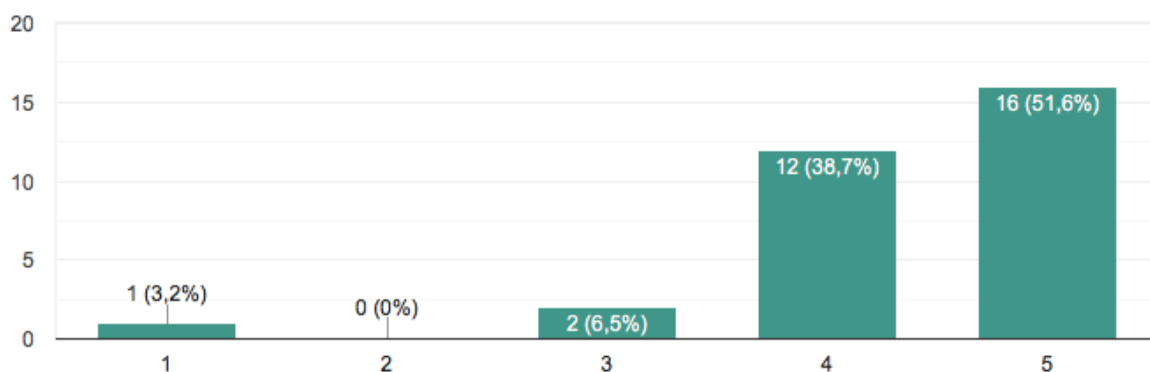
All the companies (100%) declared to possess this expertise within its own staff, rating its relevance in the following way: [20]

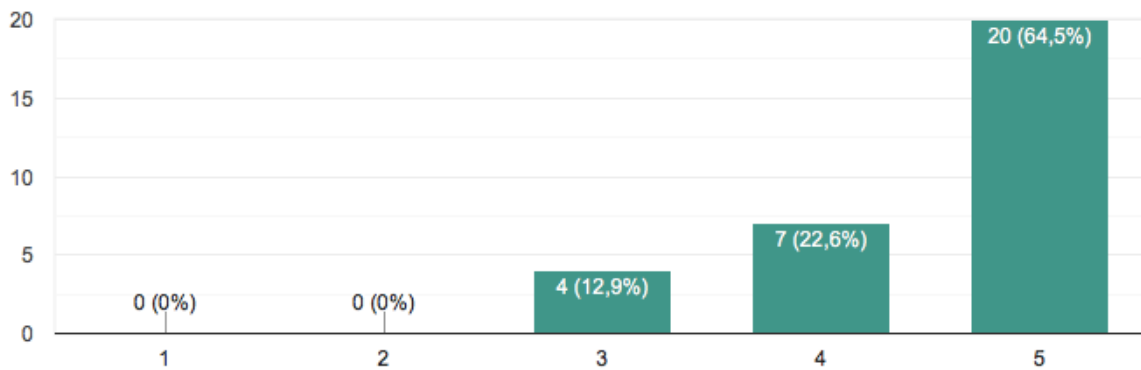How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]

How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]

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[20] The unanimity of the positive answers is also reflected on the overall perception of the staff skills and above all on its relevance on the daily business (*again the 100% declared this competence extremely important on the daily operations*).

9) FACILITY MANAGEMENT

64,5% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way:

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]
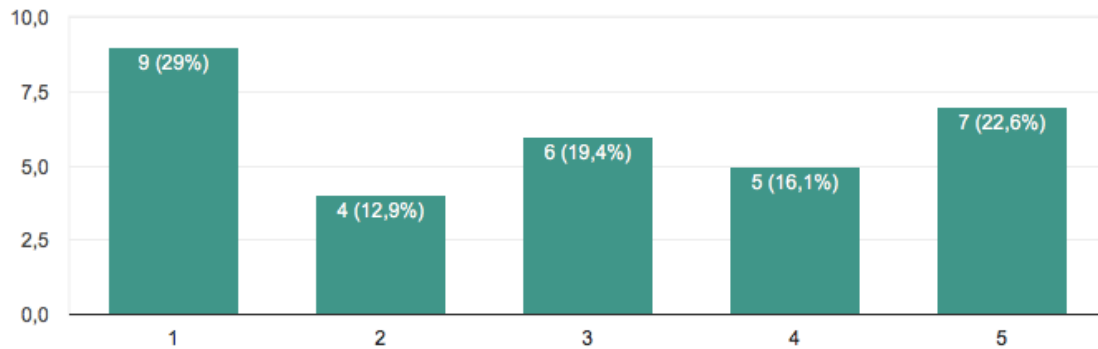
How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]
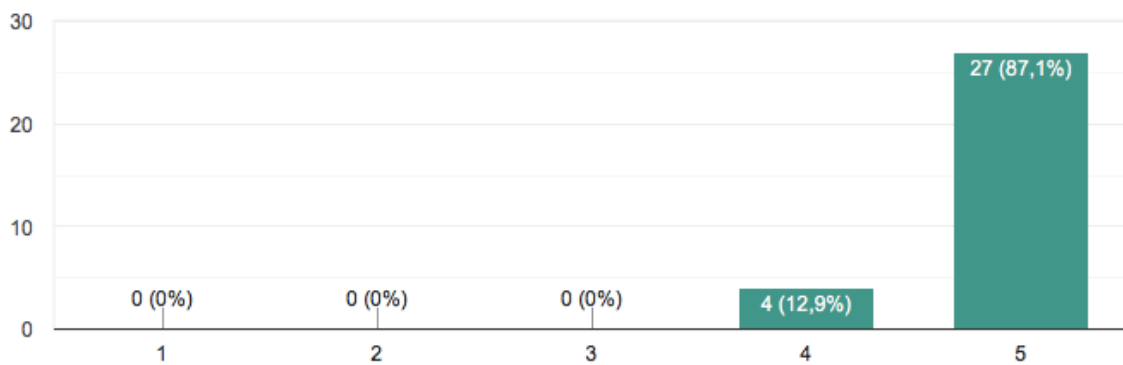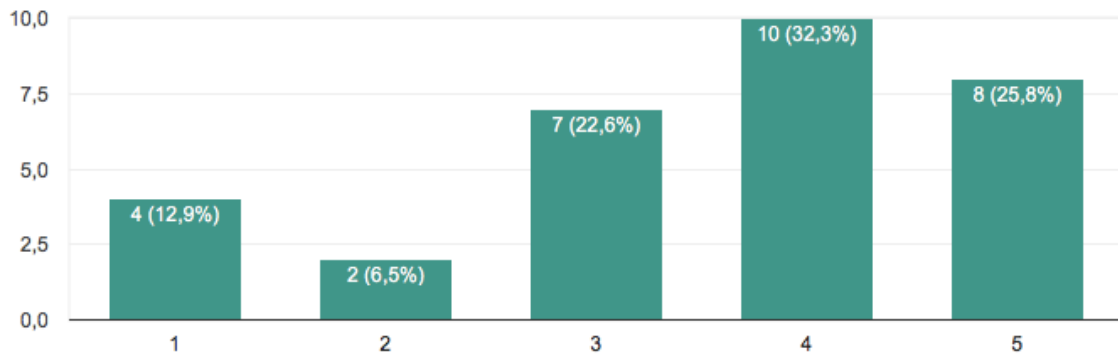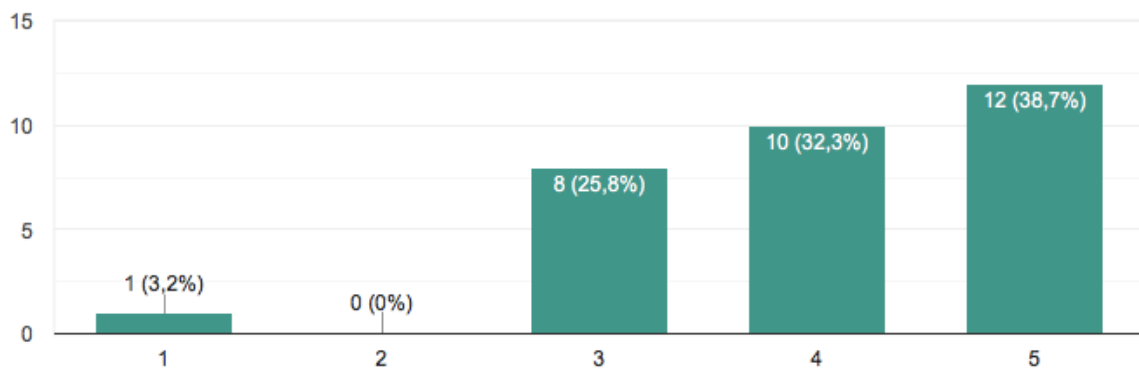

10) ECO-SUSTAINABLE BUILDING AND GREEN BUILDING (circular economy)

74,2% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way: [21]

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[21] The quite high rate of companies having this expertise in its own staff is confirmed by high relevance given to this expertise (*almost the 74% declared this expertise highly relevant*) despite of the non really high perception of the current skills of the own staff.

As the following part of this report is showing this expertise reached higher level of importance in Lithuania rather than in the other countries.
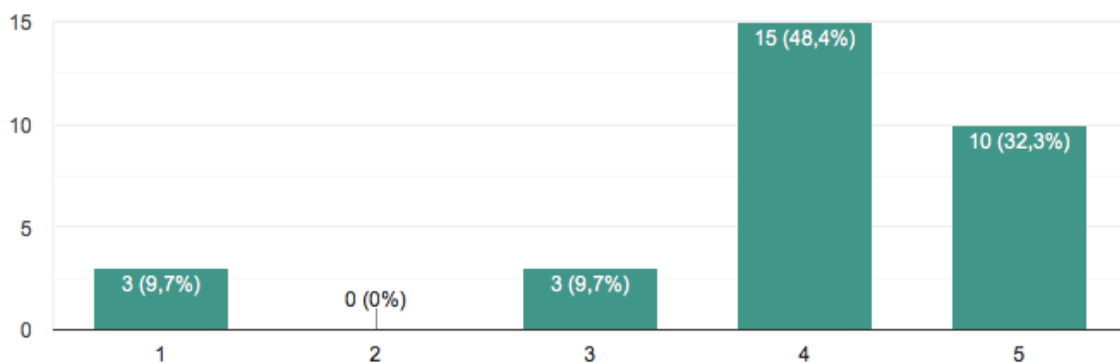
How do you evaluate your staff's skills? [1 = poor / 5 = excellent]

How much do you think this competence is important for your company? [1: not important at all 5: extremely important]
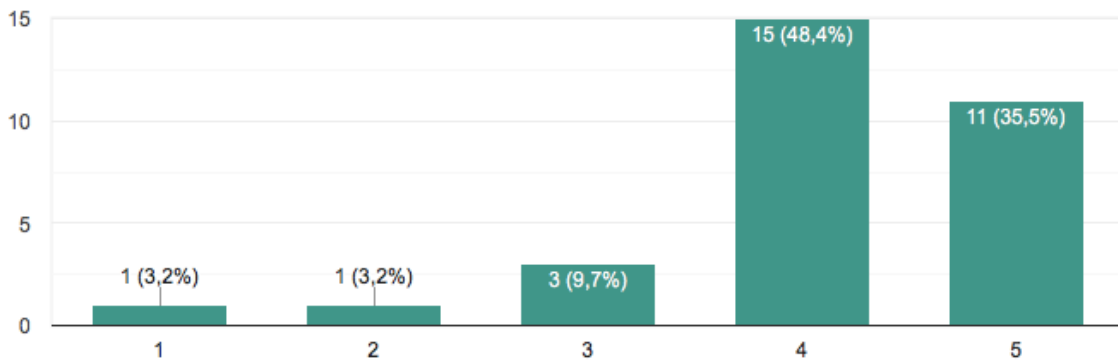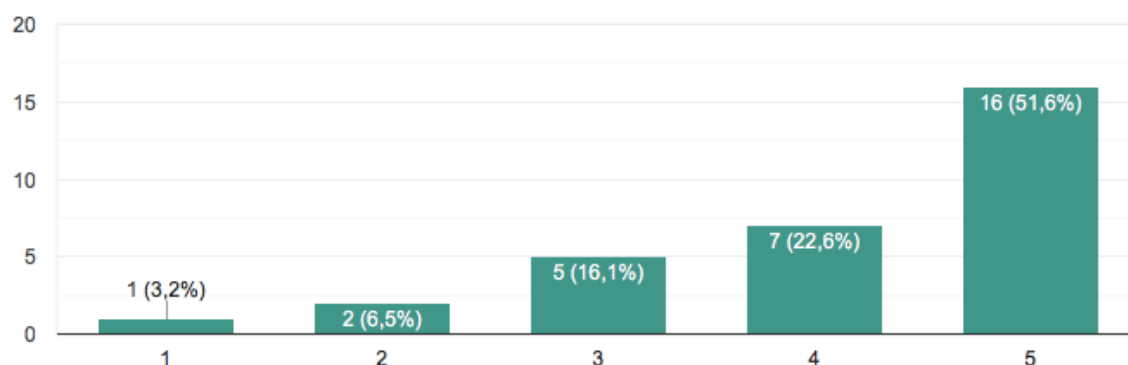

11) ENERGY EFFICIENCY

Almost all the companies (**96,7%**) declared to possess this expertise within its own staff, rating its relevance in the following way: [22]

How do you evaluate your staff's skills? [1 = poor / 5 = excellent]

[22] The unanimity of the positive answers is also reflected on the overall perception of the staff skills and above all on its relevance on the daily business (*the 93,5% declared this competence extremely important on the daily operations*).
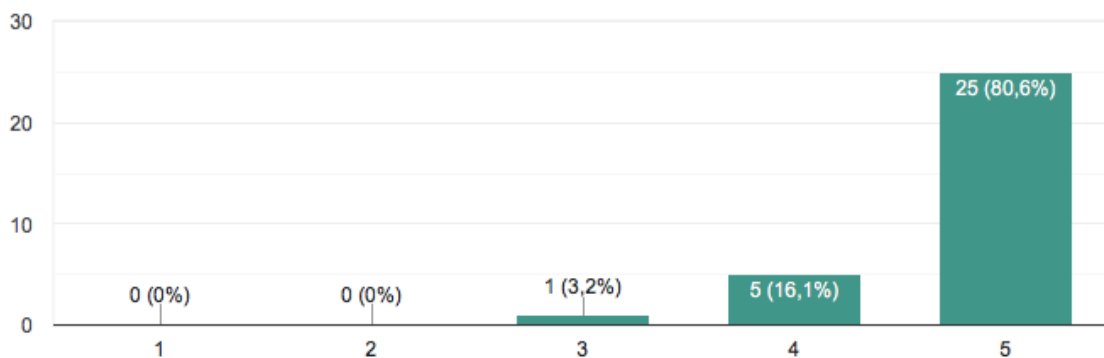
How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]

12) NEW TECHNOLOGIES / NEW MATERIALS
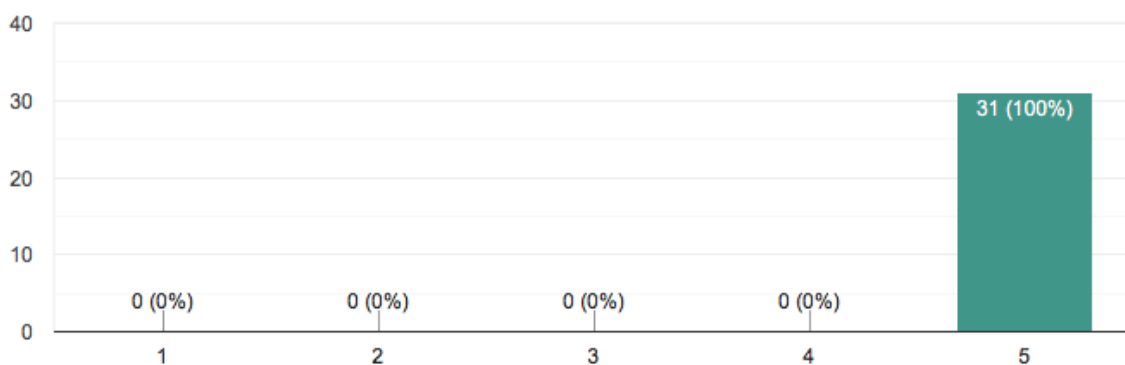
All the companies (100%) declared to possess this expertise within its own staff, rating its relevance in the following way: [23]

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]

How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]


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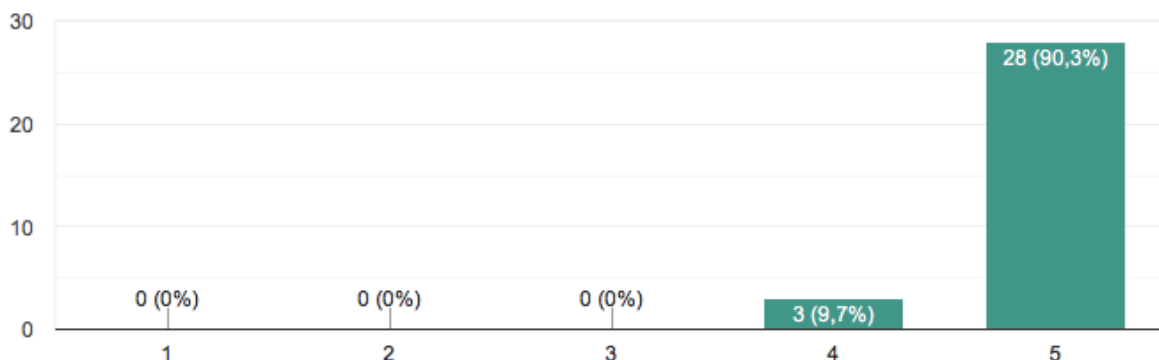
[23] The unanimity of the positive answers is also reflected on the overall perception of the staff skills and above all on its relevance on the daily business (*the 90,3% declared this competence extremely important on the daily operations*).
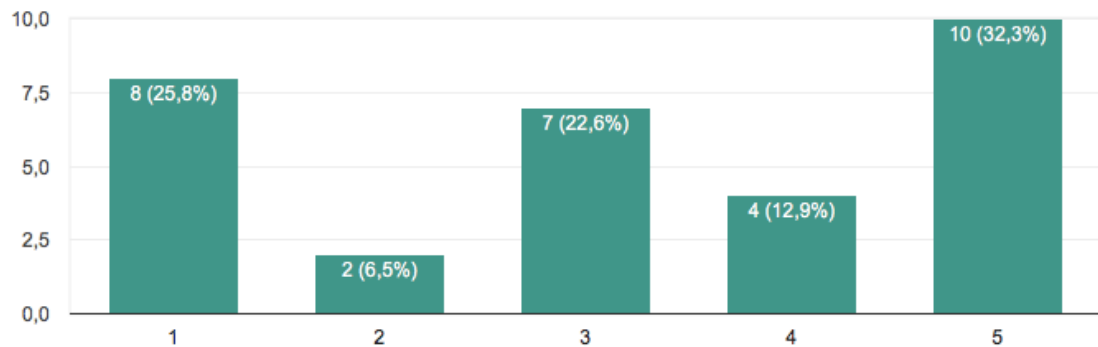
13) TRANSVERSAL SKILLS: LANGUAGES

77,4% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way: [24]

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]
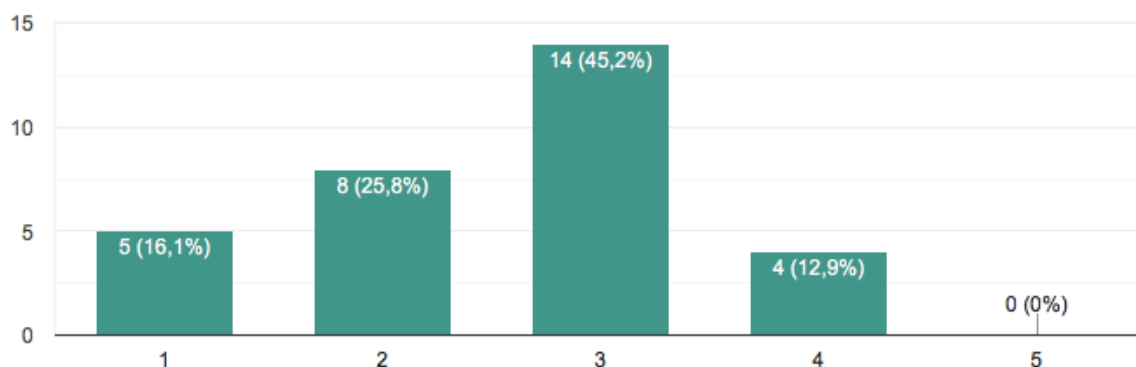
How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]
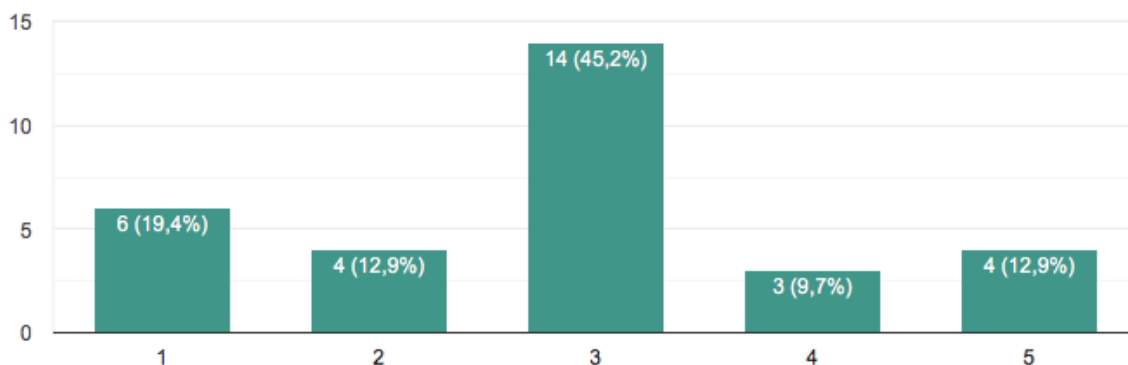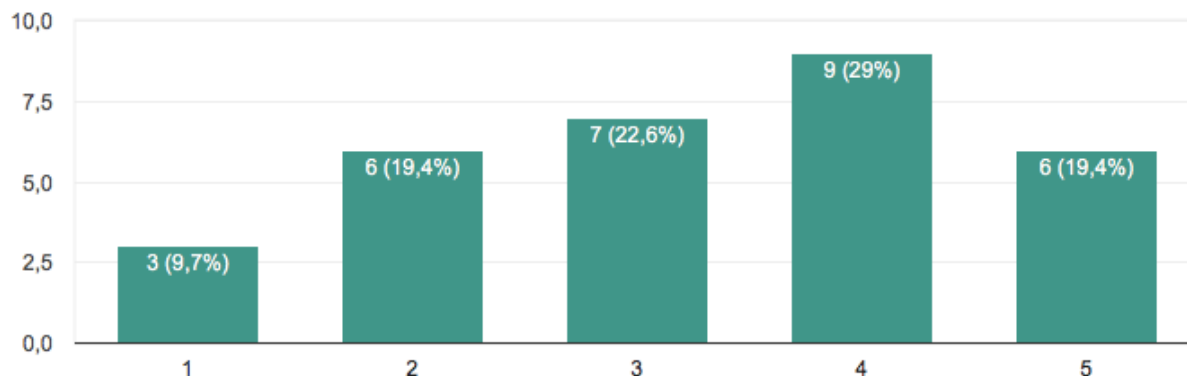

14) TRANSVERSAL SKILLS: MANAGEMENT AND ADMINISTRATION

All the companies (100%) declared to possess this expertise within its own staff, rating its relevance in the following way: [25]

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[24] Despite of the high rate of companies having this expertise in its own staff (*77,4%*) the knowledge of the language by the current staff (as it is perceived) is quite scarce and even the relevance is not showing high peaks.
These data anyway have to be connected somehow with the little dimension of the international activity of the sample companies: only 16,1% declared to operate in the European market and only the 6,5% on the international one.
[25] The unanimity of the positive answers is also reflected on the overall perception of the staff skills and above all on its relevance on the daily business (*the 90,3% declared this competence extremely important on the daily operations*).

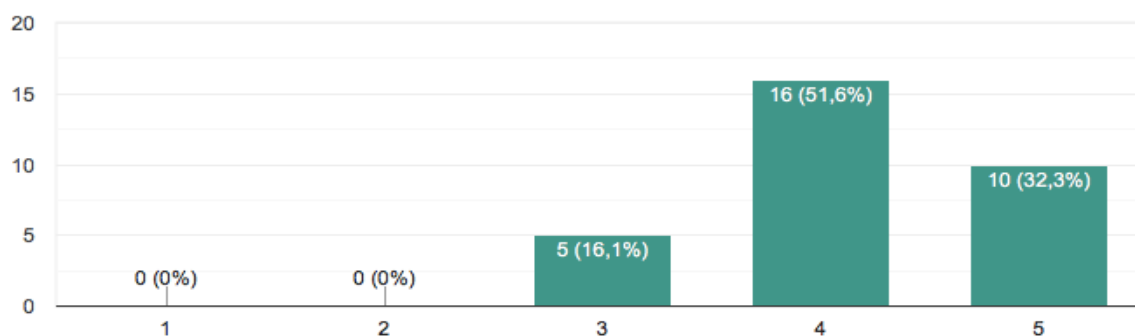How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]
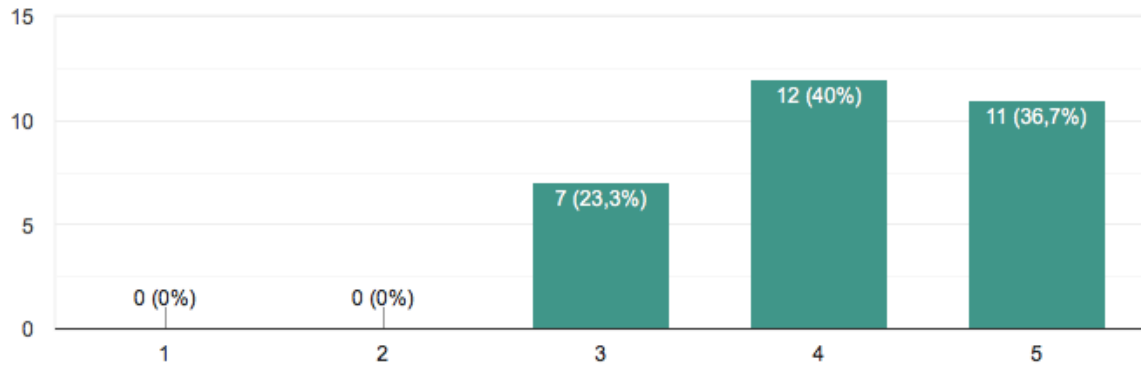
How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]
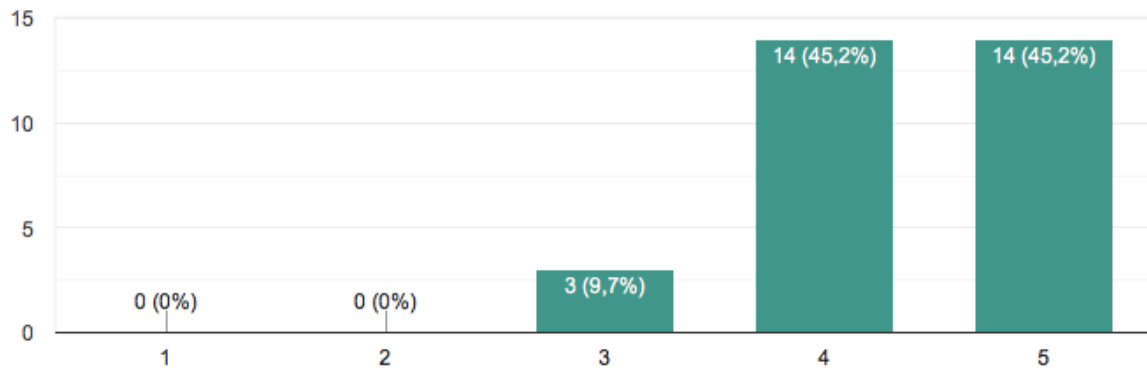
15) TRANSVERSAL SKILLS: TEAMBUILDING, COORDINATION AND PROBLEM SOLVING

90,0% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way:

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]

How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]
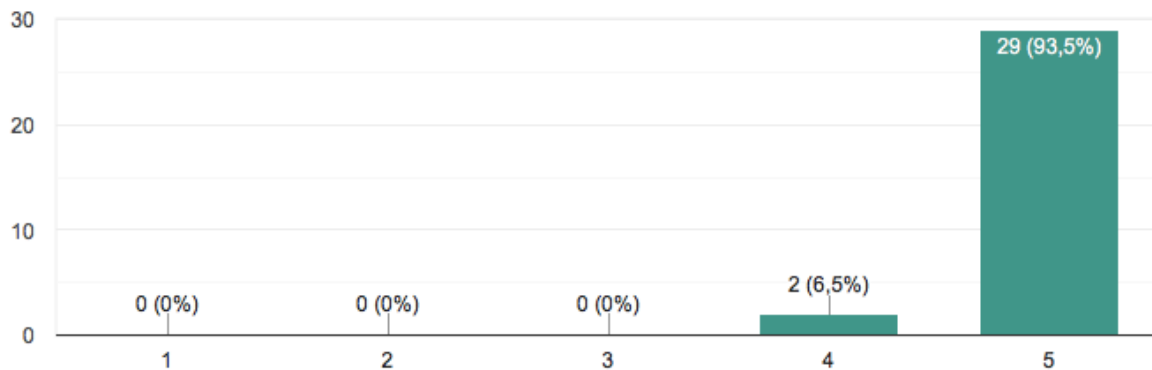

16) TRANSVERSAL SKILLS: INTERPERSONAL SKILLS

Almost all the companies (**96,7**) declared to possess this expertise within its own staff, rating its relevance in the following way:

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]

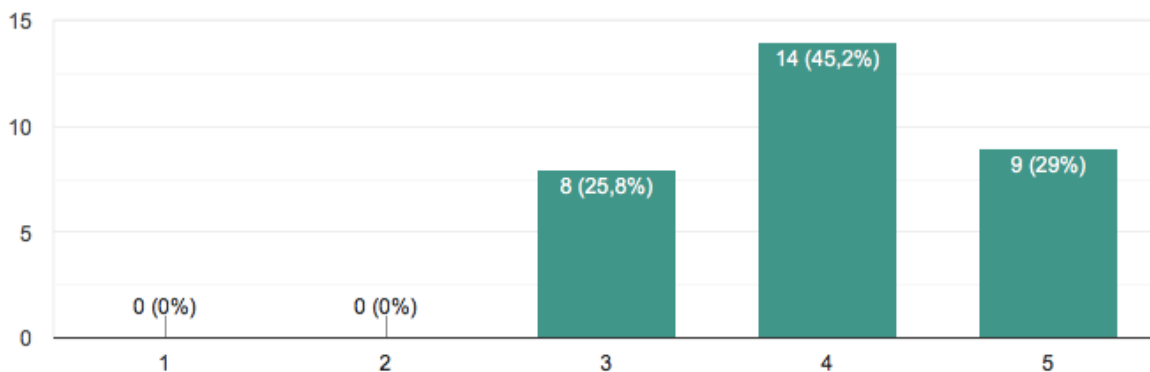
How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]
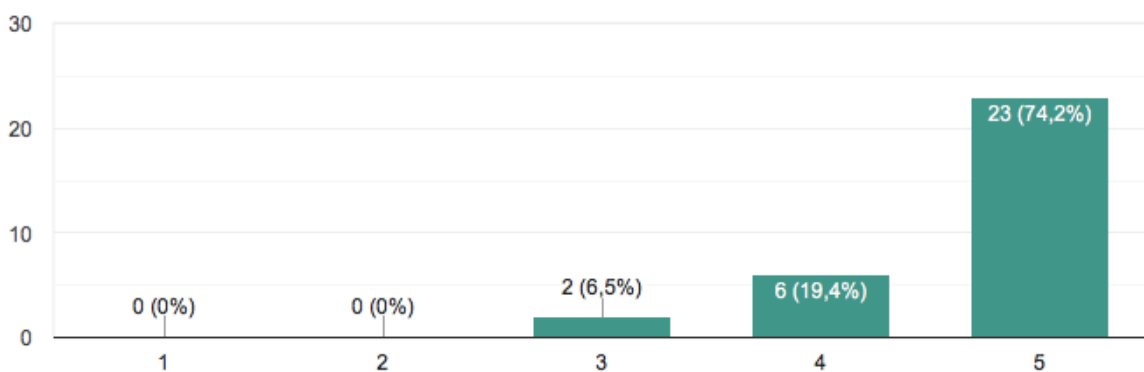
Spain

All in total <u>79 answers</u> have been collected spreading the questionnaire at national level, resulting in the picture described as follows.[26]

COMPANIES PROFILE

The average SIZE of the companies participating to the survey is **108,1** employees with the size distribution resumed in the following chart: [27]
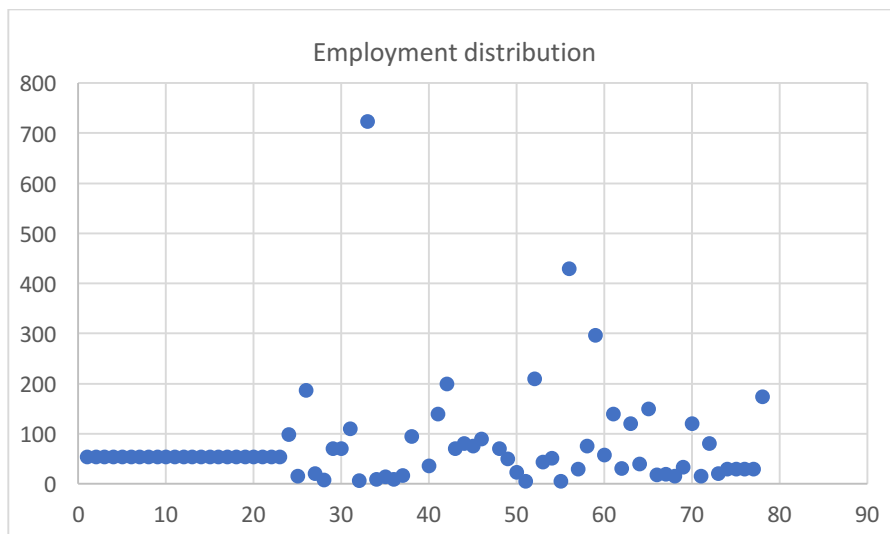
Out of the total amount of employees the following charts give evidence of the number of APPRENTICES / YOUNG WORKERS and then of FEMALE EMPLOYEES in the workforce.

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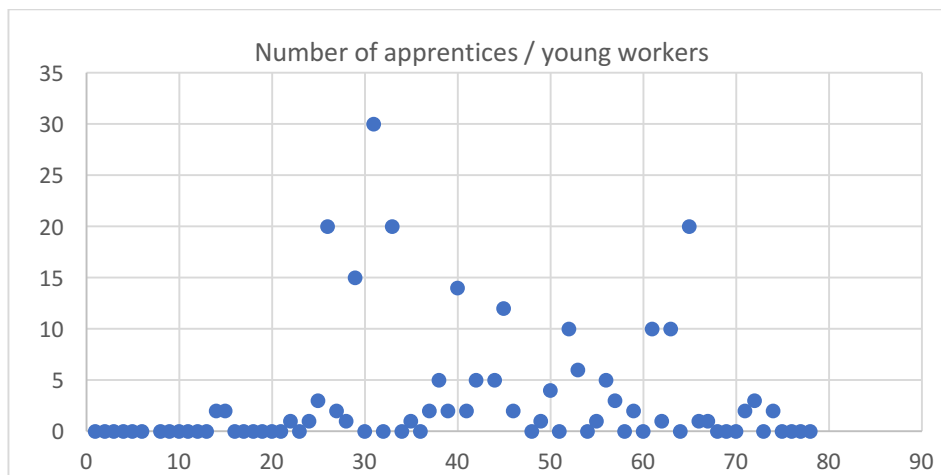
[26] For the survey in Spain the partners used two different web based platforms to better reach their specific target companies: anyway the data have been homogenized and thus together processed to produce a perfectly comparable and equable result.

[27] The chart clearly shows that the highest <u>concentration</u> of companies is around the line of 50 employees, with anyway several samples above the 100s threshold (*with the biggest counting 723 employees*). In all these charts the Cartesian coordinates are representing respectively: X axis = the progressive number of answering enterprises (*all in total 118 therefore <u>one dot represents each single answering enterprise</u>*) and Y axis the number of employees.
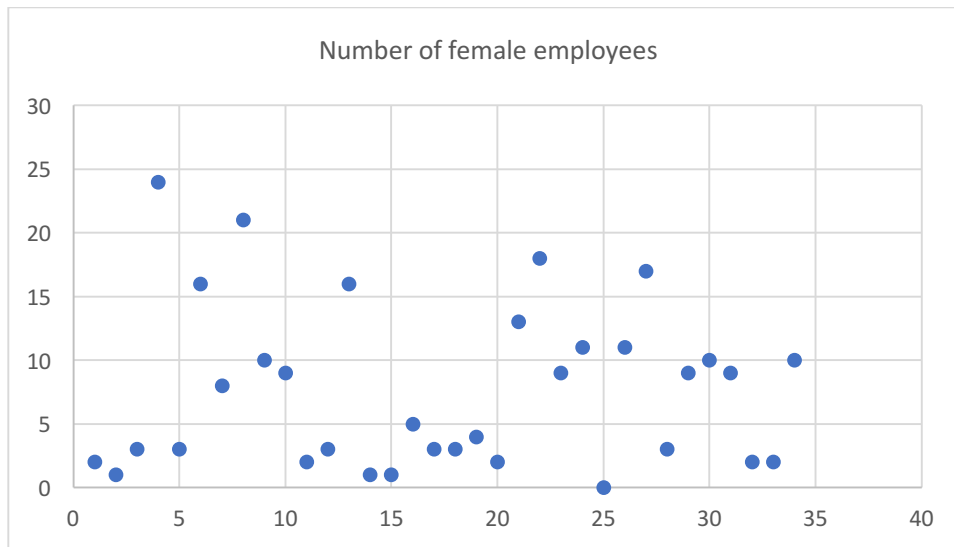
As for the female employees the average number per company is only **7,2** representing only the **9,0%** of the total workforce of the target sample.

As for the SECTOR IN WHICH THE COMPANY OPERATES the highest numbers are related to the **Residential-civil work** at the 68,4%, with minor relevance for the **Maintenance** at the 10,1% and the less common which is **Installation** at the 3,8%.
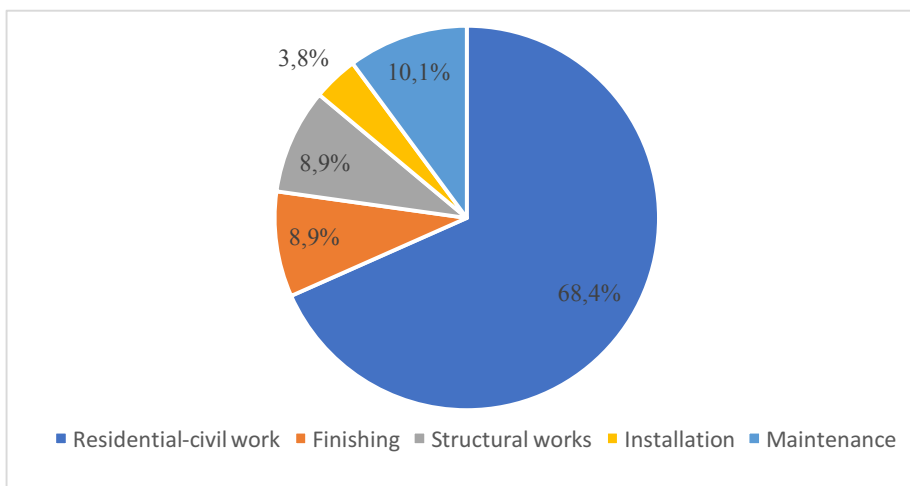
As for the MARKET IN WHICH THE COMPANY OPERATES more than the 90% of the companies are operating inland (*44,3% just at local level*) whilst only the 8,9% is working on the international market. No one declared to operate in the European market but probably not making any distinction with the international one.
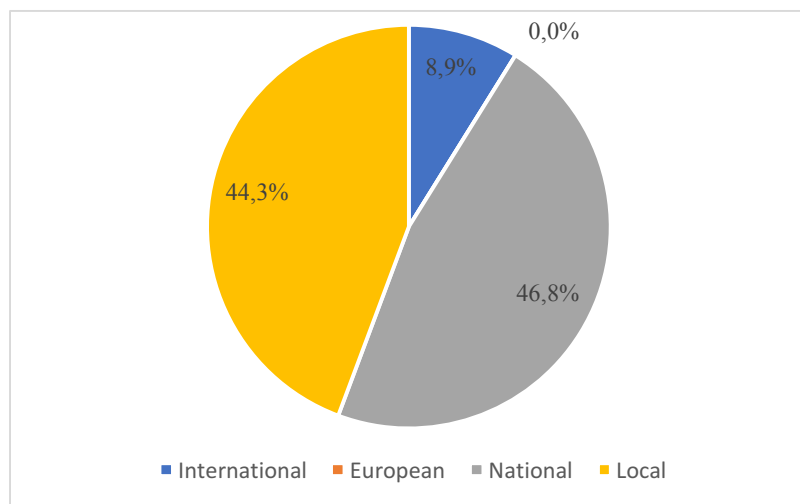
As for the TYPE OF COMPANY the vast majority of answers have been clearly directed to the Construction type (82,1%), then Engineering firm far below just at the 9,0%, while the others in the sample are even beneath.
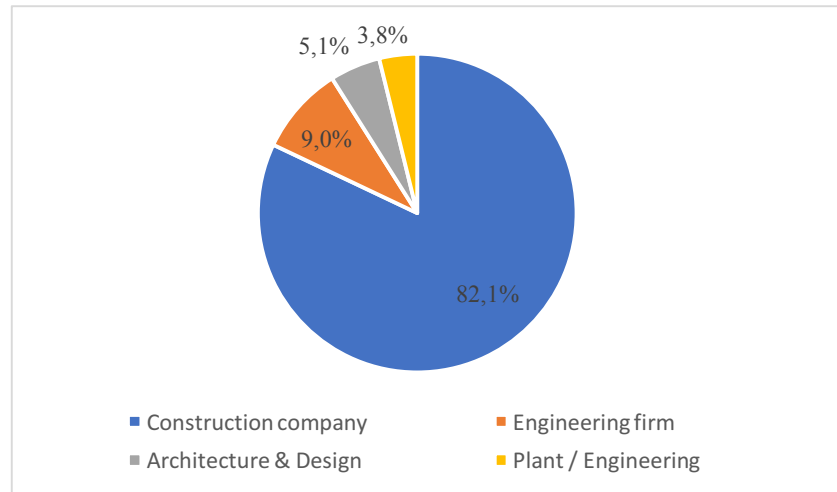
Then coming to the TRAINING habits the **84,6%** of the companies declared that in addition to compulsory training they are taking part in other training courses:[28] the **88,5%** declared to attend courses on safety in general (*a part of those already compulsory*), the **56,4%** on practical training update for bricklayers and the **51,3%** for technicians / general professionals and BIM technology. In addition, only the **23,3**% declared that the company staff is attending transversal skill trainings. [29]

Finally, as for the TYPE OF PROFESSIONAL PROFILES which are currently working in the company this is the picture resulting from the answers collected: [30]

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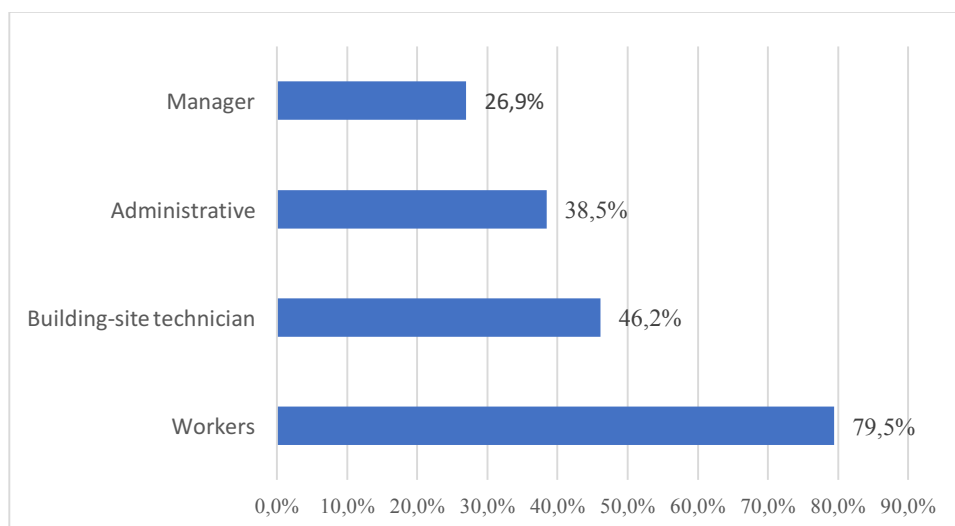
[28] The few in the sample who are not attending any course said that the main reason is the lacking of time.

[29] Clearly more than one answer was allowed on this question.

[30] Clearly more than one answer was allowed on this question.

INFORMATION ON TRAINING NEEDS

1) CAD DRAWING

73,4% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way: [31]

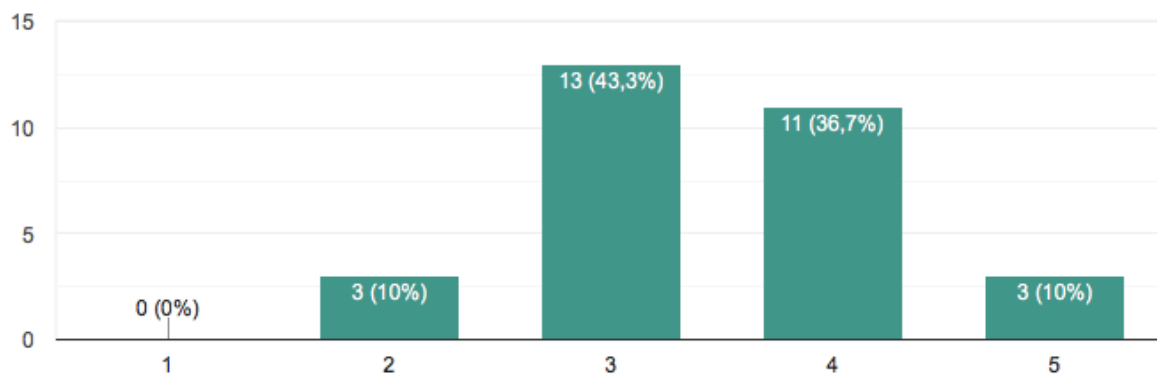How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]
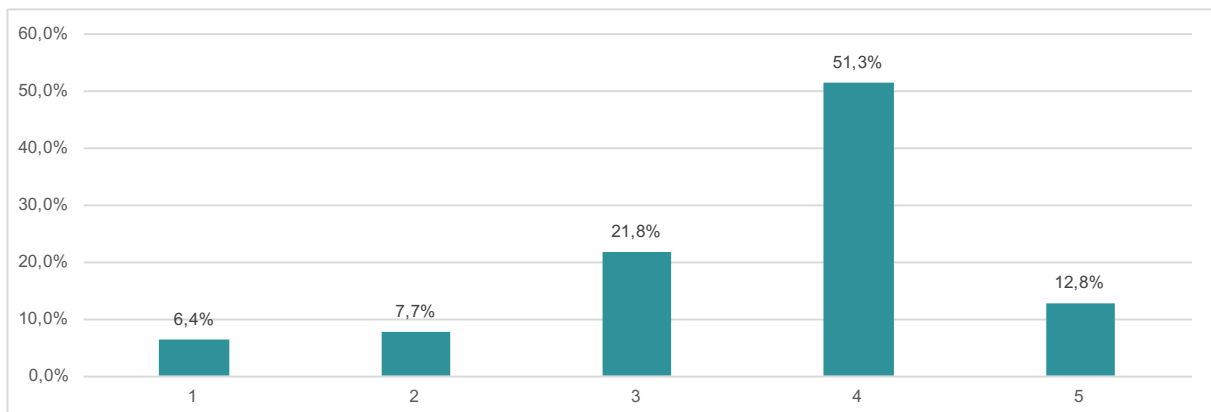
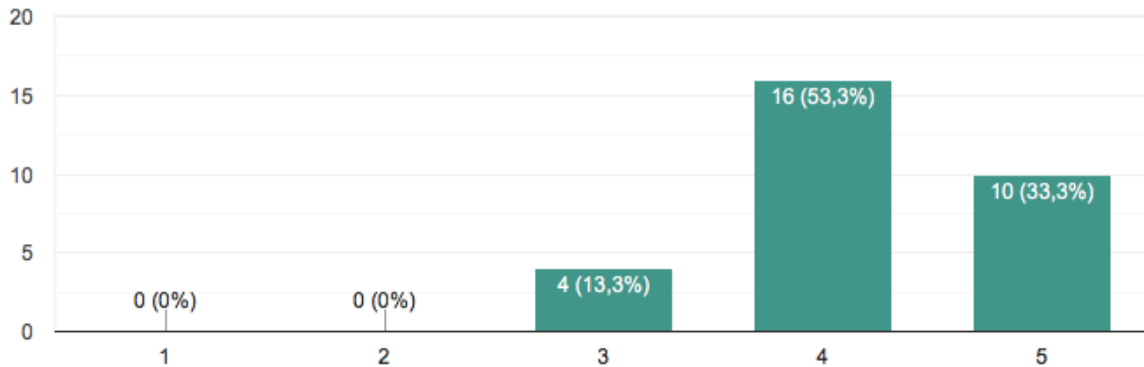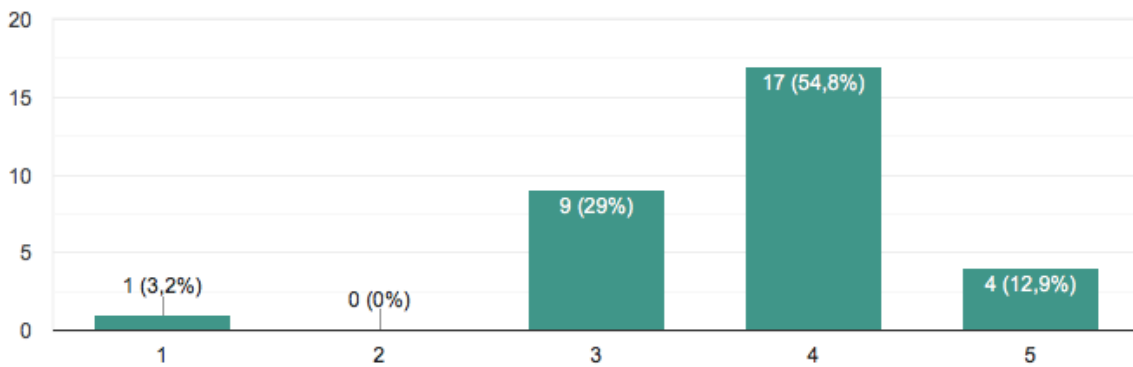How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]


2) BIM (Building Information Modelling)

38,0% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way: [32]

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[31] The high number of companies declaring to possess this expertise within their own staff is somehow confirmed by the perception of its relevance (*with almost the 65% declaring a high relevance*).

[32] The low presence of this expertise is also confirmed by the fact that only 1/3 of the sample rated it highly relevant, and almost the 43% are not really satisfied with the current skills of their own staff.

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]

How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]
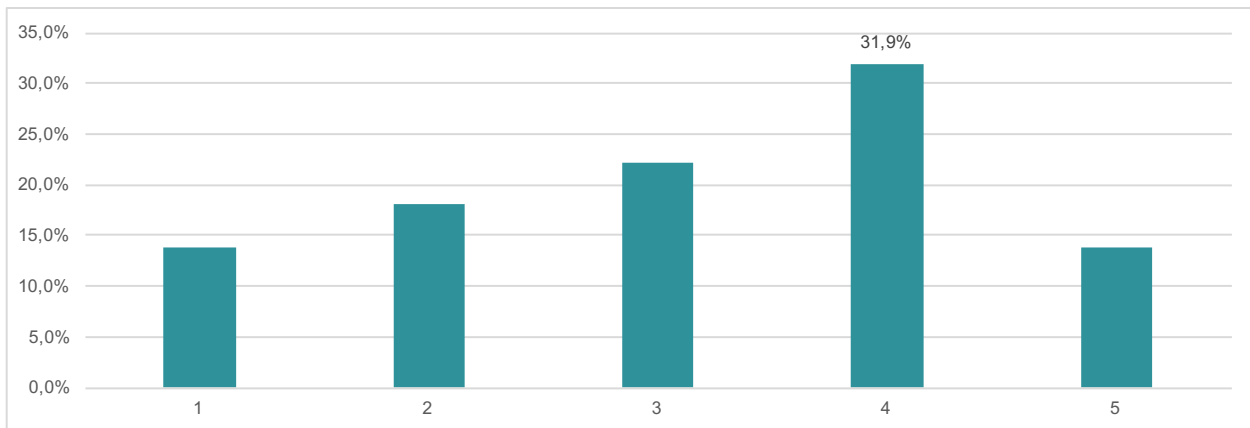

3) QUALITY SYSTEM MANAGEMENT

67,1% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way:

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]

How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]

4) TENDERS AND PUBLIC PROCUREMENT MANAGEMENT

54,4% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way: [33]

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]

How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]

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[33] The not too significant presence of these skills in the staff (*only 54,4% declared to possess it*) is however mitigated by the perception of its relevance (*with almost the 60% declaring a high relevance*).

5) ESTIMATES AND TECHNICAL ACCOUNTING

89,6% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way: [34]

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]

How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]

6) HR MANAGEMENT

65,4% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way:

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[34] The overwhelming majority declaring to possess this expertise is reflected on the extremely positive relevance of the perception of its relevance (*almost the 88% rated it highly important and no negative answers have been recorded [neither 1 nor 2]*).

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]

How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]

7) TASKS ACCOUNTING

76,6% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way: [35]

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]

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[35] Again the vast majority declaring to possess this expertise is reflected on the extremely positive relevance of the perception of its relevance (*almost the 90% rated it highly important*).

How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]

8) SAFETY MANAGEMENT

84,6% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way: [36]

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]
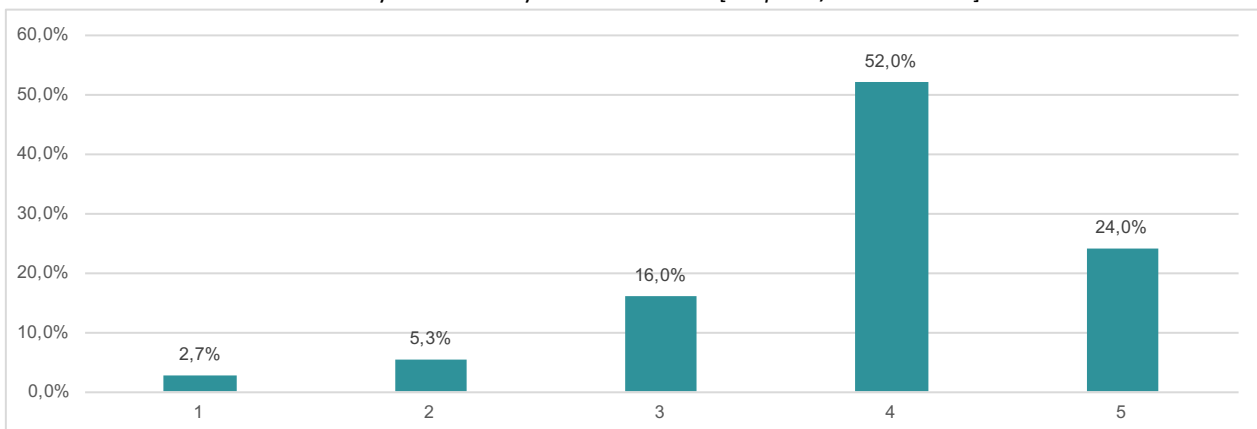
How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]

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[36] Same as above.

9) FACILITY MANAGEMENT

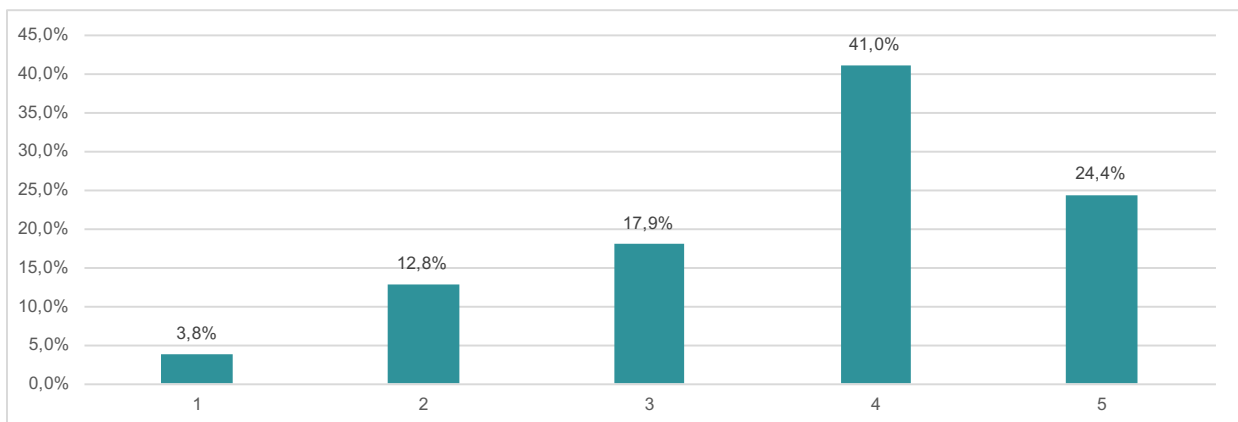Only the **29,5%** of the companies declared to possess this expertise within its own staff, rating its relevance in the following way: [37]

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]
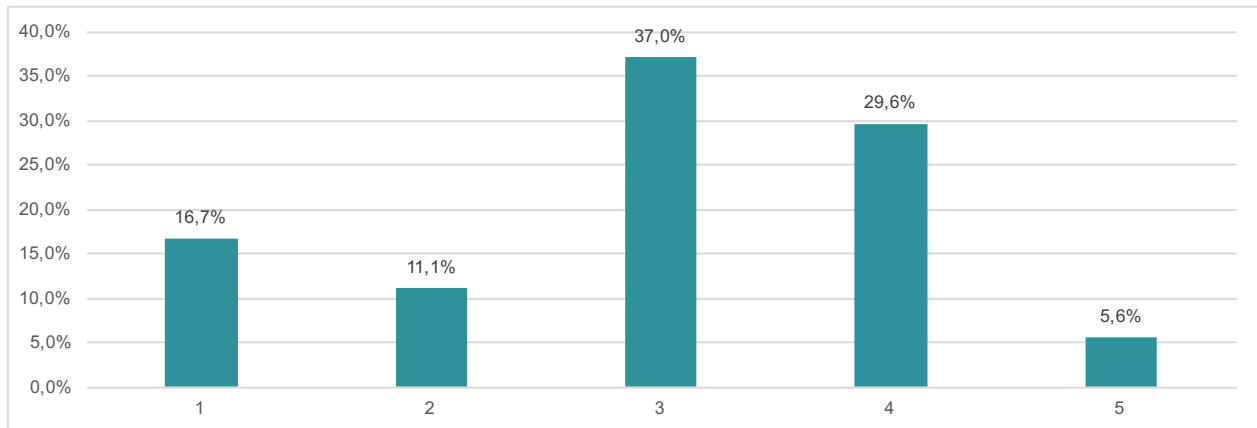
How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]
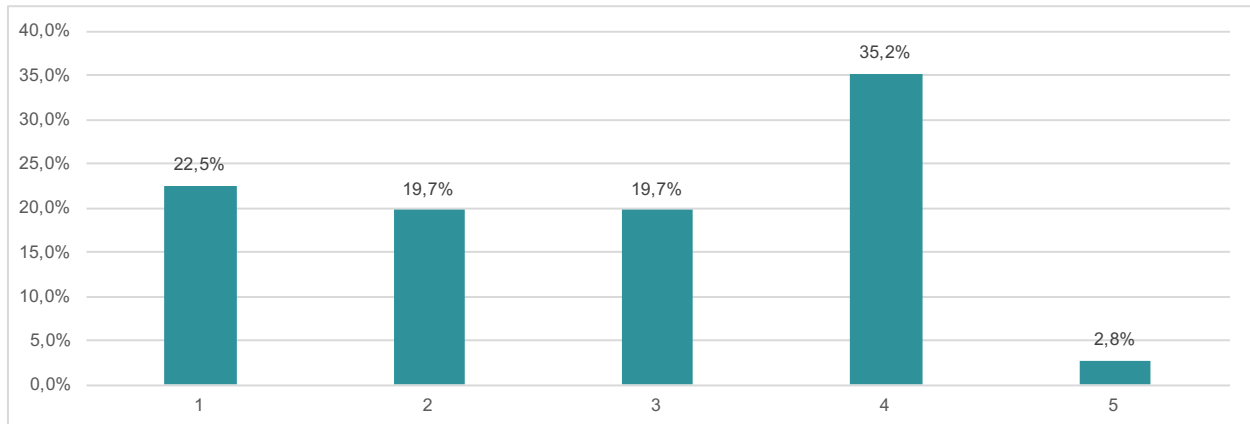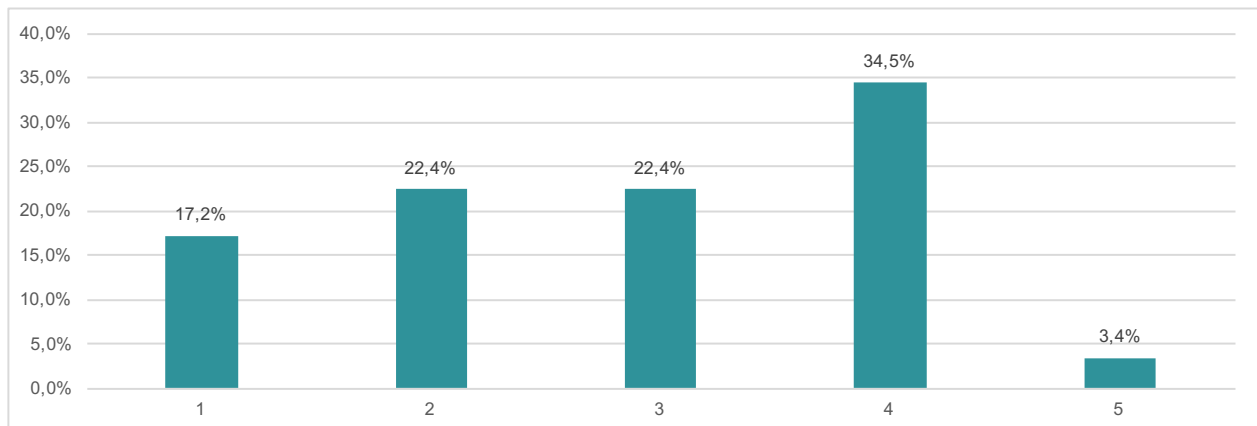

10) ECO-SUSTAINABLE BUILDING AND GREEN BUILDING (circular economy)

Only the **22,1%** of the companies declared to possess this expertise within its own staff, rating its relevance in the following way: [38]

[37] The low rate of the companies declaring to possess this expertise within the staff is confirmed by the low number of answers collected on the connected questions (*only 55 companies*) and also on the non significant relevance given by those who answered.

[38] Same phenomenon as above.

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]
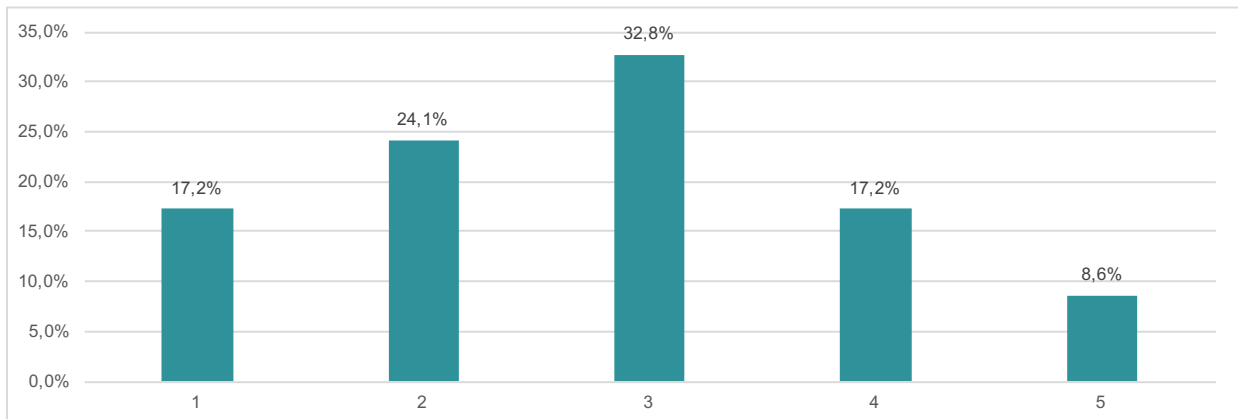
How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]
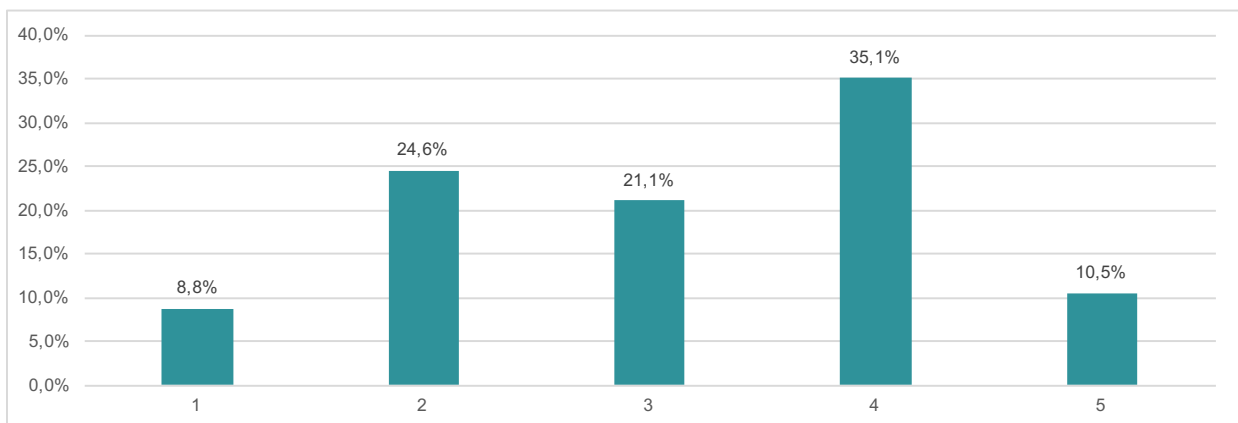
11) ENERGY EFFICIENCY

Just the **36,4%** of the companies declared to possess this expertise within its own staff, rating its relevance in the following way: [39]

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]

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[39] Again the low rate of the companies declaring to possess this expertise within the staff is confirmed by the low number of answers collected on the connected questions (*only 60 companies*) BUT anyway around the 60% declared this competence quite relevant for the company.
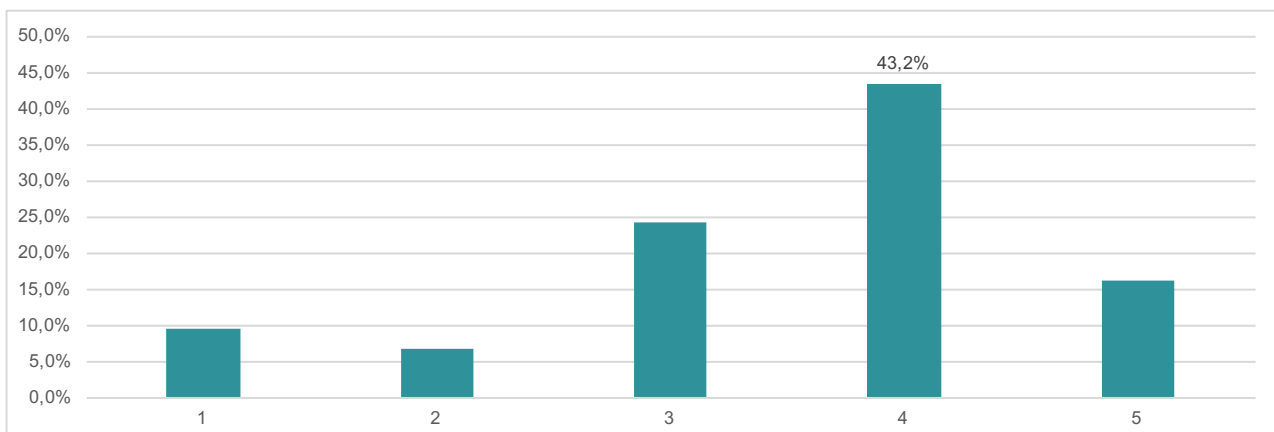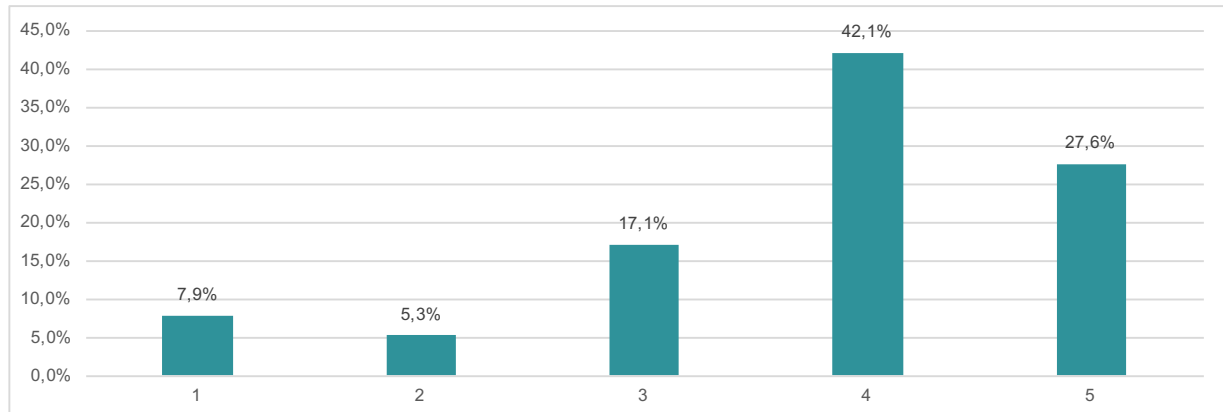
How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]

Chart: How much do you think this competence is important for your company?
- 1: 8,2%
- 2: 9,8%
- 3: 21,3%
- 4: 47,5%
- 5: 13,1%
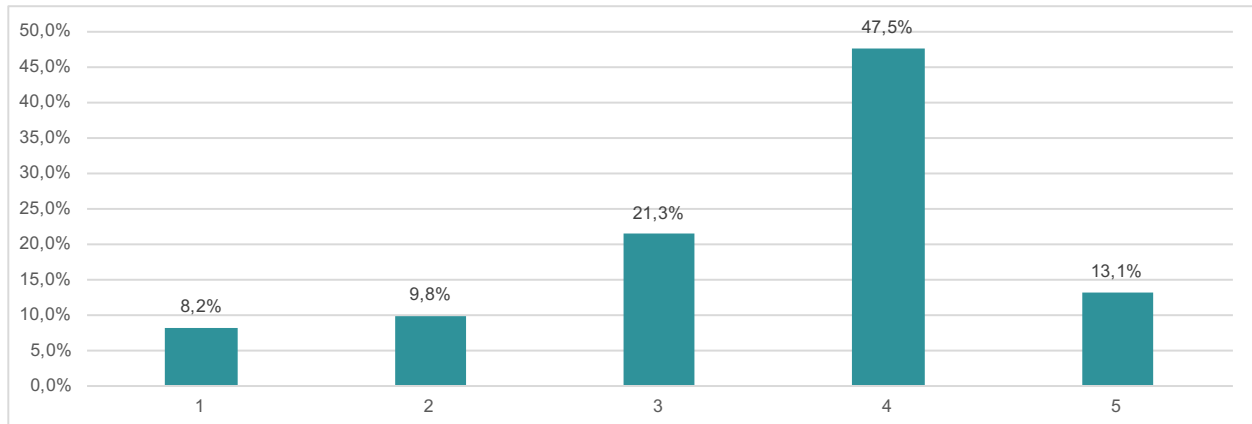
12) NEW TECHNOLOGIES / NEW MATERIALS

47,4% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way: [40]

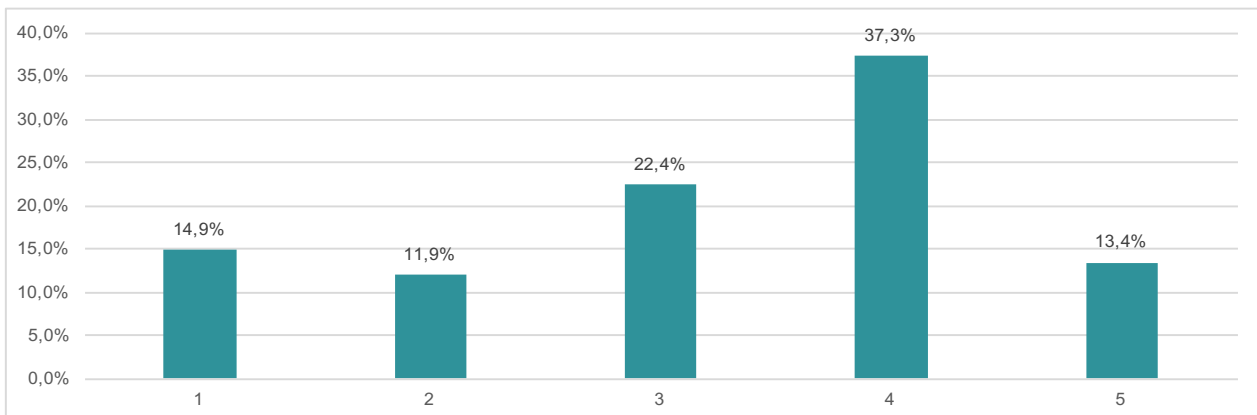How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]
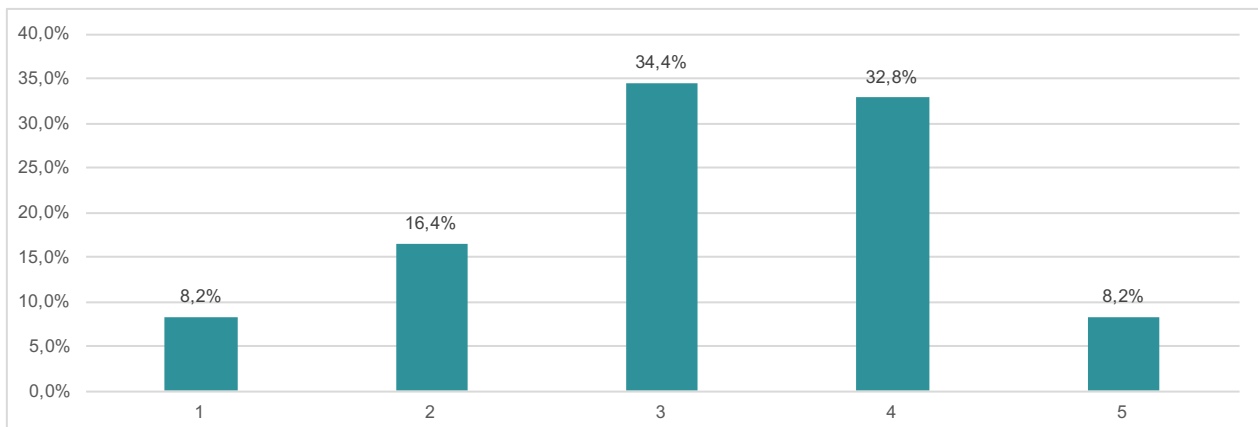
Chart: How do you evaluate your staff's skills?
- 1: 8,2%
- 2: 16,4%
- 3: 34,4%
- 4: 32,8%
- 5: 8,2%

How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]

Chart: How much do you think this competence is important for your company?
- 1: 1,6%
- 2: 9,7%
- 3: 22,6%
- 4: 51,6%
- 5: 14,5%

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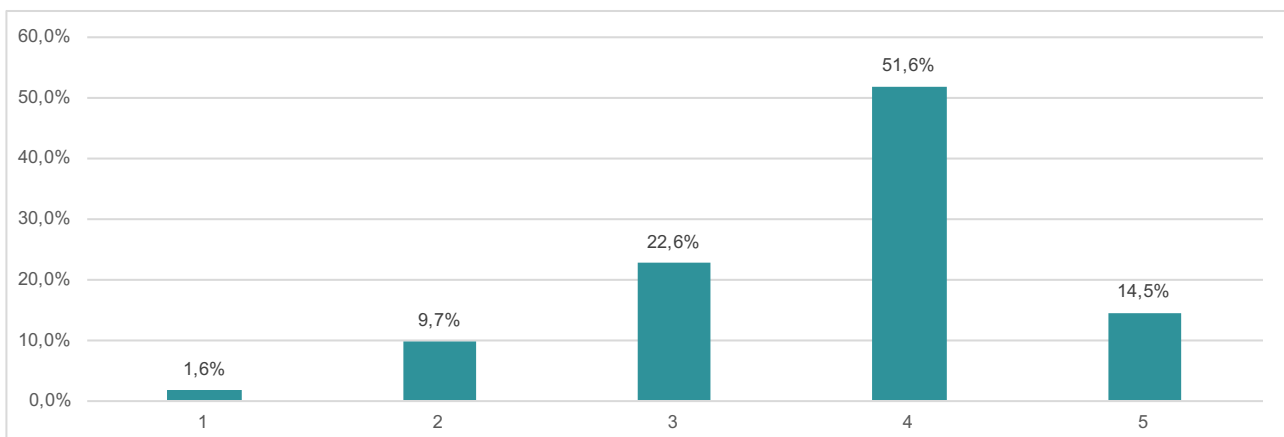
[40] Anyway around the 65% considered this competence quite important for the company.

13) TRANSVERSAL SKILLS: LANGUAGES

Just the **40,3%** of the companies declared to possess this expertise within its own staff, rating its relevance in the following way: [41]

How do you evaluate your staff's skills? [1 = poor / 5 = excellent]
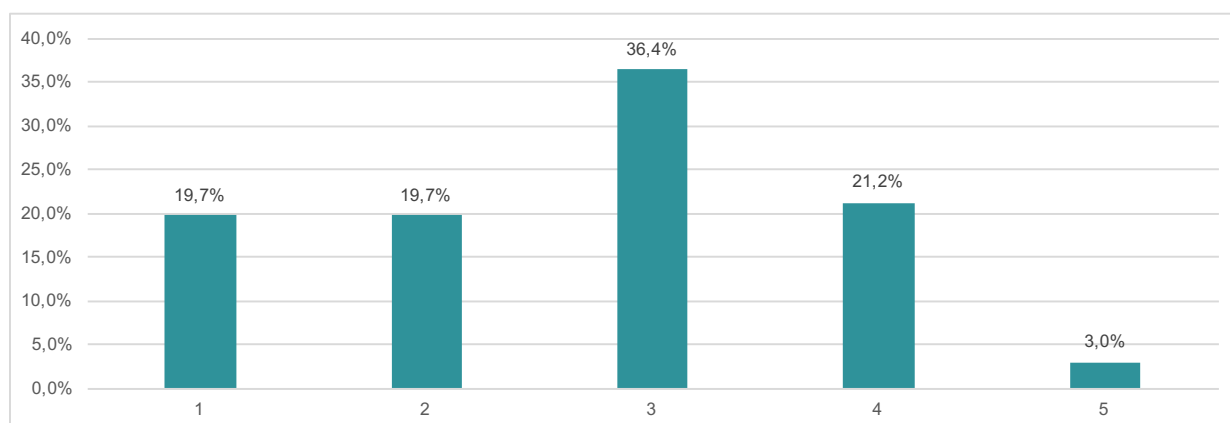
How much do you think this competence is important for your company? [1: not important at all 5: extremely important]
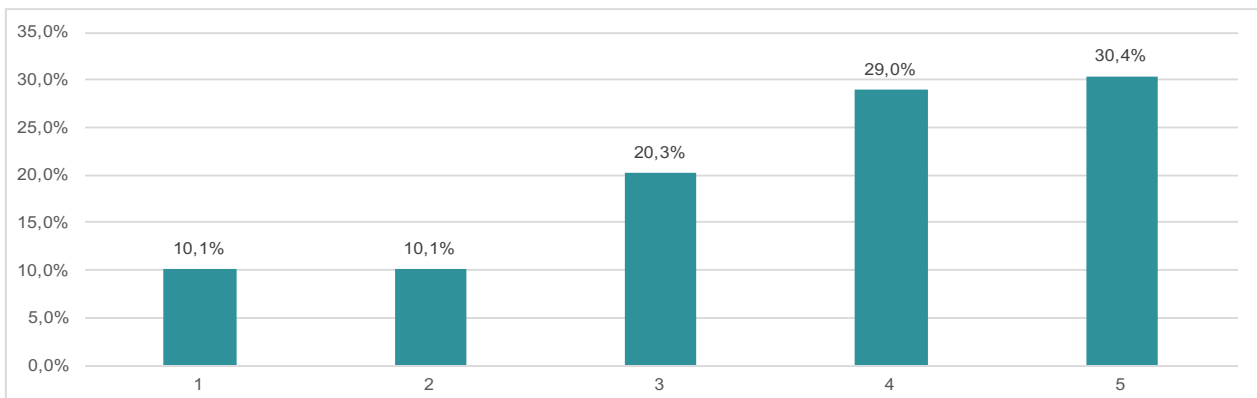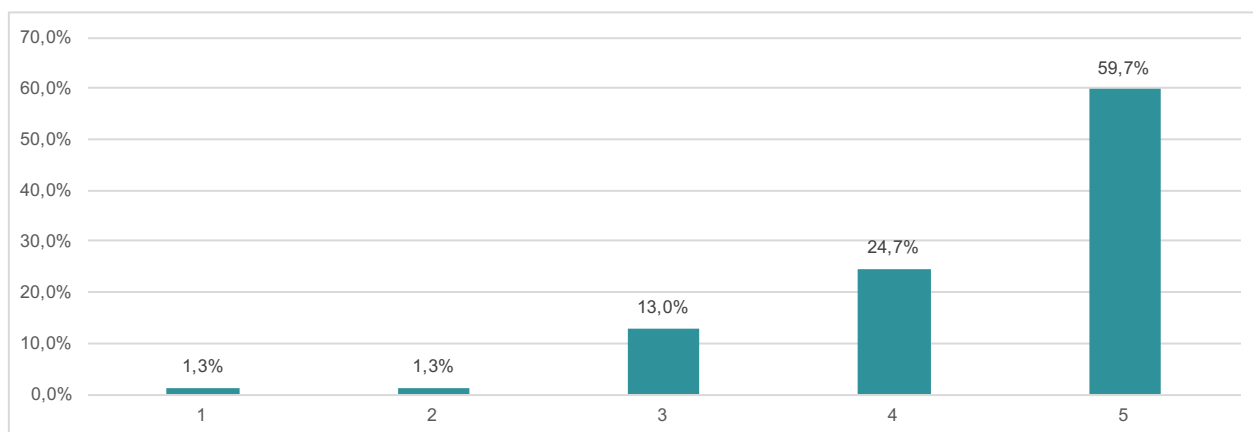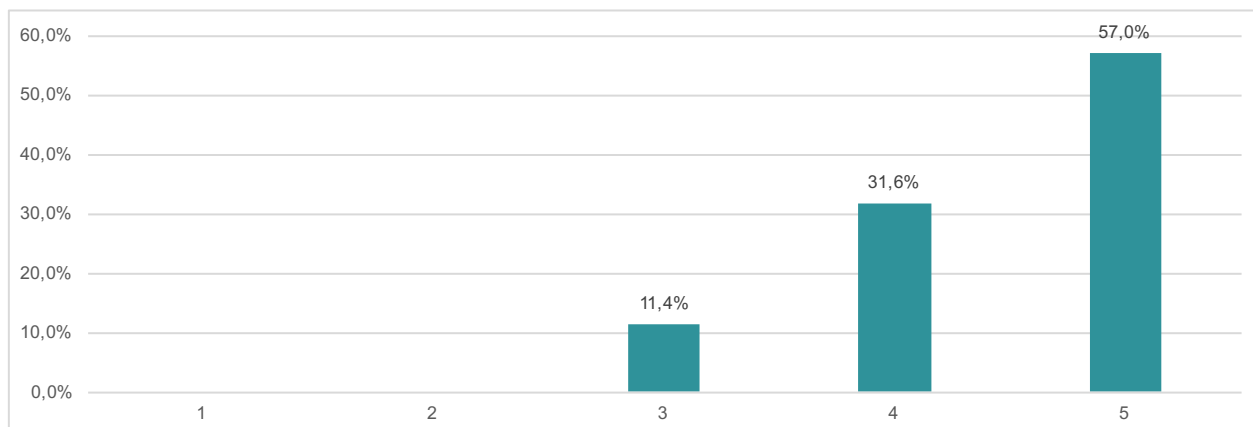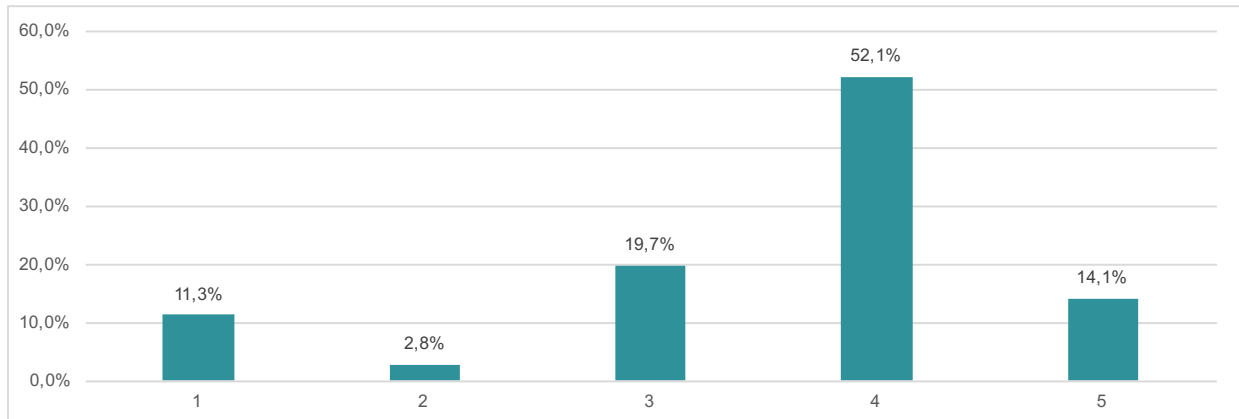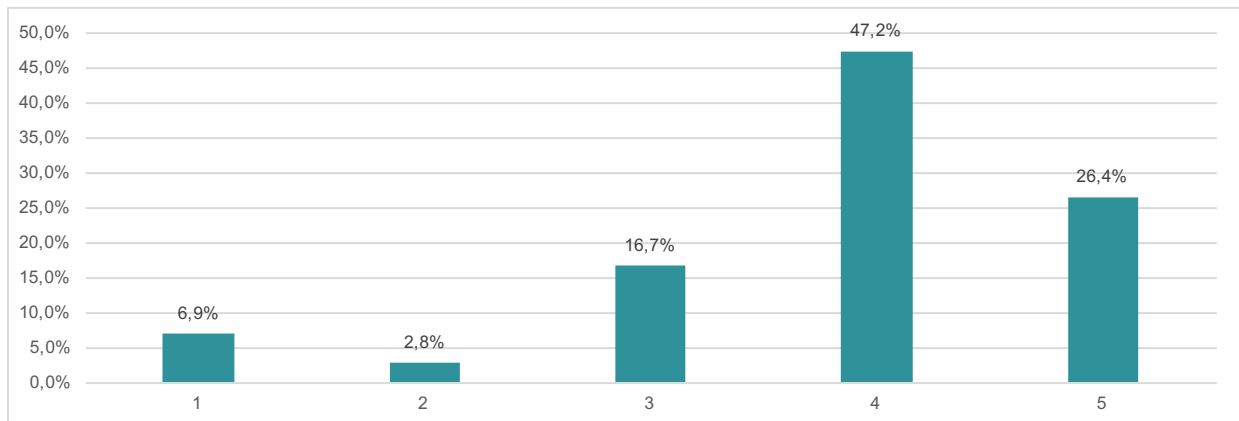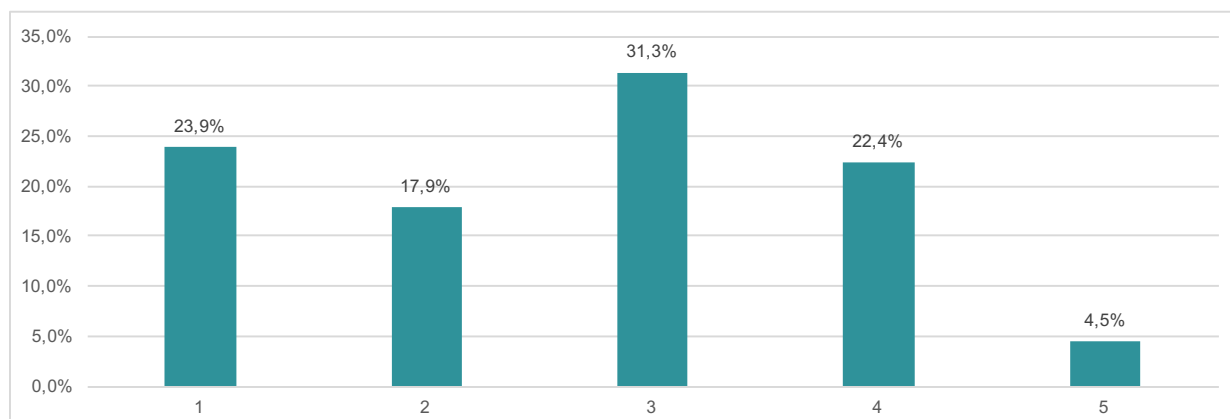

14) TRANSVERSAL SKILLS: MANAGEMENT AND ADMINISTRATION

70,7% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way: [42]

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[41] The average low level of companies having this expertise in their own staff (*40,3%*) is confirmed by the scarce perception of both the own staff' skills and the relevance of the competence itself (*again only 65 companies provided answer to these questions*).
These data anyway have to be connected somehow with the little dimension of the international activity of the sample companies, where almost the 91% declared not to work abroad.

[42] The rate is perfectly in line with the positive relevance evidenced in the charts.

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]
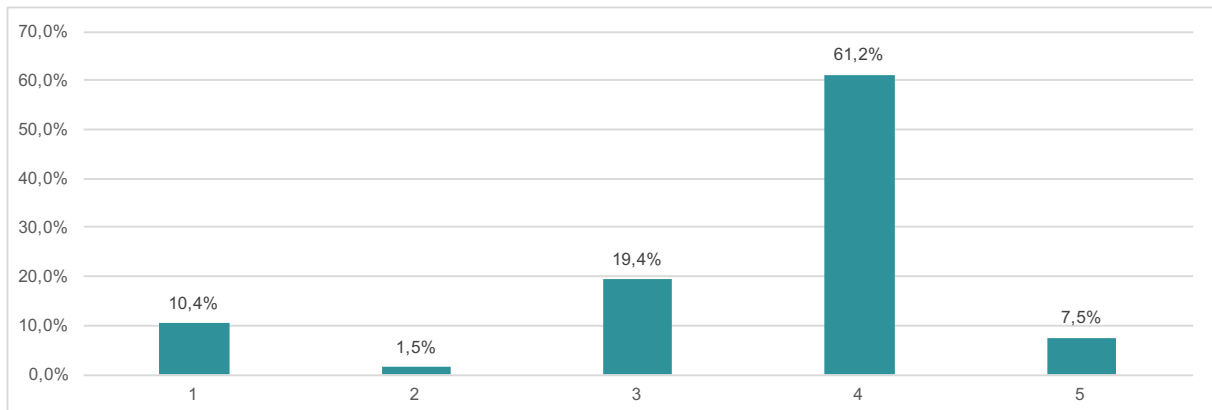
	1	2	3	4	5
%	10,4%	1,5%	19,4%	61,2%	7,5%

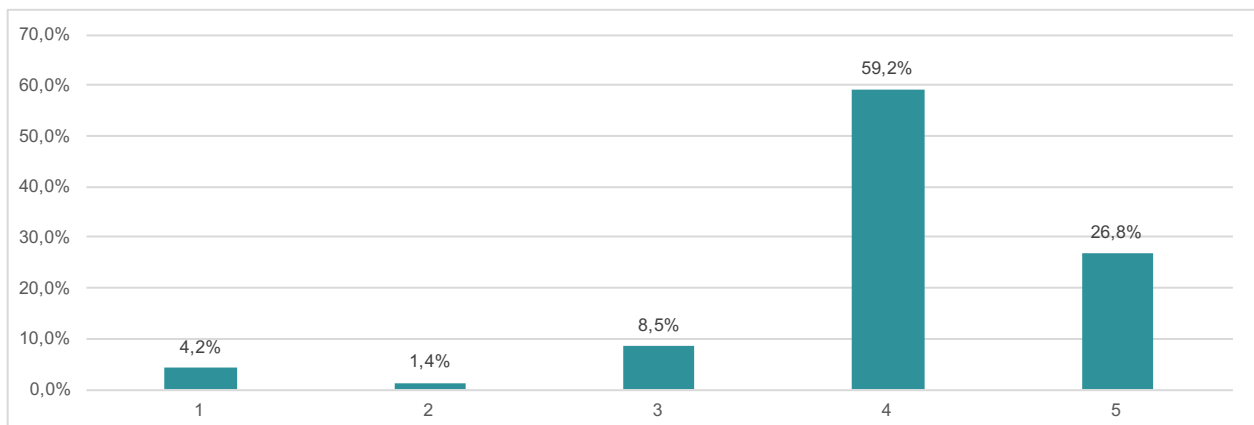**How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]**

	1	2	3	4	5
%	8,8%	2,9%	16,2%	51,5%	20,6%
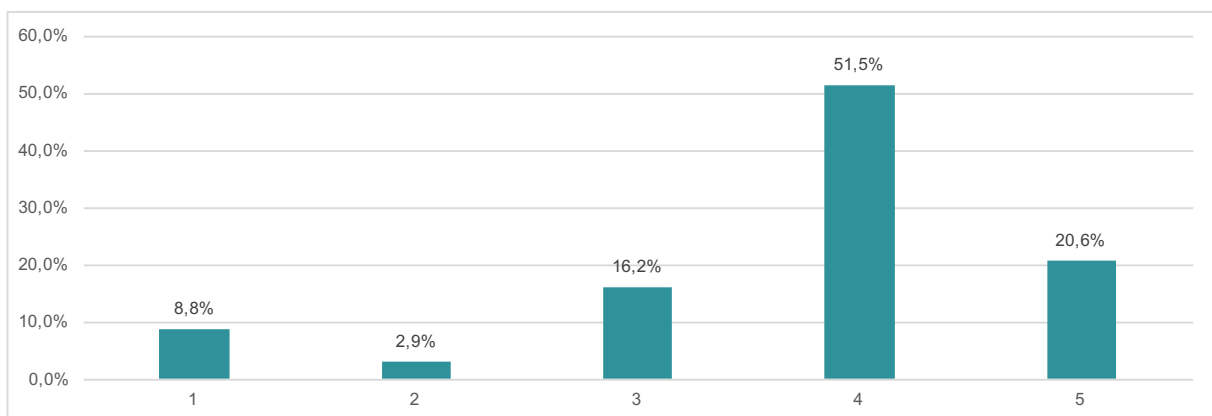
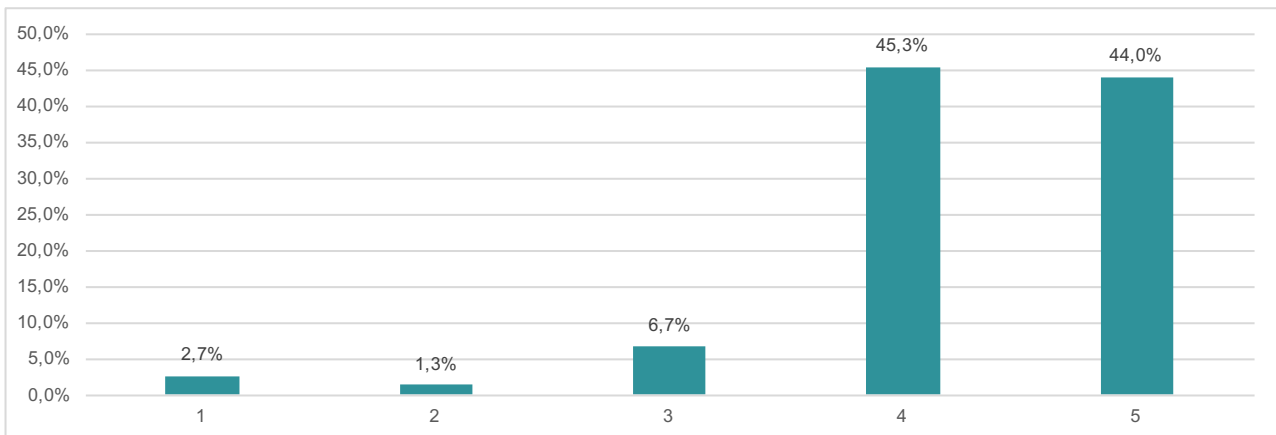## 15) TRANSVERSAL SKILLS: TEAMBUILDING, COORDINATION AND PROBLEM SOLVING

68,8% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way: [43]

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]

	1	2	3	4	5
%	3,0%	6,0%	20,9%	56,7%	13,4%
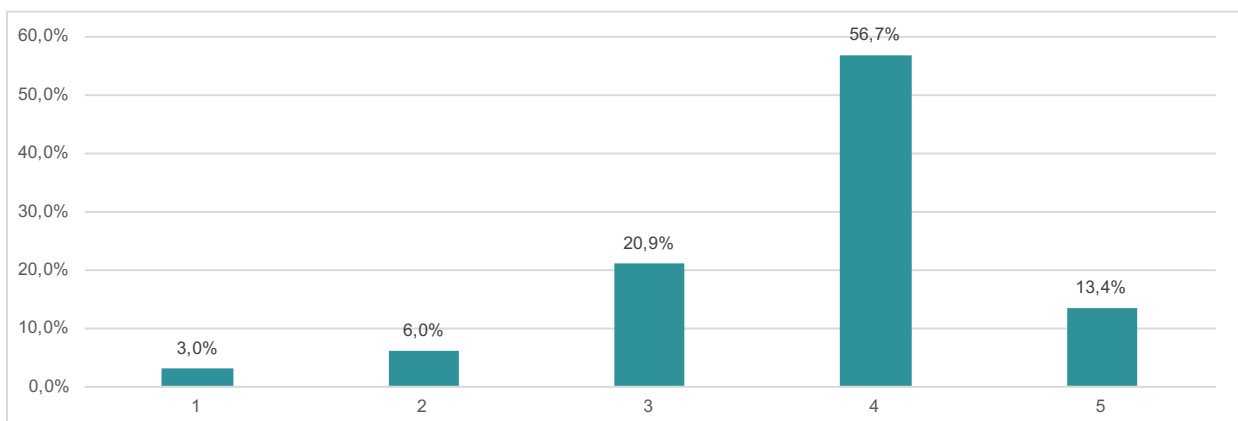
[43] Even this time the rate is perfectly in line with the positive relevance evidenced in the charts.

How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]
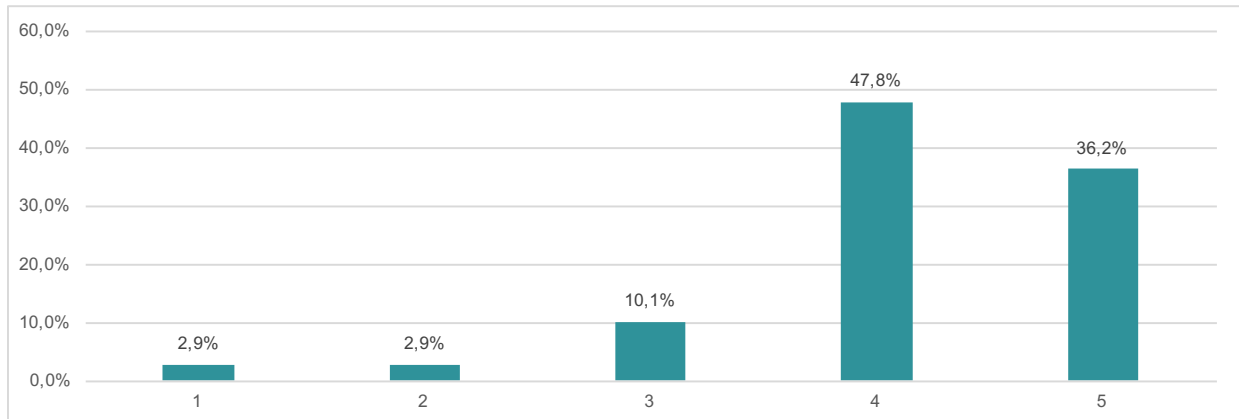
16) TRANSVERSAL SKILLS: INTERPERSONAL SKILLS
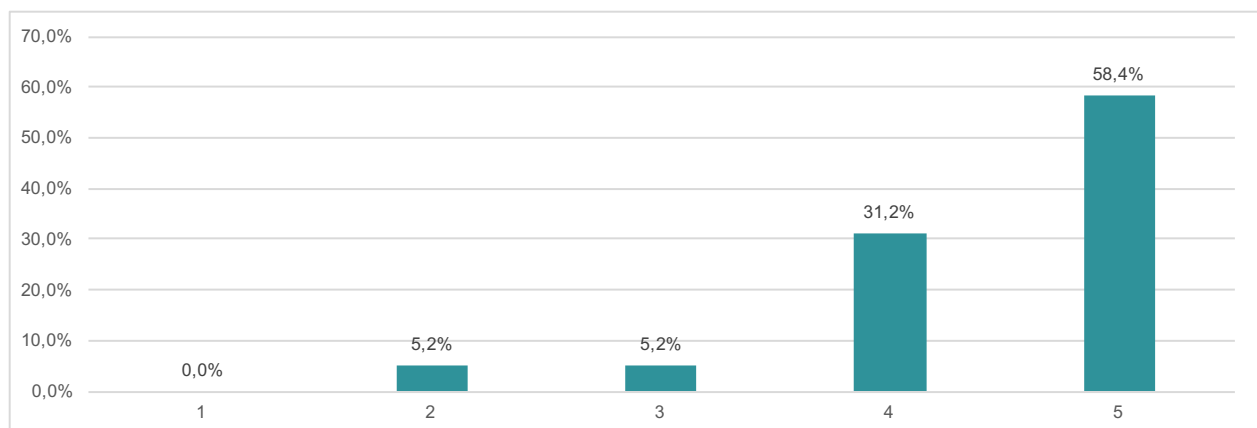
81,6% of the companies declared to possess this expertise within its own staff, rating its relevance in the following way: [44]

How do you evaluate your staff's skills? [*1 = poor / 5 = excellent*]
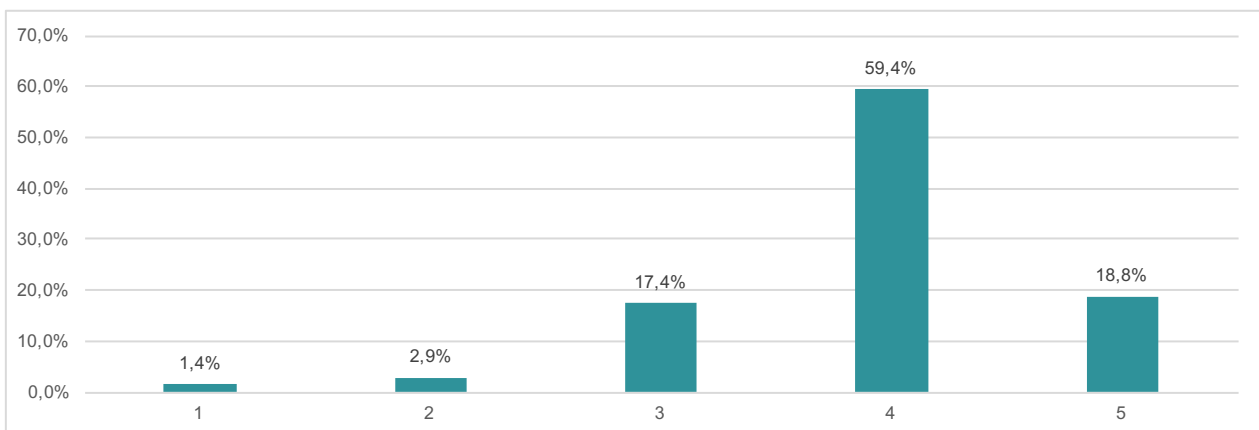
How much do you think this competence is important for your company? [*1: not important at all 5: extremely important*]


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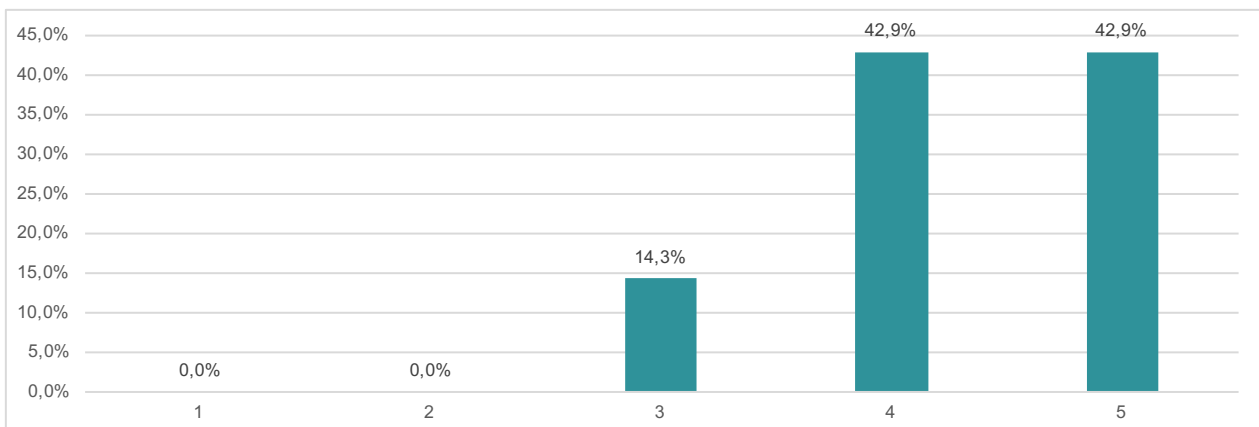
[44] Again the rate is perfectly in line with the positive relevance evidenced in the charts (*more than the 86%*).

Comparative perspective

This part aims to directly compare the scenarios of the 3 countries with respect to each single type of competence listed, immediately highlighting the similarities and / or differences registered.

Clearly the data must be interpreted in the light of regional and national territorial contexts and also of the specific characteristics of the entrepreneurial profile as it also results from the first part of the analysis (*companies profile*).

Information on training needs [45]

1) CAD DRAWING
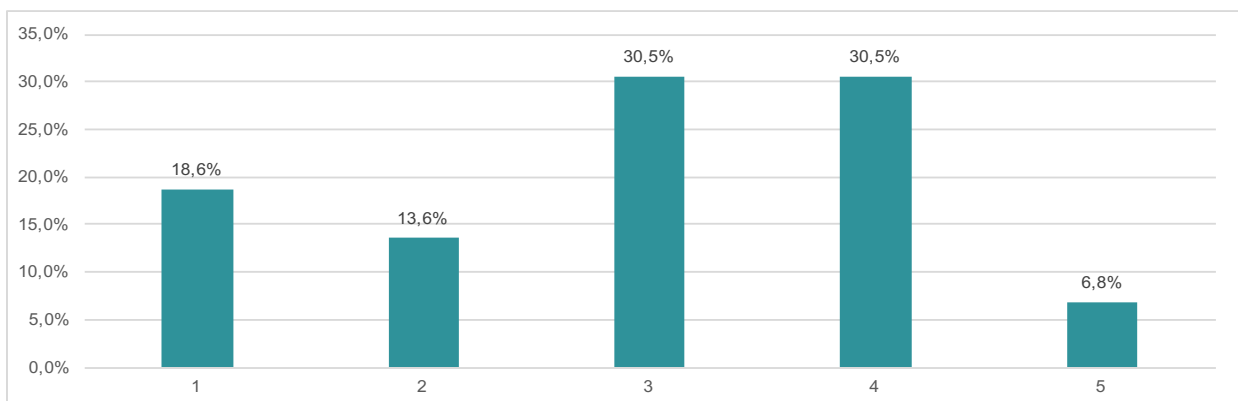
The scenario of the companies declaring to possess this expertise within their own staff varies between the 3 countries as reported on the chart, being somehow in line with the evaluation of the staff's skills (grading as average 3,5 for Italy and Spain and only 2,7 for Lithuania). On the contrary the perception of its importance for the daily business are somehow similar for the 3 countries with an average score of 3,6. [46]
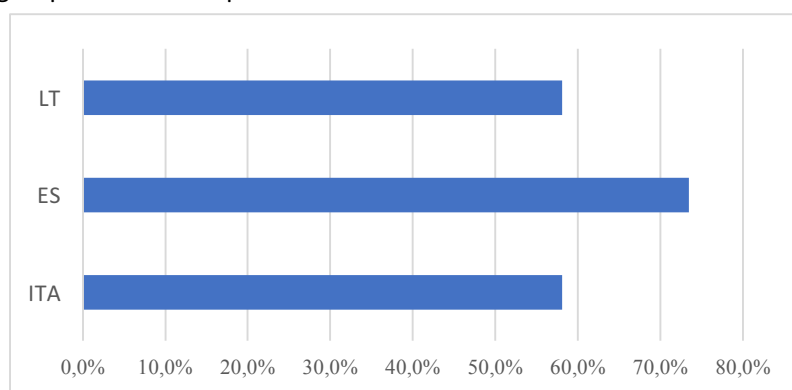
2) BIM (Building Information Modelling)

This time the differences are even more marked as for the declaration of possession of this expertise within

their own staff, with a peak for Lithuania where the 58% of the companies answered positively (*whereas in Italy only the 12,8% gave the same answer*). Despite of these large discrepancies the evaluation of the staff's skills is somehow similar (ranging from 2,2 in Italy to 2,7 in Spain) whereas the perception of its importance is quite linear with the chart: 2,7 for Italy, 3,1 for Spain and 3,6 for Lithuania.

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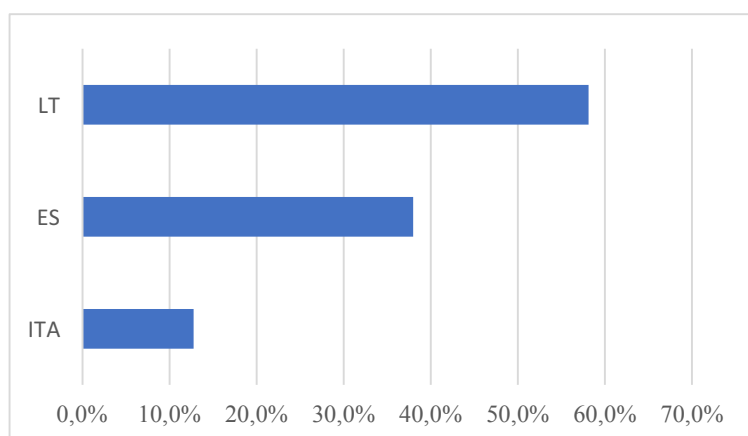
[45] To allow an easier understanding of the survey result a unique methodology has been applied for each single competence: the 3 dimensions of the analysis are respectively reported with a horizontal bar chart (*the possession of the competence*) and the description of the average of the processed grades for both the rate of staff's skills and the perception of importance.

[46] It is useful to remember that the survey has been performed using a Likert scale based on 5 scores, where 1 was referred to a poor grade and 5 to the excellent grade.

3) QUALITY SYSTEM MANAGEMENT

Again the differences are quite marked as for the declaration of possession of this expertise within their own

staff, with again a peak for Lithuania where the 90,3% of the companies answered positively (*whereas in Italy even this time the level was limited to the 41,9%*). Both the other two parameters are in line with this picture:
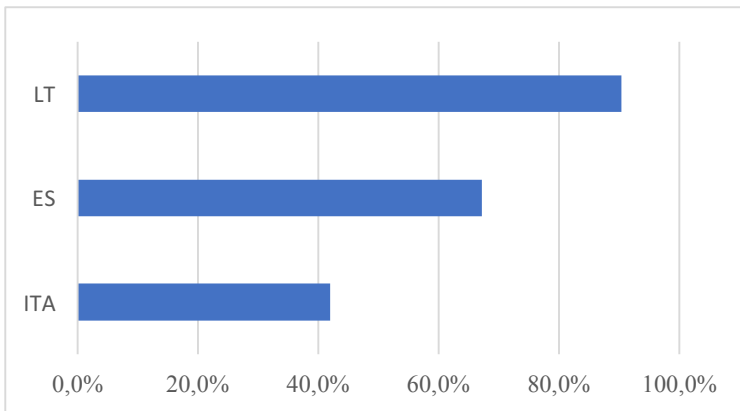
 - the <u>evaluation of the staff's skills</u> shows 2,9 for Italy, 3,5 for Spain and for Lithuania

- the <u>perception of its importance</u> shows 3,4 for Italy, 3,8 for Spain and 4,2 for Lithuania.

4) TENDERS AND PUBLIC PROCUREMENT MANAGEMENT

 Again in Lithuania almost all the companies (*96,8%*) declared to possess this expertise whereas both Italian

and Spanish are lagging far behind. And even this time both the other two parameters are in line with this picture:
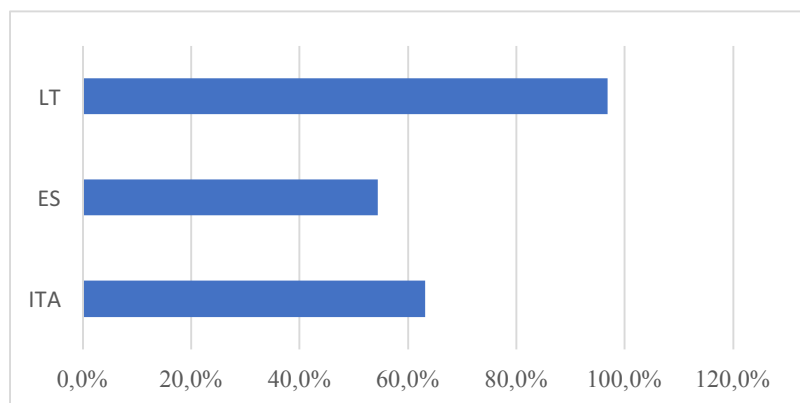
 - the <u>evaluation of the staff's skills</u> shows 3,2 for Italy, 3,3 for Spain and 4,0 for Lithuania

- the <u>perception of its importance</u> shows 3,5 for Italy, 3,6 for Spain and 4,3 for Lithuania.

5) ESTIMATES AND TECHNICAL ACCOUNTING

This time differences are really minimal (*almost all the countries tend to the unanimity*) and even the
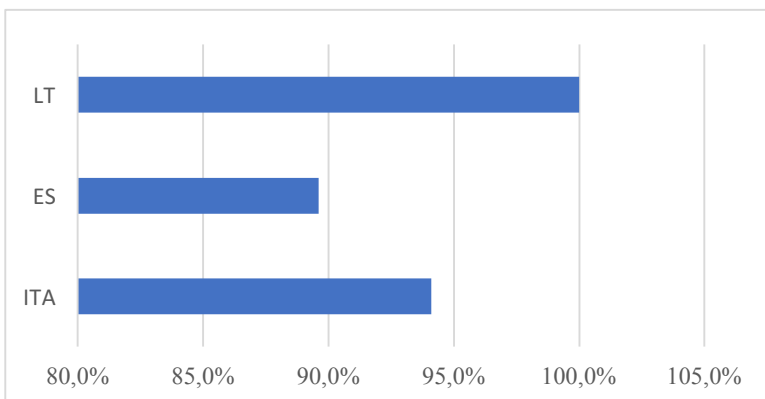
<u>evaluation of the staff's skills</u> (grading as average 4,2 in all the countries) and the <u>perception of its relevance</u> (grading as average 4,5 in all the countries) are perfectly aligned, denoting in general a competence already at disposal within the sample scenario.

6) HR MANAGEMENT

Again rates of possession are in line with the trend shown so far, with Lithuanian companies being quite

'active' and Italians and Spanish's almost similar, as well as the other two parameters:
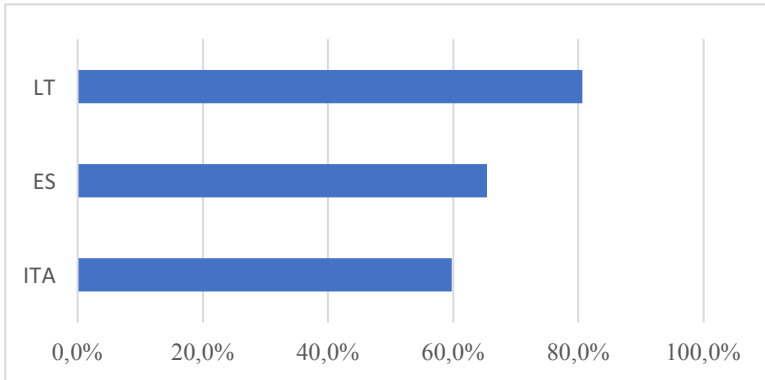
- the evaluation of the staff's skills shows 3,3 for Italy, 3,6 for Spain and for Lithuania

- the perception of its importance shows 3,8 for Italy, 3,9 for Spain and 4,1 for Lithuania.

7) TASKS ACCOUNTING

This time the situation is almost perfectly similar with all the 3 investigated parameters: the possession is

clearly shown in the picture, whilst the evaluation of the staff's skills has an average grade of 4,0 and the perception of its importance slightly varying between 4,0 in Lithuania to 4,3 in Italy and Spain.
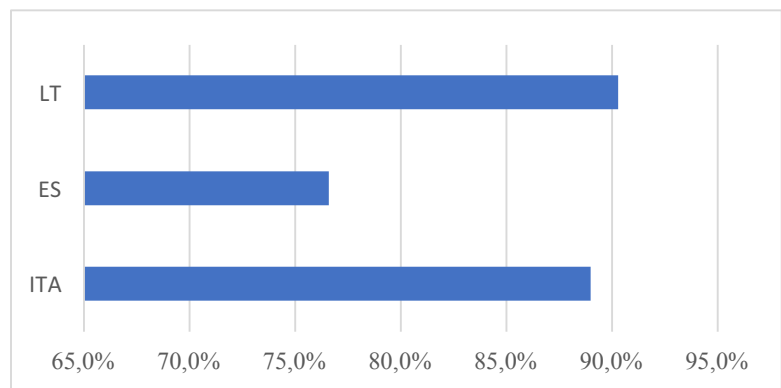
8) SAFETY MANAGEMENT

Again the situation is almost linear with high scores for all the 3 parameters, where in detail the unanimity
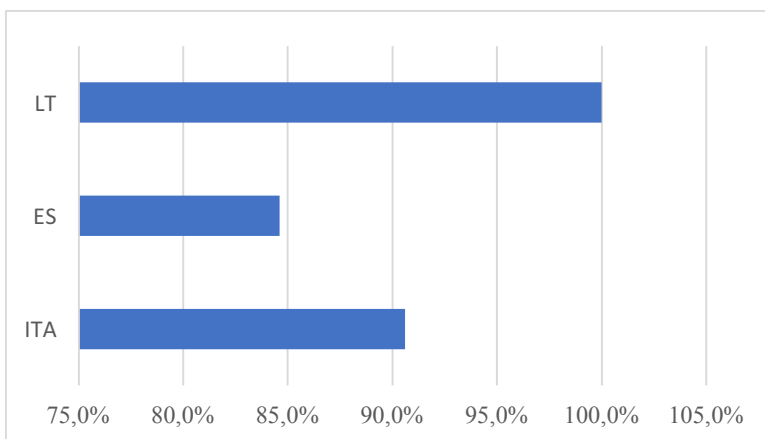
of possession in Lithuania is confirmed by reaching almost the excellence on both the evaluation of the skills (4,7 as average) and on the perception of relevance (4,8 as average). Italy and Spain are even this time similar with an average score of 3,8 on the evaluation of the staff's skills and 4,4 on the perception of this competence relevance.

9) FACILITY MANAGEMENT

This time Italy and Lithuania are sharing a similar picture whereas less than 1/3 of the Spanish companies have declared to possess this competence. And again the two other parameters are somehow respecting this trend:
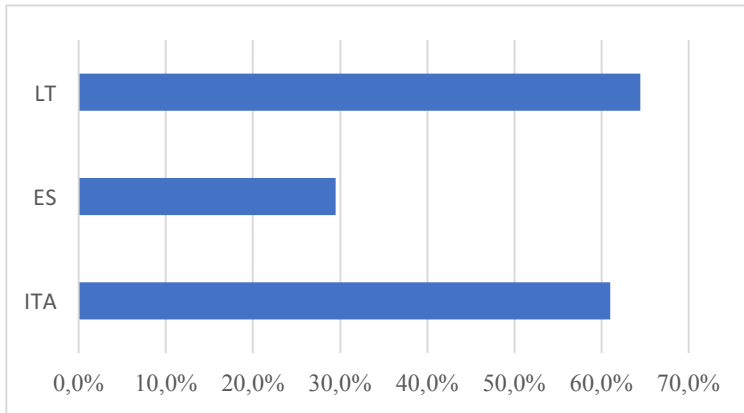
- the evaluation of the staff's skills shows 3,3 for Italy, 3,0 for Spain and only 2,9 for Lithuania

- the perception of its importance shows 3,8 for Italy, just 2,8 for Spain and 3,2 for Lithuania.

10) ECO-SUSTAINABLE BUILDING AND GREEN BUILDING (circular economy)

Again a picture where Lithuanian companies are 'leading the group' whilst both the Italian and Spanish ones are lagging far behind (*with just ¼ of the sample declaring to possess this competence*). And again the two other parameters are somehow respecting this trend:

- the evaluation of the staff's skills shows just 2,4 for Italy, 2,7 for Spain and 2,9 for Lithuania

- the perception of its importance shows 3,4 for Italy, just 3,1 for Spain and 4,2 for Lithuania.
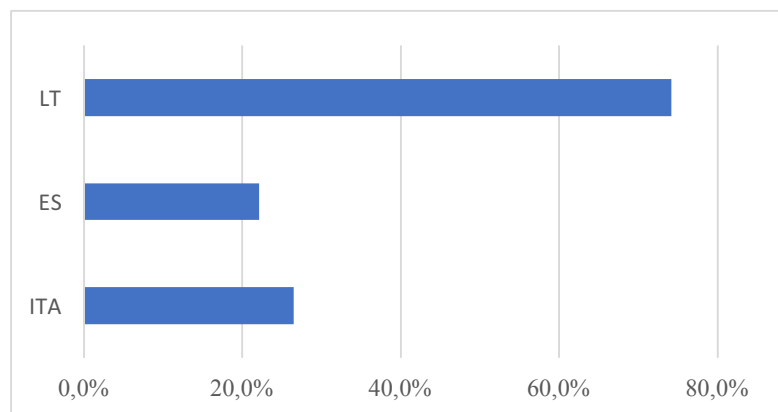
11) ENERGY EFFICIENCY

Same picture as for the previous chart: Lithuanian companies are 'leading the group' with almost the unanimity whilst both the Italian and Spanish ones are lagging behind (*this time with just a bit more of 1/3 of the sample declaring to possess this competence*). And again the two other parameters are somehow respecting this trend:
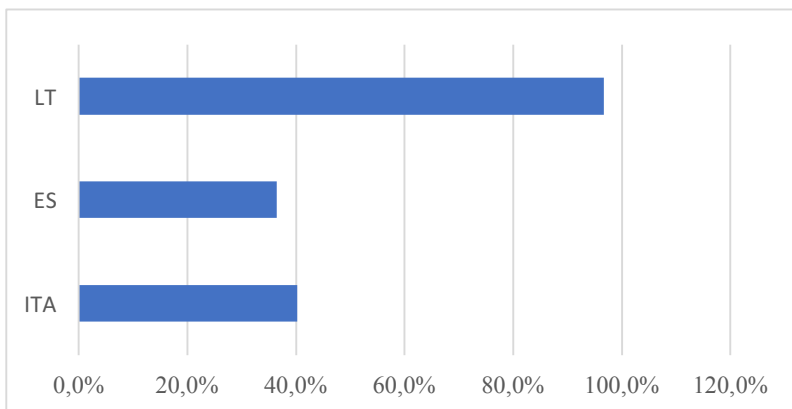
- the evaluation of the staff's skills shows just 2,7 for Italy, 3,0 for Spain and 4,1 for Lithuania

- the perception of its importance shows 3,5 for Italy, 3,4 for Spain and 4,8 for Lithuania (*in line with the almost unanimity of the chart*).

12) NEW TECHNOLOGIES / NEW MATERIALS

A new picture 'in a row': this time Lithuanian companies are reaching the unanimity whilst the Italian ones are anyway almost reaching the 2/3 and Spanish companies are lagging below the 50% threshold. And again the two other parameters are somehow respecting this trend:

- the evaluation of the staff's skills shows 3,2 for Italy and for Spain and 4,0 for Lithuania
- the perception of its importance shows 3,8 for Italy, 3,7 for Spain and 4,8 for Lithuania (*in line with the unanimity of the chart*).
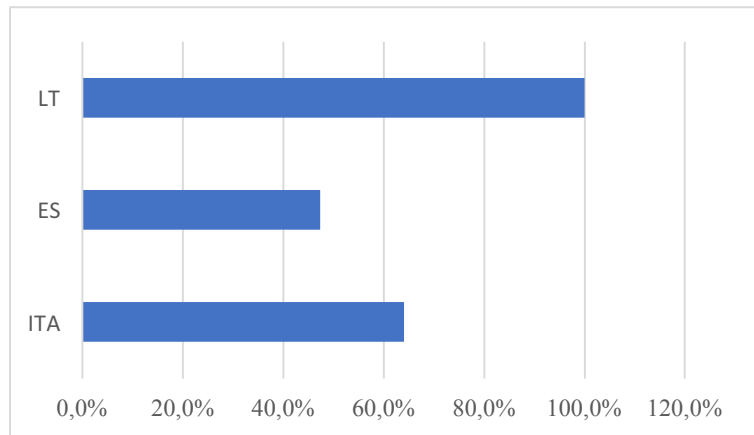
13) TRANSVERSAL SKILLS: LANGUAGES

A new picture 'in a row': this time Lithuanian companies are showing some slight 'deficiency' reaching the

77,5% but the Italian and the Spanish companies are lagging far below the 50% threshold. And again the two other parameters are somehow respecting this trend:

- the evaluation of the staff's skills shows 2,3 for Italy and 2,7 for Spain and 4,0 Lithuania
- the perception of its importance shows 2,9 for Italy, 2,6 for Spain and again the highest score for Lithuania = 3,4
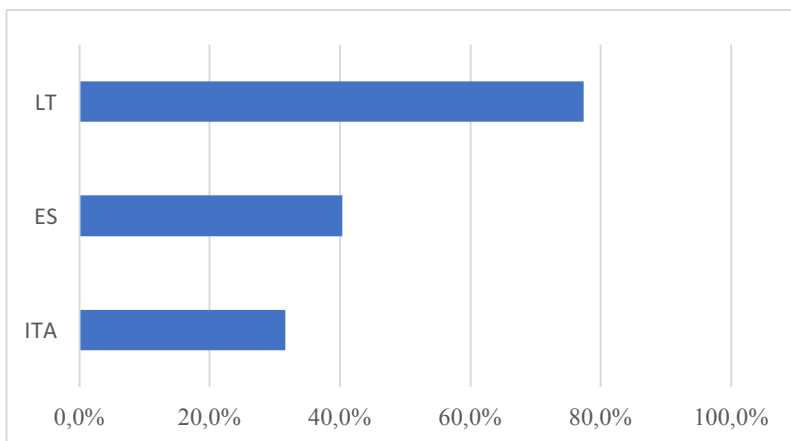
14) TRANSVERSAL SKILLS: MANAGEMENT AND ADMINISTRATION

Again a picture where Lithuanian companies are 'leading the group' with 100% of the companies answering

positively and then the Spanish (anyway with more than 70%) and Italian ones below the 50% threshold. And again the two other parameters are somehow respecting this trend:

- the evaluation of the staff's skills shows just 2,7 for Italy, 3,5 for Spain and 4,0 for Lithuania
- the perception of its importance shows 3,4 for Italy, 3,7 for Spain and 4,3 for Lithuania.
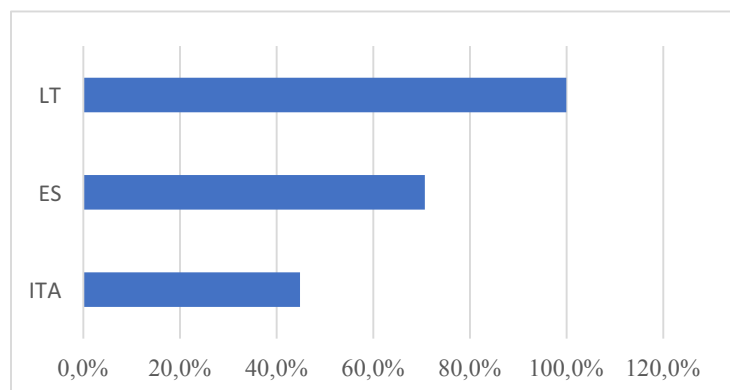
15) TRANSVERSAL SKILLS: TEAMBUILDING, COORDINATION AND PROBLEM SOLVING

No need to say that also this time Lithuanian companies are 'leading the group', the Spanish one are following and the Italian ones again below the 50% threshold. And again the two other parameters are somehow respecting this trend:
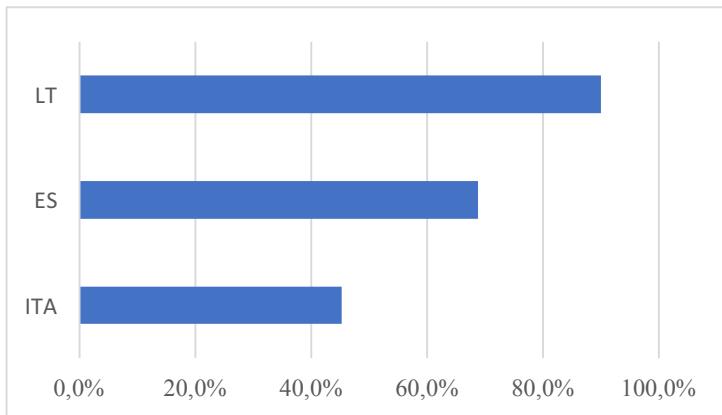
- the evaluation of the staff's skills shows just 2,8 for Italy, 3,7 for Spain and 3,4 for Lithuania

- the perception of its importance shows 3,4 for Italy, 4,1 for Spain and 4,3 for Lithuania.

16) TRANSVERSAL SKILLS: INTERPERSONAL SKILLS

And in the end this last picture do nor differ with the previous ones with Lithuanian companies almost reaching the unanimity, followed first by the Spanish one and then with the Italian companies anyway over the 2/3. And again the two other parameters are somehow respecting this trend:
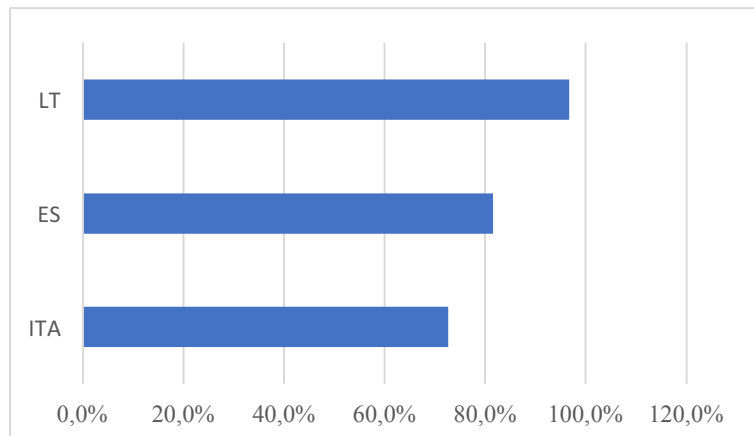
- the evaluation of the staff's skills shows 3,5 for Italy, 3,9 for Spain and 3,7 for Lithuania

- the perception of its importance shows 4,0 for Italy, 4,3 for Spain and 4,8 for Lithuania (*in line with the almost unanimity of the chart*).

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Again these pictures resulting from the comparative analysis of the 3 project countries should not lead to any ambition to create a sort of transnational perspective within the construction sector but, on the contrary, should serve to better understand each national scenario and more effectively detect possible areas of improvements starting from some local / regional good and even best practice. All in total 231 companies have participated to the survey (118 in Italy, 34 in Lithuania and 79 in Spain) providing a size big enough to sustain the different feedbacks and conclusions already anticipated during the different parts of the analysis.

First remarks

The very first remark resulting from reading of the survey data is the discovering that the construction sector is still a "traditional" sector, especially in Italy and partially in Spain, characterized by a low propensity to change and a low rate of innovation.

Construction sector has to face now many challenges,[47] stimulating efficiency improvements and renovation in the existing buildings, improving specialized training, making the sector more attractive, up-taking the new technologies and digital innovations and reducing buildings' energy consumption and greenhouse emissions.

The construction value chain includes a wide range of economic activities, going from the extraction of raw materials, the manufacturing and distribution of construction products up to the design, construction, management and control of construction works, their maintenance, renovation and demolition, as well as the recycling of construction and demolition waste. Buildings, infrastructure and construction products have an important impact on energy and resource efficiency, the fight against climate change and in the environment in general.

All these aspects of innovation and change must push the companies and the work policies to align knowledge, skills and learning outcomes with the new requirements in the construction sector.

The great fragmentation of the sector in small and very small companies together with the fact that they work in a local market, does not push, instead, companies to consider technological and process innovation as key to re-launch the sector.[48]

A new cultural season in fact affects the construction sector and foreshadows a profound change sustainability, automation, pre-fabrication, digitalisation, design the areas of change that affects products, processes and contracts.[49]

However, the results of the survey conducted by the partnership show that a significant number of our sample companies, especially in Italy and Spain, have not realized yet that the construction sector has entered a new phase.

The data on the possession of the skills related to the drivers of change are significant:

- only 12% of Italian companies that participated in the survey have BIM skills;
- 29.5% of the sample of Spanish companies has facility management skills;
- 22.15% and the 26.5% respectively of the Spanish and Italian companies in the sample, have skills related to sustainable construction and green building (circular economy);
- the percentages of companies with expertise in the field of energy efficiency are instead much more positive in all three countries involved in the survey: a percentage higher than 36% in Spain, over 40% in Italy and even higher than 96% in Lithuania.

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[47] Cresme *(2018) L'innovazione nella filiera delle costruzioni;* Cresme *(2019) Economia, società e costruzioni nel mezzogiorno negli anni 2000. Squilibri, ritardi e opportunità.*

[48] IRES Emilia Romagna *(2018) Tendenze economiche e mercato del lavoro nelle costruzioni dell'Emilia-Romagna.*

[49] Construction 2025. Industrial Strategy: government and industry in partnership. HM Government; various Authors (2015). *A Study on Energy Efficiency in Enterprises: Energy Audits and Energy Management Systems – European commission report.*

Concerning the more traditional and consolidated skills in the construction sector, the percentages are definitely much higher, for example:

- cad drawing: more than 58% of the companies located in Lithuania and in Italy, and more than 73% of the companies located in Spain have this competence;

- estimate and technical accounting: 100% of the companies located in Lithuania, almost 90% in Spain and 94% in Italy have this competence;

- tenders and public procurement management: more than 54% of the companies located in Spain, more than 63% of the companies in Italy and almost 97% of the companies in Lithuania have this competence;

The survey also finds high percentages (about 50%) relating to the possession of transversal skills by the sample, in the three countries involved.

The data emerging from the survey, underline the great importance of increasing the awareness of companies, especially Italian and Spanish ones, concerning the fact that innovation is the only way to re-emerge from a crisis that has hit this sector very hard; a cultural and technological growth of the entire construction chain is urgent now.

The construction industry should collaborate with VET system and research communities to bring forward more research, development and demonstration to the wider industry and work to remove barriers to innovation.

Construction sector should be no longer characterised by late delivery, cost overruns, late payment, accidents, unfavourable workplaces, a workforce with low skills and as an industry slow to embrace the change.

This sector should then be:

- an industry able to appeal and retain a huge group of multi-talented people, operating under considerably safer and healthier conditions; a sector chosen by young people, inspiring them into rewarding professional careers;

- a sector embracing the transition to a digital economy and the rise of smart construction. A more sustainable industry, with an efficient approach in delivering low carbon assets more quickly and at a lower cost, underpinned by a strong, integrated supply chains and productive long term relationships

Annex 1 - Questionnaire template

ICARO - Survey within the construction company system

ANALYSIS OF THE PROFESSIONAL TRAINING SYSTEM IN THE BUILDING AND CONSTRUCTION SECTOR, WITH SPECIFIC REFERENCE TO THE CONSTRUCTION SITE TECHNICIAN

Dear partner,

The survey aims to analyze the needs of building and construction companies, and to improve or create, where it is not present, the Construction Site Technician qualification.
The questionnaire is addressed to construction companies, with the aim of understanding their need for innovation, but also - and mainly - the constraints imposed by the market to which companies must necessarily adapt, focusing the GAP analysis of the existing qualification and indentification of the needs in the building sector.

We ask you then a few minutes of your time to reply to a few questions.

Many thanks for your cooperation!

COMPANY PROFILE

1. **Number of employees**

   _____

2. **Number of apprentices / young workers**

   _____

3. **Number of female employees**

   _____

4. **Sector in which the company operates**

Contrassegna solo un ovale.

- ⬭ Residential-civil work
- ⬭ Finishing
- ⬭ Structural works
- ⬭ Installation
- ⬭ Maintenance / renovation
- ⬭ Altro: _____

5. **Your role / position in the company**

_____

6. **In which market does your company operates?**

Contrassegna solo un ovale.

- ⬭ Local
- ⬭ National
- ⬭ European
- ⬭ International

7. **Which type of company is it?**

Contrassegna solo un ovale.

- ⬭ Contruction company
- ⬭ Engineering Firm
- ⬭ Architecture and Design Firm
- ⬭ Plant engineering company
- ⬭ Altro: _____

8. **In addition to compulsory training, does your company take part in other training courses?**

Contrassegna solo un ovale.

- ⬭ Yes
- ⬭ No

9. **If NO, why?**

_____

10. **If YES, in which sector? <you can choose more than 1 option>**

Seleziona tutte le voci applicabili.

- [ ] Safety at work training
- [ ] Construction workers training
- [ ] Professional training (also BIM)
- [ ] Trasversal skills (languages, marketing and communication, team building) training
- [ ] Altro: _____

11. **Which type of professional profiles are currently working in your company? <you can choose more than 1 option>**

Seleziona tutte le voci applicabili.

- [ ] Construction workers
- [ ] Construction Site Technician
- [ ] Administrative
- [ ] Manager/Professional
- [ ] Altro: _____

INFORMATION ON TRAINING NEEDS

Please rate with reference to the construction site technician or similar profiles and with respect to the following skills

Please note: Score 1 corresponds to negative i.e. poor; Score 5 corresponds to positive i.e. excellent.

1) CAD DRAWING

12. **Do you have this expertise within your staff?**

Contrassegna solo un ovale.

- ( ) Yes
- ( ) No

13. **How do you evaluate your staff's skills? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

	1	2	3	4	5
	( )	( )	( )	( )	( )

14. **How much do you think this competence is important for your company? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

	1	2	3	4	5
	◯	◯	◯	◯	◯

2) BIM (Building Information Modeling), MS PROJECT, ...

15. **Do you have this expertise within your staff?**

Contrassegna solo un ovale.

◯ Yes

◯ No

16. **How do you evaluate your staff's skills? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

	1	2	3	4	5
	◯	◯	◯	◯	◯

17. **How much do you think this competence is important for your company? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

	1	2	3	4	5
	◯	◯	◯	◯	◯

3) QUALITY SYSTEM MANAGEMENT

18. **Do you have this expertise within your staff?**

Contrassegna solo un ovale.

◯ Yes

◯ No

19. **How do you evaluate your staff's skills? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

	1	2	3	4	5
	◯	◯	◯	◯	◯

20. **How much do you think this competence is important for your company? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

1	2	3	4	5
⬭	⬭	⬭	⬭	⬭

4) TENDERS AND PUBLIC PROCUREMENT MANAGEMENT

21. **Do you have this expertise within your staff?**

Contrassegna solo un ovale.

⬭ Yes

⬭ No

22. **How do you evaluate your staff's skills? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

1	2	3	4	5
⬭	⬭	⬭	⬭	⬭

23. **How much do you think this competence is important for your company? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

1	2	3	4	5
⬭	⬭	⬭	⬭	⬭

5) ESTIMATES AND TECHNICAL ACCOUNTING

24. **Do you have this expertise within your staff?**

Contrassegna solo un ovale.

⬭ Yes

⬭ No

25. **How do you evaluate your staff's skills? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

1	2	3	4	5
⬭	⬭	⬭	⬭	⬭

26. **How much do you think this competence is important for your company? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

1	2	3	4	5
◯	◯	◯	◯	◯

6) HR MANAGEMENT

27. **Do you have this expertise within your staff?**

Contrassegna solo un ovale.

◯ Yes

◯ No

28. **How do you evaluate your staff's skills? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

1	2	3	4	5
◯	◯	◯	◯	◯

29. **How much do you think this competence is important for your company? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

1	2	3	4	5
◯	◯	◯	◯	◯

7) ACCOUNTING (TASKS and ADMINISTRATIVE)

30. **Do you have this expertise within your staff?**

Contrassegna solo un ovale.

◯ Yes

◯ No

31. **How do you evaluate your staff's skills? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

1	2	3	4	5
◯	◯	◯	◯	◯

32. **How much do you think this competence is important for your company? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

1	2	3	4	5
⬭	⬭	⬭	⬭	⬭

8) SAFETY MANAGEMENT

33. **Do you have this expertise within your staff?**

Contrassegna solo un ovale.

⬭ Yes

⬭ No

34. **How do you evaluate your staff's skills? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

1	2	3	4	5
⬭	⬭	⬭	⬭	⬭

35. **How much do you think this competence is important for your company? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

1	2	3	4	5
⬭	⬭	⬭	⬭	⬭

9) FACILITY MANAGEMENT

36. **Do you have this expertise within your staff?**

Contrassegna solo un ovale.

⬭ Yes

⬭ No

37. **How do you evaluate your staff's skills? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

1	2	3	4	5
⬭	⬭	⬭	⬭	⬭

38. **How much do you think this competence is important for your company? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

	1	2	3	4	5
	⬭	⬭	⬭	⬭	⬭

10) ECO-SUSTAINABLE BUILDING AND GREEN BUILDING (circular economy)

39. **Do you have this expertise within your staff?**

Contrassegna solo un ovale.

⬭ Yes

⬭ No

40. **How do you evaluate your staff's skills? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

	1	2	3	4	5
	⬭	⬭	⬭	⬭	⬭

41. **How much do you think this competence is important for your company? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

	1	2	3	4	5
	⬭	⬭	⬭	⬭	⬭

11) ENERGY EFFICIENCY

42. **Do you have this expertise within your staff?**

Contrassegna solo un ovale.

⬭ Yes

⬭ No

43. **How do you evaluate your staff's skills? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

	1	2	3	4	5
	⬭	⬭	⬭	⬭	⬭

44. **How much do you think this competence is important for your company? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

1	2	3	4	5
◯	◯	◯	◯	◯

12) NEW TECHNOLOGIES / NEW MATERIALS

45. **Do you have this expertise within your staff?**

Contrassegna solo un ovale.

◯ Yes

◯ No

46. **How do you evaluate your staff's skills? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

1	2	3	4	5
◯	◯	◯	◯	◯

47. **How much do you think this competence is important for your company? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

1	2	3	4	5
◯	◯	◯	◯	◯

13) TRANSVERSAL SKILLS: LANGUAGES

48. **Do you have this expertise within your staff?**

Contrassegna solo un ovale.

◯ Yes

◯ No

49. **How do you evaluate your staff's skills? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

1	2	3	4	5
◯	◯	◯	◯	◯

50. **How much do you think this competence is important for your company? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

	1	2	3	4	5
	⬭	⬭	⬭	⬭	⬭

14) TRANSVERSAL SKILLS: MANAGEMENT AND ADMINISTRATION

51. **Do you have this expertise within your staff?**

Contrassegna solo un ovale.

⬭ Yes

⬭ No

52. **How do you evaluate your staff's skills? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

	1	2	3	4	5
	⬭	⬭	⬭	⬭	⬭

53. **How much do you think this competence is important for your company? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

	1	2	3	4	5
	⬭	⬭	⬭	⬭	⬭

15) TRANSVERSAL SKILLS: TEAMBUILDING, COORDINATION AND PROBLEM SOLVING

54. **Do you have this expertise within your staff?**

Contrassegna solo un ovale.

⬭ Yes

⬭ No

55. **How do you evaluate your staff's skills? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

	1	2	3	4	5
	⬭	⬭	⬭	⬭	⬭

56. **How much do you think this competence is important for your company? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

	1	2	3	4	5
	◯	◯	◯	◯	◯

16) TRANSVERSAL SKILLS: CUSTOMER SERVICE E CUSTOMER SATISFACTION

57. **Do you have this expertise within your staff?**

Contrassegna solo un ovale.

◯ Yes

◯ No

58. **How do you evaluate your staff's skills? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

	1	2	3	4	5
	◯	◯	◯	◯	◯

59. **How much do you think this competence is important for your company? [1 = poor / 5 = excellent]**

Contrassegna solo un ovale.

	1	2	3	4	5
	◯	◯	◯	◯	◯

Do you identify other relevant skills in addition to those listed?

60.

_____

Thank you for your answers!

ICARO - Survey within the construction company system

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Dear partner,

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We ask you then a few minutes of your time to reply to a few questions.

Many thanks for your cooperation!

COMPANY PROFILE

Number of employees

La tua risposta

Number of apprentices / young workers

La tua risposta

Number of female employees

La tua risposta

Sector in which the company operates

○ Residential-civil work

○ Finishing

○ Structural works

○ Installation

○ Maintenance / renovation

○ Altro:

ICARO - Survey within the construction company system

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COMPANY PROFILE

Number of employees

La tua risposta

Number of apprentices / young workers

La tua risposta

Number of female employees

La tua risposta

Sector in which the company operates

○ Residential-civil work

○ Finishing

○ Structural works

○ Installation

○ Maintenance / renovation

○ Altro:

ICARO - Survey within the construction company system

Your role / position in the company

La tua risposta

In which market does your company operates?

- ○ Local
- ○ National
- ○ European
- ○ International

Which type of company is it?

- ○ Contruction company
- ○ Engineering Firm
- ○ Architecture and Design Firm
- ○ Plant engineering company
- ○ Altro:

In addition to compulsory training, does your company take part in other training courses?

- ○ Yes
- ○ No

If NO, why?

La tua risposta

If YES, in which sector? <you can choose more than 1 option>

- ☐ Safety at work training
- ☐ Construction workers training
- ☐ Professional training (also BIM)
- ☐ Trasversal skills (languages, marketing and communication, team building) training
- ☐ Altro:

Which type of professional profiles are currently working in your company? <you can choose more than 1 option>

- [ ] Construction workers
- [ ] Construction Site Technician
- [ ] Administrative
- [ ] Manager/Professional
- [ ] Altro:

Which type of professional profiles are currently working in your company? <you can choose more than 1 option>

- [ ] Construction workers
- [ ] Construction Site Technician
- [ ] Administrative
- [ ] Manager/Professional