META SKILLS 4TCLF

Final Report

WP3: Skills Intelligence for Forecasting and Monitoring TCLF Emerging Skills Needs

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Executive Summary

WORK PACKAGE 3 IN A NUTSHELL

AVECAL serves as the Lead Beneficiary of WP3, which encompasses the following Title and Objectives. These are designated to facilitate the execution of the Tasks assigned on this WP, aimed at realizing the expected outcomes.

Work Package 3 Title: Skills Intelligence for Forecasting and Monitoring TCLF Emerging Skills Needs

Objectives

- Developing a common methodology for detecting urgent skills needs, monitoring the progress and evolution of the demand and supply of skills, as well as anticipating future skills needs in the TCLF sector.
- Detecting available innovative, valuable, and ready-to-use information on skills in open data sources at EU and country and/or regional level.
- Strengthening skills intelligence, building on the recent work by CEDEFOP, in order to support the social partners' active involvement in skills anticipation/forecasting and the setting up of required training, according to the Skills Agenda.
- Involving in the detection of skills the main players in the value chain within the TCLF industrial ecosystem (i.e., companies and technology providers), Centres of Vocational Excellence, regions implementing smart specialization strategies, European Cluster Partnerships and Knowledge and Innovation Communities of the European Institute of Technology.
- Producing qualitative evidence and quantitative data on skills and knowledge in the TCLF industries in open data format to feed the EU Skills Panorama and the European Skills, Competencies, Qualifications and Occupations (ESCO).

SIGNIFICANCE OF SKILLS INTELLIGENCE IN THE TCLF INDUSTRIES

Studying competencies in the TCLF (Textile, Clothing, Leather, and Footwear) sector is crucial in today's companies' and employment landscape. In an ever-evolving business environment, acquiring industry-specific competencies, skills, and knowledge is essential for professionals and companies aiming to excel and thrive in their respective domains. The TCLF sector presents its unique dynamics, challenges, and opportunities, making sector-specific competencies indispensable for comprehending and effectively addressing these aspects.

In the era of globalization and rapid digital transformation, delving into and comprehensively understanding sector-specific competencies has never been more critical. This approach not only benefits individuals but also catalyses the growth and development of organizations and the economy as a whole.

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At the European level, studying sector-specific competencies is essential in the current context for several reasons, such as employment and training policies, as they are greatly informed by studies on European sector-specific competencies. These studies offer valuable insights for crafting employment policies and educational programs that are attuned to the real needs of industrial sectors across the EU.

FOCUS ON THE FOLLOWED METHODOLOGY

In a constantly evolving business environment, a deep understanding of the necessary competencies becomes essential to address emerging challenges and capitalize on future opportunities.

We have therefore implemented a series of steps that we believe will contribute to the attainment of the specific objectives associated with WP3.

We firstly focused on the Skills Intelligence Methodology (T3.1), a preliminary phase on which we aimed to establish a common methodology for detecting urgent skills needs with the idea of monitoring the progress and evolution of the demand and supply of skills, as well as anticipating future skills needs, which will allow us to gather skills intelligence in a fast, accurate and effective way. The detected results were compiled in the first Deliverable, D3.1 “Skills Intelligence Methodology”, a restricted e-document report.

In the subsequent phase, a desk-based research (T3.2) was conducted by the European Apparel and Textile Confederation (EURATEX), with the contribution of all the Project’s partners, with the aim of looking into the panorama of available open data sources at global and/or EU level as well as country and/or region level, in order to explore the availability of innovative, valuable and ready-to-use information on skills and knowledge in the TCLF sectors.

In the third stage (T3.3), Field research was carried out with the objective of collecting qualitative evidence on skills according to ESCO taxonomy that will help the TCLF sectors understand the picture it will face in terms of emerging skills and knowledge. This comprised two distinct activities: initially, an online survey prepared by the Confederation of Italian Industry (CONFINDUSTRIA) and responded to by pertinent key informants in the TCLF industries. Subsequently, a sequence of sector-divided Focus Group sessions, organized by the participating countries, was conducted. These sessions were dedicated to scrutinizing trends and pinpointing skill requirements within the textile, clothing, leather, and footwear sectors in the context of competency intelligence.

In the concluding phase (T3.4), we developed the second and ultimate Deliverable of WP 3, namely D3.2 "Final report," which constitutes the present report. The primary objective of this task is to generate pertinent, valuable, and innovative quantitative data on skills and knowledge, aligned with the ESCO taxonomy, derived from the field research findings. Consequently, this final report consolidates the outcomes at the EU level, with a particular emphasis on the status in each partner country. It will be made accessible in open data format to contribute to the EU Skills Panorama and ESCO and will serve as input for updating national Skills Strategies (T 2.6).

In the final phase (T3.4), the second and final Deliverable of WP 3 was elaborated, which constitutes D3.2 “Final report”, which is the current report. The final aim of this task consists of

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producing relevant, valuable, and innovative quantitative data on skills and knowledge, according to ESCO taxonomy, from the information obtained in the field research. This final report condenses thus the results, at EU level, with special focus on the situation of each partner country. It will be available in open data form in order to feed the EU Skills Panorama and ESCO and will serve as an input to update the national Skills Strategies (T 2.6). It is also a dynamic document that can and should be regularly updated on the basis of new studies, practices, and emerging skills that are identified or anticipated to be required in the future.

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2. Industry profile

2.1 An overview of the industry

2.1.1. Industry (by sector/country and EU)

Companies

The observation of the number of companies in the partner countries is essential for a conceptual picture and an accurate development of the report in each of the sectors.

In this way, the number of companies found in each country provides an insight into the size and structure of the sector in each country so that it is possible to understand which sector is most present in each country and to understand the development of the methodology.

In addition, business concentration can also provide relevant insights into key aspects such as market dynamics, the diversity of skills and knowledge required and the promotion of training in these sectors. A larger number of companies may indicate a greater diversity in the demand for skills.

This makes it necessary to observe the data in each of the partner countries in order to make comparisons to identify trends, strengths and weaknesses in each country, as well as in the European Union as a whole.

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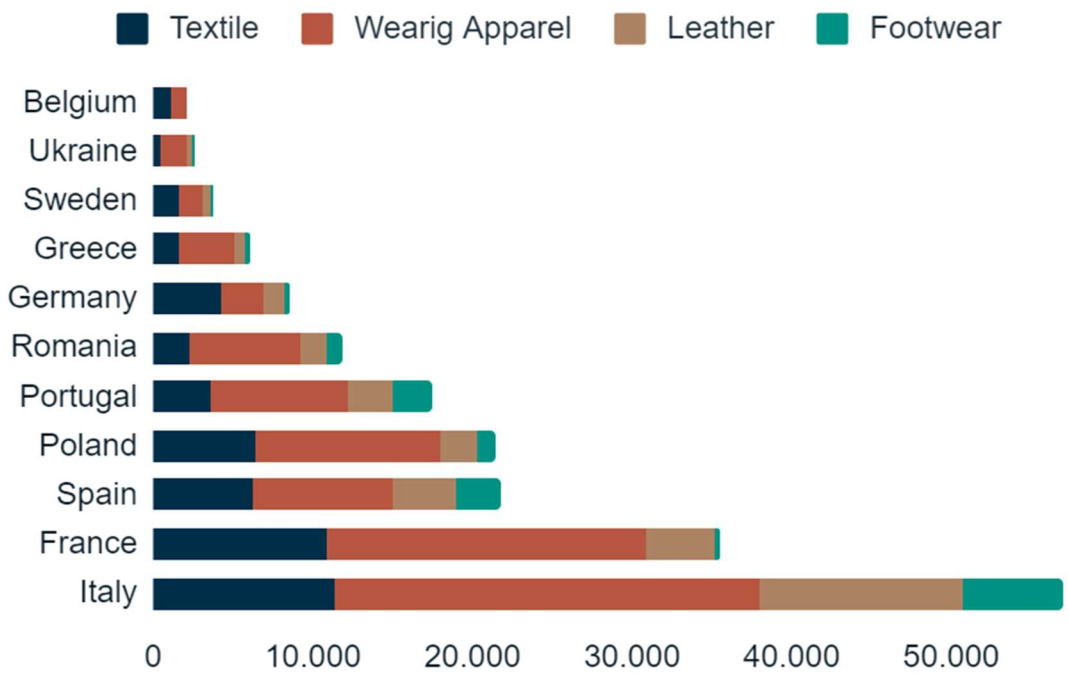
COMPANIES ALLOCATION IN TCLF INDUSTRIES – 2022



The graph above provides a comprehensive visual comparison that sheds light on the business structure of the sectors under study in this project, specifically the textile, garment, leather and footwear industries. Through this representation, we are able to appreciate both the breadth of business presence in each sector and the diversity of firms in each region.

It can be seen that, in most of the countries represented, all sectors have a percentage share. However, Sweden lacks a footwear market and has a minimal presence in the leather sector. On the other hand, Belgium concentrates only on the textile and clothing sectors.

When analysed by region, it is clear that Italy, France and Spain have the largest number of companies in the TCLF sectors, followed by Poland, Portugal, Romania, Germany and Greece.

In comparative terms, when examining the relevance of each sector, Italy and France emerge as the countries with the highest number of companies in the textile, clothing and leather sectors. These countries account for 51% of garment firms, 44.92% of textile firms and 42.10% of leather firms in the sample of countries analysed.

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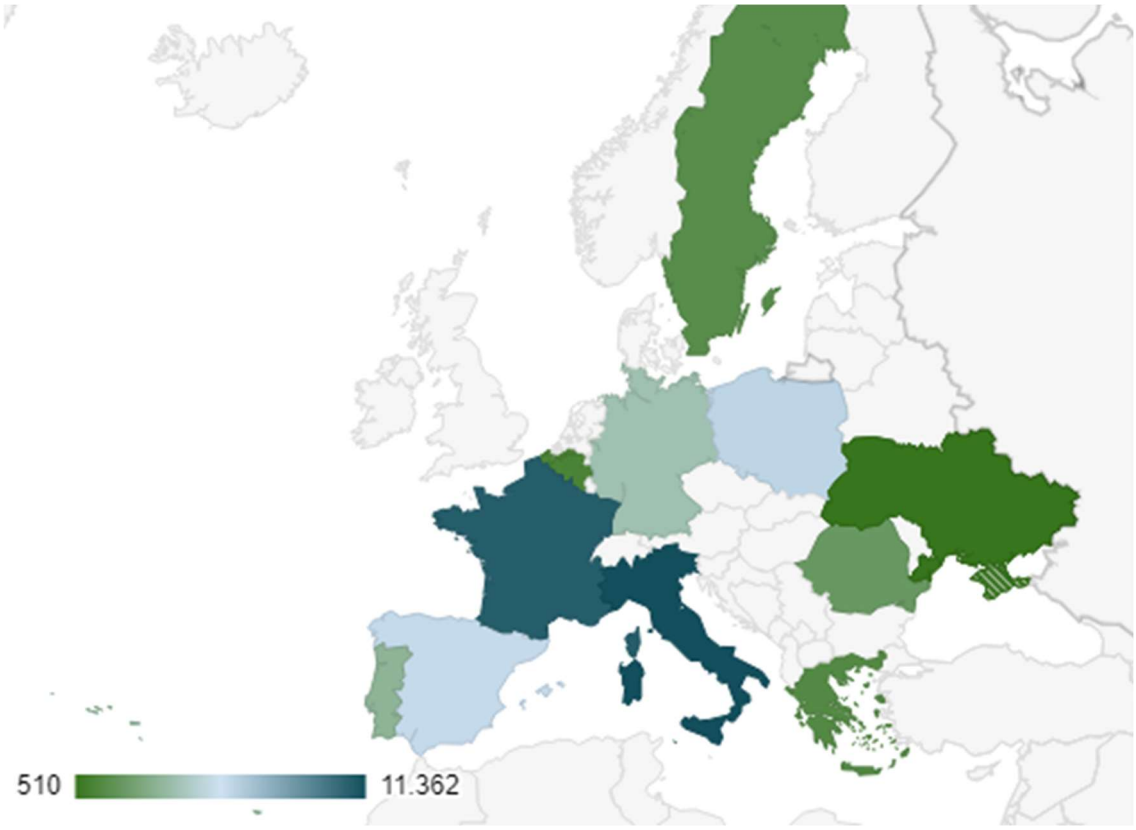
Countries such as Poland, Spain, Germany, Portugal and Romania also have a strong presence in the textile and clothing sectors.

However, as far as the footwear sector is concerned, Italy and Spain stand out by concentrating a significant percentage of companies in relation to the total, covering

Together they account for 61% of the total. They are followed by Portugal, Poland and Romania in terms of importance in this sector.

On the other hand, Germany stands out for its strong presence in the textile and clothing industries, hosting some 6,872 companies between them, ranging from internationally renowned manufacturers to specialised SMEs.

Despite the economic challenges, Greece is home to 6,112 companies in the above-mentioned sectors. Sweden is mainly present in the textile sector, while Belgium, until 2022, had no business representation in the leather and footwear sectors.



The evolution of the year 2022 compared to 2021 reveals that the total number of companies in the textile sector in the European Union as a whole experienced an increase of 2.11%, while in the clothing sector this increase was 1.65%. However, the leather and footwear sectors suffered a reduction in the number of enterprises, registering a decrease of -2.13% and -3.49%, respectively.

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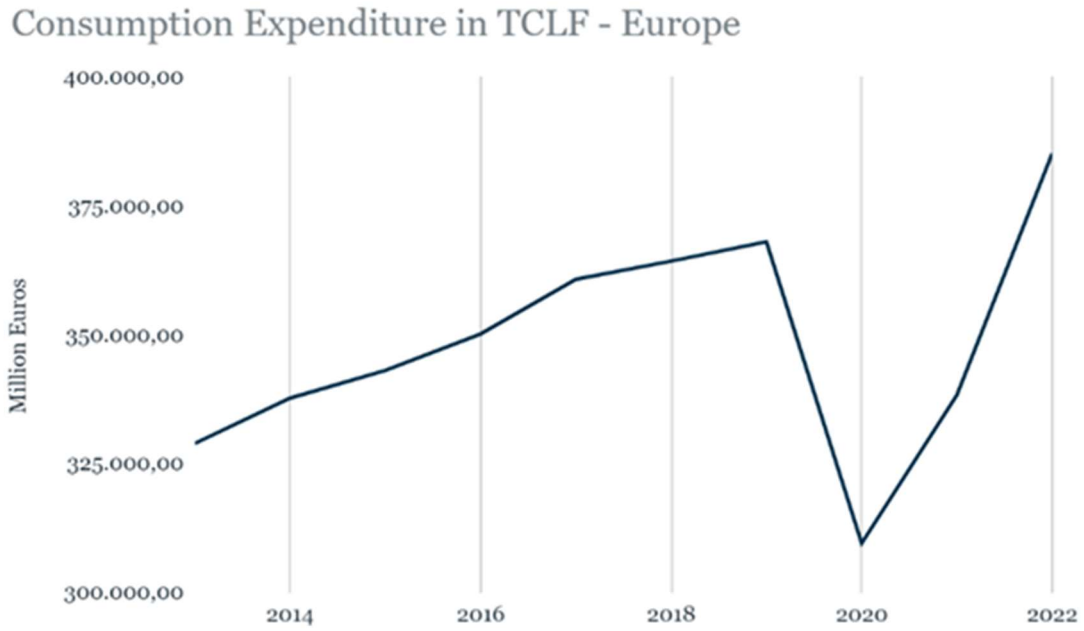
The geographical distribution of these sectors has been influenced by recurring international challenges, and companies in all countries have joined forces to address these adversities. One of the main obstacles they face is the generational change and the rising costs of raw materials and energy in recent years.

2.1.2 Consumption



Apparel and footwear consumption experienced an upward trend from 2013 to 2019, driven by economic growth and fashion trend influences. However, the outbreak of the COVID-19 pandemic in 2020 had devastating consequences for the industry, generating a marked decline in demand due to imposed restrictions and changes in consumer habits.

As can be seen in the figure above, after the economic recovery, once the COVID-19 pandemic had almost completely dissipated, there was an increase in consumption of clothing, footwear and other textile items. However, it is important to consider that these data show an inflationary component. During the third quarter of 2022, a 22% increase in online apparel prices was observed in markets such as the United States, United Kingdom, France, Italy and Spain, compared to the previous quarter. This phenomenon has exacerbated pressure on household budgets, already affected by increases in other sectors such as food and fuel.

Persistent challenges related to high prices and economic uncertainty remain a concern for consumers and TCLF industry. . The ability of fashion operators to adapt to these

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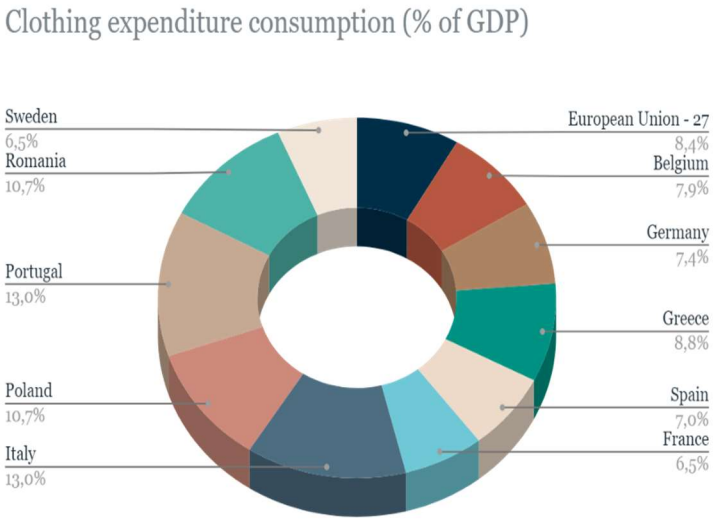
specific regional and business challenges will be crucial to their long-term survival and success.

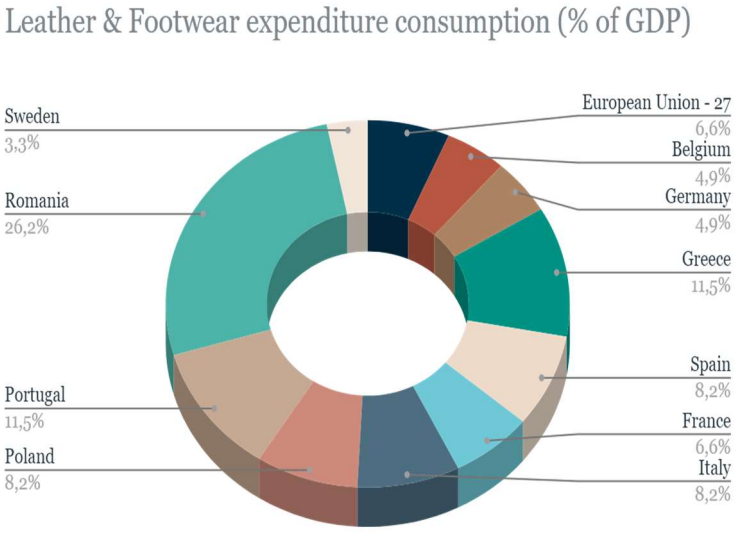


If we look particularly at each country's consumption of clothing. We observe that:

MEDIA EUROPEA	Superior a la media de la EU	Inferior a la media de la EU
8,4%	- Italia - Portugal - Rumanía - Polonia - Grecia	- Bélgica - Alelmania - España - Suecia - Francia

If we look particularly at each country's consumption of leather and footwear. We observe that:

MEDIA EUROPEA	Superior a la media de la EU	Inferior a la media de la EU
6,6%	- Romania - Portugal - Greece - Spain - Poland - Italy	- France - Belgium - Germany - Sweden



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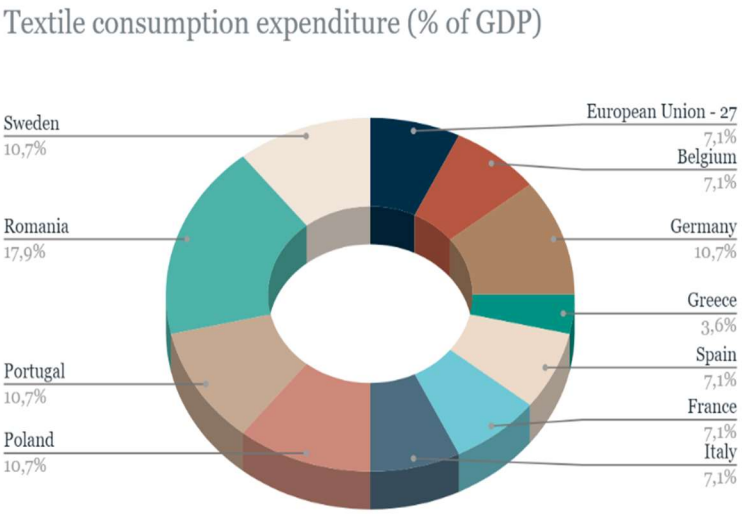
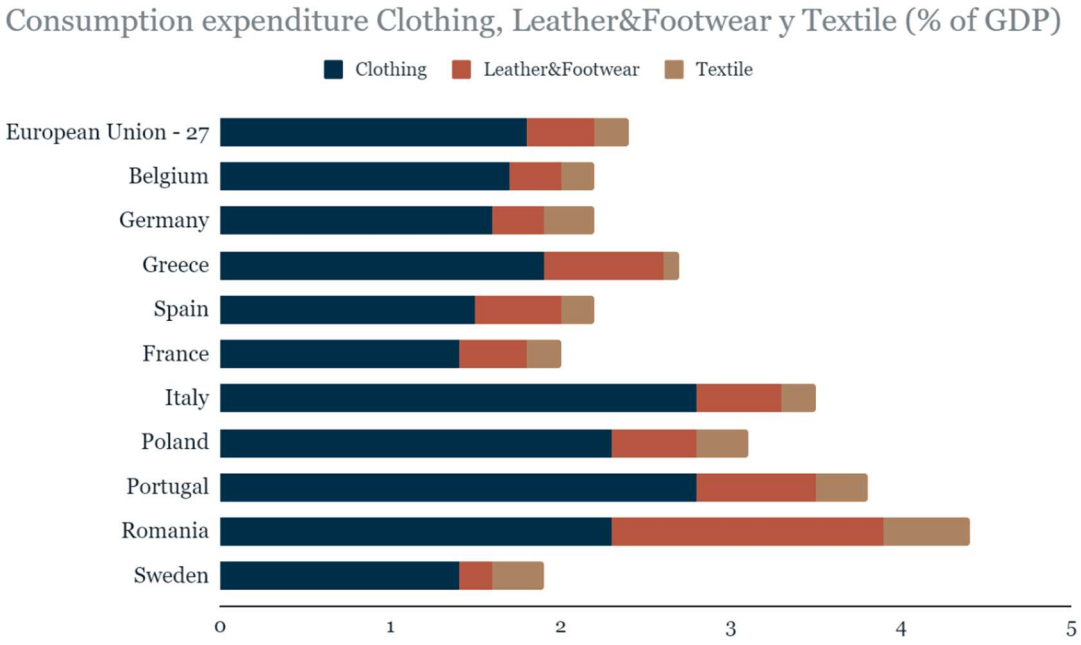
If we look particularly at each country's consumption of leather and footwear. We observe that



MEDIA EUROPEA	Superior a la media de la EU	Inferior a la media de la EU
8,4% - España - Bélgica - Francia - Italia	- Rumanía - Suecia - Alemania - Portugal - Polonia	- Grecia

In a global vision:



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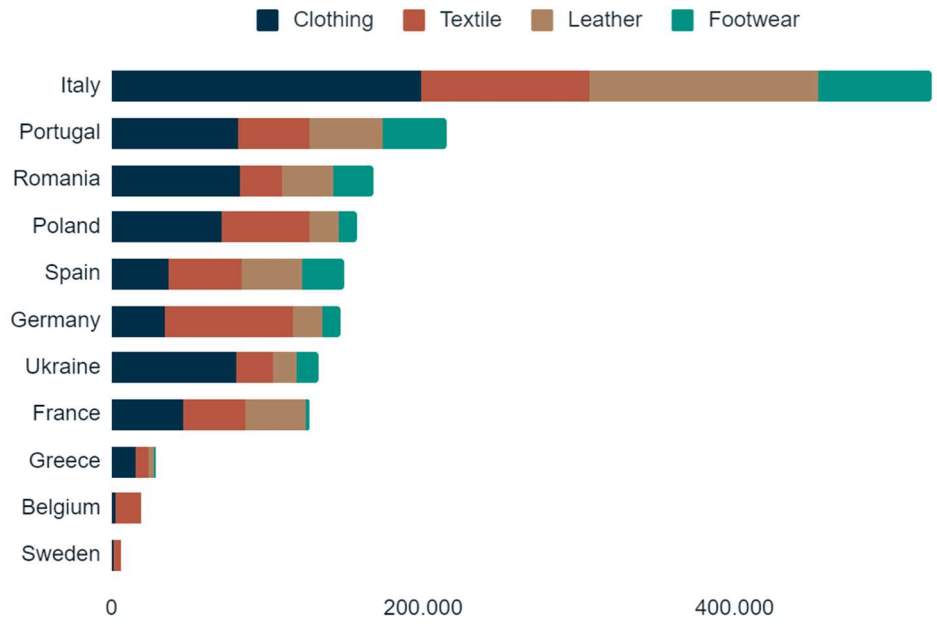
The countries with the highest consumption in the TCLF industries as a whole, and above the European average, are Romania, Portugal, Italy, Poland and Greece. In relation to specific sectors, Portugal and Italy are the leading countries in terms of clothing consumption. In terms of leather and footwear consumption, Romania leads, followed by Portugal and Greece. Likewise, Romania leads the consumption of textiles in the European Union, followed by Sweden, Portugal, Poland and Germany. This last analysis shows that those countries with a predominantly colder climate, correlatively, have a higher consumption of textiles, which could be household linen.

2.1.3 Employment

Employed

The Textile, Clothing, Leather and Footwear (TCLF) sector stands as one of the fundamental pillars of the European economy, generating employment for millions of people. Specifically, by 2022, a 41% increase in employment across the European Union is seen in these sectors. However, these industries have undergone a number of transformations due to factors such as digitalisation, sustainability, changes in consumption patterns and demographic dynamics. It is therefore crucial to take into consideration both the most recent data available and the evolution of employment in the Textile, Clothing, Leather and Footwear sectors in the partner countries and in the EU-27 as a whole.

EMPLOYMENT ALLOCATION IN TCLF INDUSTRIES – 2022



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Comparative analysis by country

Italy

In the garment sector, Italy is known worldwide for its strong position in the fashion and design industry, which, as we have observed when looking at the number of companies in each sector, gives it a unique position in the TCLF sectors, providing employment to a total of 146,471 people in the garment sector in 2022 and 146,471 in the leather sector. If we consider the total sum of all sectors, Italy employs more than half a million people, which is almost 2% of the total employed population.

Portugal

Portugal has a very representative industry in all four sectors, with a large number of companies, which places it among the top 5 countries with the highest concentration of companies in the EU.

While it is true that it is home to a larger number of companies in the leather and footwear sectors, in terms of employment, the leather sector is one of the driving forces of the Portuguese economy, providing job opportunities for a large part of the population. Specifically, 127,549 jobs in the textile and clothing sectors and 87,887 in the leather and footwear sectors.

Romania

Romania has a dynamic and constantly evolving textile and clothing industry, which has played a significant role in the country's economy and in employment generation, being the third country with the third highest number of employees in the EU TCLF family as a whole.

In terms of employment, the Romanian textile and garment sectors are a key part of the workforce, from production workers to designers and managers, the garment industry comprises a total of 82,266 employees and together with the other sectors they account for a total of 167,774 employees, a figure that has been reduced by -2% compared to 2021. This means that in the sectors as a whole, around 3,300 jobs have been destroyed.

Poland

In recent years, Poland has been one of the countries affected by recent environmental situations and conflicts, so that in 2022 the number of employees in the total TCLF sectors has been reduced by 5% compared to 2021.

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Spain

The fashion industry continues to regain momentum. The number of companies in the industry has managed to halt the decline that has been occurring over the last two years and the figure has only fallen by 0.3%, the smallest fall since the start of the pandemic, although still insufficient to reach positive rates. The overall balance of the number of workers in the industry is negative, after a 2021 with an increase in employment, in 2022 there has been a decrease of 0.75% in employment. On the other hand, in terms of the number of workers, the leather and footwear industry is the only one to record a positive rate, employing a total of 65,107 people.

Germany

Like all other countries, the TCLF industries, as a whole, have experienced a series of macroeconomic and geopolitical changes. Despite the difficulties, the number of companies has increased in all sectors. However, this is not matched by job creation in the textile and clothing industry, where around 1.12% of jobs have been destroyed. On the other hand, the leather and footwear industries are experiencing a growth in employment, which means that the overall balance in terms of job creation is 0.12% higher than in 2021, representing a total of 147,435 jobs in the TCLF sectors in 2022.

France

France is one of the leading countries in the industries covered by the project, being second only to Italy in terms of the number of companies in the textile, clothing and leather sectors. However, these data are not reinforced by a leadership in terms of employment. Thus, the country ranks among the last in terms of job creation, with 126,938 employees in 2022.

Greece

As can be seen in the graph, Greece has a total of 28,315 employees in the TCLF sectors, a traditionally small size compared to other countries in Europe, but which is increasing in recent years, namely in 2022 the TCLF industries in Greece have increased their workforce by 15,495 employees.

Ukraine

As is known to all, the war that broke out between Ukraine and Russia in February 2022 has affected a huge number of aspects. The destabilisation of the latent economy and society is also reflected in the TCLF sectors. As Ukraine struggles to maintain its territorial integrity and stability, its industries face an uncertain outlook, with significant repercussions in terms of employment, production and competitiveness in the global market. Despite this, almost the entire majority of enterprises (80%) continue their activities to meet both domestic and external demand. Ukraine

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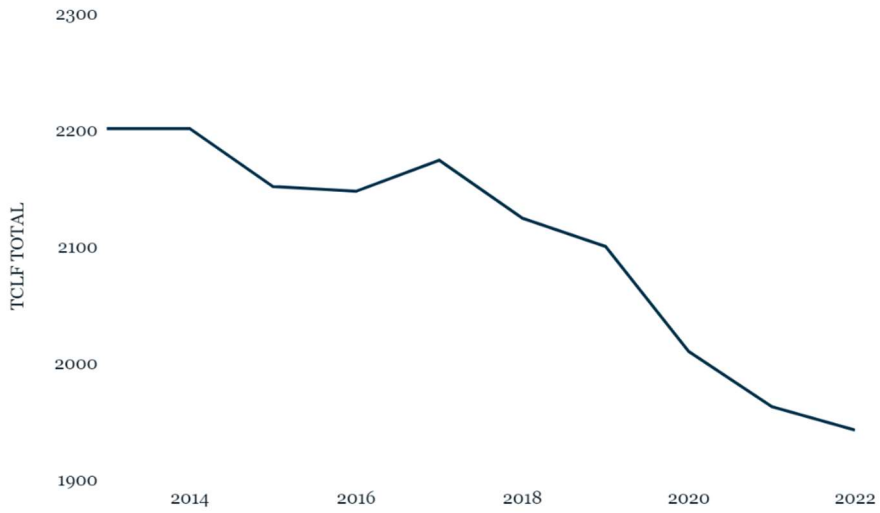
has a major presence in the garment sector, employing almost 80,000 people and with the other three sectors a total of 133,500 employees.

Belgium

The economy of Belgium, with a labour market of approximately 4 million jobs, is mainly based on the service sector.

The participation of the textile and clothing sector in the Belgian economy is limited. The leather and footwear sector is currently not represented at all in the country, however, this does not alter the fact that the TCLF sectors in Belgium have a rich history. In terms of employment, the textile and clothing sector represents about 0.5% of the total workforce in Belgium. As of today, 2,071 people are employed in the textile and clothing sectors.

Europe



In the aggregate of TCLF industries in Europe, employment has tended to decline since 2014, affected by several factors such as successive economic crises, most recently the post-COVID-19 crisis and global competition.

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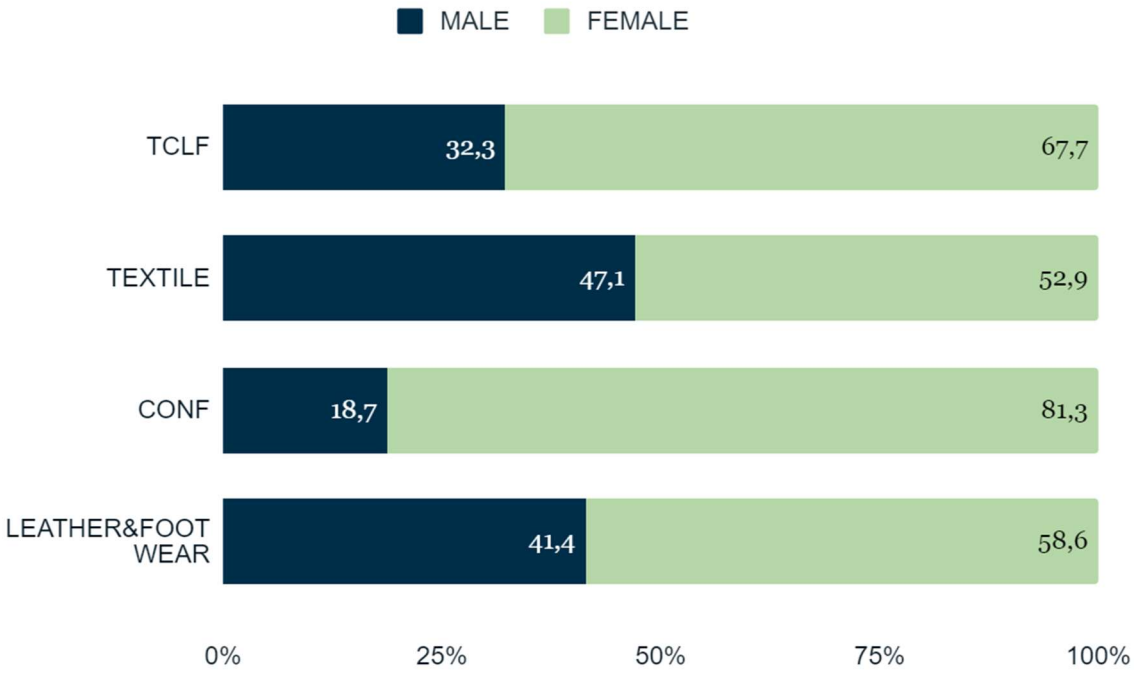
Gender Dimension and Age distribution

The participation of both men and women in the textile, clothing, leather and footwear sectors is a fundamental pillar of the global economy. It is considered essential to study the gender dimension in these sectors, we will explore the gender dynamics in the workforce both in the European Union and in partner countries.

TCLF GENDER DIMANSION OF LABOUR FORCE – 2022



Fuente: Eurostat

In a first visual observation, it is evident that the Textile, Clothing, Leather and Footwear (TCLF) industry is mostly composed of women, representing 67.7% of the total workforce in 2022.

These sectors, historically associated with predominantly female roles such as sewing and dressmaking, have in recent decades experienced a gradual shift towards a more gender-diversified workforce.

Greater gender equity has been observed in the textile, leather and footwear sectors, where the number of male and female employees is almost evenly split. On the other

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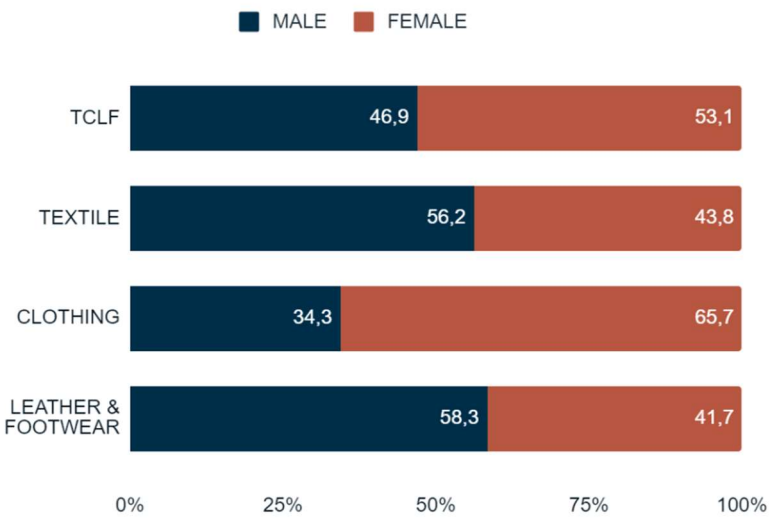
hand, clothing remains a predominantly female-dominated sector. Not only in production techniques, the equality and evolution of the sectors has also occurred in leadership and management roles.

Comparative analysis by country

Italy



Considering gender parity in the sectors analyzed, it is observed that Italy is on a par with the European average in the Textile, Clothing, Leather and Footwear (TCLF) industry, characterized by a slight majority presence of women. However, a disparity with respect to the European trend is evident in the specific sectors of Textile and Footwear in Italy. In these areas, although gender equality is considerable, the male workforce acquires significant prominence. Specifically, in the Textile sector, men represent 56.2% of the workforce, while in the Leather and Footwear sector they reach 58.3%.

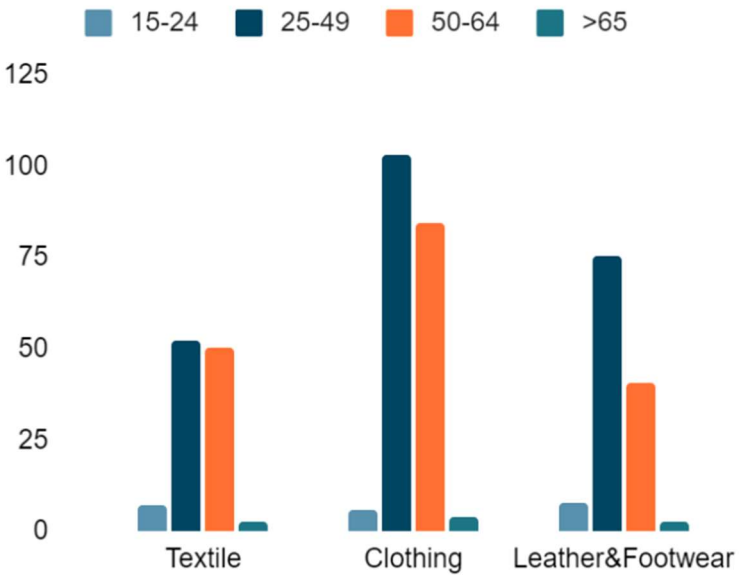
THE **ONLY**

COUNTRY WITH

EMPLOYEES OVER

65 YEARS IN **ALL**

SECTORS



Thousand People. Soucre: Eurostat

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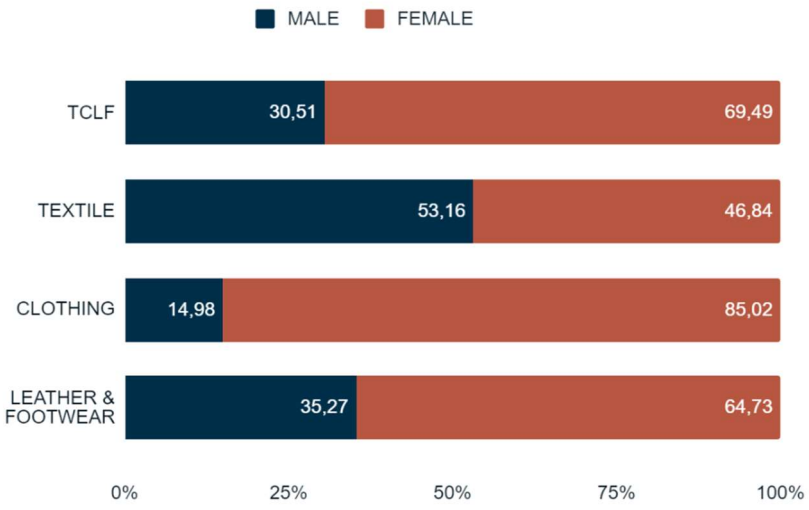
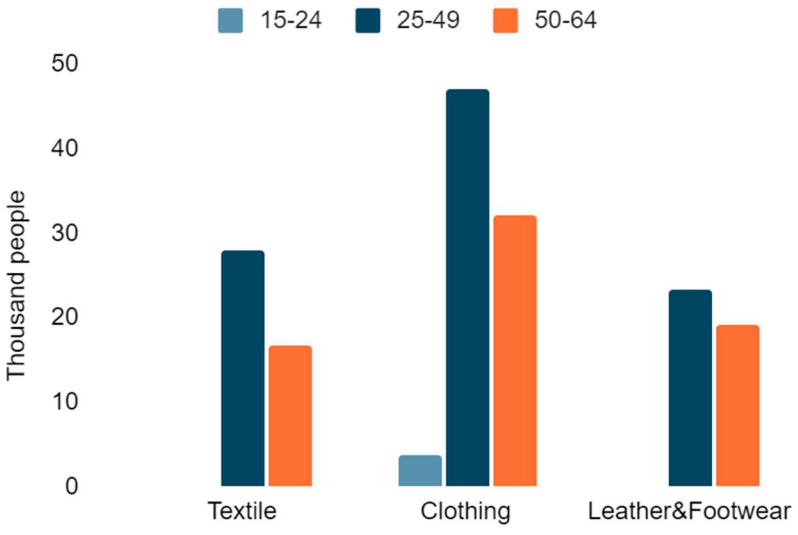
Portugal

The analysis of the Portuguese context reveals an alignment with the predominant pattern in Europe, characterized by an unequal gender distribution in several industrial sectors. Specifically, the apparel, leather and footwear sectors stand out for having a higher female representation in the workforce, reflecting a common trend in the region. However, it is important to note that the textile industry shows greater parity compared to the aforementioned sectors, with a 53% proportion of men.



This relative gender balance within the textile sector in Portugal can be attributed to various factors such as gender equality policies, changes in labour market demand and specific organisational structures of textile companies in Portugal.



THOUSAND OF YOUNG EMPLOYEES, BUT LITTLE GENERATIONAL TURNOVER

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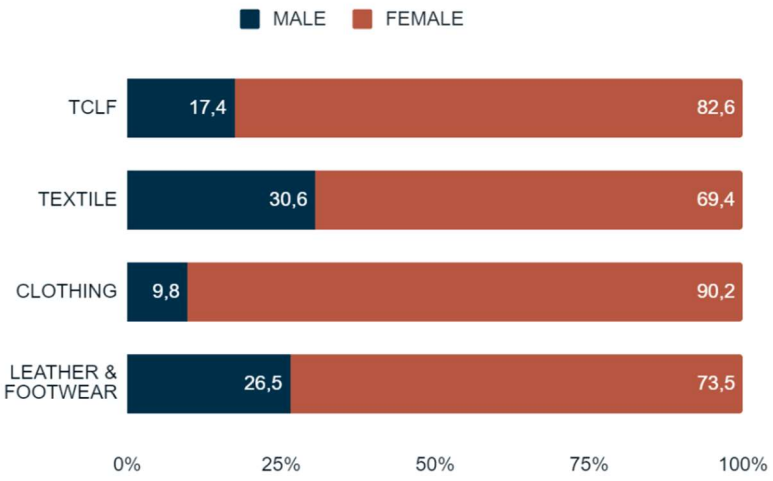
Romania

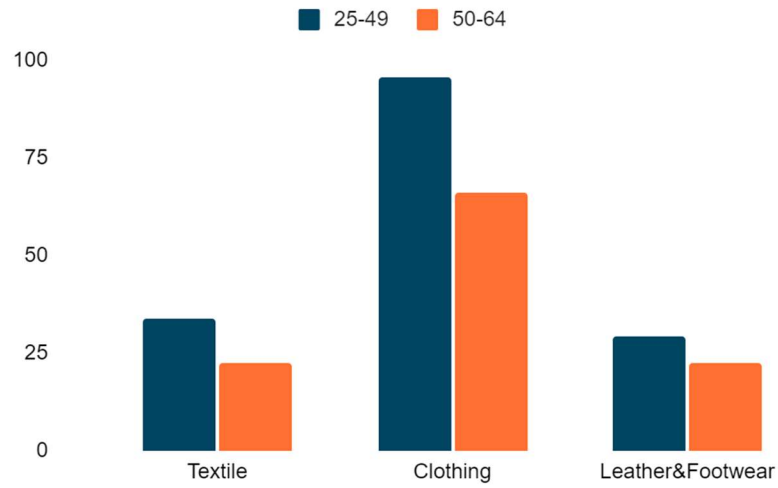


In Romania, the Textile, Clothing, Leather and Footwear (TCLF) industry presents a labor landscape notably dominated by women, who represent 82.6% of the workforce in these sectors. This trend is reflected more specifically in each subsector. In the textile industry, although there is a more balanced gender presence compared to other subsectors, men make up only 30.6% of the labor force, while women represent 69.4%. On the other hand, in the apparel sector, gender inequality is more pronounced, with 9.8% of men and 90.2% of women employed. This marked disparity is evidence of a clear female predominance in Romania's garment workforce.

As for the leather and footwear industry, although male participation is more significant compared to clothing, women still occupy a considerable share of 73.5%, while men account for 26.5%. These data indicate a relative but still notable female dominance in this sub-sector.

It is relevant to contrast these data with the European median. In 2022, the share of women in the TCLF sectors in Europe stood at 67.7%, while in Romania it rose to 82.6%. This notable discrepancy in favour of higher female participation in these sectors could be attributed to various factors, such as government policies and socio-economic dynamics.

TOTAL
ABSENCE
OF
EMPLOYEES
> 65



Thousand people. Soucre: Eurostat

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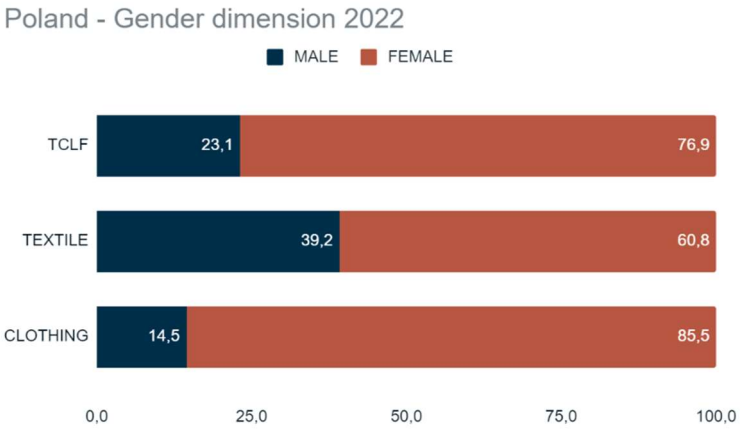
Poland

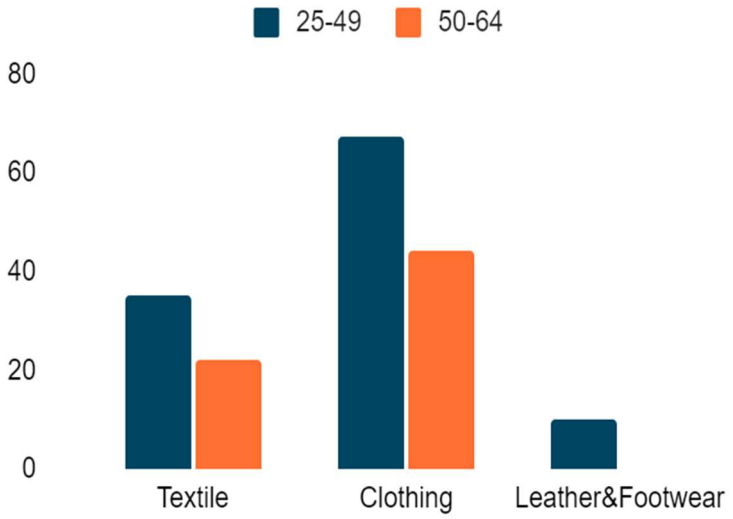


In Poland, the Textile, Clothing, Leather and Footwear (TCLF) industry shows a marked gender disparity, reflecting a common trend in Europe, but with significant particularities. Men constitute only 23.1% of the workforce in these sectors, while women account for 76.9%.

When analysed by sector, in the textile industry, men account for 39.2%, while in the clothing industry they represent only 14.5%, showing a marked feminisation where women account for 85.5% of the workforce. In the leather and footwear industry, although there are 15.9 thousand employees in total, there is no specific data on gender distribution.

PREDOMINANCE OF YOUNG LABOR FORCE

BUT THERE IS A **GENERATIONAL CONCERN. ABSENCE <25** IN ALL SECTORS



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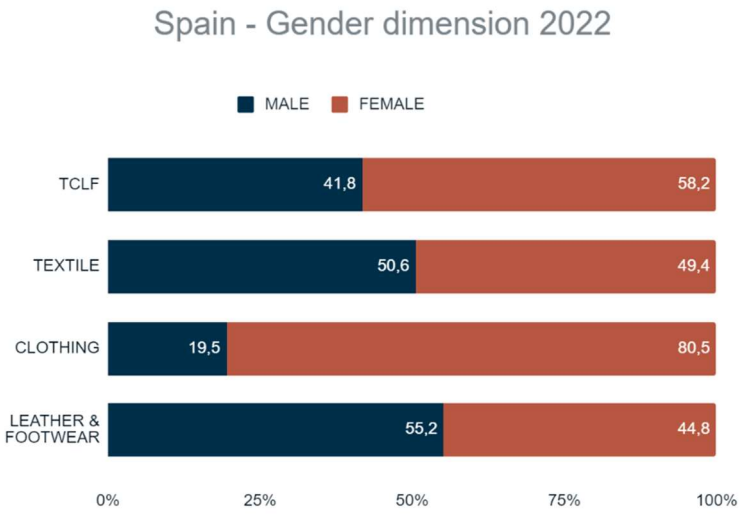
Spain

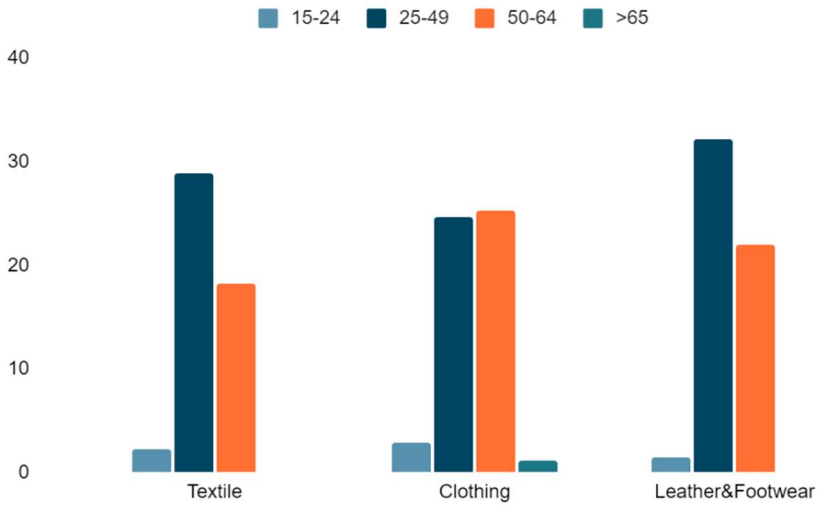
Spain reveals a peculiar gender Dynamic compared to the general European trend

In the TCLF industry as a whole, there is a significant presence of both genders, being practically equal. In the textile, footwear and leather industry, men make up the majority of the workforce. However, in clothing, the proportion of men drops significantly to 19.5%.



According to national data, 62.4% of the companies in the Spanish fashion industry are owned by women. This data provides an additional perspective on the role of women in business in the TCLF industry in Spain, showing a significant female presence in leadership and decision- making positions.

Compared to the European picture, Spain reflects a high gender diversity in the workforce and an equal distribution in most sectors.



SINGLE
DEMOGRAPHIC
DISTRIBUTION
IN THE **CLOTHING**
SECTOR:

Generational change in DANGER

Thousand people. Soucre: Eurostat

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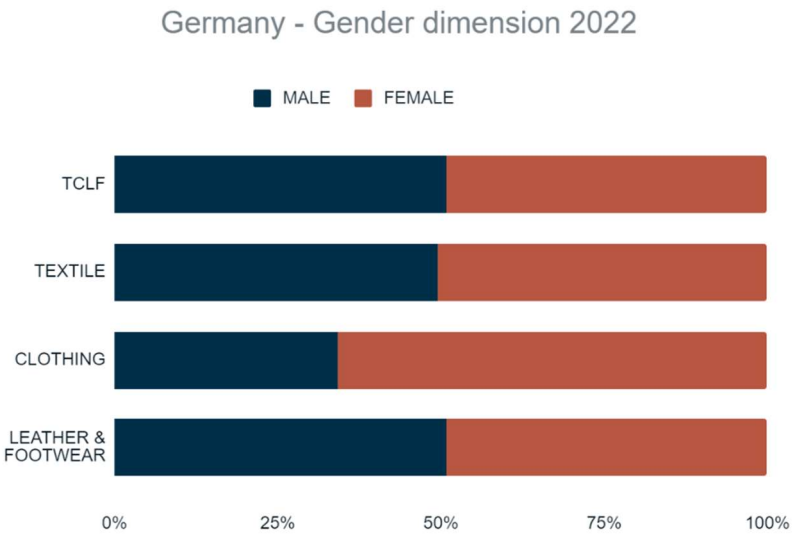
Germany

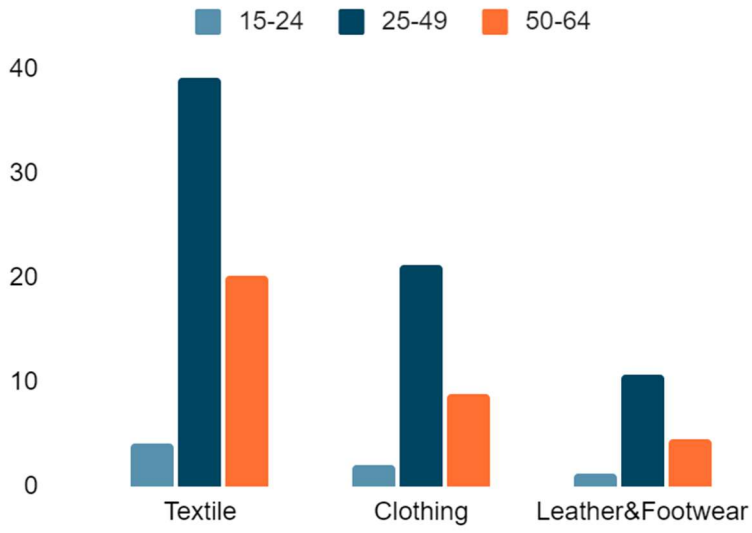


It is evident that the Textile, Clothing, Leather and Footwear (TCLF) industry in Germany exhibits an equitable distribution of the labour force.

This graph highlights the significant presence of both men and women in the textile, leather and footwear industries.

In terms of gender distribution, there is widespread equality, with approximately 50 per cent of the labour force made up of each gender.

However, this trend of equality is interrupted in the garment sector, where the female presence shows a majority representation, reaching 65.9%, in contrast to the male presence, which represents only 34.1%. This pattern reflects a clear discrepancy in the gender distribution within the TCLF industry in Germany, highlighting the female preeminence in the garment sector in particular.



Thousand people. Soucre: Eurostat

FROM OLD TO YOUNG

THE NOTORIETY OF **PUBLIC INTEREST** GERMAN IN THE TCLF SECTORES

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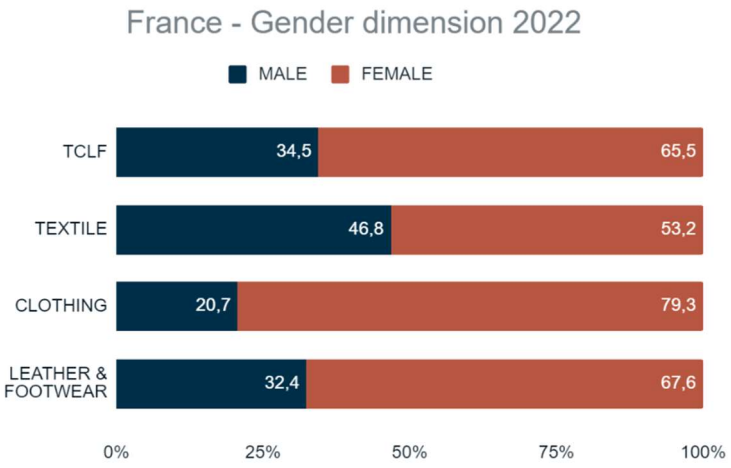
France

The TCLF industry in France is mainly a female world. In all the TCLF sectors studied in this project, France follows European trends and employs a total of 85,000 women, which represents 65.5% of the total in these sectors. It is worth noting that the clothing, leather and footwear sectors are distinguished by a higher representation of women, which reflects a common pattern in the region.

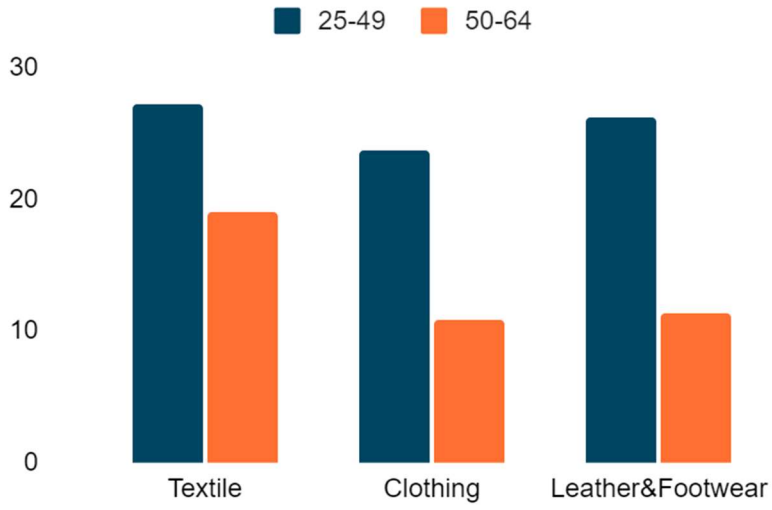


It should be noted that the textile industry shows a higher parity compared to the sectors mentioned above. In this sense, the workforce is divided into 46.8% men and 53.2% women, indicating an equal gender distribution in this industry.

A WORKFORCE

VIBRANT AND YOUTHFUL

FOSTERS INNOVATION AND DYNAMISM



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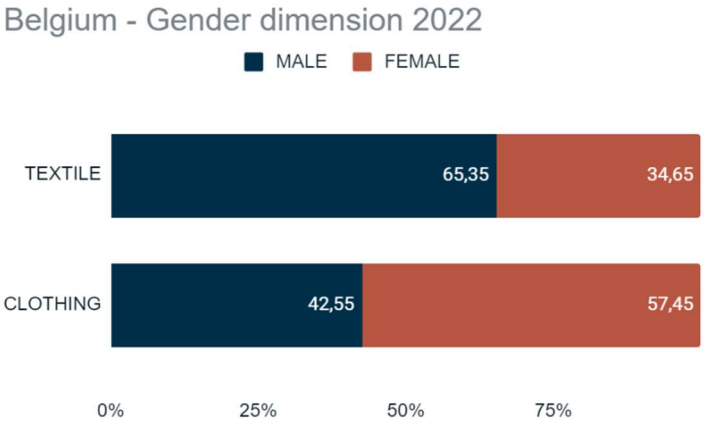
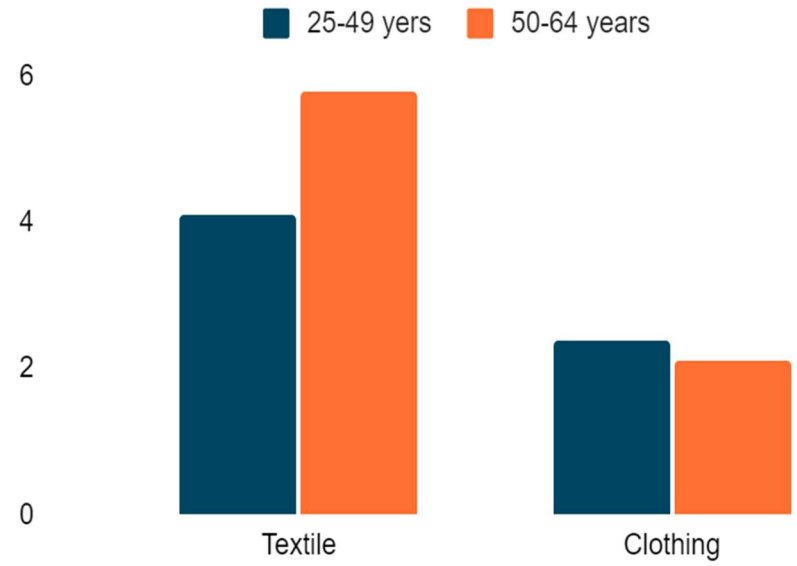
Belgium



In Belgium, a dichotomy emerges. In the textile sector, there is a predominantly male workforce, while in the clothing sector there is a greater female presence.

*It is important to note that data are not available for the leather and garment sectors, which makes the picture of gender distribution in these areas less clear.

TOTAL LOCK OF STRENGTH LABOUR <25 AND >64



Thousand people. Soucre: Eurostat

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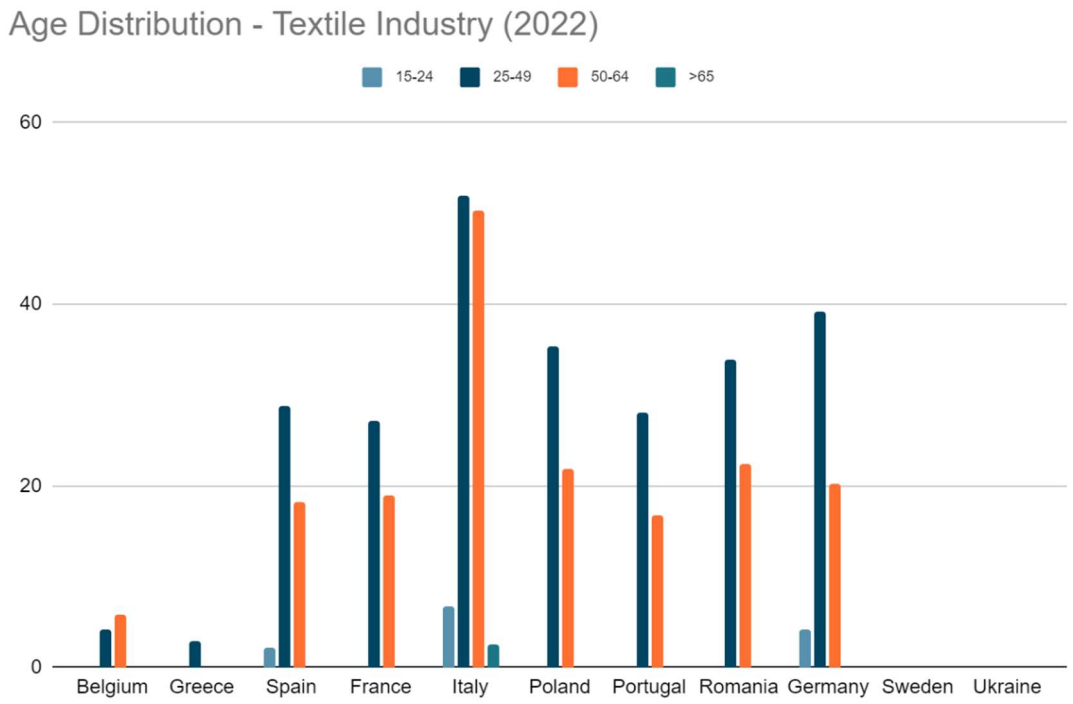
Global analysisi of demographics in TCLF sectores

Understanding age distribution across industry sectors is essential to understanding labour dynamics, recruitment trends and potential implications for labour planning and industrial policy. It also provides insight into how each country manages generational renewal, workforce training and career development within the textile industry.

This analysis not only sheds light on the demographic characteristics of workers in the textile industry, but also provides relevant information for the formulation of policies to promote the competitiveness and sustainability of this crucial sector of the European economy.



Thousand people. Soucre: Eurostat

The selected graph provides a visual representation of data on the age distribution of employees in the textile sector in 2022. Through this analysis, it can be seen that Italy has a workforce distributed across all age sectors, distinguishing itself from the rest of the countries by having a presence of workers over 65 years of age and, together with Spain, with young workers between 15 and 24 years of age.

Estas concentraciones pueden atribuirse a medidas específicas de empleo juvenil y programas de formación en el sector textil.

Another set of countries can be distinguished: Portugal, Romania, Poland, Germany, France, Greece, Ukraine and Sweden have an age distribution of the textile sector that

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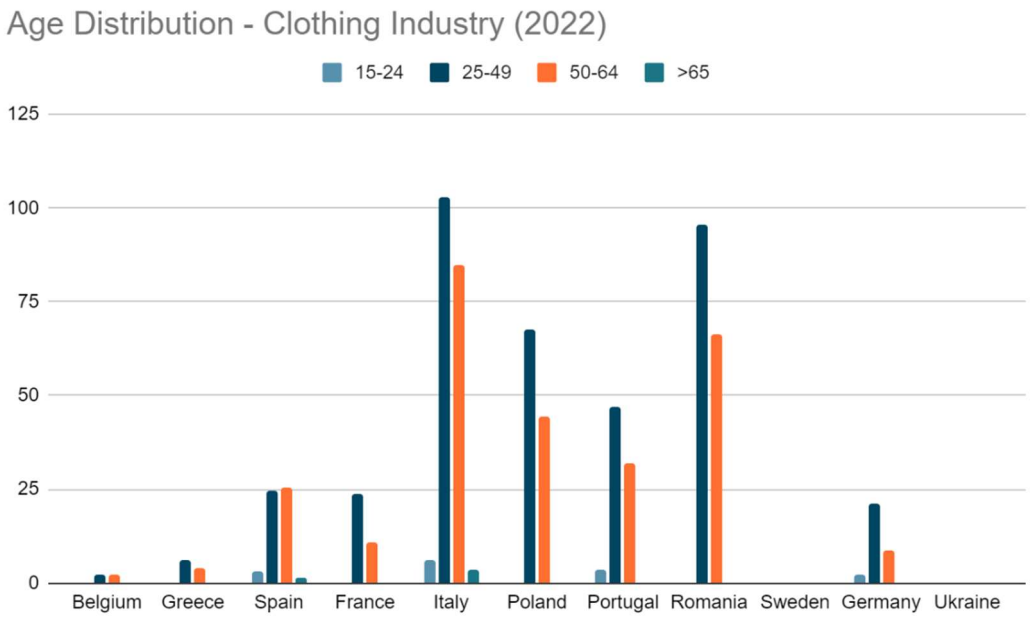
mainly comprises the population aged 25-49. This concentration suggests a workforce in the middle stage of their careers, however, it is important to bear in mind that each country may have different labour and social policies that influence this distribution.

Finally, Belgium stands out as the only country where the presence of workers aged 50-64 is higher than that of workers aged 25-49 in the textile sector. This poses challenges in terms of overall renewal and the need to attract and retain younger talent.

In summary: The age distribution in the textile sector varies significantly between the European countries analysed, reflecting differences in labour, cultural and economic policies. While some countries such as Italy and Spain show generational diversity, others such as Belgium have a more mature workforce in terms of age. These differences underline the importance of adapting employment and training strategies to the specific characteristics of each country in order to maintain the competitiveness and sustainability of the textile sector in Europe.



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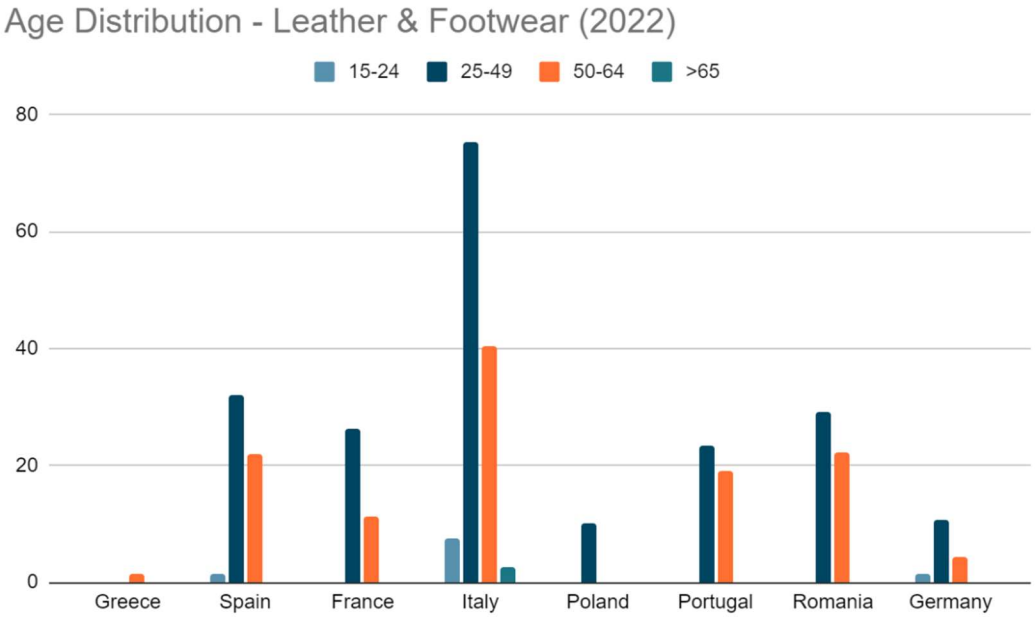
To understand the demographic composition of the garment workforce in various European countries, we begin our detailed analysis with the graph illustrating the age distribution in this sector.

This approach will provide a clear picture of the age distribution of the garment workforce in the countries considered.

Italy, Spain and Portugal stand out for having a diverse demographic composition in their garment workforce. In these countries, there is a significant presence of both workers aged 65+ and young workers aged 15-24. Notably, Spain is the only country where the presence of workers aged 50-64 exceeds that of workers aged 25-49 in the garment sector, indicating a unique demographic distribution in this respect.

Romania, Poland, Germany, France, Greece, Ukraine, Belgium and Sweden: On the other hand, these countries follow a trend in which there is a higher presence of 25-49 year olds employed in the garment sector. This demographic distribution suggests a predominantly mid-career garment workforce, with a combination of experience and youth in the workplace.

In summary, the age distribution in the garment sector varies markedly across the countries analysed, reflecting differences in labour, cultural and economic policies. These divergences underline the need to adapt employment and training strategies to the specific characteristics of each country in order to ensure the competitiveness and sustainability of the garment sector in Europe.



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In examining the demographics of employees in the leather and footwear sector, significant variability is observed across the selected European countries. Italy and Spain stand out for their generational diversity in this sector, with a labour presence of both young workers (15-24 years) and workers over 65 years. This particularity underlines the inclusion of multiple age cohorts in the labour force, which may reflect both specific employment policies and a work culture that values experience and youth equally.

On the other hand, in countries such as Portugal, Romania, Germany, France, Ukraine, Belgium and Sweden, the majority of employees in the leather and footwear sector are in the 25-49 age range. In addition, there is a significant presence of workers between the ages of 50 and 64, indicating a stable and experienced workforce in these countries. However, it is important to note an exception in Poland, where no employees over the age of 49 are found in this sector, which may indicate particularities in the labour and demographic dynamics of that country.

Finally, Greece has a unique demographic distribution with only the presence of a workforce aged 50-64 in the leather and footwear sector.

Conclusions: The age distribution in the leather and footwear sector varies considerably between the European countries analysed, reflecting differences in labour, cultural and economic policies. While some countries such as Italy and Spain show generational diversity, others have a workforce more focused on the middle age of working life. These divergences underline the importance of tailoring employment and training strategies to the specific characteristics of each country to ensure the competitiveness and sustainability of the leather and footwear sector in Europe.

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2.1.4 Sustainability and resource efficiency

For decades, the intensity of weather events has become more visible. The year 2023 was characterised as the "warmest year on record" according to Greenpeace. In addition, 27% of the oceans experienced a marine heat wave, while sea ice extent decreased by 15% and more than 100 weather events were recorded in the year 2023. The consequences of these phenomena are devastating socially, environmentally and economically.

The Textile, Clothing, Leather and Footwear (TCLF) sectors are no strangers to these phenomena and the challenges posed by climate change. These industries face significant challenges related to the use of natural resources and environmental impact. In this context, the transition towards more sustainable practices has become imperative both to mitigate environmental impacts and to ensure the long-term viability of these sectors.

These changes will not only help to improve the environment and build a more sustainable world, but will also influence the adaptability of businesses, job creation and the need for training in emerging skills related to sustainability

Sustainability

“Sustainability refers to the management of resources to meet the needs of today's global system, without compromising the needs of the future.”

We have heard and read this definition hundreds of times, however, when applied to the TCLF industry, we could say that sustainability in these sectors refers to the adoption of policies and practices that reduce the social impact of the production of garments, textiles, leather and footwear. In view of this, the use of more environmentally friendly materials

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Circular economy and resoucre efficiency

The circular economy specifically in the TCLF sectors is based on optimising the use of resoucres and energy soucres, so that (in this case) textiles, clothing, leather and footwear are produced, consumed, recycled and reused in other production processes. This use cycle includes designing garments and products that are durable, repairable and recyclable by applying technologies such as artificial intelligences (AI), blockchain and 3D printing.

The textile and footwear sector accounts **for 8% of global greenhouse gas emissions.**

The clear needs in terms of sustainability and resource efficiency are reflected in the European Green Pact. All actors in society have a key role to play in making Europe more efficient. In terms of the skills and training needed, we will explore in later sections how the environment emerges as a crucial factor that influences and will continue to influence the development of these skills.

2.2 Current situation and the relevance of the skills in TCLF Industries

2.2.1 Employment by education level

Education is the pillar that underpins the development of this project, which is why it is considered fundamental to observe the trends and metrics that comprise both the European Union and the countries involved. Each country has its own regulations and areas of study in relation to its education system. By analysing the level of employment according to the education of the population, it is therefore intended to observe those trends that can guide the transformation of competences and develop training courses adapted to the needs that have been detected in the course of this study.

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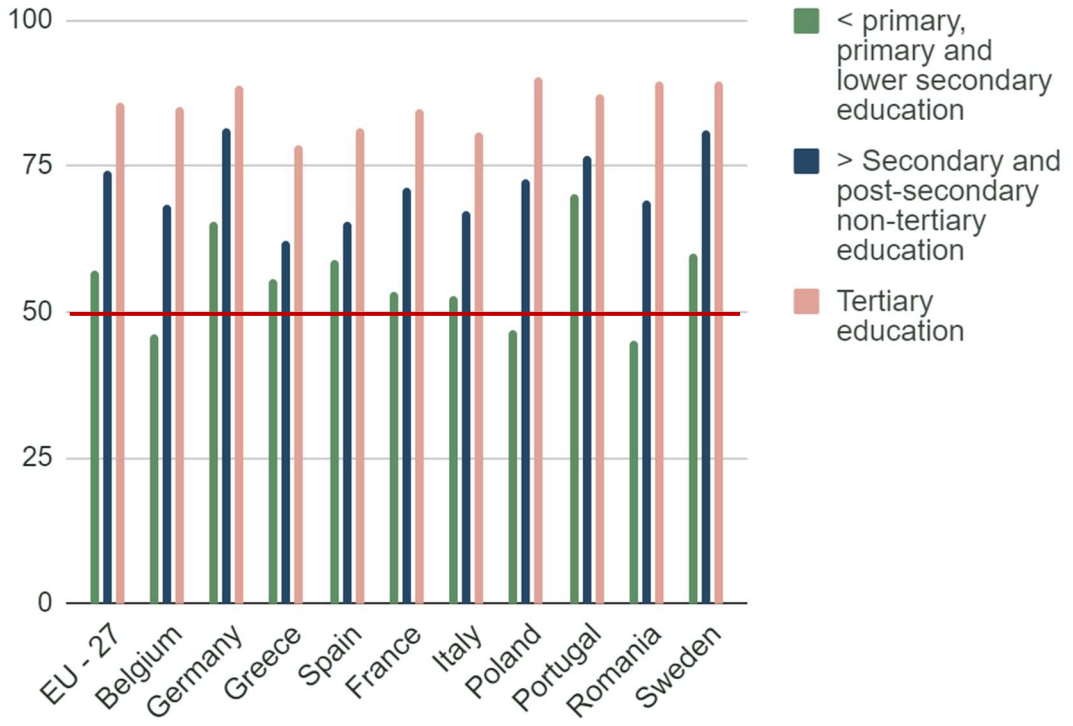

Thousand people. Soucre: Eurostat

In the European Union (EU), there is a clear correlation between the level of education attained and employment rates. According to recent data, 57.2% of people with primary or secondary education are employed. This percentage increases significantly among those with more than secondary (but not tertiary) education, where 74.2% of the population is employed.

However, the highest employment rate is observed among individuals with tertiary education, where an impressive 86% of the population is employed.

2.2.2 ¿Why is relevant to analyze existing skills?

Analysing existing and future skills requirements within the Textile, Clothing, Leather and Footwear (TCLF) sectors is critical due to rapid technological evolution, changing consumption patterns and labour market trends. These sectors, which have historically been vital to the global economy, are facing significant challenges that require a thorough review of the skills needed to maintain competitiveness and sustainability.

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Firstly, analysing existing skills allows for the identification of gaps between current workforce capabilities and emerging market demands. In an environment where automation and digitalisation are transforming operations, it is essential to assess which technical and digital skills are critical to optimise production, logistics and marketing of TCLF products. The ability to handle technologies such as computer-aided design (CAD), additive manufacturing (3D printing), process automation and data analytics is becoming essential.

Secondly, anticipating future skills is key to preparing professionals and new talent for the opportunities that will arise. Advances in sustainable materials, circular production and product customisation will demand skills in innovation, ethical and sustainable supply chain management, as well as knowledge in biotechnology applied to textiles and materials. In addition, the ability to understand and respond to changing consumer demands, such as the trend towards ethical fashion and supply chain transparency, will require skills in communication, corporate social responsibility and brand management.

Thirdly, skills analysis in TCLF sectors is crucial to ensure the employability and career development of workers. Identifying transferable skills and complementing them with continuous training in new competencies will allow employees to adapt to changes and advance their careers within the industry. In addition, fostering collaboration between companies, educational institutions and government agencies will facilitate the creation of training programmes tailored to the needs of the labour market.

In conclusion, analysis of existing and future skills in TCLF sectors is essential to promote innovation, enhance competitiveness and ensure sustainability in a dynamic and constantly evolving business environment. By investing in relevant skills development, the TCLF industry can prepare itself to address current and future challenges, ensuring strong economic growth and the creation of quality jobs worldwide.

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3. Methodology

The proposed seven-step final report methodology provides an organised and comprehensive structure for systematically approaching the sector skills screening process by enabling us to:

- Comprehensive understanding Each stage addresses a specific aspect of the process, allowing for a deeper and more comprehensive understanding of the needs and dynamics of the process.
- Step-by-step approach: Dividing the process into stages facilitates the management and execution of each phase more effectively, avoiding the omission of crucial steps.
- Alignment with the project life cycle: Stages can be adapted to the project life cycle, from initial identification to ongoing evaluation, providing a coherent structure.
- Continuous improvement: The inclusion of monitoring and evaluation stages allows for continuous adjustments and improvements based on feedback and results obtained, ensuring effectiveness over time.
- Stakeholder participation: Each stage can involve different stakeholders, such as companies, workers, educational institutions, etc., which favors collaboration and active participation of all relevant actors.
- Adaptability: The staged methodology is adaptable to different contexts and sectors, allowing its application in different situations and guaranteeing the necessary flexibility.
- Clarity and transparency: The division into stages provides clarity in the process, which facilitates communication and understanding both internally and externally.

In summary, a seven-step methodology provides a comprehensive and organised structure for effectively managing sector skills screening, from needs identification to continuous evaluation and process improvement.

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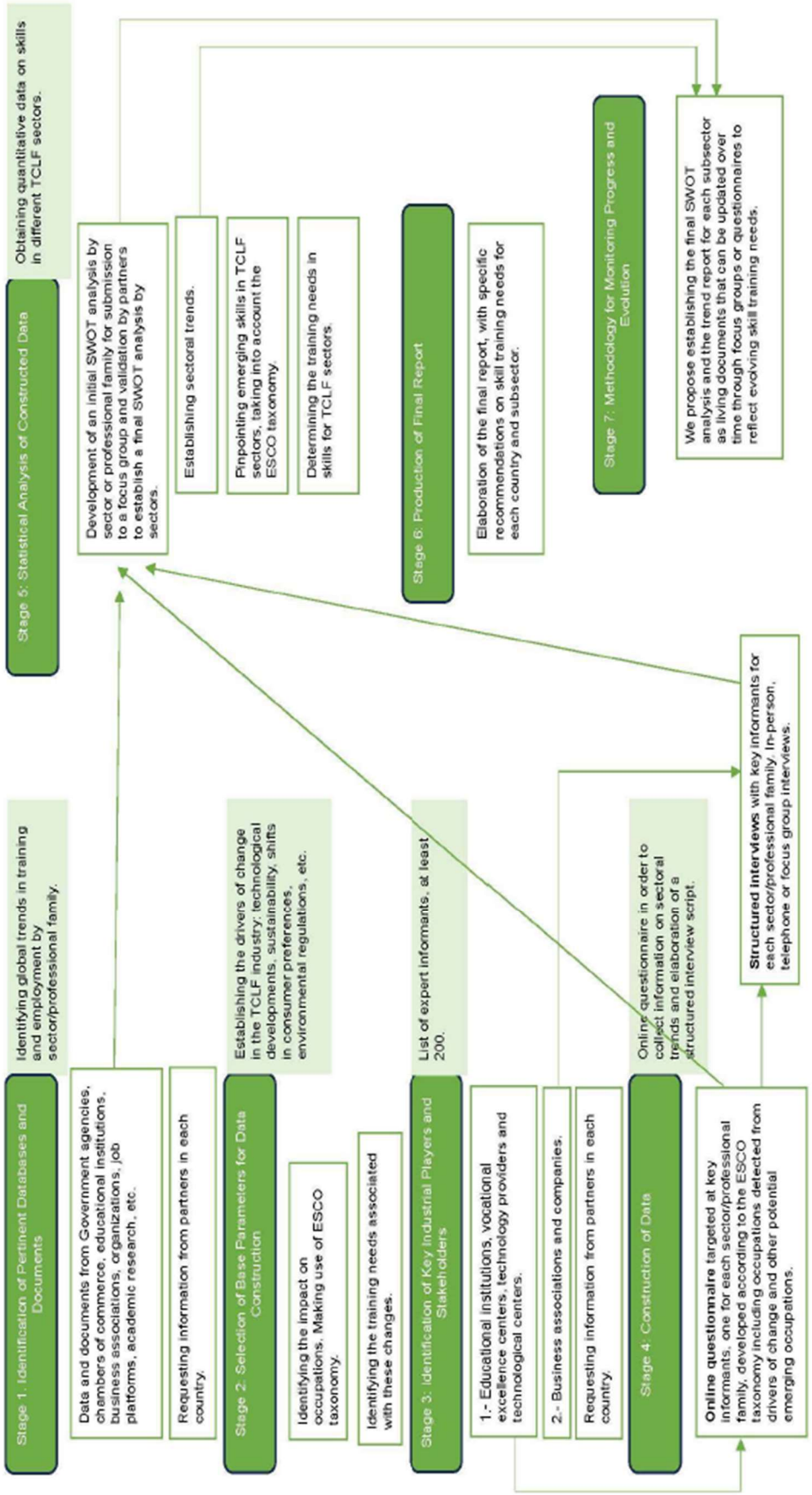

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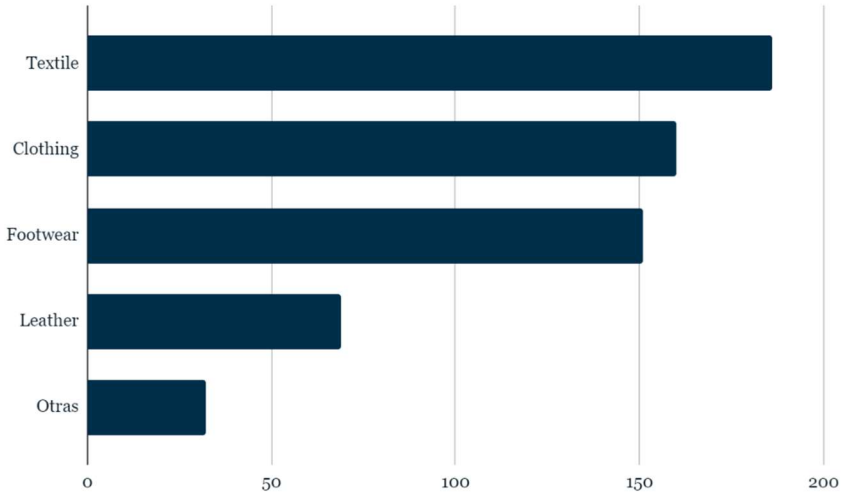
4. Survey Results

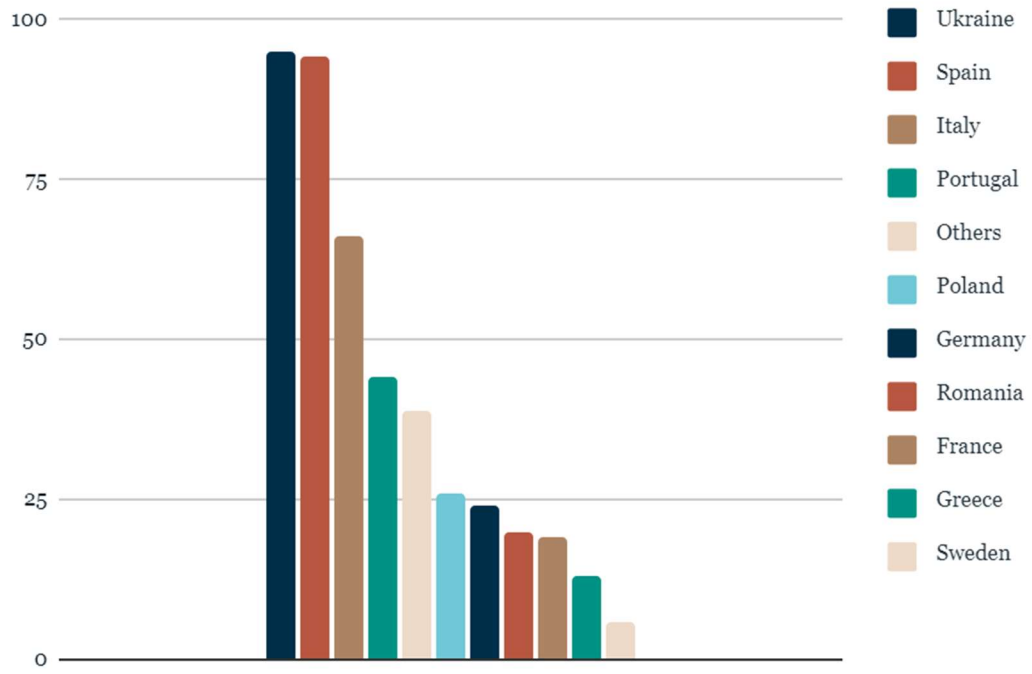
SURVEY RESULTS

SECTION 1 – GENERAL INFORMATION (1- 6)

1. What sector do you work in?



2. Nationality



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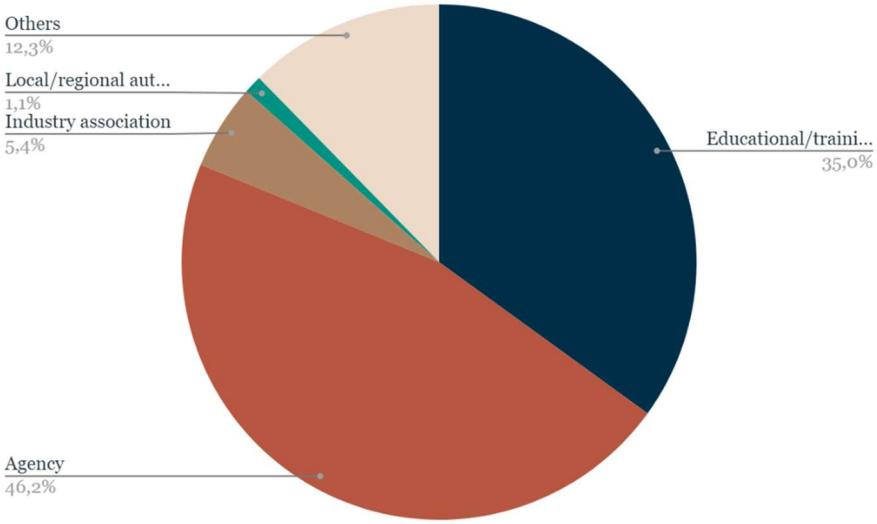
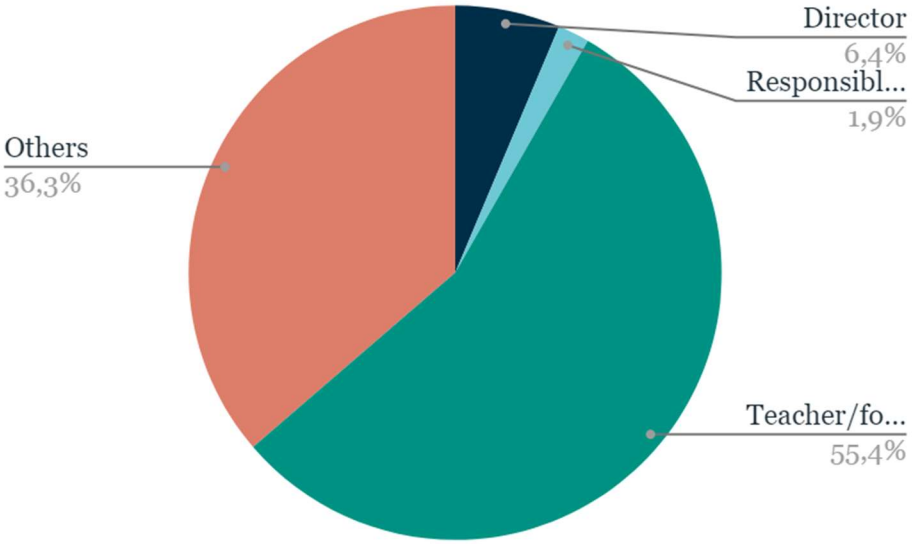
3. **What type of organization are you?**



SECTION 2 - ONLY FOR VET/HE CENTERS (7-12)

4. **Status of the respondent**



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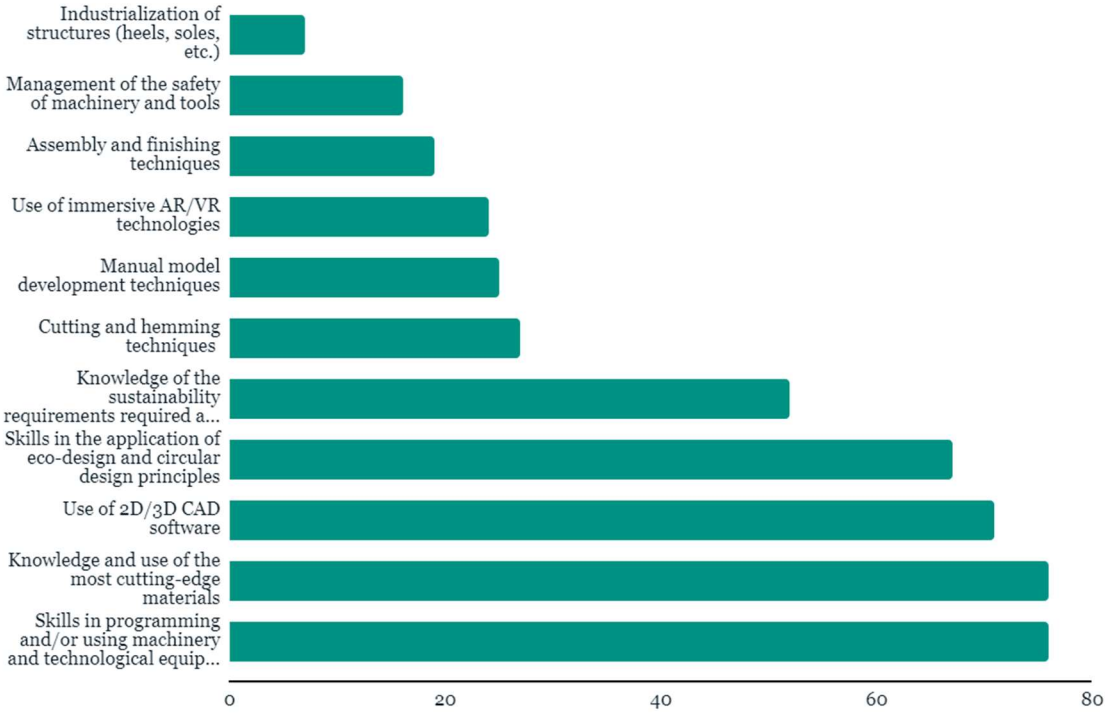
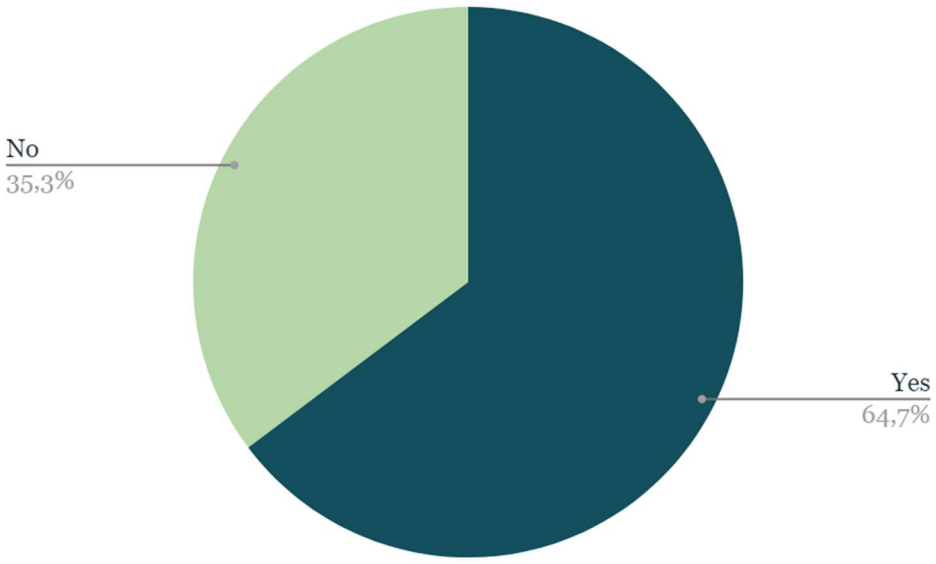
5. What skills do you think will be critical in the next 3-5 years?



6. Do you think there is a correspondence between the skills requested in your sector and the people perception?



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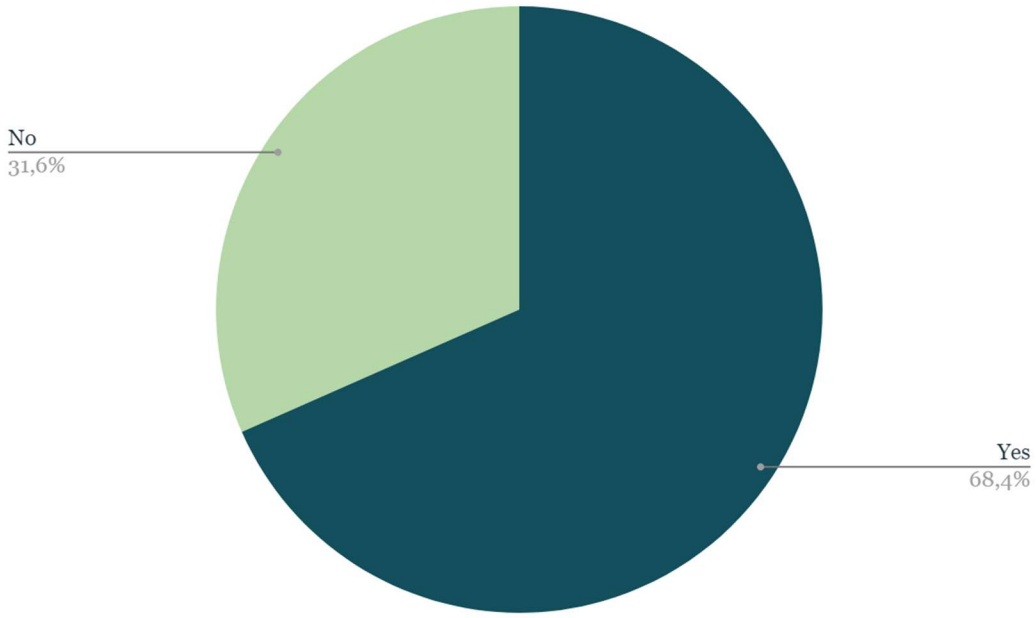
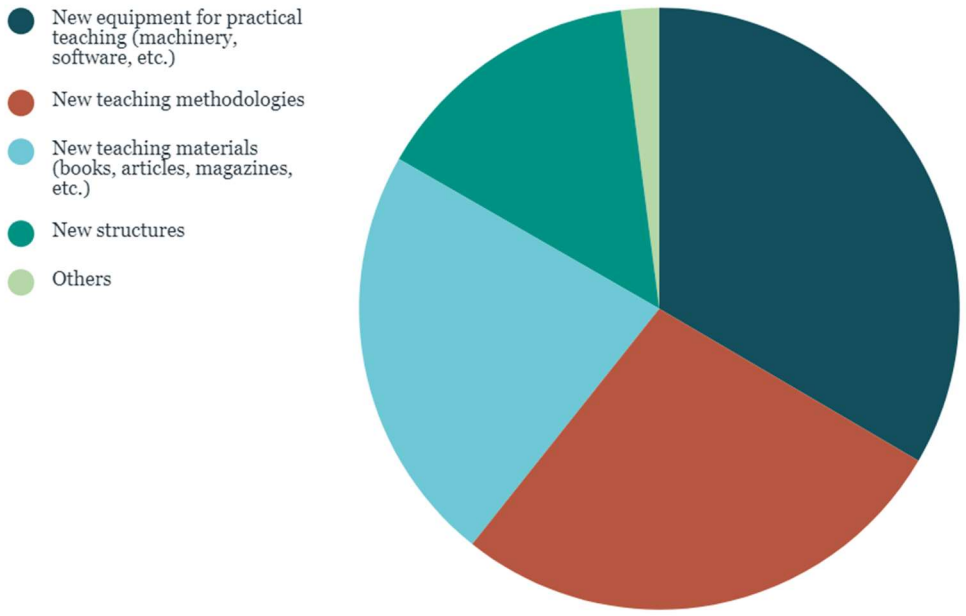
7. **Do you think current training activities will be able to prepare the next worker generation with the appropriate skills and knowledge to fill the gap left by retirements?**



8. **What kind of innovations has the center developed or adopted in the last 5 years?**



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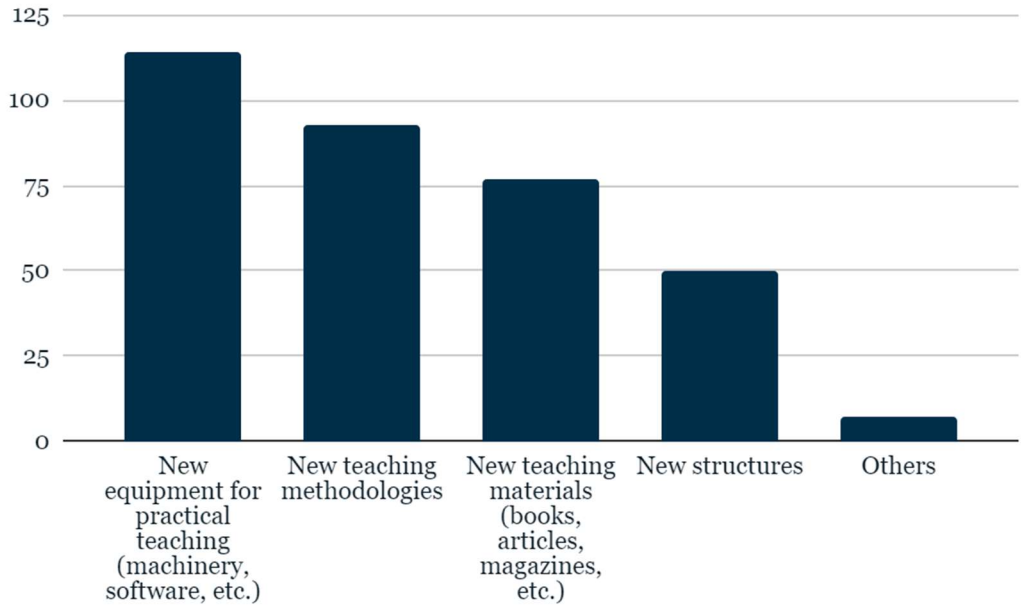
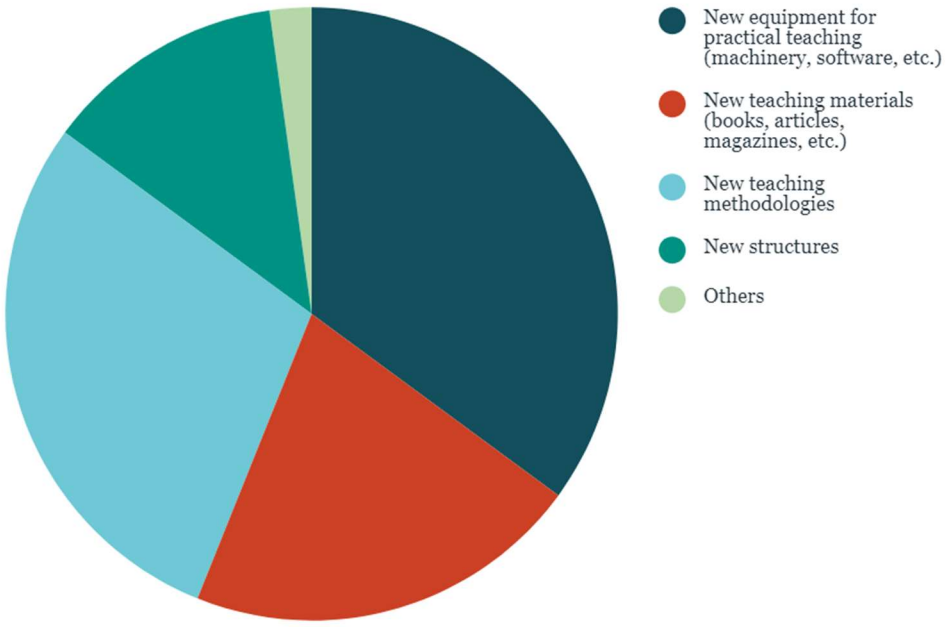


9. **What kind of innovations should the center introduce (or expect to introduce) in the company planning in the NEXT 5 years?**



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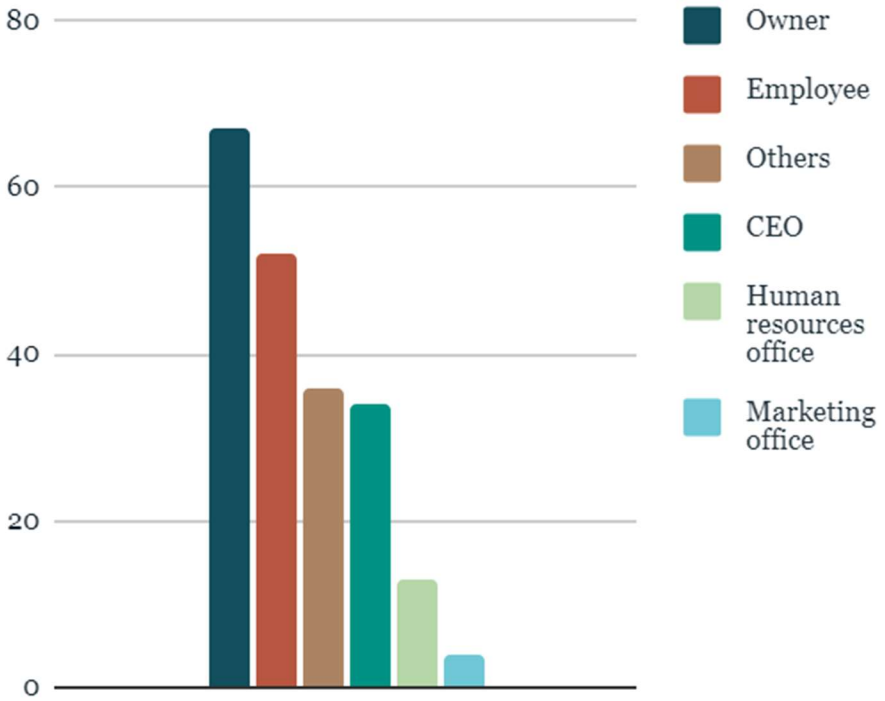
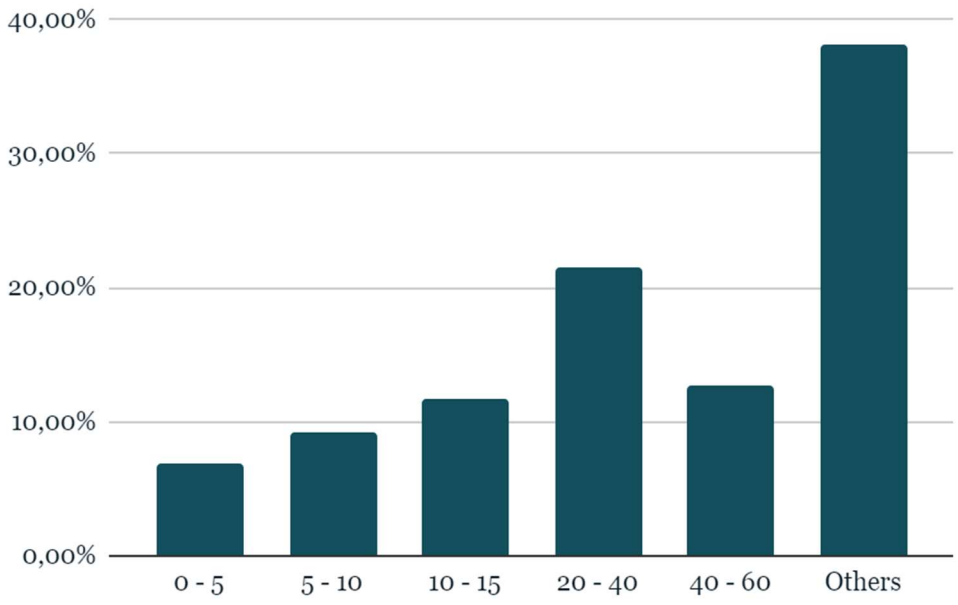
SECTION 3 – ONLY FOR COMPANIES (13-20)

10. Status of the respondent/Role in the company



11. How many people does the company employ?



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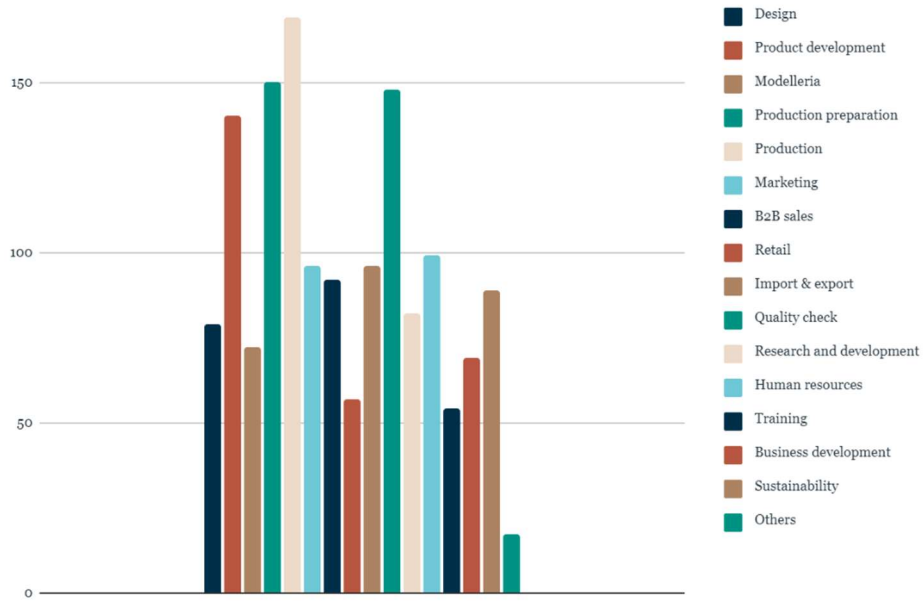
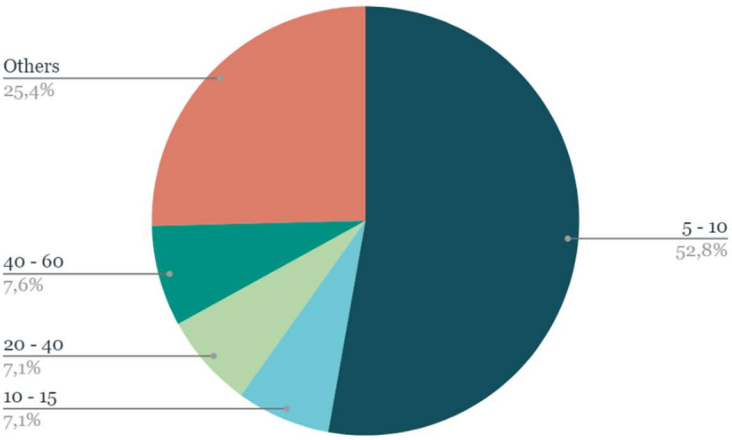
12. **Does the company employ people abroad?**

13. **Please tick all departments of the company, with at least one dedicated employee (full or part-time)**



14. **How many employees are expected to retire in the next 5 years?**



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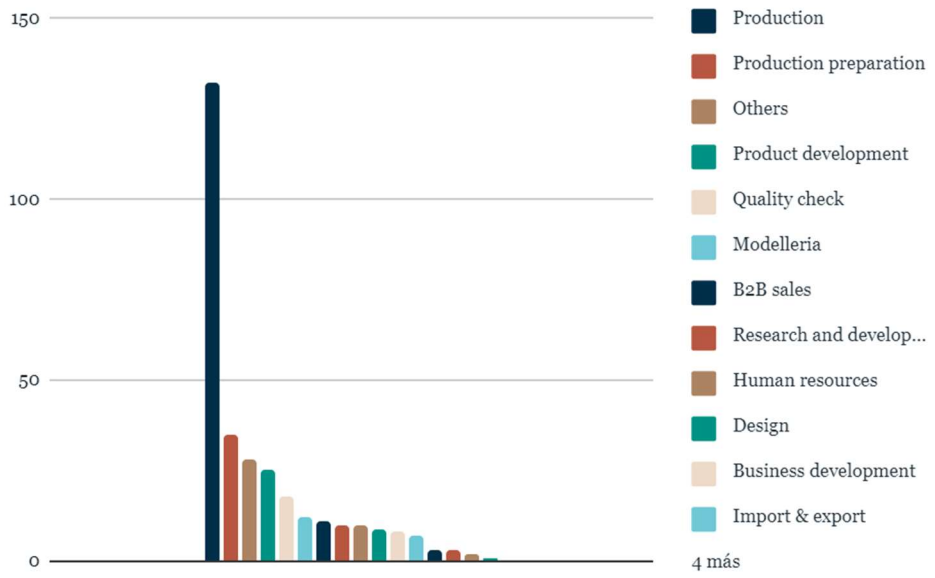
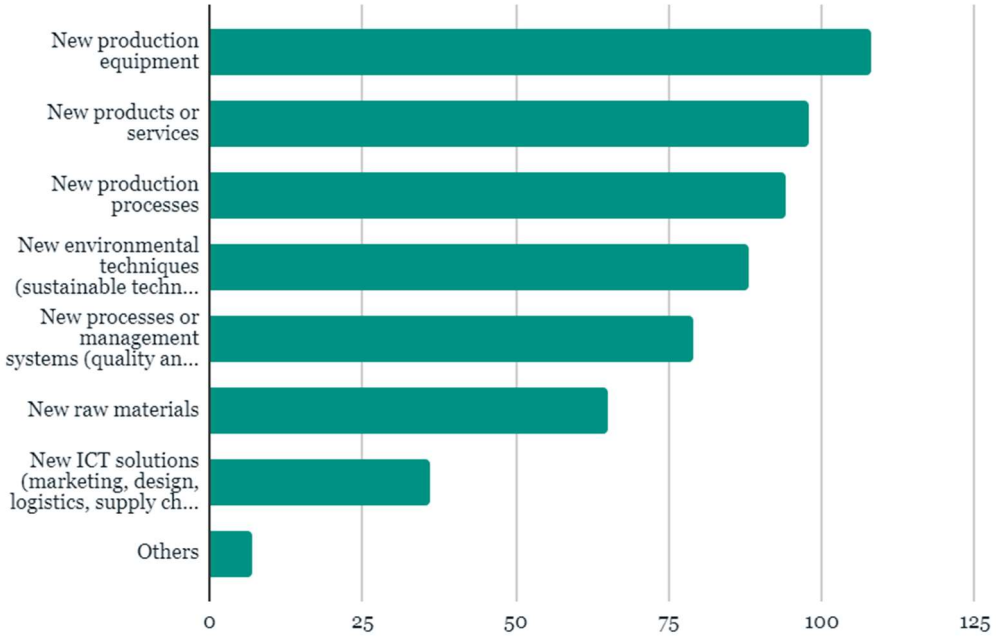
15. **Please tick all departments of the company that will be more affected by retirements (full or part-time)**



16. **What kind of innovations has the company developed or adopted in the last 5 years?**



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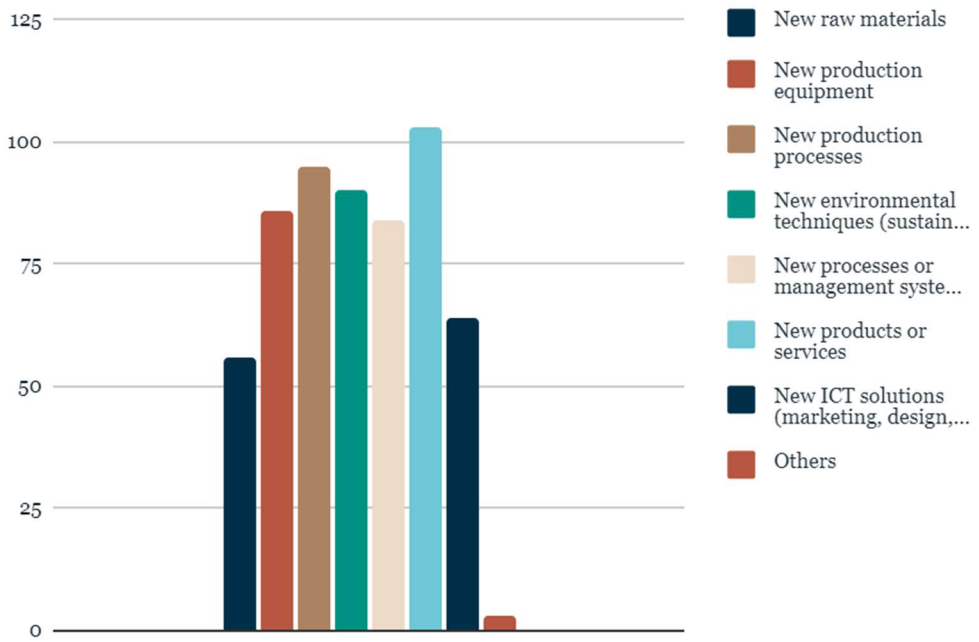
17. **Do you offer training courses for employees?**

18. **What kind of innovations will the company introduce (or expect to introduce) in the company planning in the NEXT 5 years?**



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SECTION 4 – FOR EVERYONE

A. Regulations and governance

19. New EU trade agreements facilitating access to international markets

20. The Brexit

21. Protectionism (Emerging trade barriers and uncertainties - e.g. Israel, Russia, China, etc.)

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22. **EU Green Economic Policies (Digital Product Passport, Due Diligence Directive, etc.)**

23. **General Data Protection Regulation (GDPR)**

24. **Farming and raw material subsidies for producers outside the EU**

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25. **Technical standards and stricter environmental, H&S regulation, (e.g. REACH, …)"**

B. Environmental change

26. **Positive consumer view of social and environmental sustainability.**

27. **Increased transparency within production and sourcing supply chains**

28. **Push towards a circular economy (recycling, reuse, etc.)**

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29. **Increase of the cost of energy and raw materials due to climate change or (geo)political developments"**

C. Economics and globalization

30. **Increased demand for traceability along the supply chain.**

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31. **Increasing costs of raw materials and transportation deriving from ongoing international conflicts (Russia and Ukraine, Israel and Palestine, etc.)**

32. **Consequences of COVID-19 Pandemic (consumers' behavior, costs, regulations, etc.)**

33. **Lack of energy supplies deriving from international instability and rising of energy costs.**

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34. The rise of e-commerce and multi-channelling"

D. Technological change

35. Advanced manufacturing processes, technologies and materials.

36. Additive manufacturing (3D printing, rapid prototyping, …)

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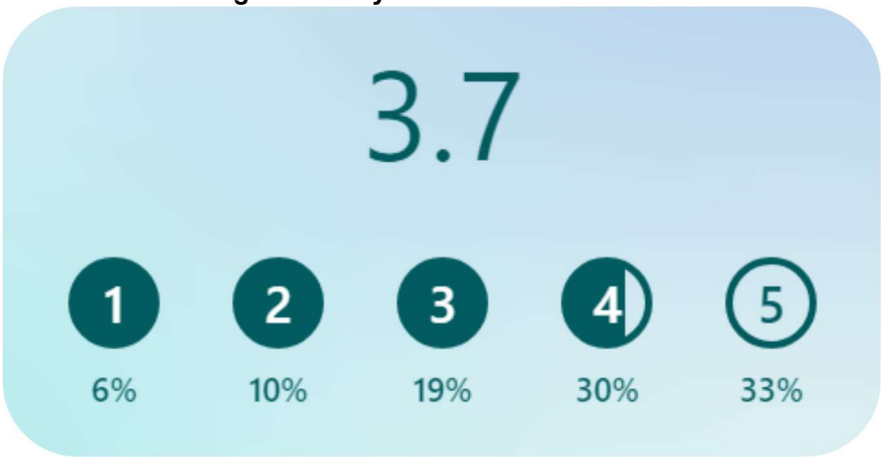
37. **Augmented reality (real-world augmented by computer-generated information.**

38. **Simulations Horizontal and vertical integration of production processes.**

39. **Move towards full knowledge economy and R&D in TCLF.**



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40. Growing importance of online sales & opportunities in new markets"

E. Demographic and population change

41. The ageing workforce in TCLF

42. Diversity and inclusion in the workplace (women, immigrants, refugees, etc.)

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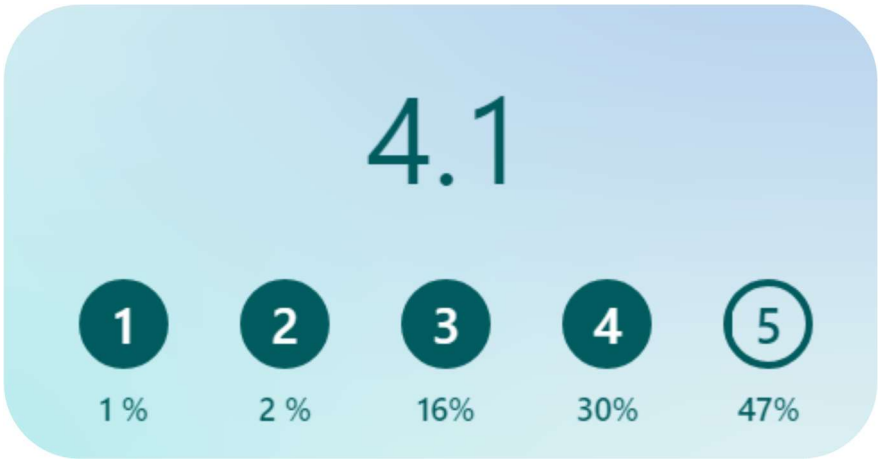
43. **Increase in digital skills**



44. **Changing TCLF product requirements for an older population.**

45. **Changing behavior of younger generations approaching work.**

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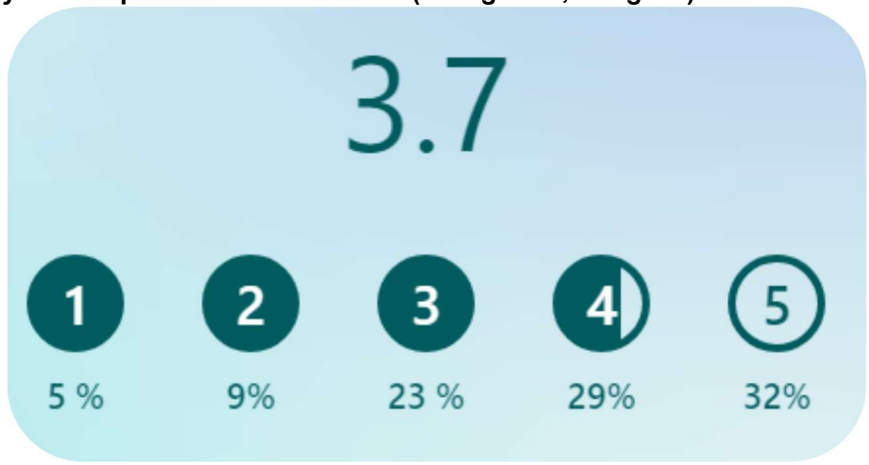
F. Values & identities

46. Difficulty to attract young people to TCLF technical positions.

47. Difficulty to attract STEM graduates in TCLF.

48. Necessity to incorporate new labor force (immigrants, refugees).



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49. Growth of the second- hand sector"

G. A new consumer

50. Demand for personalization

51. Increased concern for a healthier lifestyle and wellbeing

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52. **Request for high-end and luxury products**

53. **The rise of online sales Increased pace of change for fashion, fast fashion**

54. **Preference for local/national products (importance of European country of origin branding)**

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55. **Low price dominance of the TCLF retail**

56. **Rise of sustainable and green product**

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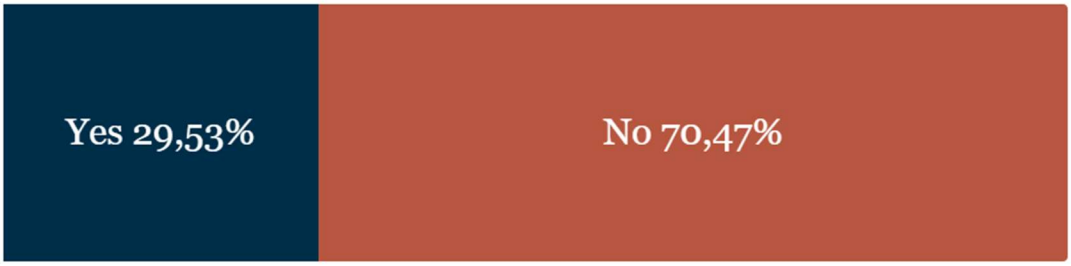
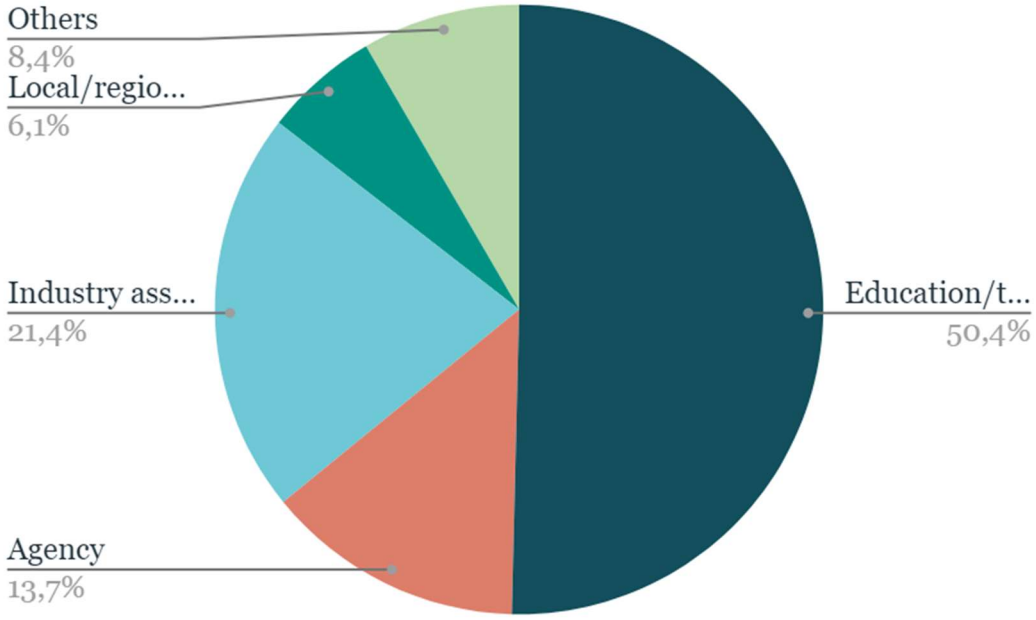
H. Sectorial attractiveness

57. Do you think there is the need to raise the attractiveness of the sector?

58. Do you know any activity that helps making the sector more open and attractive?



59. Activity promoter



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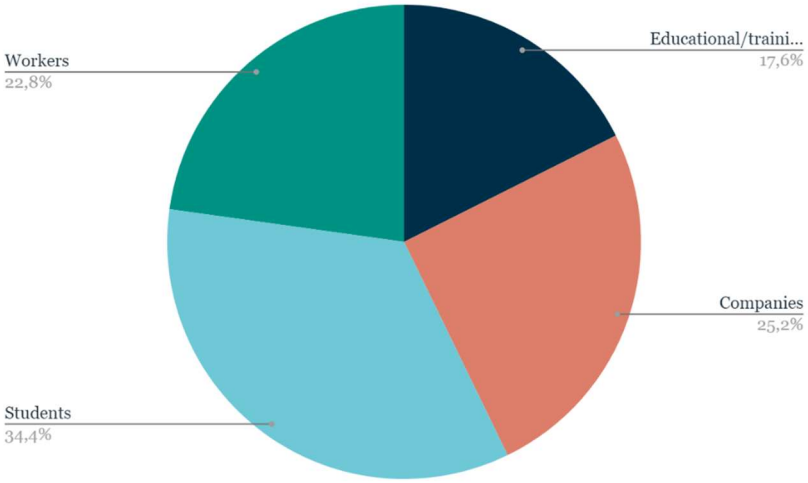
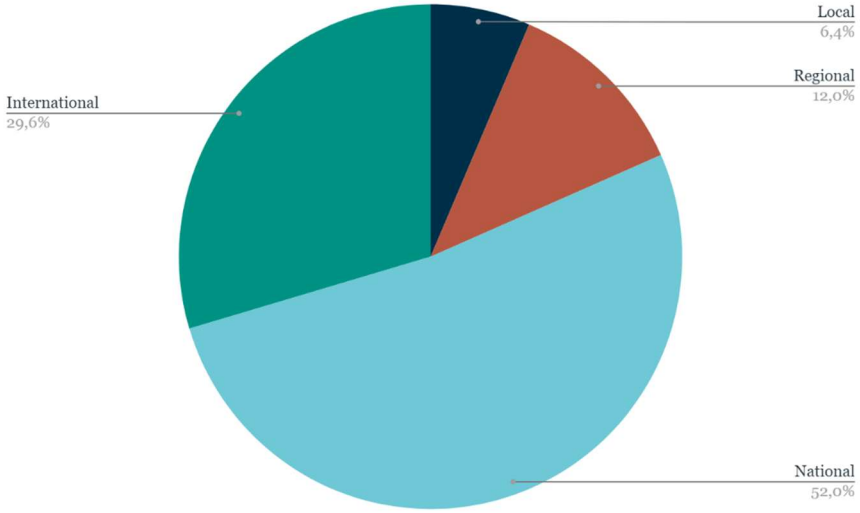
60. **Title (*)**

61. **Short description (*)**

62. **Audience**



63. **Extension of the event**



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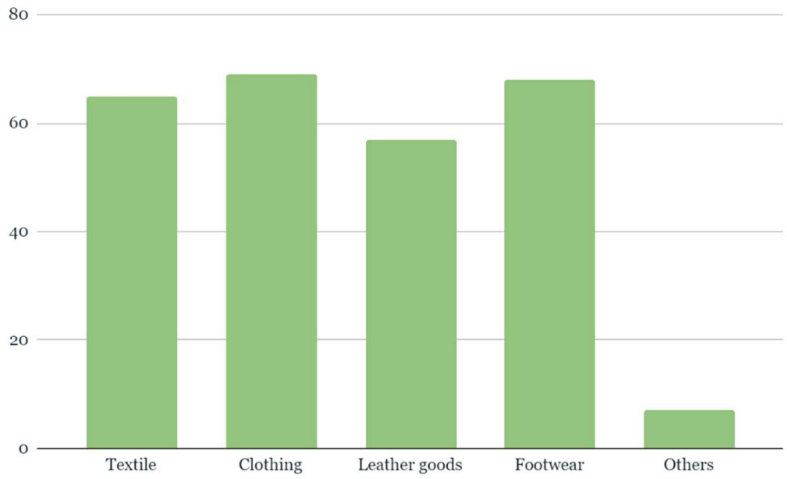
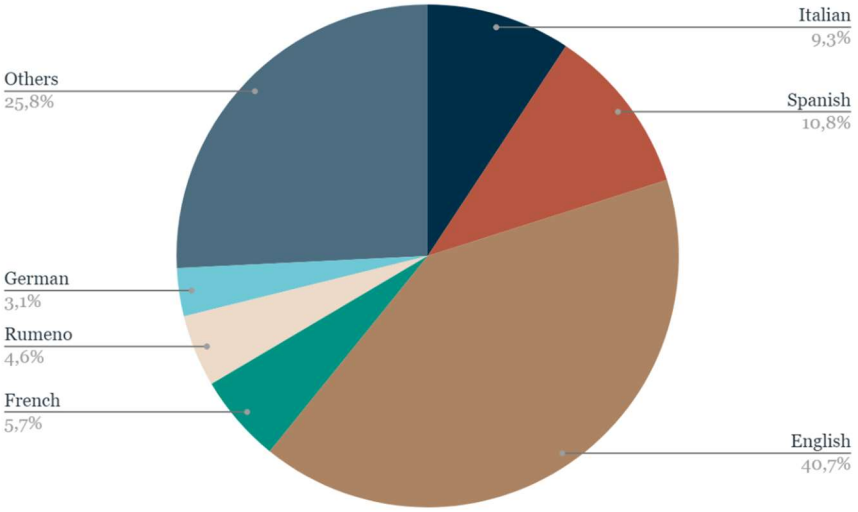
64. Type of industry



65. Language



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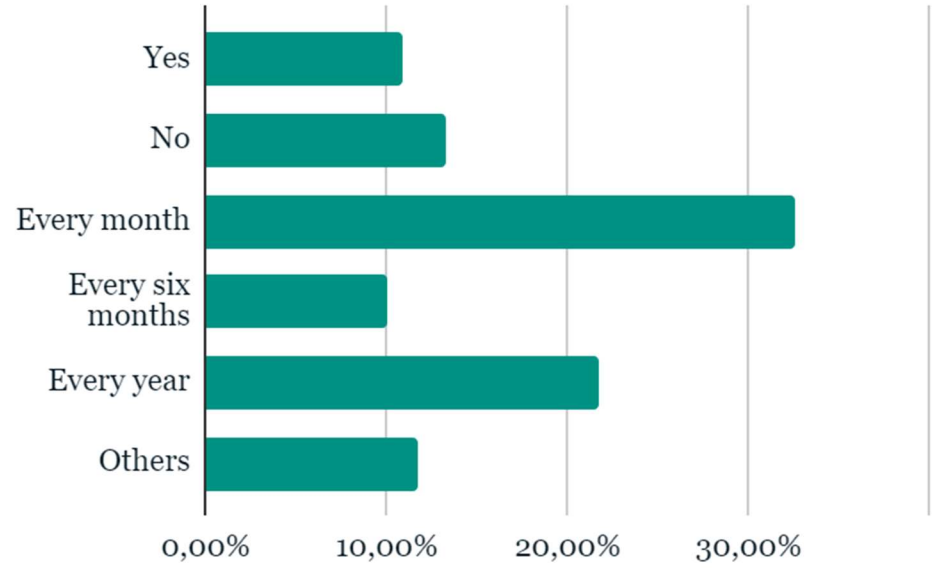
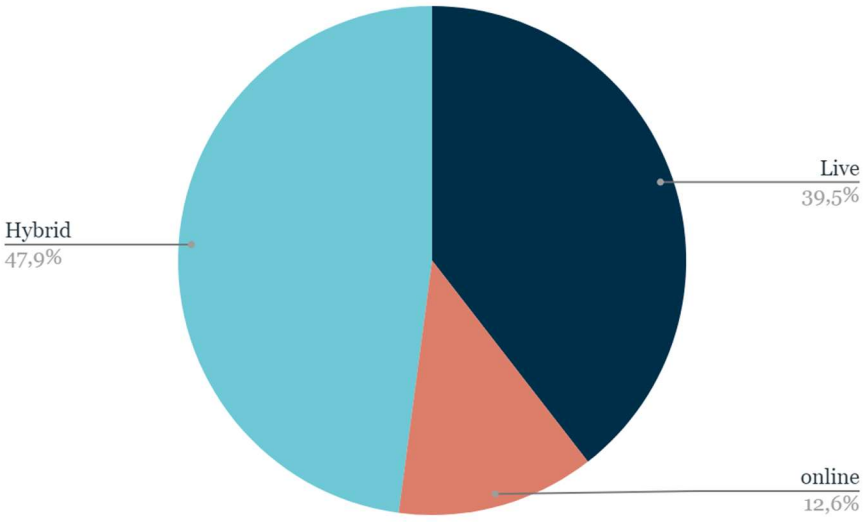
66. Is it replicated? If so, how often?



67. Modality



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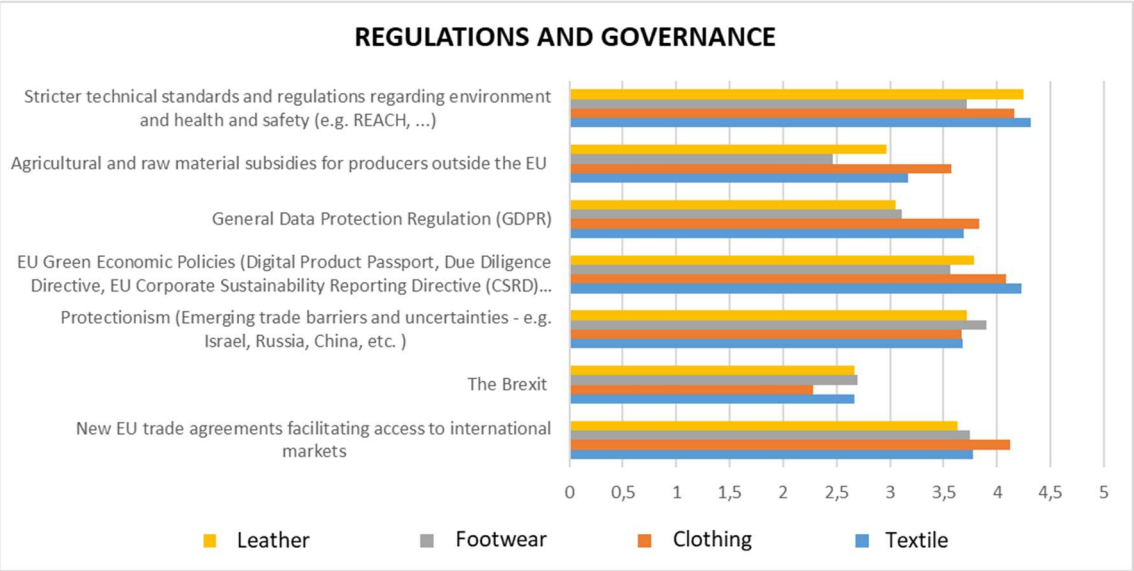

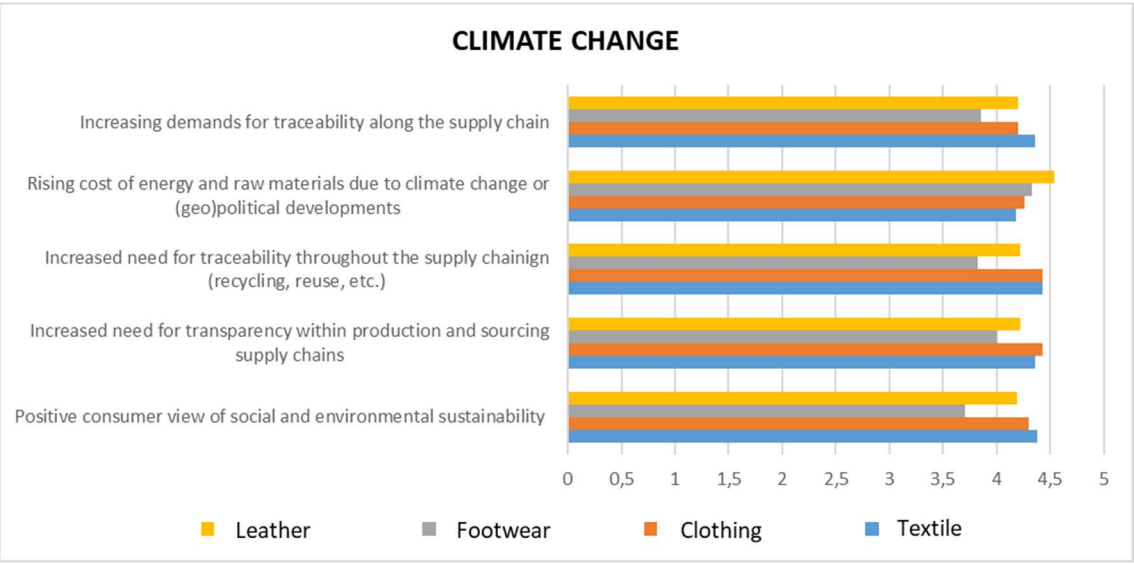

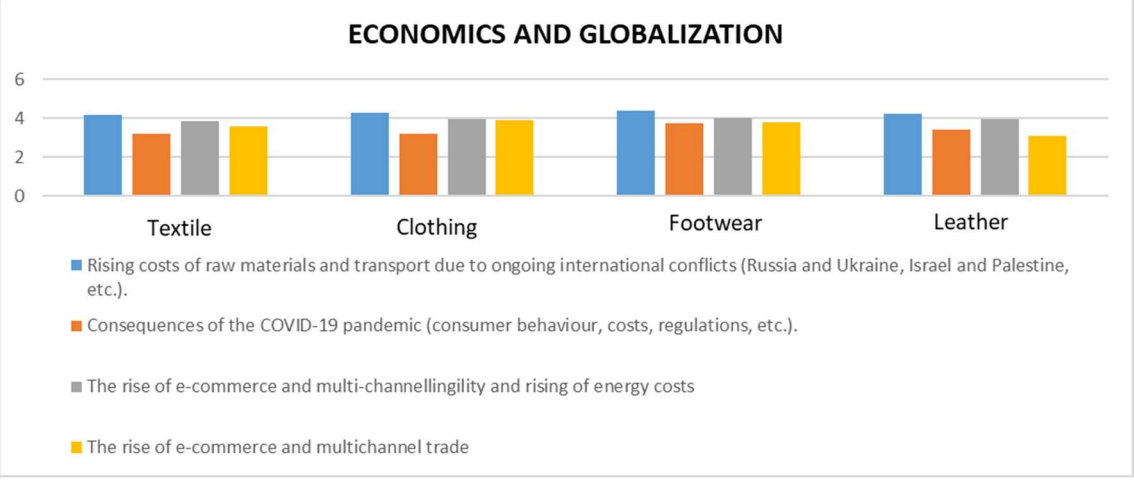

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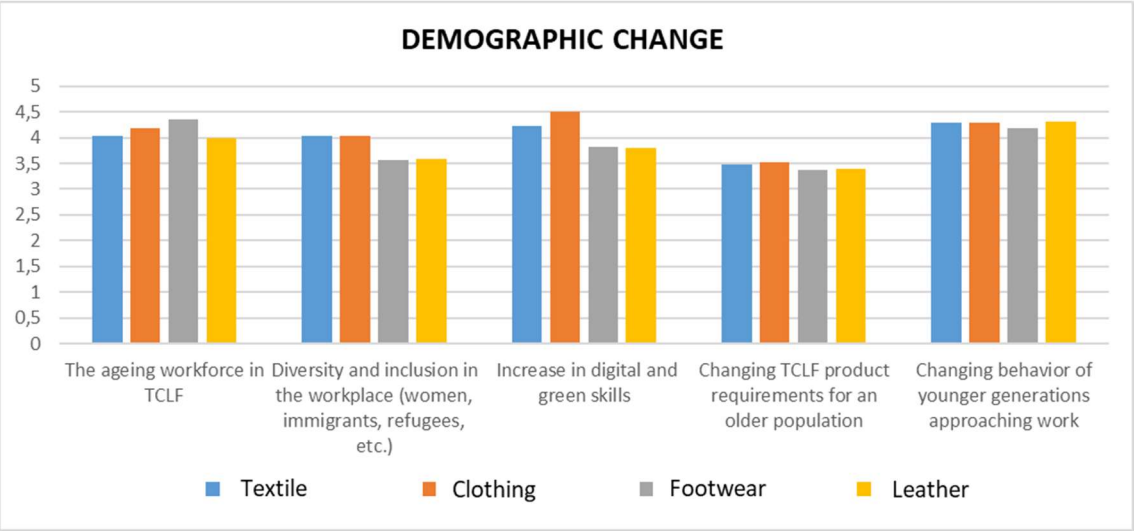

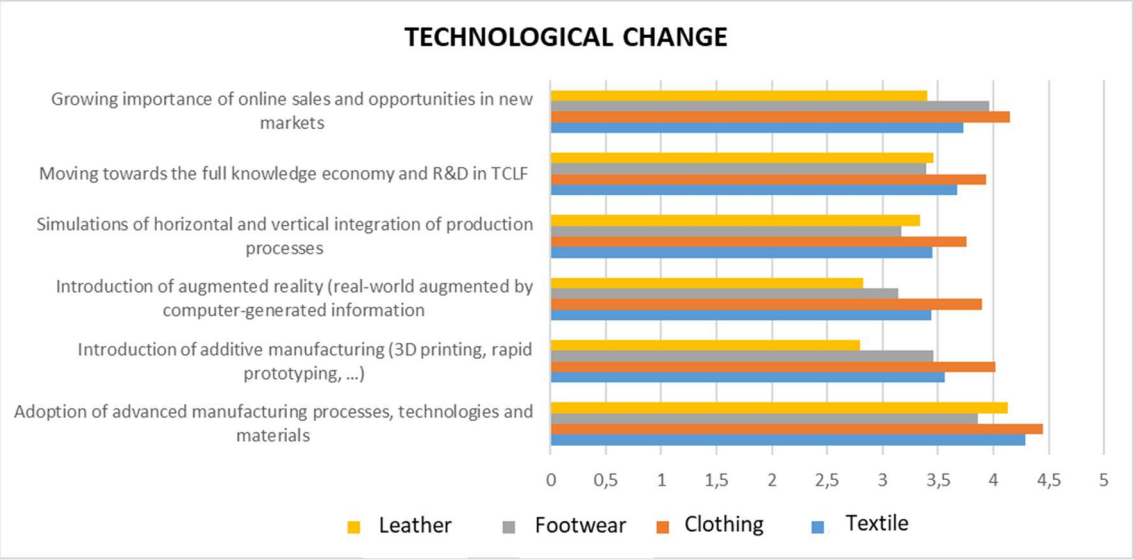

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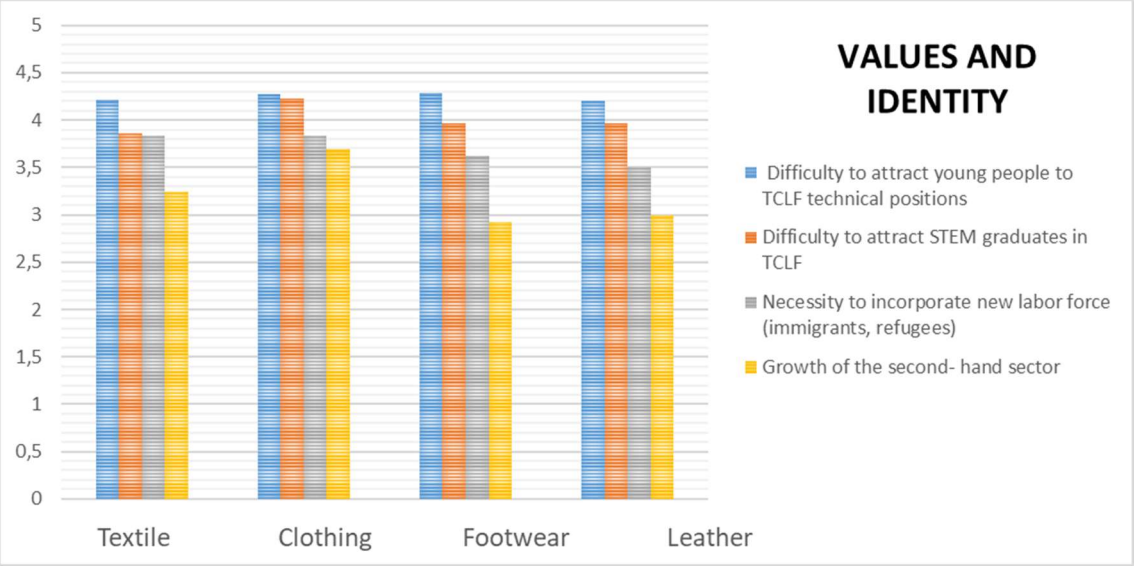

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5. SWOT Analysis Results

TEXTILE

STRENGTHS

- **High quality material/ Reputation**: The recognized brand reputation and high quality standards of European textile companies facilitate compliance with EU legislation, especially in shared economy areas accustomed to producing high quality products from excellent domestic cotton and other fiber types. (GR, RO,IT)
- **Young people**: Young people coming out of the university circuits are willing to perform "creative/cognitive" tasks (not in production), together with their adaptability in the fields of digitalization, it is relatively easy to find personnel for these functions that are becoming more and more important. (IT,PT)
- **Sustainability**: Textile companies have a rich heritage and commitment to textile recycling and exhibit a wealth of experience in sustainable design, material use, logistics, corporate social responsibility and sustainability education, which will be instrumental in developing new competencies, especially in eco-efficient manufacturing, in line with global trends and regulations. (IT,SP,SW)

WEAKNESSES

- **Generational transition**: The textile sector in several countries is grappling with the challenges posed by an aging workforce, including difficulties in finding traditional professional roles crucial to these sectors and in attracting younger people into middle and entry-level production positions. (GR, PT, IT,RO,SW)
- **Attractiveness**: Inability to attract and retain new workers and talent in companies. This may be due to outdated production techniques, family reconciliation and the ambition for professional growth that some companies are unable to offer (GR, PT, IT).
- **Sustainability**: Lack of internal communication to ensure sustainability commitments, inability to reflect the cost in the final price of the product (PT, IT)
- **Digitalization/Technology:** Lack of experience and, therefore, technological implementation in emerging areas of digitalization (AI, AR, VR...) and lack of efficient supervisory technology solutions (PT, RO, SP, SW)
- **Waste Management**: Poor implementation of competencies in eco-efficient manufacturing processes and waste reduction (RO,SP)

S W O T

OPPORTUNITIES

- **EU regulations on sustainability:** EU sustainability regulations: Increasingly stringent EU and national sustainability regulations can provide a unique stimulus for process and product innovation, where EU companies can benefit most from technologies and skills (GR, IT).
- **Environmental awareness and sustainability:** the growing public attention to environmental issues stimulates the research needed to produce products with innovative features, making EU production more competitive than that of Asian countries and satisfying market demands (GR, IT, SP, RO).
- **Technology development**: Opportunity to improve the development of processes, products and their sustainability, enhancing the competitiveness of companies (GR, IT).
- **Training**: The creation and establishment of training, bachelor's and master's degree programs in conjunction with companies could facilitate skills transfer (PT, RO, SW).

THREATS

- **Regulations:** New global environmental regulations could pose challenges for companies that are slow to adapt, potentially leading to production disruptions or sanctions(SP, IT, PT, SW).
- **Economic/Increased costs:** Rising costs in raw materials and energy, depreciation against third currencies of other countries increasing the final price of products, thus reducing destination markets (GR, PT, IT, RO)
- **Technology development**: Opportunity to improve the development of processes, products and their sustainability, enhancing the competitiveness of companies (GR, IT).
- **Environmental/ Sustainability:** The inability to recognize greenwashing, either when it comes to recognizing raw material suppliers or other companies that do not really comply with sustainability principles, harms the competitiveness of those responsible companies (IT, RO,SP).

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CLOTHING

STRENGTHS

- **Tradition**
- **High quality in products and integrated service with high added value.**
- **Sustainability:** Strong commitment to the development of sustainable garments and positive consumer feedback (RO, SP,SW).
- **Innovation/Technology:** Strong research and innovation "offer" and expertise of academic and research organizations (GR), adoption of disruptive technologies such as virtual simulation/prototyping, dedicated production management software and machine learning (RO), differentiation through quality and innovation (PT).
- **Training/Education:** There are training programs such as engineering that allow companies to find qualified profiles, and educational institutions can offer training in sustainability and digitalization (RO, IT,SP)

WEAKNESSES

- **Aging workforce**
- **Lack of qualified staff**
- **Sector attractiveness/ Image:** Poor image of the sector in society and young people (GR, IT,PT)
- **Technology:** Lack of skills required to adopt new technologies (PT, SP, SW).
- **Legislation application:** Lack of knowledge when applying the relevant legislation (PT), delay in real measures applying the legislative frame (RO).

S W O T

OPPORTUNITIES

- **Environmental awareness and sustainability:** The increase in demand and production of sustainable garments stimulates research to manufacture products with innovative features, training in sustainable skills and competitiveness (GR, IT, PT, SP).
- **EU regulations on sustainability:** The adoption of new EU regulations and legislation on sustainability can provide an exceptional stimulus for process and product innovation (GR,IT).

THREATS

- **Regulations:** The main threats are, on one hand, the adaptability of SMEs and, on the other hand, the difficulty in conducting compliance checks with EU regulations on imported products (GR, IT, SW)
- **Increase in the cost of raw materials:** Increase in the price of these materials (GR), increase in the cost of these, that could lead to an increase in the financial costs of products and this result in increased competition from low-cost productions such as those SE Asia (GR, IT).
- **Competition**:
  - International competition from third countries, such as China, India or Turkey, with lower costs in energy, labour, etc (GR).
  - Competition from international markets with more advanced sustainability practices (SP).

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LEATHER

STRENGTHS

- **Logistics:** efficient and quick supply chain processes and logistics (FR, GR)
- **Leather's material characteristics:** sustainable, durability, biodegradable, renewable and natural material (FR & IT).
- **High quality material**: luxurious and timeless material with a wide range of applications, including manufacturing high quality articles for top brands in the case of Spain (RO, SP, GER).

WEAKNESSES

- **Generational transition:** Retired highly qualified workers and the added difficulty in atracting younger generations (FR, GR, IT, PT, RO, SP, SW)
- **Image of the sector/Atractiveness:** Including poor image of the sector for young people and bad environmental reputation of tanners (FR, IT, SP, GER).
- **External communication:** communication difficulties regarding engaging with the external world and exchanging information, confusion in consumer perception (FR, IT).
- **Lack of relevant training:** This includes the lack of trained trainers to teach more technical parts and the lack of social support for students necessary to successfully train them and retain them in the company (FR, GR, PT, RO, GER).

S W O T

OPPORTUNITIES

- **EU Intervention:** EU regulations that could favour sustainable practices and aid from EU financial tools (FR, GR).
- **Environmental awareness:** EU regulations that could favour sustainable practices; Strengthening of environmental awareness (GR); Positive consumer view of social and environmental sustainability (FR, GR, IT).
- **Consumer behaviour:** More aware consumers, positive consumer view of social and environmental sustainability and increased concern for a healthier lifestyle and well-being (GR, IT, PT, SP)
- **Training**: Establishing comprehensive mentorship programs could facilitate the transfer of critical skills from older to younger generations, potentially addressing the workforce aging issue while enhancing skill levels (GER, SP, PT, SW)

THREATS

- **EU Regulations:** The impossibility of carrying out substantial checks on compliance with European standards on imported products. Furthermore, regulations can put the tanning industry under economic pressure due to regulation (GR, FR, IT, RO, SP, GER,).
- **Inflation/Increase in relevant costs**
- **Water Stress:** Increased water scarcity in certain regions can affect the quality of production and, therefore, the competitiveness of companies (FR, SP).
- **Misperception of leather as a meterial:** consumers are disoriented/ misinformed due to manipulation by entities that promote a lifestyle faovring plastic over natural materials like leather, due to a lack of awareness of the challenge and opportunities that natural materials offer. (FR,PT)

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FOOTWEAR

STRENGTHS

- **Training/Education:** Many HE/VET companies and training centers that offer training courses with the aim of improving and adapting employees' skills according to new technologies. (PT, RO, GER)
- **Geographical position**: The strategic geographical location allows for good business development and good logistical connections (GR, RO)
- **Well-developed sector.** Both the "production chain" with a strong presence/network of raw material suppliers, tanneries, footwear manufacturers and machinery companies, such as strong industry knowledge (PT, IT, GR, RO, SP)
- **Sustainability**: Companies that address the issue of sustainability could have advantage over their competitors (GR, IT, SW)
- **Strong Network:** That bring together companies, VET/ES providers, research centers and distribution companies (IT, GR).
- **Technology**: AI is used to optimize production and processes, improve quality and reduce costs, analyzing large amounts of data, manufacturers can identify patterns and make predictions to avoid bottlenecks and increase efficiency (GR, IT, PT, SP, SW)

WEAKNESSES

- **Resistance to change/Lack of innovation:** Low rate of investment in research and development of new products and methodologies (GR, IT, SP).
- **Aging work force/Generatioinal transition:** The extensive specialized knowledge is mainly found in the older generation, which is close to retirement age and there is a risk of not being able to transmit the extensive qualified knowledge to the next generation (GER, GR, IT, PT, SP, SW).
- **Lack of attractiveness:** The lack of advertising for careers in the footwear industry contributes to the perception of this sector as a declining industr
- **Poor investment in training (educational and companies):**
  - The lack of loyalty and commitment to the employer is a widespread phenomenon today, which is why companies invest little in the training of their staff.
  - For cost reasons, not all new technologies may be available in training centers and teachers who have not had direct contact with the industry for too long may be outdated.

S W O T

OPPORTUNITIES

- **Technology**: Innovation and technology are revitalizing the footwear industry, attracting not only those interested in traditional manufacturing but also individuals drawn to technological advancement (GER, GR, PT, SP)..
- **Marketing:** The footwear industry can be promoted as a viable profession using marketing tools, influencers, and celebrities. Manufacturers can penetrate expanding export markets, particularly in emerging economies. (GER, RO).
- **Sustainability:** Developing a sustainability scale that evaluates ecological impacts could enhance transparency for consumers in the footwear industry (GER, RO).
- **Partnerships:** Partnerships with international retailers can expand market reach. Alliances between companies, schools, and town halls can promote training and improve school-to-work transitions, and collaboration with tech startups can drive innovation and competitiveness (RO, PT, SW).
- **Consumer behaviour:** Growing health consciousness drives demand for comfortable and functional footwear. Besides, youth prioritize individuality and personalized high-quality products, presenting opportunities (GER, GR, RO, SP).

THREATS

- **Regulations**: Limited human and financial resources hinder regulatory compliance efforts, especially for SMEs (GER, GR, IT, RO SP).
- **Training:** Shortage of skilled trainers for technical courses in schools, and lack of specialized footwear sector teachers in VET/HE centres (PT, SP).
- **Competition from low-cost manufacturing countries:** Intense competition from low-cost manufacturing countries (China, India, Turkey) due to significantly lower labour costs. Established international brands and emerging competitors further squeeze profit margins and market share (GR, RO).
- **Technology obsolescence:** Economic risks may arise from high costs and rapid obsolescence of new technologies. Previous machines had longer lifespans compared to software-based systems, which become obsolete quickly. Rapid technological change may outpace businesses' ability to adapt, especially if workforce upskilling lags. (GER, SP, SW).

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6. Sectoral Trends Analysis

6.1 Drivers of change

El análisis de los motores de cambio es fundamental para comprender y anticipar las transformaciones globales a las que están expuestos los agentes de educación y el tejido empresarial en las industrias Textil, Confección, Cuero y Calzado (TCLF). Estos motores representan fuerzas poderosas que moldean el entorno económico y social, influyendo en las estrategias de formación y desarrollo dentro de estos sectores.

Los motores de cambio clave que impactan significativamente en las industrias TCLF incluyen el empleo, la demografía, el medio ambiente y la tecnología. El empleo, por ejemplo, está experimentando transformaciones estructurales debido a la automatización y la evolución de las habilidades demandadas por la industria. La demografía, con cambios en la composición generacional de la fuerza laboral, afecta la disponibilidad de talento y la diversidad en el trabajo. El medio ambiente, con la creciente preocupación por la sostenibilidad y la ecoeficiencia, está impulsando innovaciones en materiales y procesos. La tecnología, por su parte, está revolucionando la producción, distribución y comercialización de productos en estas industrias.

Al estudiar estos motores de cambio de manera integral, podemos identificar oportunidades y desafíos emergentes que guiarán la formulación de estrategias educativas y empresariales efectivas y adaptativas. Este análisis nos permite prepararnos proactivamente para abrazar el futuro y construir una base sólida para el crecimiento sostenible y la competitividad en las industrias TCLF en un contexto mundial dinámico y en constante evolución.

Employment and Demographics

En anteriores apartados, ya hemos analizado la demografía actual y las dinámicas demográficas de los empleados en las industrias TCLF. Se augura por tanto, una sociedad envejecida en muchos de los paises que en este proyecto participan y una preocupación relevante por el relevo generacional de muchos oficios que tradicionalmente han sido más artesanales. Es aquí donde entran factores clave, discutidos tanto en el cuestionario realizado en la investigación cualitativa, como en los focus group con los informantes clave. Estos aspectos, son analizados más adelante, sin embargo, podemos augurar que, la adaptación de tecnología será el foco para garantizar el progreso de las industrias Textil, Confección, Cuero y Calzado.

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Environment and Technological and Digital Innovation

The environment, along with technological innovation and digitalisation, as determining factors of change.

In terms of the environment, aspects such as green economic policies promoted by the European Union, initiatives like the Digital Product Passport, and the EU Corporate Sustainability Reporting Directive establish criteria and standards in terms of environmental and social sustainability in supply chains.

The rise in energy and raw material costs, attributed to climate change and geopolitical conflicts, is pushing TCLF companies to seek more efficient and sustainable alternatives in their operations. Alongside this, the increasing positive perception of consumers regarding social and environmental sustainability is also a key factor driving change in the TCLF industries. Consumers today are "demanding" sustainability and transparency criteria from companies and products.

In conclusion, innovation in manufacturing processes, technologies, and materials enables the optimization of processes and makes them more transparent and sustainable, a premise valued by a younger segment of the population, and which stands as a focal point for attracting them to the TCLF industries.

6.2 TCLF Sectors Skills Needs

Having examined several key aspects such as the current socioeconomic status of the industries, employment, and drivers of change, it is time to delve into the needs that the sectors comprising this project present.

As we know, the Textile, Clothing, Leather, and Footwear industries represent a diversity of activities and requirements, where the skills and knowledge needed sometimes differ. Therefore, conducting individualized research for each subsector is fundamental to understand what will be required in the not-so-distant future in terms of training.

The main objective of this section is to identify the critical areas that require the development of effective training programs tailored to the real demands of the industry.

Below are graphs showing the aggregated means of the opinions of key informants obtained through focus groups conducted in each sector, offering a clear perspective of the main priorities detected.

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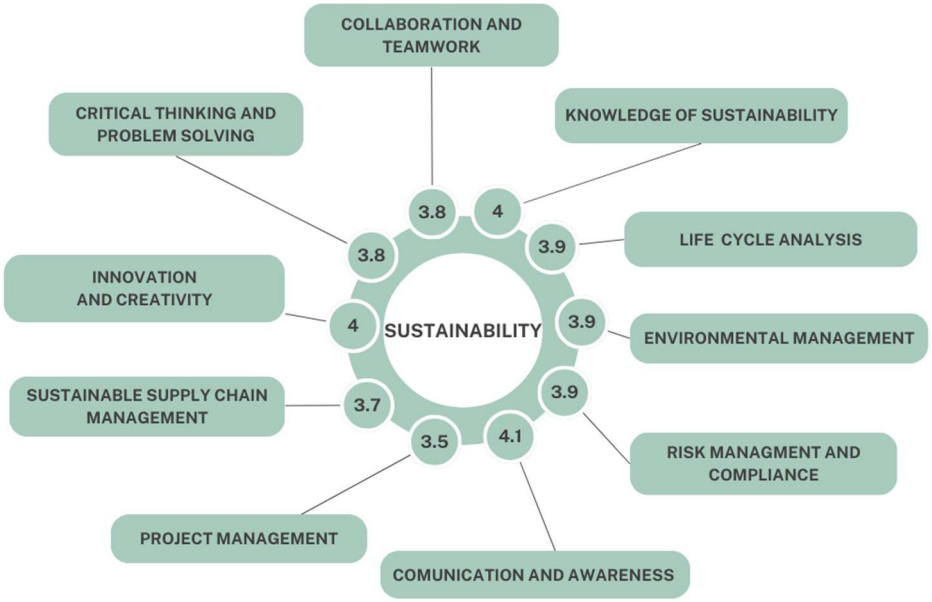
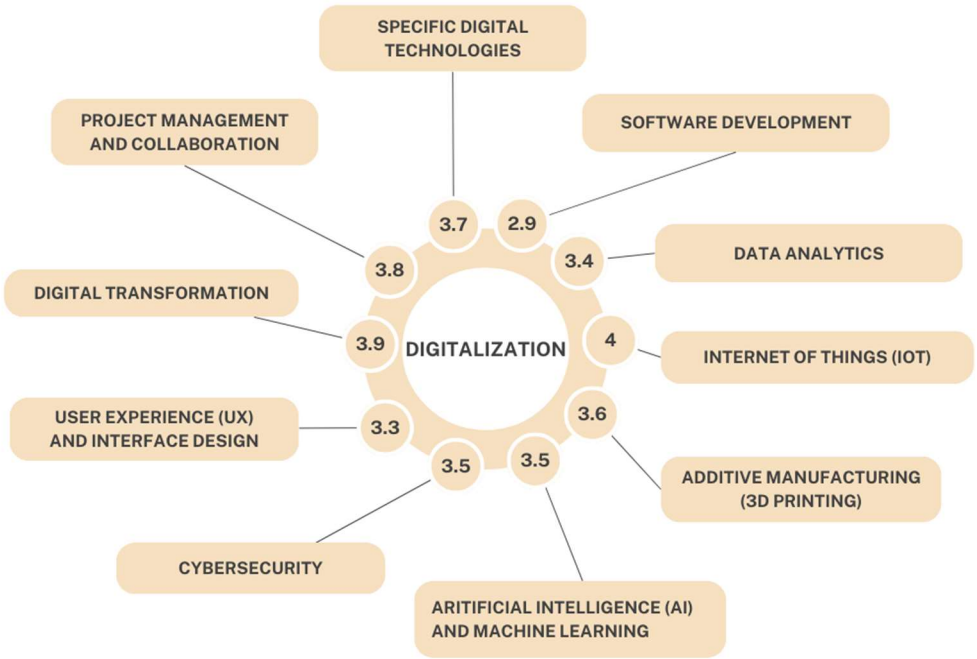
TEXTILE

Training needs – SUSTAINABILITY



Training needs – DIGITALIZATION



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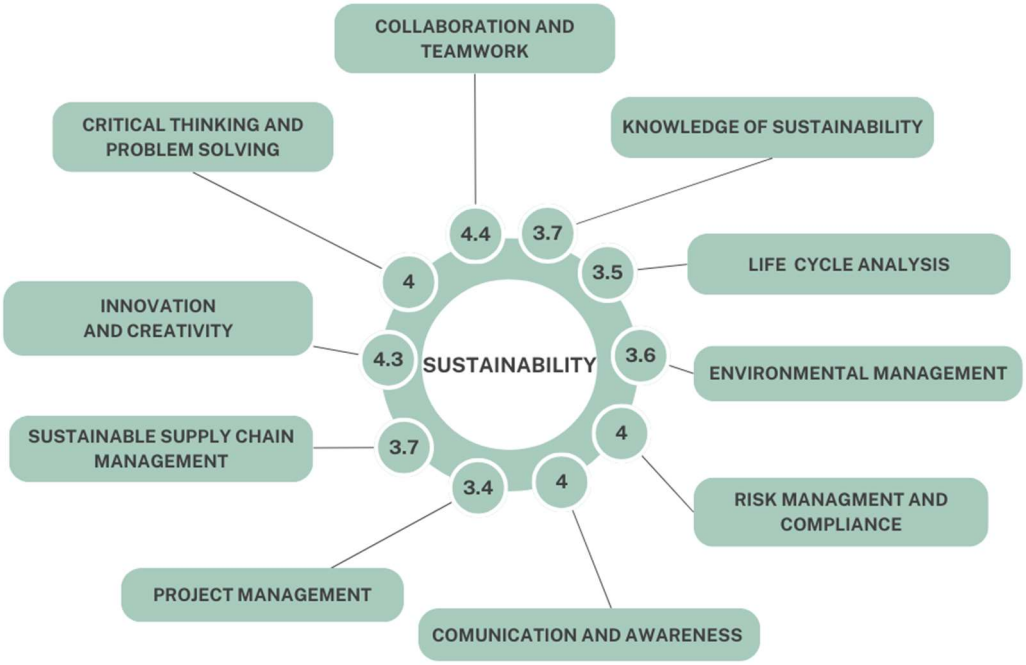
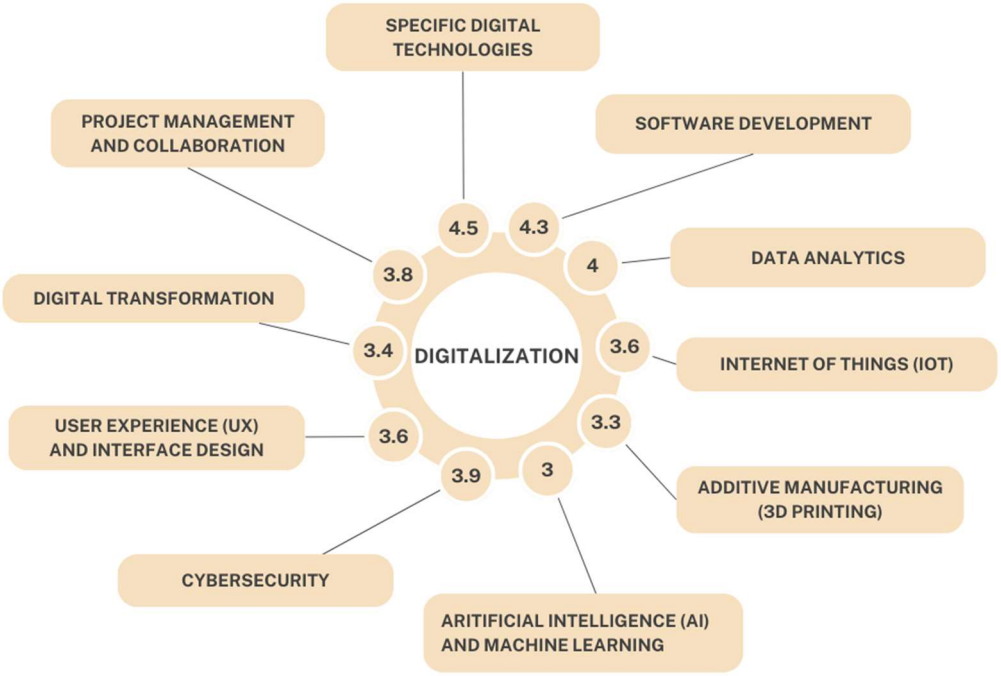
CLOTHING

Training needs – SUSTAINABILITY



Training needs – DIGITALIZATION



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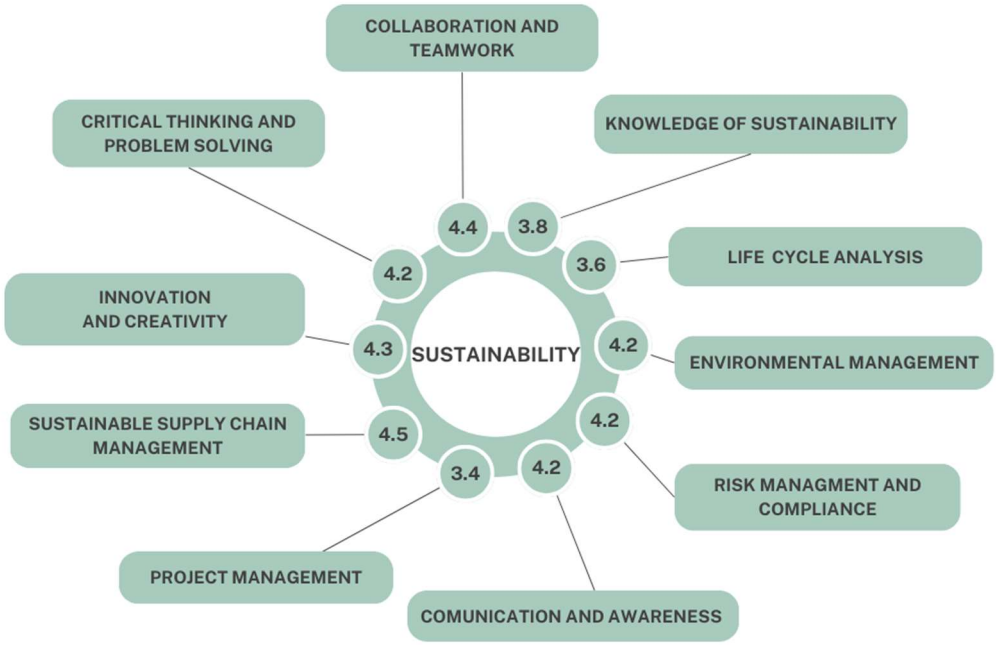
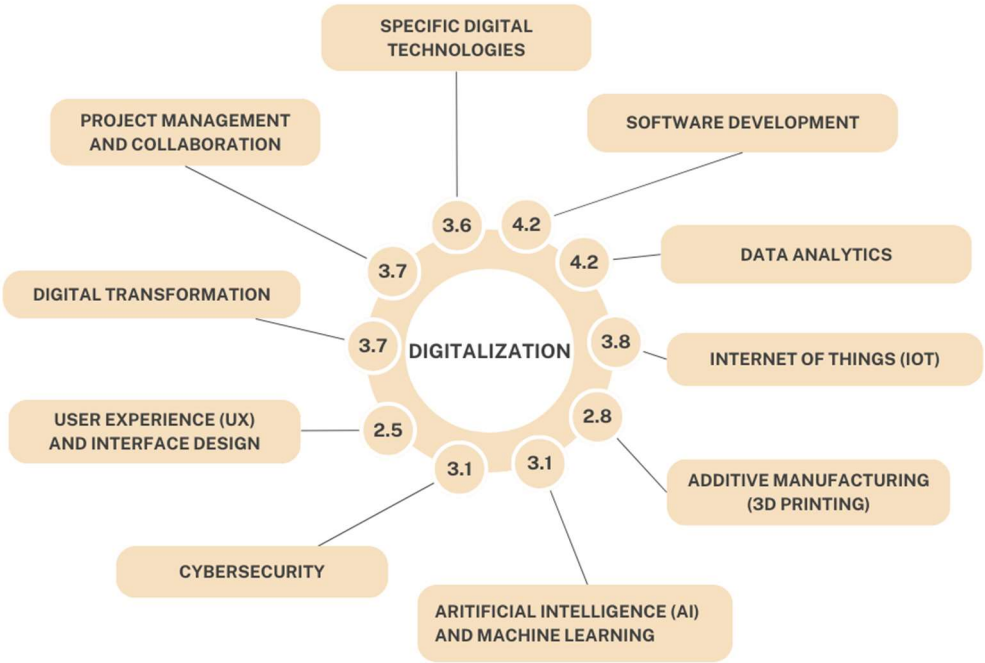
LEATHER

Training needs – SUSTAINABILITY



Training needs – DIGITALIZATION



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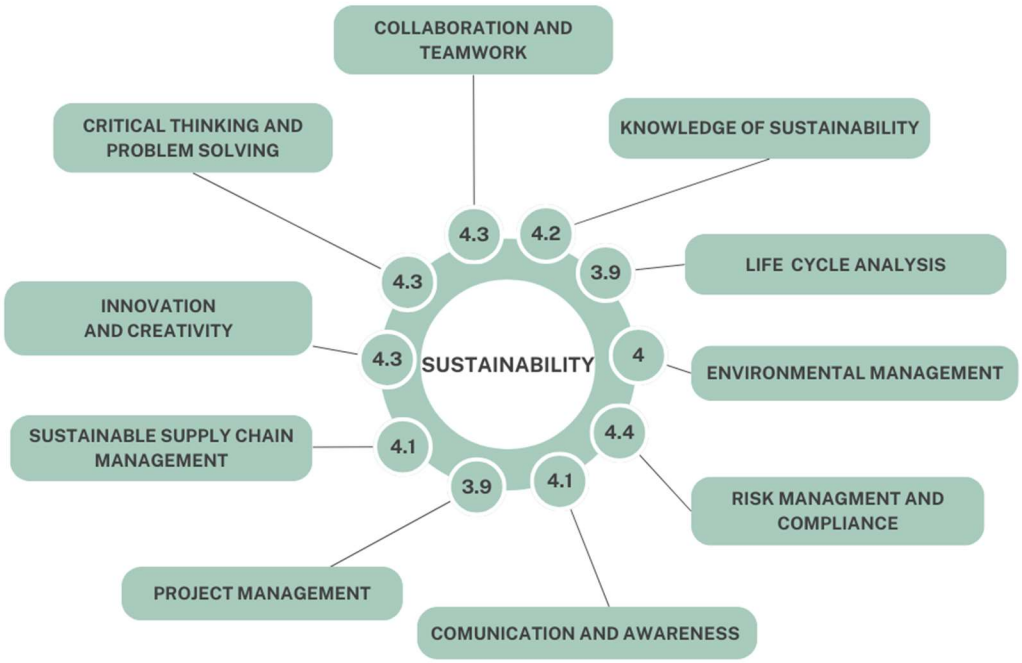
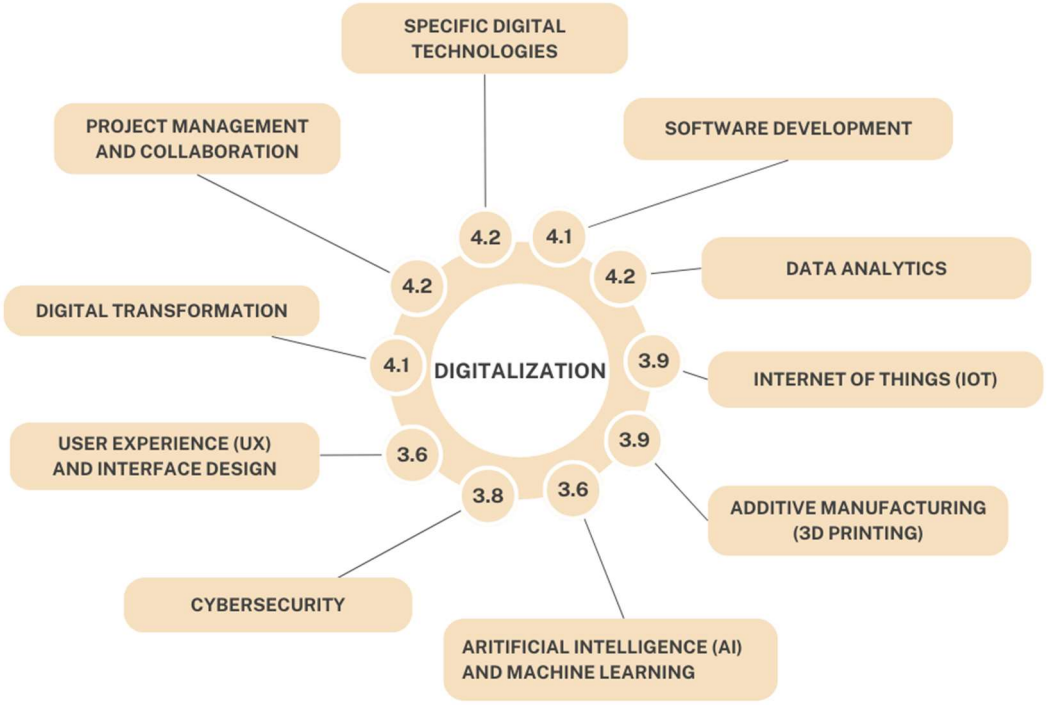
FOOTWEAR

Training needs – SUSTAINABILITY



Training needs – DIGITALIZATION



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The essential training needs identified across all TCLF sectors regarding **sustainability** are innovation and creativity. These are pivotal components in seeking sustainable solutions, spanning the development of environmentally friendly products and processes. In an increasingly aware world of sustainability's importance, the imperative for the TCLF industry to innovate and create sustainably drives positive change towards more responsible and eco-friendly practices.

In addition to innovation and creativity, another training need identified is in risk management and regulatory compliance, particularly in the leather, clothing, and footwear industries, with an average score exceeding 4 (with 5 being the highest level of need), while the textile industry reaches a score of 3.9. We understand risk management and regulatory compliance as the ability to recognize risks associated with unsustainable practices, as well as being aware of relevant environmental, labour, and safety regulations and standards to ensure compliance.

Similarly, the training need for collaboration and teamwork aims to integrate sustainability into all areas of the company and promote a sustainable culture. In this aspect, the Clothing, Leather, and Footwear industries scored an average of >4 out of 5, while the textile industry scored an average of 3.8 points.

Finally, other needs that the TCLF industries require include sustainability knowledge (understanding the fundamental principles of sustainability, including concepts such as circular economy, eco-design, energy efficiency, and corporate social responsibility) and sustainable supply management.

On the other hand, in the realm of **digitalization**, skills needs vary across industries and exhibit notable differences among them. Nonetheless, certain common needs have emerged, including proficiency in utilizing specific digital technologies tailored to the TCLF sector, such as CAD/CAM systems for designing and patterning, virtual reality tools for product design and visualization, and supply chain management systems.

Additionally, it is also considered highly necessary to acquire skills related to software development and programming for the creation and customization of applications, e-commerce platforms, ERP systems, and specific tools that may exist in the industries.

Finally, another recognized requirement pertains to data analysis, which involves collecting, analysing, and interpreting data using business intelligence tools to inform decisions in marketing strategies, inventory management, demand forecasting, and optimization processes.

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6.3 Relate trends to skills needed

In the TCLF (Textile, Clothing, Leather, and Footwear) industry, various skill gaps have been identified that could affect the industry's ability to adapt to technological changes, market trends, and sustainability demands. Some of these skill gaps include:

- **Digital Skills:** Many professionals in the TCLF industry lack the digital skills necessary to work with emerging technologies, such as computer-aided design (CAD), additive manufacturing, data analysis, and digital supply chain management.

- **Sustainability Knowledge:** As sustainability becomes increasingly important in the TCLF industry, there is a gap in understanding and knowledge of sustainable manufacturing practices, the use of eco-friendly materials, and circular product design.

- **Supply Chain Management:** Skills in supply chain management are needed to efficiently coordinate all stages of production and distribution, but many professionals lack experience in this field, especially in international and globalized environments.

- **Creative and Functional Design:** Although design is fundamental in the TCLF industry, there is a gap in creative and functional design skills that can adapt to changing market demands and consumer expectations regarding aesthetics and functionality.

- **Digital Marketing Skills:** With the growth of e-commerce, skills in digital marketing and online platform management are needed to effectively promote and sell products. However, many professionals in the industry lack experience in this field.

- **and Management Skills:** For those wishing to lead projects or start their own businesses in the TCLF industry, entrepreneurial and management skills are needed, such as strategic planning, financial management, and team leadership. However, there is often a gap in these skills.

In summary, skill gaps in the TCLF industry can impact the industry's ability to innovate, compete in the global market, and address sustainability challenges. It's important to address these gaps through training programs, education, and professional development initiatives that equip professionals with the skills necessary to thrive in an ever-evolving business environment.

In this sense, we can define the future professional profiles in each of the TCLF industry sectors and relate them to the occupations of the ESCO taxonomy, which provides us

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with a common framework to describe and compare skills and occupations in Europe, facilitating labour mobility and alignment of skills supply and demand in the labour market. These occupations of the ESCO taxonomy reflect the diversity of skills and competencies required in the fashion industry in Europe, covering areas such as design, manufacturing, data analysis, supply chain management, and customer experience.

In the FOOTWEAR sector, we can identify the following:

- Smart Footwear Engineer: This profile could be associated with occupations such as "Fashion Product Development Engineer" (ESCO: 2162.2) and "Electronic Engineer" (ESCO: 2142.1).

- Sustainable Footwear Designer: This profile could be linked to occupations such as "Sustainable Fashion Designer" (ESCO: 2151.1) and "Footwear and Leather Goods Designer" (ESCO: 2163.2).

- Additive Manufacturing Specialist: This professional profile would be related to occupations such as "Additive Manufacturing Technician" (ESCO: 2149.1) and "Computer-Aided Design Technician" (ESCO: 2149.3).

- Market Data Analyst: This role could be associated with occupations such as "Market Analyst" (ESCO: 2424.2) and "Data Analyst" (ESCO: 2511.1).

- Footwear User Experience (UX) Expert: This profile would be related to occupations such as "User Experience Specialist" (ESCO: 2511.1) and "Graphic Designer" (ESCO: 2144.1).

- Augmented Reality (AR) and Virtual Reality (VR) Specialist: This profile could be linked to occupations such as "Virtual Reality Application Developer" (ESCO: 2513.2) and "Augmented Reality Application Developer" (ESCO: 2513.1).

- Sustainable Supply Chain Manager: This professional profile could be related to occupations such as "Supply Chain Manager" (ESCO: 1131.1) and "Procurement Manager" (ESCO: 1214.1).

In the CLOTHING sector, we find:

- Digital Fashion Designer: This profile could be associated with occupations such as "Fashion Designer" (ESCO-08: 3413.2) and "Graphic Product Designer" (ESCO-08: 3421.2).
- Sustainable Textile Manufacturing Expert: This profile could be linked to occupations such as "Textile Production Specialist" (ESCO-08: 7535.1) and "Industrial Quality Control Manager" (ESCO-08: 1322.2).

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- Fashion Data Analyst: This professional profile could be related to occupations such as "Market Research Analyst" (ESCO-08: 2634.1) and "Business Data Analyst" (ESCO-08: 2512.2).
- Fashion Customer Experience Specialist: This profile could be associated with occupations such as "Customer Relations Specialist" (ESCO-08: 2422.1) and "Retail Sales Manager" (ESCO-08: 1421.2).
- Responsible Supply Chain Manager: This profile would be related to occupations such as "Purchasing Manager" (ESCO-08: 1330.1) and "Production Manager" (ESCO-08: 1330.2).
- Advanced Textile Engineer: This profile could be linked to occupations such as "Textile Engineer" (ESCO-08: 2142.1) and "Research and Development Engineer" (ESCO-08: 2143.1).
- Fashion E-commerce Expert: This professional profile could be related to occupations such as "Digital Marketing Specialist" (ESCO-08: 2432.2) and "E-commerce Manager" (ESCO-08: 1226.2).
- Inclusive Fashion Designer: This profile could be associated with occupations such as "Fashion Designer" (ESCO-08: 3413.2) and "Fashion and Accessories Designer" (ESCO-08: 3413.1).

In the TEXTILE sector, we can find the following:

- Advanced Textile Engineer: This profile could be associated with occupations such as "Textile Engineer" (ESCO: 2142.1) and "Textile Product Development Engineer" (ESCO: 2143.1).
- Sustainable Textile Manufacturing Expert: This profile could be linked to occupations such as "Textile Production Specialist" (ESCO: 7535.1) and "Fabric Processing Technician" (ESCO: 7533.1).
- Sustainable Fashion Designer: This profile would be related to occupations such as "Sustainable Fashion Designer" (ESCO: 2151.1) and "Fashion Designer" (ESCO: 2153.1).
- Fashion Data Analyst: This role could be associated with occupations such as "Market Research Analyst" (ESCO: 2424.2) and "Data Analysis Specialist" (ESCO: 2511.1).
- Textile E-commerce Specialist: This professional profile could be related to occupations such as "E-commerce Specialist" (ESCO: 2422.2) and "Online Marketing Specialist" (ESCO: 3423.1).
- Textile Supply Chain Manager: This role could be linked to occupations such as "Supply Chain Manager" (ESCO: 1131.1) and "Textile Production Manager" (ESCO: 1132.1).
- Innovator in Textile Technology: This profile would be related to occupations such as "Research and Development Engineer" (ESCO: 2143.1) and "Researcher in Natural Sciences" (ESCO: 2161.1).

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- Compliance and Ethics Specialist: This profile could be associated with occupations such as "Product Regulation Specialist" (ESCO: 2519.1) and "Regulatory Compliance Specialist" (ESCO: 2422.2).

In the LEATHER sector, we can identify:

- Synthetic Leather Research Engineer: This profile could be associated with occupations such as "Research and Development Engineer" (ESCO: 2143.1) and "Textile and Leather Product Development Engineer" (ESCO: 2143.2).
- Leather Processing Technology Specialist: This profile could be linked to occupations such as "Surface Treatment and Coatings Specialist" (ESCO: 3131.3) and "Leatherworking Machine Operator" (ESCO: 8133.1).
- Sustainable Leather Product Designer: This profile would be related to occupations such as "Fashion and Accessories Designer" (ESCO: 3413.1) and "Industrial and Craft Product Designer" (ESCO: 2143.2).
- Sustainability Manager in the Leather Industry: This role could be associated with occupations such as "Corporate Sustainability Manager" (ESCO: 1211.1) and "Production Manager" (ESCO: 1330.2).
- Leather Product Marketing Specialist: This professional profile could be related to occupations such as "Marketing Specialist" (ESCO: 2411.2) and "Advertising Specialist" (ESCO: 2412.2).
- Technical Maintenance Technician for Leather Production Equipment: This role could be linked to occupations such as "Industrial Maintenance Technician" (ESCO: 3133.2) and "Technician in Industrial Machinery and Equipment" (ESCO: 3133.1).
- Compliance Specialist: This profile would be related to occupations such as "Product Regulation Specialist" (ESCO: 2519.1) and "Regulatory Compliance Specialist" (ESCO: 2422.2).

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7. County and Key Informant Recommendations

Country specifications

TEXTILE

Country	STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
Greece	- **Establishment of new companies**: Several new (established after 2011) companies in the ICT sector. Many of them are breaking away from classic business process support applications and entering new fields of application.	- **Decline in textile industry**: Significant decline in the textile industry since after 1990 many businesses closed due to competition.	- **Specialization**: Regional smart specialization strategy for the research groups with related subjects to the needs of the regional economy as well as the neighbouring states/regions.	- **Low funding**: Low rate of funding for R&D actions, difficulty in increasing private investment and low proportion of research funding to educational institutions.
Portugal	- **Networks/ Partnerships**: Collaborative network with organisations from the scientific and technological system, established partnerships and integrated cluster bringing together various services.	- **New generations:** Behaviour of new generations (high expectations, lack of commitment, etc.)	- **Partnerships:** Bringing academia and industry closer together.	- **New technologies:** Replacement of jobs by AI.
Spain	- **Computer/ Software aid:** Experience using computer-aided design (CAD) software and supply chain management (SCM) systems.	- **Supply chain:** Lack of implementation in an ethical and responsible supply chain.		

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Italy	- **Immigration**: The growth of immigration flows provides textile productions with the opportunity to have a workforce willing to perform tasks in environments and at times no longer preferred by Italian younger generations.		**- Increasing integration among businesses**: The new demands from consumers' brands, new regulations, and standards on environmental sustainability will require increasing integration among businesses. In practice, this leads to the rationalization of value chains, generating more vertically integrated and efficient supply chains. The new digital technologies, on which textile companies are investing, will make it increasingly easier to trace and manage the entire production chain.	- **Climate change**: Textile districts specialized in winter productions (such as wool productions) are penalized by climate change. '- **"Generational break"**: Decreasing inclination of young people towards long working hours makes it difficult for companies that are unwilling to reorganise their processes to survive.
Romania	- **Training**: The management of companies belonging to the textile sector supports the continuous development of human resources through awareness-raising programmes on the impact of waste on the economy, the environment, and people. There are also training/ retraining programmes following technological upgrading.	- **Immigration**: The limited resources of Romanian labour force led companies to hire immigrants, but their training for the specific tasks in this field requires a longer period of time.	- **Participation in fairs**: The participation in international profile fairs to identify potential collaborations with global/ emerging markets.	- **Certification providers**: Increasing importance of some organisations/ private bodies that take on the role of certification providers for various aspects related to sustainability, but do not always have the necessary legitimacy, sometimes represents an obstacle for the textile companies, to sell products from their own portfolio in some markets.

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Sweden	- **Innovation and Technology Adoption**: Swedish TCLF companies are often at the forefront of adopting new technologies, such as virtual reality for product development and digital co-pilots to integrate learning in the workplace. This helps in rapidly adapting to technological changes and maintaining a competitive edge.		- **Collaboration with Startups**: Increased collaboration with tech startups could lead to the development of innovative solutions, propelling the sector forward and keeping it relevant in a highly competitive global market.	- **Rapid Technological Change**: The pace of technological change could outstrip the ability of businesses to adapt, especially if the workforce cannot upskill quickly enough to meet new demands.

Country specifications

CLOTHING

Country	STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
Greece	- **Prices and flexibility:** Competitive prices and great business flexibility in small orders.	- **Lack of support to SMEs:** The lack of sectoral horizon-tal support/ consult-ing infrastructure for small business-es.	- **Specialization strategy:** The regional smart special-ization strategy for the research groups with related subjects to the needs of the regional economy as well as the neighbouring states/regions.	- **External circumstances:** Terrorist events and riots in the Mediterranean region and migration stream that passes through Greece as the border of Europe in the East.

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Germany	- **Sectorial attractiveness with special focus on youngsters**: Initiatives to promote young talent such as the HDSL/Junior Award are in place. Also, companies promote young talent through scholarships, including support for 10 university of applied sciences students and trainees at the PFI. Some companies also offer their employees the opportunity to train as shoe technicians, although this only applies to 3 out of 9 of the current graduating class. Moreover, a campaign is currently run to promote the attractiveness and awareness of professions in the TCLF sector. The "GO Textile #RunYourFuture" campaign, which is dynamic and youth-oriented, has the objective of providing information about career opportunities in the TCLF sector. With an appealing online presence that is specifically tailored to the habits and preferences of the younger generation, the campaign appeals to the young target	- **Competition between companies**: Companies are in strong competition with each other. Small training companies, in particular, are exposed to the risk of losing their trainees to larger companies with more attractive salary offers.		- **Quality problems** can arise because the expertise to check product quality is no longer available internally. When quality control is outsourced, there is less control over the process. This applies to both production and purchasing. - **Incorrect future strategies** or the inability to adapt to change can arise if the company has insufficient knowledge of its products. Specific product knowledge and knowledge of production processes are essential for a well-founded assessment of the effects of trends and regulations.

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	group and encourages them to explore career prospects in the textile, clothing, leather, and footwear industry.			
Italy		- **Lack of specialized workers** who have a clear vision of all the production process phases.	- **Modernization processes**: Possibility to "learn" how to implement modernization processes from other more dynamic sectors (i.e. textile sector).	- **Need to gather financial aid** both from private and public investors for upgrading the capabilities of the companies.
Portugal	- **Exportations**: High level of exportations.	- **Companies' internal difficulties**: Leadership, communication, and computer difficulties inside companies along with the fact that employers don't want more responsibility as they are already overwhelmed with tasks.	- **Unemployment**: Update skills for people who are unemployed and prepare them for new opportunities.	- **Environment**: Climate changes.
Romania	- **Labour and production costs**: Compared to Western Europe countries, labour and production costs in Romania are relatively lower, providing a cost advantage for footwear manufacturers.	- **Excessive rely on imports**: Romania may still rely on imports for certain specialized components or materials, which can expose manufacturers to supply chain disruptions and cost fluctuations.		- **Proliferation of counterfeit products**, especially online, which poses a threat to the reputation and market share of genuine Romanian footwear brands, undermining trust, and revenue potential.
Spain	-**Innovation**: Potential for innovation in design and materials.		- **Relocation**: The relocation of footwear can turn Spain as an epicentre of positioning and traceability.	

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Sweden		- **Skill Gaps in New Technologies**: While Swedish companies are keen on adopting new technologies, there might be a lag in the workforce's ability to handle these technologies due to insufficient training and development programs.	- **Mentorship Programs**: Establishing com prehensive mentorship programs could facilitate the transfer of critical skills from older to younger generations, potentially addressing the workforce aging issue while enhancing skill levels.	

Country specifications

LEATHER

Country	STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
France	- **Financial**: Financial capability to meet challenges, including availability of investments for employee training.		- **Work automation**: The potential for work automation, improving efficiency, decreasing work hardship, and reducing labour costs.	
Germany	- **Education**: Existing education in DQR/EQR levels 5 and above. - **Safety**: Machine/ work and equipment/ plant safety.		- **Attractiveness**: Attract young people by digital change.	
Italy	- **Sustainability:** Circular economy and commitment to the environment and sustainability, as well as capacity to create beauty by transforming waste.	- **Traceability:** Increased demand for traceability along the supply chain.	- **Environmental sustainability:** Positive consumer view of social and environmental sustainability.	

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Greece	- **Business ecosystem**: Existence of a small but dynamic business ecosystem. - **Geographical position**: Greece's geographical position of strategic importance in SE Europe combined with an established position in the business development of the specific region.	- **Importation**: Counter-trafficking and illegal imports. - **Training**: Absence of training schools. - **Financial**: Unstable conditions and complex tax framework, liquidity problems, high labour costs and high costs of money.	- **Growth prospects**: Considerable growth prospects in new markets. - **External circumstances**: New possibilities for the development of the sector from the explosive rise of tourism.	- **Illegal trade**: Inability to curb illegal trade. - **External circumstances**: Terrorist events and riots in the Mediterranean region and migration stream that passes through Greece as the border of EU in the East.
Portugal	- **Training**: Keep training programs up to date and more training for those already employed. - **Sector attractiveness**: Campaigns to attract newcomers near schools and VET centres to abolish bad image of the sector.	- **Misinformation**: Wrong idea that animals are killed to use their skins in the industry.	- **Raising awareness**: Campaigns to highlight the value of leather and raising awareness, changing thus mentalities and negative preconceptions of the sector.	- **Disinformation**: Lack of information about the origin of the material.
Spain	- **Training:** Skilled staff (extensive knowledge and specialization). - **Brands:** Strong brand names and reputation.	- **Visibility:** Limited visibility of the sector in the media.	- **Industry 4.0:** Great advancements. - **Training:** Training programs in digitalization and sustainability innovation as well as partnering with VET/HE centres to develop high-quality training programs.	- **Lack of legal protection:** for the term "leather" in EU. - **Farming practices:** bad farming practices.

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Romania	- **R&D:** Chemical companies with strong R&D in leather chemicals and finishing auxiliaries. - **EU Cooperation:** Ongoing cooperation with tanneries within EU.	- **Equipment:** Working on obsolete equipment and machinery using conventional technologies. - **Decrease in companies and production:** Severe decrease in the number of leather-making companies and decline of the leather production volume and economic profitability/cost-effectiveness in existing tanneries.	-**Trading opportunities:** Taking advantage of trading opportunities within EU space. - **EU qualifications:** Joining implementation of EU qualifications framework.	- **Financial:** Economic constraints related to lack of investment funds, increase of taxes, duties, etc. - **Training:** Discontinuity of training both at VET and HE.
Sweden	- **Innovation and Technology Adoption**: Swedish TCLF companies are often at the forefront of adopting new technologies, such as virtual reality for product development and digital co-pilots to integrate learning in the workplace. This helps in rapidly adapting to technological changes and maintaining a competitive edge.	- **Skill Gaps in New Technologies**: While Swedish companies are keen on adopting new technologies, there might be a lag in the workforce's ability to handle these technologies due to insufficient training and development programs.	- **Collaboration with Startups**: Increased collaboration with tech startups could lead to the development of innovative solutions, propelling the sector forward and keeping it relevant in a highly competitive global market.	- **Rapid Technological Change**: The pace of technological change could outstrip the ability of businesses to adapt, especially if the workforce cannot upskill quickly enough to meet new demands.

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Country specifications

FOOTWEAR

Country	STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
Germany	- **Sectorial attractiveness with special focus on youngsters**: Initiatives to promote young talent such as the HDSL/Junior Award are in place. Also, companies promote young talent through scholarships, including support for 10 university of applied sciences students and trainees at the PFI. Some companies also offer their employees the opportunity to train as shoe technicians, although this only applies to 3 out of 9 of the current graduating class. Moreover, a campaign is currently run to promote the attractiveness and awareness of professions in the TCLF sector. The "GO Textile #RunYourFuture" campaign, which is dynamic and youth-oriented, has the objective of providing information about career opportunities in the TCLF sector. With	- **Competition between companies**: Companies are in strong competition with each other. Small training companies, in particular, are exposed to the risk of losing their trainees to larger companies with more attractive salary offers.		- **Quality problems** can arise because the expertise to check product quality is no longer available internally. When quality control is outsourced, there is less control over the process. This applies to both production and purchasing. - **Incorrect future strategies** or the inability to adapt to change can arise if the company has insufficient knowledge of its products. Specific product knowledge and knowledge of production processes are essential for a well-founded assessment of the effects of trends and regulations.

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	an appealing online presence that is specifically tailored to the habits and preferences of the younger generation, the campaign appeals to the young target group and encourages them to explore career prospects in the textile, clothing, leather, and footwear industry.			
Greece	- **Prices and flexibility**: Competitive prices and great business flexibility in small orders.	- **Lack of support to SMEs**: The lack of sectoral horizontal support/ consulting infrastructure for small businesses.	- **Specialization strategy**: The regional smart specialization strategy for the research groups with related subjects to the needs of the regional economy as well as the neighbouring states/regions.	- **External circumstances**: Terrorist events and riots in the Mediterranean region and migration stream that passes through Greece as the border of Europe in the East.
Italy		- **Lack of specialized workers** who have a clear vision of all the production process phases.	- **Modernization processes**: Possibility to "learn" how to implement modernization processes from other more dynamic sectors (i.e. textile sector).	- **Need to gather financial aid** both from private and public investors for upgrading the capabilities of the companies.
Portugal	- **Exportations**: High level of exportations.	- **Companies' internal difficulties**: Leadership, communication, and computer difficulties inside companies along with the fact that employers don't want more responsibility as they are already overwhelmed with tasks.	- **Unemployment**: Update skills for people who are unemployed and prepare them for new opportunities.	- **Environment**: Climate changes.

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Romania	- **Labour and production costs**: Compared to Western Europe countries, labour and production costs in Romania are relatively lower, providing a cost advantage for footwear manufacturers.	- **Excessive rely on imports**: Romania may still rely on imports for certain specialized components or materials, which can expose manufacturers to supply chain disruptions and cost fluctuations.		- **Proliferation of counterfeit products**, especially online, which poses a threat to the reputation and market share of genuine Romanian footwear brands, undermining trust, and revenue potential.
Spain	-**Innovation**: Potential for innovation in design and materials.		- **Relocation**: The relocation of footwear can turn Spain as an epicentre of positioning and traceability.	
Sweden		- **Skill Gaps in New Technologies**: While Swedish companies are keen on adopting new technologies, there might be a lag in the workforce's ability to handle these technologies due to insufficient training and development programs.	- **Mentorship Programs**: Establishing com prehensive mentorship programs could facilitate the transfer of critical skills from older to younger generations, potentially addressing the workforce aging issue while enhancing skill levels.	

After reviewing the SWOT analyses provided by each participant country, the most common Weaknesses and Threats, as well as the predominant Strengths and Opportunities, have been identified.

In addition, a set of recommendations has been formulated to tackle these weaknesses and threats, alongside suggestions for preserving and enhancing the frequently identified strengths and opportunities.

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7.1 Weaknesses and Threats

a) Generational Transition. Facilitating the seamless transition between generations in the workforce poses challenges in effectively integrating younger talent to succeed retiring employees.

Recommendations

1. Knowledge Transfer Programs: Implement structured knowledge transfer programs where experienced workers can mentor younger employees. This can include apprenticeships, on-the-job training, and skill development programs to ensure that critical skills and expertise are passed down to the next generation.

2. Cross Generational Collaboration: Foster an environment of collaboration between different generations. Encourage open communication and knowledge sharing between older and younger workers. This can help bridge the gap in skills and experience while fostering a culture of learning and innovation.

3. Flexible Work Arrangements: Recognize that different generations may have different work preferences and priorities. Offer flexible work arrangements such as remote work options, flexible hours, and parttime opportunities to accommodate the needs of workers across different age groups.

4. Invest in Training and Development: Provide ongoing training and development opportunities for both older and younger workers to upgrade their skills and stay relevant in the industry. This can include technical training, leadership development programs, and cross functional training to broaden employees' skill sets.

5. Succession Planning: Develop a succession plan to identify and groom future leaders within the organization. This involves identifying high potential employees, providing them with opportunities for growth and development, and ensuring a smooth transition when key leaders retire or leave the organization.

6. Promote Diversity and Inclusion: Embrace diversity and inclusion initiatives to attract and retain talent from different age groups and backgrounds. Recognize the unique contributions that each generation brings to the workplace and create an inclusive environment where everyone feels valued and respected.

7. Adopt Technology and Innovation: Embrace technology and innovation to streamline processes, improve efficiency, and attract younger talent who are often more tech savvy. Investing in modernizing equipment and infrastructure to remain competitive in the industry and appeal to younger workers should also be taken into account.

8. Employee Engagement and Retention: Implement strategies to engage and retain employees across different generations. This can include offering competitive compensation and benefits packages, promoting work-life balance, and

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creating a positive work culture that values employee wellbeing and job satisfaction.

b) Sector Attractiveness. It is essential to educate both newer generations and consumers about the reality of the sector, including manufacturing processes, to ensure continuity in employability and in consumption within TCLF sectors. This education helps dispel misconceptions among young people, preventing them from misunderstanding the nature of work in these sectors. Additionally, informing consumers about the intricate processes involved in manufacturing products fosters appreciation and understanding, reducing the likelihood of declining consumption due to misconceptions about pricing or ethical concerns related to materials like leather.

Recommendations

1. Sustainable Practices and Misinformation: Consumers, especially younger generations, are increasingly conscious about the environmental and social impact of their purchases. Embracing sustainable and greener practices throughout the supply chain, including the use of eco-friendly materials (as far as possible), implementing sustainable processes, and innovating in reuse and recovering processing methods and reducing waste and water consumption, will not only mitigate the environmental impact but also enhance the TCLF sectors attractiveness. These efforts could be highlighted in marketing campaigns to appeal to environmentally and socially conscious consumers. Disinformation also plays a crucial role as this leads to a misunderstanding of the industries, being one possible solution to enhance marketing efforts and showcase the industry's sustainability and/or developing an information campaign to highlight the progress that TCLF companies have made in the recent years in reducing the environmental impact of their processes, including waste reduction, reuse/recycling and circular economy practices.

2. Investment in Technology and R&D: Investing in automation technologies to reduce labour-intensive tasks, thus improving working conditions and enhancing the overall image of the TCLF sectors, ultimately contributing to increasing the sector attractiveness. Moreover, investing in R&D is crucial to capitalize opportunities presented by advancements in digitalization and sustainability innovation, as well as to develop new products and processes that meet market demand for sustainably produced goods.

3. Customization and Personalization: Offer customizable and personalized products to cater to the preferences of individual consumers. Allow customers to choose their own colours, patterns, and designs, or offer personalized monogramming and customization services. This gives consumers a sense of ownership and uniqueness, making the products more appealing and desirable.

4. Digital Marketing and Social Media: Leverage digital marketing channels and social media platforms to reach younger consumers where they spend a significant amount of their time. Create engaging content, including videos,

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photos, and interactive experiences, to showcase the products and brands' story in a dynamic and appealing way. Collaborate with influencers and brand ambassadors who have a strong presence on social media to reach a wider audience.

5. Storytelling and Brand Identity: Develop a strong brand identity and narrative that resonates with young consumers. Tell compelling stories about the sector's history, values, and craftsmanship to create an emotional connection with consumers. Highlight the unique aspects of the TCLF industries, such as handmade craftsmanship or traditional techniques, to appeal to consumers seeking authenticity and heritage.

6. Enhancing employment conditions for youth: Provide young individuals with enhanced job contracts and pathways for career advancement.

7.2 Strengths and Opportunities

a) Partnerships. Developing partnerships and seizing collaboration opportunities can be instrumental in driving growth, innovation, and competitive advantage for TCLF companies, enabling them to achieve their strategic objectives more effectively and efficiently.

Recommendations

1. Develop Partnerships with VET/HE Centres and Industry Associations: This could help to address specific skill gaps related to digitalization and sustainability practices.

2. Foster Collaboration between Different Stakeholders: Encouraging collaboration between TCLF companies, technology providers, educational institutions, and government agencies can help to develop innovative training initiatives.

3. Stronger Connection between Public Institutions, TCLF Companies and Associations: This could be done to adapt the existing policies to the real needs of the sectors and create strategies that support its development and innovative solutions at national and regional level.

4. Foster International Partnerships: Explore opportunities for international partnerships and knowledge exchange to enhance training offerings and stay competitive in the global market of the TCLF industries.

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b) Experience and Tradition. Due to the deep-rooted tradition of the TCLF sectors in the project partner countries, the production techniques, manufacturing processes and quality standards have for decades strengthened the expertise and efficiency of these industries. By integrating training programs that leverage experience and tradition, companies in the TCLF industries can empower their workforce, preserve heritage craftsmanship, maintain quality standards, and differentiate themselves in the market.

Recommendations

1. Craftsmanship Skills: Developing skills for present and future workers in the craftsmanship of the TCLF sectors to enhance their tradition, focusing on using high-quality materials, attention to detail, and traditional techniques along with the use of new technologies to create products that are durable, timeless, and of superior quality are key to maintain the quality and tradition in the TCLF sectors as an asset.

2. Quality Control Training: Implement training programs focused on quality control and assurance to uphold the standards of excellence associated with traditional craftsmanship in the TCLF sectors could contribute to maintaining these industries as leaders in the global market, ensuring continued consumer trust and satisfaction while safeguarding the rich heritage and artisanal integrity they embody. It is also crucial to train employees to recognize and maintain quality benchmarks, ensuring that products meet the expectations of discerning consumers who value craftsmanship and attention to detail.

3. Innovation and Adaptation Training: While preserving tradition is important, training programs for employees and students of VET/HE centres should also emphasize the integration of innovation and adaptation to meet modern market demands of the TCLF sectors. Equip employees and VET/HE students with the skills and knowledge needed to incorporate new technologies, sustainable practices, and contemporary design trends while respecting and honouring traditional craftsmanship.

4. Cross-Sector Collaboration Training: Facilitate training sessions that encourage collaboration and cross-pollination of ideas between different sectors within TCLF. By bringing together professionals from textile, clothing, leather, and footwear industries, these sessions can foster creativity, innovation, and interdisciplinary approaches to product development and craftsmanship.

5. Customer Engagement and Storytelling Training: Train employees that work in the public eye (i.e. in-store sales, sales representatives, etc.) to effectively communicate the stories, heritage, and craftsmanship behind the products to customers. By enhancing their storytelling skills, employees can engage customers on a deeper level, conveying the value of tradition and experience embodied in each product of the TCLF industries.

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6. Continuous Learning and Professional Development: Establish a culture, within the TCLF sectors, of continuous learning and professional development inside the organization. Encourage employees to pursue further education, attend industry conferences, and participate in skill-building workshops to stay abreast of evolving trends, techniques, and technologies in the TCLF industries.

c) Technology and R&D. Strong R&D, expertise from academic and research bodies, adoption of disruptive technologies such as virtual simulation/ prototyping, softwares dedicated to production management and machine learning and differentiation through quality and innovation are increasing in the TCLF sectors. It is therefore crucial not only to take advantage of this but also to do so through an efficient strategy. By integrating technology, R&D, and disruptive learning methodologies, the TCLF industries can navigate the digital and green transition successfully while appealing to young generations and positioning themselves as leaders in innovation, sustainability, and creativity.

Recommendations

1. Promotion of Tech-Driven Career Paths: Showcase in VET/HE centres the diverse career opportunities available in the TCLF industries that leverage technology and innovation. Highlight the role of digitalization, sustainability, and R&D in shaping the future of these industries will attract young talents who are passionate about making a positive impact through their work.

2. Internship and Mentorship Programs: Offer internship and mentorship programs that provide hands-on experience and exposure to the latest technologies and trends in the TCLF industries. Partner with educational institutions and industry associations to create opportunities for students and employees to gain practical skills and insights from industry experts.
3. Hackathons and Innovation Challenges: Organize hackathons, innovation challenges, and design competitions that encourage young talents to develop disruptive solutions for the TCLF industries. Provide platforms for collaboration and idea-sharing among participants, fostering a culture of innovation and entrepreneurship within the TCLF sectors.

4. Collaboration with Tech Startups and Universities: Partnership between TCLF companies and VET/HE centres and tech startups, universities, and research institutions to access cutting-edge technologies and expertise in areas such as materials science, digital design, and sustainable innovation. Collaborate on joint R&D projects, innovation labs, and technology incubators that foster creativity, experimentation, and knowledge exchange between industry and academia.

5. Online Learning Platforms and Gamification: Implement online learning platforms and gamification techniques, both in educational centres and in TCLF companies, to make learning and upskilling/reskilling more interactive, engaging, and accessible to all generations. Develop digital training modules,

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mobile apps, and interactive games that cover various aspects of the TCLF industries, from design and production to sustainability and consumer trends.

6. Virtual Reality (VR) and Augmented Reality (AR) Experiences: Leverage VR and AR technologies to create immersive experiences that engage young generations and enhance their learning opportunities in the TCLF sectors. Develop virtual tours of manufacturing facilities, interactive product design platforms, and AR-enabled shopping experiences that appeal to tech-savvy consumers and provide valuable insights into the industries.

7. Digitalization of Production Processes: Implement digital technologies such as automation, robotics, and AI in TCLF companies to streamline production processes, improve efficiency, and reduce waste. Invest in advanced manufacturing systems that enable agile and flexible production, allowing for customization and quick response to changing market demands.

8. Invest in Sustainable Technologies: Embrace sustainable technologies such as recycled materials, eco-friendly dyeing processes, and water-saving manufacturing techniques to reduce environmental impact and meet the growing demand for sustainable products. Allocate resources to R&D initiatives focused on developing innovative solutions in the TCLF industries that prioritize environmental sustainability while maintaining product quality and performance.

Generic recommendation: In this point, we would like to include the recommendation made by the Confederation of National Associations of Tanners and Dressers of the European Community (COTANCE), to distinguish the responses of the online survey and FG sessions results of the leather industry from the other sectors, as well as, in future endeavours, not group it with textiles and clothing but instead adopt a more tailored, individual approach. This reasoning is based on the feedback received from numerous stakeholders in the leather industry, in the course of T3.3 tasks, to categorise Leather on the one hand, a more intensive process in chemicals and in the same lifecycle stage, and the other sectors on the other hand, given that the processes of these are more intensive in physical aspects and involves the transformation of materials into fashion articles.

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8. Competency Development Strategies

Effective strategies for competency development

1. Needs assessment: Identifying current competencies and those needed to achieve organizational objectives.
2. Individualized planning: Developing personalized development plans for each employee based on their current skills and professional goals.
3. Training and education: Providing both internal and external training opportunities, including workshops, online courses, seminars, and certification programs.
4. Mentorship and coaching: Pairing employees with mentors or coaches who can provide guidance, advice, and support in the development of specific competencies.
5. Job rotation: Allowing employees to rotate through different roles within the organization to gain diverse experience and develop additional competencies.
6. Feedback and continuous evaluation: Providing regular feedback on employee performance and offering opportunities for continuous improvement.
7. Challenges and special projects: Assigning challenging projects and additional responsibilities that allow employees to develop and demonstrate new competencies.
8. Learning culture: Fostering an organizational culture that values learning and continuous development, where employees feel motivated and supported to enhance their competencies.

To strengthen the skills of personnel in the textile, clothing, leather, and footwear (TCLF) industry, several approaches can be applied:

1. **Technical training programs.** Offering specialized technical training programs in key areas of the industry, which may include:

    - Fashion design: Programs that teach the principles of fashion design, including freehand drawing, computer-aided design (CAD), collection development, fashion trends, and design presentation techniques.
    - Pattern making and cutting: Training in creating patterns for clothing and footwear, using both manual techniques and computerized pattern-making software. This includes understanding fabric and material properties, as well as optimizing fabric usage.
    - Garment making and sewing: Programs that teach sewing techniques and assembly of clothing and leather and footwear products, including the operation of industrial sewing machines and finishing techniques.

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- Footwear manufacturing: Training in the construction of different types of footwear, from sports sneakers to formal shoes, including footwear pattern making, material cutting, assembly, and finishing.
- Textile materials processing: Programs covering weaving, knitting, printing, dyeing, and finishing processes for fabrics, as well as handling materials such as leather, fur, and synthetic materials.
- Quality and production control: Training in quality control techniques applied to textile and clothing production, including raw material inspection, monitoring of manufacturing processes, and evaluation of finished products.
- Sustainability and social responsibility: Training in sustainable and responsible practices in the industry, including the use of eco-friendly materials, clean production processes, fair labour conditions, and compliance with ethical and environmental standards.

These specialized technical training programs are essential to equip professionals with the skills and knowledge necessary for success in the TCLF industry and to adapt to changes in the global market.

2. **Training in technology and automation**. Providing training in the use of advanced technologies and automated systems used in production can cover a variety of key areas:

   - CAD/CAM for design and cutting: Training in the use of computer-aided design (CAD) software to create patterns for clothing, footwear, and accessories, as well as computer-aided manufacturing (CAM) systems to optimize material cutting.
   - Advanced industrial sewing machines: Training in the operation and maintenance of specialized industrial sewing machines, including programmable sewing machines, high-speed sewing machines, and machines tailored for specific fabrics.
   - Robotics and automation: Training in the use of robots and automated systems for production tasks in the TCLF industry, such as material handling, component assembly, automated sewing, and product finishing.
   - Information systems management: Training in production management systems (ERP), product tracking and traceability systems, enterprise resource planning systems, and other tools for supply chain and production management.
   - Digital textile printing: Training in digital printing technologies applied to textile production, including direct-to-fabric printing, sublimation, transfer printing, and other digital printing techniques for imprinting patterns and designs on fabrics.
   - Augmented reality and virtual reality: Training in the use of augmented reality (AR) and virtual reality (VR) technologies for product design, prototype visualization, production process simulation, and personnel training.
   - Internet of Things (IoT) in the textile industry: Training in the use of sensors and connected devices to monitor and optimize production processes, inventory tracking, quality management, and predictive maintenance of machinery.

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These are some areas of training in technology and automation that can help professionals in the TCLF industry to stay updated with the latest trends and technologies in an ever-evolving market.

3. **Business skills development**. Providing training programs in business skills and management, including:

    - Training in supply chain management and logistics.
    - Leadership development and team management programs.
    - Training in product design and brand development.
    - Courses on marketing and sales strategies in the TCLF sector.
    - Workshops on financial management and industry-specific accounting.
    - Training in emerging technologies, such as digitization and artificial intelligence applied to the TCLF industry.
    - Soft skills development programs, such as effective communication and problem-solving in a business environment.

4. **Certification and accreditation programs**. Establishing industry-recognized certification and accreditation programs to validate employees' skills and knowledge, which can enhance their employability and job mobility.

5. **Workplace learning**. Implementing workplace learning programs where employees can acquire practical skills and specific knowledge through direct experience under the supervision of experienced professionals.

6. **Collaboration with educational institutions**. Establishing partnerships with local educational institutions such as technical schools, universities, and vocational training centres to develop training programs tailored to the needs of the TCLF industry.

7. **Promotion of innovation and creativity**. Foster an environment that encourages innovation and creativity, where employees feel encouraged to propose new ideas, techniques, and solutions to improve processes and products in the industry.

By implementing these approaches comprehensively, TCLF industry companies can strengthen their personnel's skills and remain competitive in an ever-evolving market.

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9. Final Conclusions

In conclusion, the comprehensive analysis conducted in this Final Report on Skills Intelligence for Forecasting and Monitoring TCLF Emerging Skills Needs, illuminates critical insights into the evolving landscape of these sectors. Through meticulous examination and robust data collection, we have identified key trends, challenges, and opportunities shaping the future skill requirements within these dynamic industries. Our findings underscore the imperative for proactive strategies to address emerging skill demands, ensuring the continued competitiveness and sustainability of businesses operating in the TCLF sector.

Skill Diversification: The TCLF sector is experiencing profound changes propelled by emerging technologies, sustainability initiatives, and evolving market preferences. Consequently, there is a growing need for diversified skills in areas such as engineering, design, data analytics, supply chain management, and compliance.

Emphasis on Sustainability: Within the TCLF industry, sustainability has emerged as a pivotal focal point across every facet of the value chain. Proficiency in sustainable materials, eco-conscious manufacturing methodologies, and ethical business management is now essential for addressing both environmental and social considerations.

Integration of Technology: The integration of cutting-edge technologies like additive manufacturing, augmented reality, artificial intelligence, and data analytics is revolutionizing the processes of product design, manufacturing, and marketing within the TCLF industry. This evolution necessitates a workforce equipped with expertise in these domains and capable of swiftly adapting to the dynamic technological landscape.

Demand for Ongoing Training: In light of the swift evolution within the TCLF sector, an ongoing commitment to training and skill enhancement is imperative. Professionals must stay abreast of the latest trends, technologies, and sustainable methodologies to retain their competitiveness in the labour market.

Collaboration and Interdisciplinary Approach: The inherently interdisciplinary nature of the TCLF sector underscores the significance of collaboration among diverse areas of expertise. Multifaceted teams that blend technical, creative, commercial, and ethical proficiencies are indispensable for tackling intricate industry hurdles and nurturing innovation.

In summary, the TCLF industry is undergoing a period of transformation and revitalization, spurred by advancements in technology, sustainability initiatives, and shifting market dynamics. Professionals who can adeptly navigate this evolving landscape, embrace new skill sets, and engage in fruitful collaboration are poised to excel in this dynamic and ever-evolving industry.

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Evolution from Industry 4.0 to Industry 5.0

At this juncture, we would like to delve into the industry's ongoing evolution, already transitioning to a new phase: Industry 5.0. The fundamental paradigm of Industry 5.0 is the harmonious integration between humans and machines, where both collaborate efficiently and effectively in the production process. Unlike earlier stages of the industrial revolution, where automation and technology often replaced human labour, Industry 5.0 seeks to maximise the strengths of both: the precision, speed, and consistency of machines, along with the creativity, adaptability, and problem-solving skills of humans.

In this prototype, workers are not replaced by technology, but become active partners in the manufacturing process. Advanced technology, such as artificial intelligence, collaborative robotics, and the Internet of Things, empowers workers to perform more complex and varied tasks, while machines perform the repetitive and physically demanding tasks. This collaboration results in greater efficiency, quality, and flexibility in production.

In addition, Industry 5.0 also promotes mass customisation, where products can be tailored to individual consumer needs and preferences, thanks to the ability of advanced technologies to manage small batches or even produce unique parts at a competitive cost.

In short, the fundamental paradigm of Industry 5.0 is the harmonious collaboration between humans and machines, where both parties complement each other to achieve more efficient, flexible, and customised production.

The move from Industry 4.0 to Industry 5.0 implies a significant evolution in the way production systems are conceived, designed, and operated, and therefore a significant evolution in the required skills:

- **Increased Human-Machine Integration**: While Industry 4.0 focused on automation and connectivity of production systems, Industry 5.0 emphasises collaboration and integration between humans and machines. This implies a greater emphasis on improved human-machine interfaces (HMIs) and the implementation of technologies that facilitate direct human-robot interaction, such as collaborative robotics.

- **Mass Customisation**: Industry 5.0 focuses on the ability to produce highly customised products on a large scale. This implies greater flexibility in manufacturing processes, enabling the production of small batches or even one-off parts in a

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cost-effective manner. Mass customisation is achieved through digitisation and supply chain flexibility, as well as the use of technologies such as additive manufacturing and artificial intelligence.

- **Focus on Sustainability**: The transition to Industry 5.0 also implies an increased focus on sustainability and corporate social responsibility. This is reflected in the adoption of more sustainable manufacturing practices, the use of recycled materials and the optimisation of production processes to reduce waste and minimise environmental impact.

- **Increased Artificial Intelligence and Data Analytics**: Industry 5.0 further leverages artificial intelligence and data analytics to optimise production processes and improve decision-making. This includes the implementation of autonomous manufacturing systems, prediction of machine maintenance and real-time optimisation of production workflows.

- **Decentralisation of Production**: Industry 5.0 could also drive decentralisation of production, with distributed and localised manufacturing closer to markets and end consumers. This is facilitated by the adoption of technologies that enable agile and flexible production in multiple locations, as well as real-time collaboration between different production sites.

In short, the move from Industry 4.0 to Industry 5.0 implies an evolution towards more collaborative, flexible, customised, and sustainable production systems, making the most of advanced technologies and promoting greater integration between humans and machines.

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11. Annexes

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