



MANUAL OF COMPETITIVENESS  
AND INNOVATION OF  
**TÂMEGA E SOUSA**

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## OBJECTIVES

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This Competitiveness and Innovation Manual aims to identify competition drivers of the Tâmega e Sousa sub-region's strategic sectors: Furniture, Apparel and Textile, Footwear and Metalworks. The purpose is to create a Sectoral Competitiveness and Innovation Index (hereinafter referred to as ICIS), with the following objectives:

1. Size the competitiveness level where the sectors outperform or fall short;
2. Establish a general ranking and by size, allowing companies to assess their performance in relation to the sector's average and to align behaviours and strategies;
3. Define a starting point for the establishment of territorial-based strategies to stimulate the creation and absorption of value by the strategic sectors.

In this work, the micro dimension was the main guideline for assessing the degree of competitiveness of the Tâmega e Sousa sectors. This means that, although macro factors are considered as influential, we will privilege the so-called "micro explanation of competitiveness", which means the way in which sectors organize their resources and processes in order to be more competitive.

The strategic sectors' selection process included in this work was based on three levels of criteria: 1) impact on local economy; 2) international tradable character; and 3) expertise level. We considered four dimensions of competitiveness for the elaboration of ICIS (Image 1):

- a. **Performance.** Performance in terms of productivity, human capital and financial strength;
- b. **International Orientation.** Degree of integration in international markets;
- c. **Innovation and Value.** Ability to innovate and invest in processes that create added value. The absorption of this added value is a critical point;
- d. **Territory.** How the territorial situation conditions the competitiveness of the sectors of specialization.



Image 1 - Tâmega e Sousa sectoral competitiveness dimensions

Source: Own elaboration.

The Tâmega e Sousa Competitiveness Manual aims to be a work in progress, with positive effects on the territory. We argue that a long-term vision is needed to bring perceivable and measurable results. Therefore, the project foresees a 10-year time horizon, between 2020 and 2030.

## RESULTS

### 1. Overall Ranking

After analysing the final ICIS scores, we came to the conclusion that **Metalworks** is the most competitive sector in Tâmega e Sousa, with 6.61 points, followed by **Footwear**, with 6.14 points (Chart 1). **Furniture** comes third and **Textile and Apparel** is the least competitive sector with only 5.32, below the average of the Tâmega e Sousa manufacturing industries.

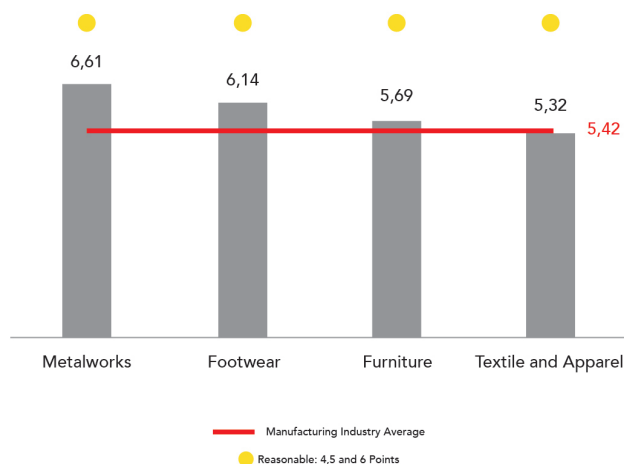


Gráfico 1 – ICIS, pontuações finais, por setor.

In spite of the differences we can see that **there is no sector clearly more or less competitive than the others**: all scores are within the “Reasonable” rating. Bearing in mind that these are the drivers of a significant part of its socio-economic fabric, a medium-low score indicates weaknesses in competitiveness not only by sector but also by region.

## 2. Ranking by dimensions of competitiveness

### 2.1. Performance

The dimension A. Performance intends to assess the competitiveness of the sectors evaluating their capacity to be productive, to grow sustainably, and based on qualified human resources.

In this dimension, **Footwear** leads, with 5.75 points, closely followed by **Metalworks**, with 5.62 points. The worst ranked sector in terms of performance is **Textile and Apparel** with 4.71 points, which, like **Furniture**, falls below the average of the manufacturing industries in Tâmega e Sousa.

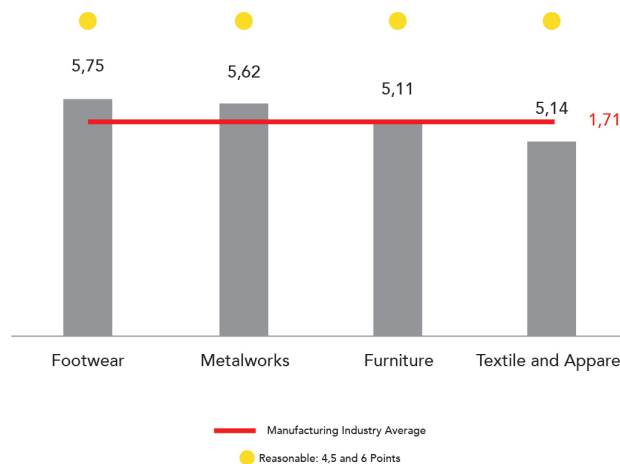
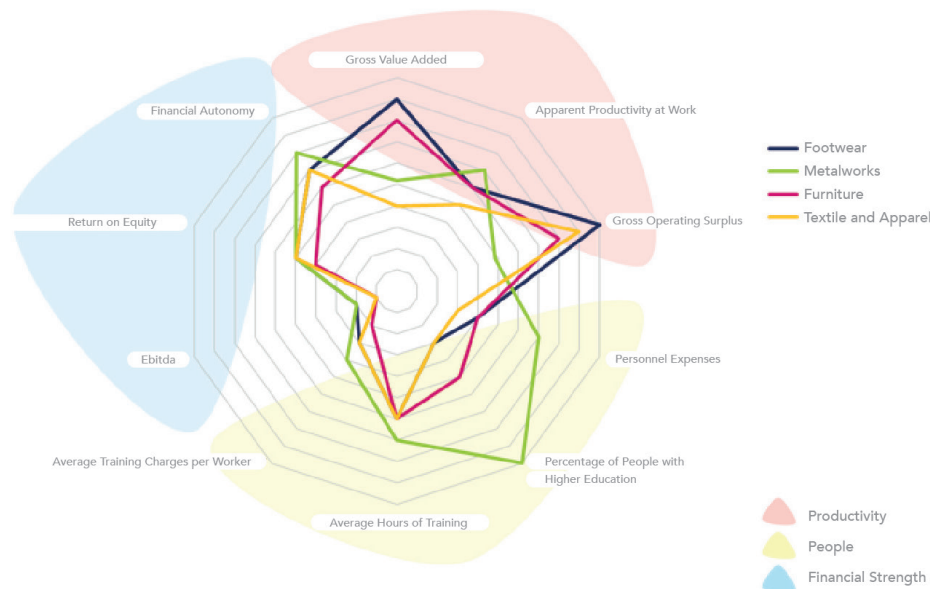


Chart 2 - Competitiveness dimension A. Performance: final results.

In the case of a composite index, the different performance levels of the four strategic sectors do not all bear the same explanation. As we will see below, while **Footwear** surpasses other sectors in terms of “Productivity”, Metalworks is the leader in the “People” and “Financial” sub-dimensions.



**Chart 3 - Comparison of Performance sub-dimensions: "Productivity", "People" and "Financial Strength".**

**Footwear**, which stands out in the Productivity level, with a rating of "Good", is simultaneously one of the worst performers in terms of the quality of human capital (People), just ahead of **Textile and Apparel**.

**Metalworks** leads by far in the "People" sub-dimension - with 7 points - showing superiority in terms of qualification and investment in workers. This sector has the best qualification in the sub-dimension "Financial Strength", but the worst result in the A.1. Productivity sub-dimension, which is why it is not the absolute leader in the dimension A. Performance.

**Furniture** is the sector with the worst result in terms of "Financial Strength", with a rating of "Weak". It does get a "Good" rating in the "Productivity" area, largely because of its "Gross Operating Surplus", as we will see below.

Finally, **Textile and Apparel** gets scores within the "Reasonable" rating. This is the sector with the worst performance in terms of human capital. It is actually the only one of the four strategic sectors with a rating of "Weak" in this sub-dimension.

## 2.2. International Orientation

The indicator most valued in the internationalization analysis is normally exports, assuming that the sectors that export the most are the most competitive per se. This

finding is incomplete and can lead to an overvaluation of the international competitiveness of a territory. First, because it fails to consider the inward direction of internationalization, present in the foreign direct investment received. Second, because it does not assess the value that international trade really brings to a given region.

To address this issue, the analysis of the International Orientation includes the indicators “companies with foreign participation” and “degree of openness to the outside world”, in order to get a real, full framework of the subject.

The B. International Orientation dimension is led, notably, by the **Metalworks** sector, with 7.65 points, equivalent to a rating of “Good”. **Footwear** is second, with 6.25 points. These two sectors are the only ones above the sub-region’s manufacturing industries’ average. **Furniture** and **Textile and Apparel** reach the same score: 5.55.

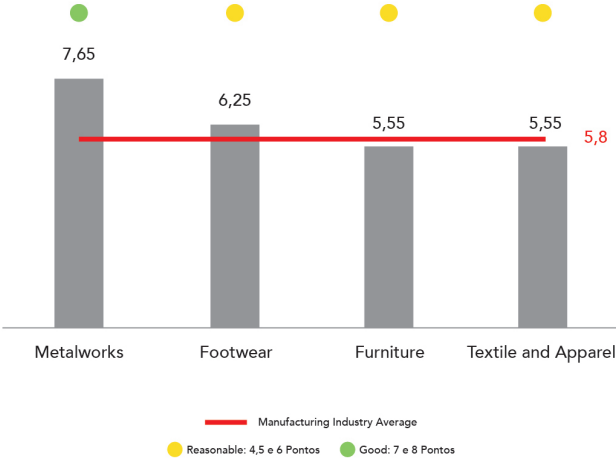


Chart 4 - Competitiveness of dimension B. International Orientation: final results

The B. International Orientation dimension is strongly leveraged by the “export intensity” indicator, where 3 out of 4 sectors are rated as being “Very Good”. Those sectors are **Footwear, Furniture** and **Textile and Apparel**. This is the only indicator where **Metalworks** is slightly behind the rest, in this dimension.

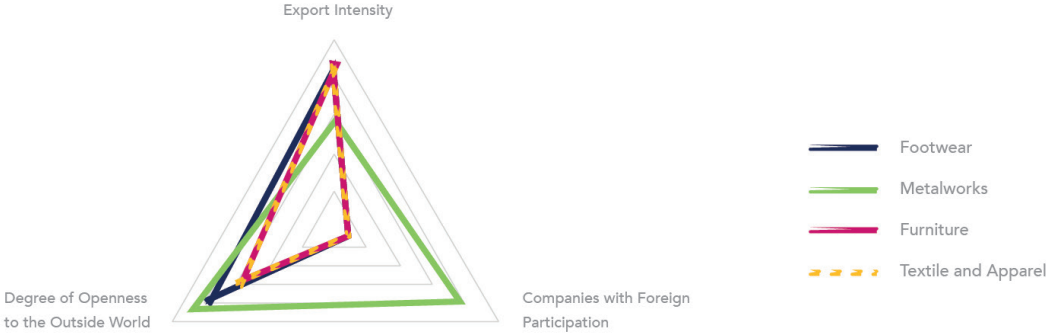


Chart 5 - Comparison of indicators of dimension B. International Orientation.



With regard to foreign participation in the companies of Tâmega e Sousa, we can see that **Metalworks** stands out with 8 points while the remaining sectors have the minimum score (1 point). This reveals **little openness or capacity to attract foreign investment by Footwear, Furniture and Textile and Apparel**, which can result in lower levels of innovation. **Metalworks achieves the greatest degree of openness to the outside world, closely followed by Footwear**. This indicator highlights the importance that exchanges with the rest of the World have in view of the value created by each sector.

### 2.3. Innovation and Value

The dimension C. Innovation and Value is one of the most important for measuring the level of competitiveness and innovation in the sectors of Tâmega e Sousa. It consists of two sub-dimensions: C.1. Innovation and C.2. Value.

Again, **Metalworks** is the sector that outstandingly leads this dimension with a score of 7.9. It is followed by **Furniture, Footwear** and **Textile and Apparel**, all with a rating of "Reasonable". All strategic sectors of Tâmega e Sousa are above the Manufacturing Industry's average (6 points).

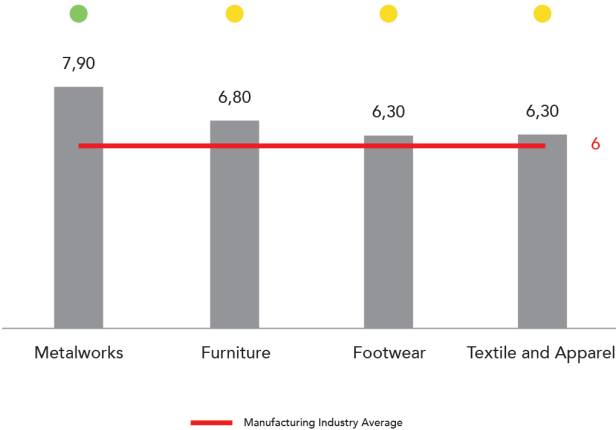


Chart 6 - Competitiveness dimension C. Innovation and Value: final results.

After our analysis we can almost perceive there's symmetry between sectors. The most innovative sector is **Metalworks**, with a rating of "Very Good", as opposed to **Textile and Apparel**, with only 4.8 points. It is interesting to realize that notwithstanding being the least innovative sector of the group, Textile and Apparel is the one that most contributes to the creation and retention of value in the territory.

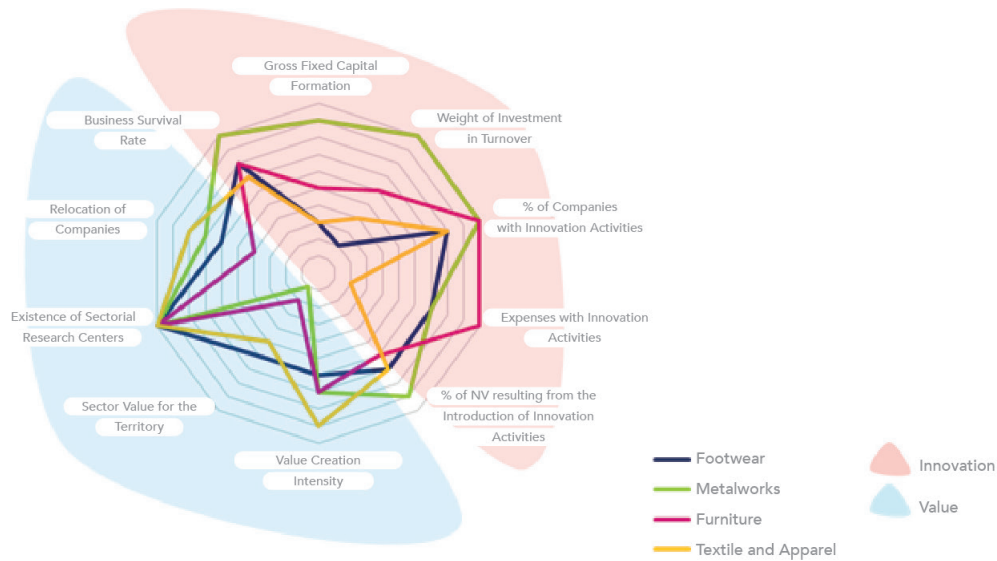


Chart 7 - Comparison of sub-dimensions C. Innovation and Value.

## 2.4. Territory

The dimension D. Territory comes with some differences in relation to the other dimensions. First, we try to understand how the territory influences the characteristics and microeconomic positioning of each company. This influence is specific to each sector and allows comparisons to be made with the reference territory (Portugal), as well as to understand the level of expertise that Tâmega e Sousa has in each of them.

Secondly, dimension D. is the only competitiveness dimension considered in the ICIS that also includes a macroeconomic perspective. Here, we try to understand the level of competitiveness of Tâmega e Sousa as a whole, based on the premise that "in uncompetitive environments it becomes harder for companies to be competitive". Given that the territory is common to all sectors, the score obtained in the D.2. Macro will be considered equal for all strategic sectors in the study (and for all other sectors within the manufacturing industry to which ICIS can be applied).

A general analysis shows that there is greater specialization in the sectors of **Footwear**, **Furniture** and **Textile and Apparel**, which far exceed the average of the manufacturing industries of Tâmega e Sousa. In contrast, **Metalworks** scores only 3.78 points in this dimension, being the sector where Tâmega e Sousa has the least specialization, which may have an impact on the ability to capture value.

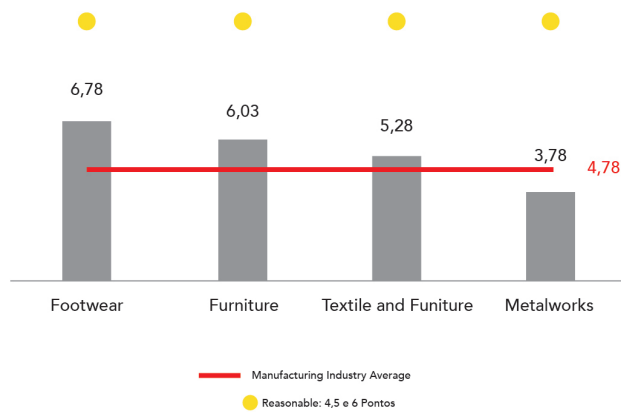


Chart 8 - Competitiveness of dimension D. Territory: final results.

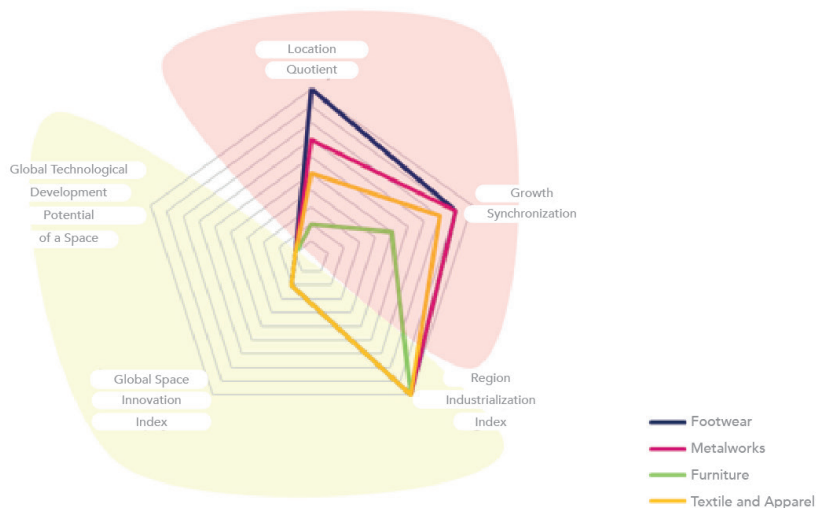


Chart 9 - Comparison of sub-dimensions D. Territory

### 3. Interpretation of Results

#### Footwear

The Footwear sector wins in the Performance and Territory dimensions, showing the degree of specialization and dependence that Tâmega e Sousa has in this sector. The depth of the link between sector and territory has an important and two-way impact on productivity, people and financial results. Thus, it is a sector with a strong influence on the sub-region, on which not only the business fabric depends, but also jobs, wages and a large part of the Tâmega e Sousa socio-economic network. In a nutshell: if the sector grows, the territory thrives; if the sector falls, the territory falls with it.

This degree of specialization and dependence can have negative consequences, since it is one of the sectors with one of the worst performances in dimension D. Innovation and Value. If the Footwear sector has difficulties in innovating and creating and retaining value, its competitiveness could be at risk in the long term, damaging Tâmega e Sousa's socio-economic fabric, more than it would in a less determinant sector.

The margin of progression in terms of International Orientation will make it possible to further expose the territory to foreign markets, improving its competitiveness. So far, this contact has been made mainly via exports, but it could be enhanced with the increase of FDI funding.

## Metalworks

Metalworks is the most qualified strategic sector in Tâmega e Sousa, leader in dimension C. Innovation and Value and sub-dimension A.2. People. This proves the importance of the sector in creating value in the territory and sets it aside from other sectors. It also leads in dimension B. International Orientation, as the sector with greater foreign participation and openness to the outside world.

In the dimension A. Performance the sector also gets the best score in the "Financial Strength" sub-dimension. However, it does have the worst result in the sub-dimension "Productivity", mainly due to its participation in the sectoral GVA and the result in terms of GOS.

Finally, Metalworks is the sector with the worst result in the dimension D. Territory, which allows us to draw some conclusions: the sector is not as intrinsically involved with the region's socio-economic fabric as the rest. Another conclusion that we can draw is that Metalworks suffers a greater de-synchronization of growth compared to the national average, which means it does not grow at the same speed as the rest of the country. Bearing in mind that, from a national perspective, this is one of the sectors that brings the most wealth, generates jobs and exports, this data is worrying and conveys the need for specific policies for the competitiveness of this sector in the region.

## Furniture

Furniture is one of the sectors with more consistent scores in all dimensions of competitiveness, albeit never in the lead. There is an odd dynamic that we describe next. Although Furniture is one of the sectors with higher values in terms of innovation, its capacity to create and retain value is very low. This is clear in the low turnover resulting from innovation activities and the low score in the sub-dimension C.2. Value, namely in the indicators "creation of sectoral value" and "relocation of companies", the latter being particularly important.

The lack of capacity to profit from investment in innovation and convert it into real value for companies is disturbing, as it undermines the competitiveness of a sector at a deep level. The relative monopoly of national production can explain the disincentive to innovation and value creation.

In terms of Performance, Furniture presents the worst “Financial Strength” of Tâmega e Sousa’s group of strategic sectors, mainly due to the EBITDA and Financial Autonomy performance.

In terms of International Orientation, Furniture has a good export intensity, but it lacks the ability to attract foreign investment and the degree of openness to the outside world. This situation is worrying because it demonstrates that Furniture is not able to attract foreign investors to mitigate its own investment deficit, nor to extract the value of its exports-based internationalization process.

Finally, we can say that Furniture is part of the group of sectors with greater tradition and specialization in Tâmega e Sousa, but it needs urgent measures to stimulate its competitiveness.

## Textile and Apparel

Textile and Apparel is the least competitive and innovative in the group of strategic sectors, below the average of Manufacturing Industries in Tâmega e Sousa, both in the general ICIS score and in almost all four dimensions of competitiveness (except for dimension D. Territory). One of the major handicaps in the sector is the human capital. In strategic sectors such as this one, responsible for a significant part of the territory’s labour, these scores explain the fact that Tâmega e Sousa is NUTS III, with one of the lowest average monthly earnings and purchasing power per capita in the whole country.

The lack of qualifications in Textile and Apparel is both a reason and a consequence of the low level of investment in innovation, visible in dimension C. Innovation and Value. Here, Textile and Apparel present low scores in terms of “gross fixed capital formation”, “expenditure on innovation activities” and “weight of investment in turnover”. This is the sector with the worst survival rate in the group of strategic sectors. Despite this, the sector manages to create value, evident in the fact that it is the sector with the best performance in terms of “intensity of value creation”.

Like Footwear and Furniture, Textile and Apparel has an excellent “Export Intensity”, but a reduced capacity to attract foreign investment, as well as a low degree of openness to the outside world. Again, this reveals little openness or capacity to attract foreign investment by Footwear, Furniture and Textile and Apparel, which can result in lower levels of innovation.

# 2030 VISION

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## 1. Trends 2030

The World economy and society are going through a time of profound changes. In no other phase of history have we experienced a period of such accelerated development worldwide, with an impact on the way we behave, live and work. In order to increase the competitiveness of Tâmega e Sousa's strategic sectors by 2030, we must understand the trends that will define the economy in the coming years. Will we continue to consume and produce in the same way? Will our main trading partners remain the same?

Thanks to rapid technological innovation, we are constantly connected to people from all over the World, connections that blur the weight of national borders. The current level of globalization means that every decision made by a country can have a profound impact on the daily lives of people on the other side of the World. Large metropolises are growing at a fast pace and the World population is increasingly urban. Climate change becomes more evident, with the intensity and frequency of extreme environmental events increasing.

This conjuncture allows us to point out some macro trends that, although they're already a reality, will get an increasing prominence in the time horizon up to 2030

- a) Demographic changes: growth of the middle class and an ageing population;
- b) Climate change and scarcity of resources;
- c) Rapid technological development
- d) Sustainable consumption: consumers becoming increasingly aware of their choices;
- e) Emergence of new markets.

**2030 is just ten years away.** At the current pace of development, we can anticipate a decade of rapid changes that will require companies to constantly analyse and evaluate the market, so that they always stay one step ahead, turning any new trend into an opportunity.

## 1.1. By sector

### 1.1.1. Footwear

**News markets.** The current context of technological innovation is expected to contribute to increase the sector's flexibility and rapid response capacity, making it reach new markets. Economic growth will make it possible to diversify markets, especially for countries in Southeast Asia.

**E-commerce.** Consumers are increasingly choosing to buy online, avoiding schedules or being subject to the availability of in-store stocks.

**Woman Power.** Women are the segment of clients that will increase most in footwear consumption, thanks to a worldwide growth of the number of women with access to education, who later end up entering the labour market with better wages.

**New seniors consumers.** The ageing of the population brings new opportunities to the production of comfortable shoes, focused on the relief of health problems typical of the elderly or chronic diseases. As an example we have shoes developed for diabetics or smart shoes with GPS, created specifically for patients with dementia or Alzheimer's. And it's not just innovation. Companies that combine the production of therapeutic footwear with design elements, in contrast with the unattractive image of this segment that often alienates the consumer, will become trendsetters.

**Sustainability and Materials.** Leather is the key raw material for Portuguese footwear, but this material is beginning to cause more and more questions coming from consumers. Under what conditions was the cattle raised? What is the process used to process the raw material before the shoes are manufactured? Companies must deliver more sustainable production methods, with reduced ecological and water footprint. There will be an increase in new materials such as compostable leather with recyclable rubber, for example, or recycled polymers or vegan materials.

### 1.1.2. Textile and Apparel

**Innovation.** Similarly to the Footwear sector, innovation will become increasingly prevalent in companies' day-to-day activities. One of the most recent examples, and a clear sign of the sector's rapid technological development, is digital clothing: clothes that only exist digitally, pointed out by some as the fashion of the future. There will be a move away from low-cost strategies, making it impossible for us to compete with countries like Vietnam or Bangladesh. Innovation is the last possibility to make a difference and climb the value chain, so that the Portuguese Textile and Apparel sector hits new market segments and new clients (ATP, 2014).

**Intelligence is the new oil.** The search for data will accelerate, so companies get to use algorithms to analyse their clients' purchase history and browse for data that ex-

plains and predicts consumer behaviour. Artificial intelligence will play a pivotal role, for example, in identifying defective products and comparing the final result with the original design.

**Technical and functional textiles .** This is one of the segments with the greatest future growth potential, since it applies to products and solutions from different areas, among which we highlight health, construction, aeronautics and agriculture. Currently, we are facing the emergence of smart textiles, with relevant developments such as the application of threaded bacteria (*Bacillus Subtilis*) that cause the fabric to react to increased body heat or perspiration, or the bionic threads with potential medical applications (tissue that detects fever or performs an ECG).

**New processes (automation).** Automation of the sewing process and technologies for 3D knitting, such as digital or laser printing, are just a few examples. Automation technologies may also be responsible for creating, for example, micro factories within the company, which will act as a lever for the customization trend, increasingly appreciated by consumers.

**New senior consumers.** The demand for adapted clothing is expected to increase, for example, for people who are unable to get dressed without help or who suffer from certain health problems associated with old age. There will be a growing number of business opportunities for companies that manufacture casual and sportswear (senior athleisure trend) for the active senior segment.

**E-commerce.** In recent years, companies have begun to place an increasing importance in the omnichannel, deemed to become an important practice in coming years. Online sales have grown rapidly and are expected to grow even more in the short and medium term, both on the companies' websites and on sales platforms.

**Sustainability.** Due to sustainability concerns, until 2030 the textile and apparel industry will favour the use of alternative materials (replacing cotton with fibres made from materials such as wood (TENCEL), hemp or bamboo). Brands will focus on recycled fabrics, on circular business models (upcycling, clothing rental services, resale) and on the use of sustainable production techniques (dyeing without water, digital and laser printing, ecological inks).

### 1.1.3. Furniture

**Creativity and Innovation.** Creativity and innovation are considered key words when discussing the future of the Furniture sector. In the specific case of the Portuguese industry, the concepts started to appear in the daily lives of companies due to intense national and international competition, and one of the only ways for companies to make a difference and move up the value chain is by incorporating innovation and design in their products.



**Customization.** More and more consumers are looking for products to customize and adapt to their needs. The acquisition of this type of furniture is considered a status symbol, which allows people to be different and distinguished.

**E-commerce and digital.** With regard to innovation, technological showrooms and Augmented Reality are increasingly being used by companies and appreciated by consumers. The preponderance of e-commerce will grow until it becomes the preferred purchasing method. More and more consumers are beginning to realize the advantages of buying their furniture from home, seeing that companies' websites are able to present their complete catalogue with great ease.

**Market diversification.** Traditional markets are beginning to lose some of their dominance to emerging markets. The greatest economic growth has been registered on these emerging markets, and the urban middle class is expected to increase rapidly. Companies in the sector need to change their strategy and gradually focus on these new markets

**New concept of Home.** In large urban centres a new concept of "Home" emerges, ranging from single-person or shared housing with colleagues, to houses where several generations live together. Houses become smaller, which encourages the growing demand for multifunctional furniture items, such as sofa beds or beds with built-in drawers. The demand for smaller furniture has also increased.

**Millennials.** Millennials represent the largest consumer group and, therefore, are of greatest importance to the next decade. It is the first generation in the last century that will have a lower income than their parents, making them more sensitive to prices. Millennials buy mainly online, placing a strong emphasis on the authenticity and sustainability of the products they buy.

**Sustainability.** Sustainability is one of the mandatory requirements when buying furniture for a growing segment of consumers. The pressure on companies to use eco-friendly materials, reduce, recycle and reuse is increasing. Some of the strategic priorities will be to search for new equipment and materials, the valuation of waste and by-products of the manufacturing process, the reduction of emissions of polluting particles, design and development of products with optimized environmental performance, and eco-design.

#### 1.1.4. Metalworks

**Innovation and Artificial Intelligence.** The coming years will be characterized by the continuous advance of artificial intelligence methods, which will be progressively integrated into the production process. The development of solutions to facilitate the connection between different stages of the production process will make it possible to reduce energy consumption and delivery times for the final product.

**Automotive sector.** Considering the specific case of the automotive segment, there is a clear increase in the connectivity and digitization of vehicles, which means a consequent increase in demand for certain materials. An increasing percentage of the costs of a new vehicle are related to electronic systems, which currently include, for example, advanced GPS systems, fault alerts and pedestrian detection systems.

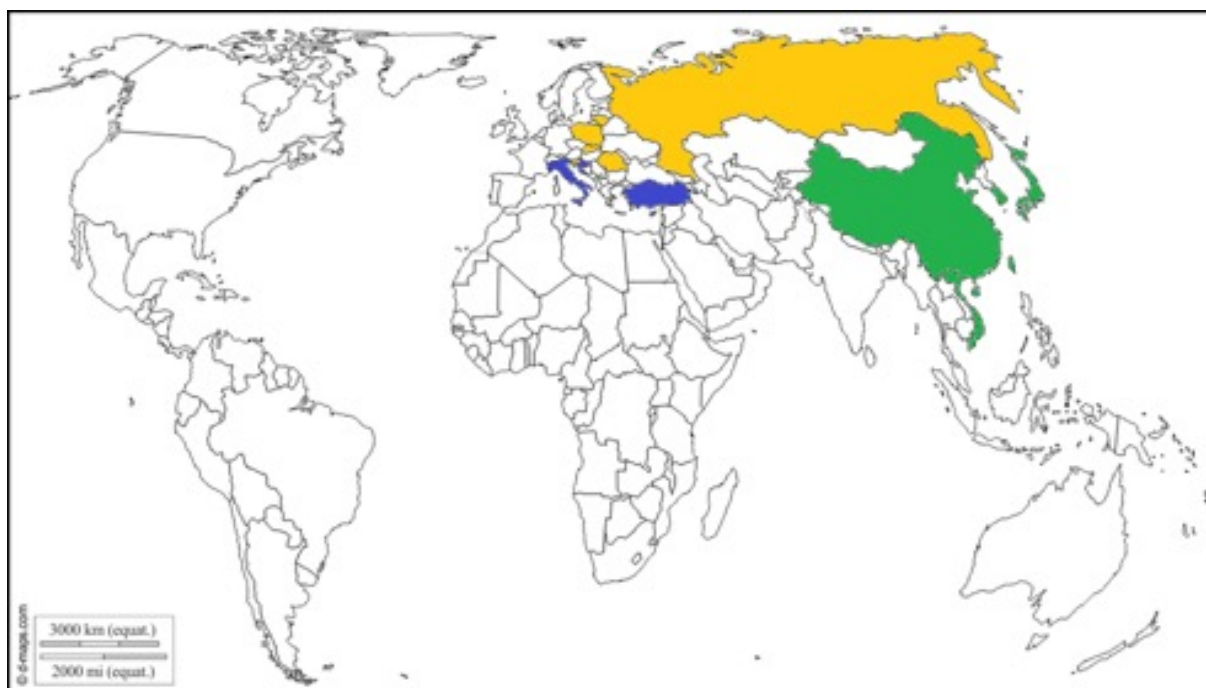
Concerns about reducing energy consumption, minimizing polluting emissions resulting from productive activity, reducing the amount of materials consumed and optimizing reuse, are already on the agenda. E-mobility will gain ground, with electric vehicles winning the market. The current problems of speed and autonomy are expected to be solved by 2030 and companies working on these innovations will lead the sector's competitiveness. The introduction of autonomous vehicles will deeply mark the sector in coming years.

**Sustainability.** The sector has already started looking for new, less polluting fuel sources, including hydrogen, the most abundant element in the Universe. Companies that are already using this technology at an early stage of production mention a period of 10 to 20 years to go to market, best case scenario.

## 1.2. By market

The reduced capacity to attract foreign investment and the lack of diversification in exports from the strategic sectors of Tâmega e Sousa are the two main problems in its internationalization process. The great dependence on exports and investment markets means that any circumstance that affects them will have a considerable impact on exports. This fact is already a reality. The slowdown in the European economy, the Brexit stalemate and the loss of very important clients such as the Spanish giant Inditex to more competitive markets had, in 2018 and 2019, a very significant impact on Tâmega e Sousa's exports, which dropped following a period of 5 years of growth.

In this sense, we can suggest a set of export markets for strategic diversification.



**Map 1 - Opportunity markets for the internationalization of the strategic sectors of Tâmega e Sousa.**

**Southeast Asia:** China, South Korea, Hong Kong, Taiwan, Vietnam, Japan.

Up to 2030 Asia will be an El Dorado. The opportunities in this area of the World, mainly in consumer goods, are due to the emergence of the middle class and the greater commercial openness. The signing of the Regional Economic Partnership (RCEP), scheduled for 2020, a trade mega-treaty which will result in the creation of the largest economic bloc in the World proves it. Together, the 15 countries that will be part of the partnership represent approximately 40% of the World GDP and almost half of the planet's population. The creation of a free trade area, with harmonization of procedures, elimination of trade discrimination and the progressive elimination of trade barriers are the main objectives of RCEP.

**Eastern Europe:** Slovakia, Slovenia, Romania, Poland, Lithuania and Russia.

OEastern Europe experiences a favourable economic climate, where markets will continue to grow in value, unlike Western Europe which will tend to stagnate (or even recede). Portuguese exporters benefit from similar advantages in these markets, more than when exporting to Western Europe (lower transport costs, greater possibilities for just-in-time purchases).

Eastern Europe is the main market for home goods (home textiles and furniture), valuing the quality and design of Portuguese products, despite the increasing compe-

tition for cost coming from Asian countries, Turkey, Pakistan and national production. There are opportunities in Metalworks, mainly production machines and equipment, taking into account the importance of the industry in these countries.

**Mediterranean Europe:** Turkey, Croatia, Cyprus, Italy and Malta.

Although less relevant than Southeast Asia or Eastern Europe, the Mediterranean countries are an alternative for diversifying exports from the strategic sectors of Tâmega e Sousa, especially Furniture and Textile and Apparel. In this group of countries Turkey stands out. Despite being a strong international competitor for Portuguese products, mainly textiles, this country has increased its imports. The greater Turkish industrial production forces the country to import more (mainly productive) equipment and technology, opening big opportunities for the Metalworks sector.

The other side of internationalization is FDI, which makes it possible to fill the shortcomings in terms of investment in innovation, in specialized human capital, to encourage new productive methods and strengthen its competitiveness. We recommend the establishment of specific strategies for attracting FDI, targeted at the strategic sectors of Tâmega e Sousa, in carefully selected markets.

When analysing the evolution of FDI inflows, we can see that foreign investment in manufacturing decreased by 3.9% between 2015 and 2018. This downward trend is not in sync with the national panorama, where the FDI stock increased 8.5% in the same period. The secondary sector has been losing relative interest to sectors such as real estate investment and tourism. In other words, foreign investment in Portugal is increasing, but the manufacturing industries are not being targeted by said investment.

	2015	2016	2017	2017	2015-18
Total	125.515,2	128.222,97	137.462,11	136.168,79	8,5%
Manufacturing Industries	8.151,7	8.707,79	7.651,62	7.836,11	-3,9%

**Table 1 - Evolution of FDI stock from abroad in Portugal (millions of euros) (2015-2018).**

Source: Bank of Portugal, 2019.

In terms of trends in FDI source markets, we can single out African and Asian countries, the only regions where the growth trend in the last four years has been positive. Bearing in mind that 90% of the FDI received by our manufacturing industry comes from the EU - our main investor - the drop is worrying, although minor: -2.8% between 2015 and 2018.

## 2. Summary of Conclusions

- Metalworks is the most competitive strategic sector in Tâmega e Sousa, followed by Footwear, and in opposition to Furniture and Textile and Apparel, which are below the average of the sub-region's Manufacturing Industries. There is no sector that is, clearly, more or less competitive than the others.
- The most fragile sectors in terms of competitiveness and innovation - Footwear, Furniture and Textile and Apparel - are also those where there is a greater degree of specialization and dependence by the territory. If their competitiveness is jeopardized, in the long run, there will be a clear damage to the local socio-economic fabric, more than in less determinant sectors.
- It becomes urgent to balance Metalworks's standard of specialization, in order to level its regional performance in relation to the rest of the country. Taking into account the relevance of the sector and its dragging effect on the economy, if Tâmega e Sousa manages to be as specialized in Metalworks as it is in the other sectors, the creation of value for the territory would improve.
- If Tâmega e Sousa fails to keep up with Industry 4.0 trends, it will tend to lose its competitive advantages to other players - national and international - and stay prisoner of its own specialization.
- The benefits of Tâmega e Sousa's specialization in the strategic sectors can be improved by a scale component. The establishment of consortia and common brands helps to strengthen the commercial capacity and the positioning of sectors abroad, capitalizing on the already existing recognition.
- Productivity differs not only between sectors, but also between companies of different scales: large companies are, as a general rule, more productive and competitive than SMEs. This point must be analysed with particular attention, since the latter constitute almost 100% of the business network in the Tâmega e Sousa sub-region.
- The low productivity of the workforce remains one of the main challenges of the four strategic sectors of Tâmega e Sousa, mainly noticed in Footwear, Furniture and Textile and Apparel.
- Although human capital is often the weakest link in the problem of productivity and competitiveness, voices from the sectors point to the need to manufacture more sophisticated goods, with greater added volume, moving it up the value creation chain.
- Tâmega e Sousa is the NUTS III with the lowest percentage of employed personnel with higher education degrees. On the other hand, strategic sectors have difficulties in finding and retaining specialized professional labour, highly knowledgeable of their job and the productive process, with accumulated know-how.

- The issue of human resources takes on a key role until 2030 in the long term, taking into account the expected impact of the digitization and automation of the economy (Industry 4.0). In addition to the requalification of the workforce, Tâmega e Sousa companies should invest in a design thinking strategy, anticipating the future environment and new trends in the labour market.
- The slowness of measures on human capital, innovation and resistance to existing change, makes it difficult to alter a less than favourable framework. It is not easy to change the mind-sets and management models are sometimes too static in the face of change.
- There is a social overvaluation of what Innovation means, leading companies to invest in innovation for less than adequate reasons, presenting a greater strategic weakness. A large percentage of projects end up dying prematurely (when investment and incentive projects end, for example).
- We found an insufficient link between the academic environment and companies, which reduces the efficiency of the innovation system. It is advisable to develop regional projects, with a specific focus on strategic sectors and the involvement and commitment of all actors: companies, local administration, higher education institutes, sector associations and technological centres.
- In 2018 Tâmega e Sousa's exports decreased for the first time in five years. The drop in exports from Tâmega e Sousa was not accompanied by the rest of the country and the North region, where exports continued to grow. Footwear was the sector where exports dropped the most, followed by Furniture. Metalworks and Textile and Apparel increased their exports.
- There is a painful lack of diversification in exports, where the vast majority is European: 90% of the sub-region's exports come from strategic sectors and more than 80% of exports are centred in the top 10 international clients (intra-community). For 2030, market diversification may include Southeast Asia, Eastern Europe and the Mediterranean.
- Internationalization is not just about exports. The capture of FDI is as important as or more important than exports, but the Industry has been losing relative interest to foreign investors, compared to real estate and tourism. In other words, FDI in Portugal is increasing, but the manufacturing industries are not being targeted by said investment.
- The development of carefully prepared strategies on the part of regional players to attract FDI, guided towards the announced markets, might bring good results.



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