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Industrial Clusters and Global Value Chains:

A Comparative Analysis of
the Montebelluna District and
the Vietnam's Textile and
Footwear Sectors

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Introduction

Over the past few decades, the global industrial landscape has experienced huge transformations, shaped by accelerating globalization, technological advancement, and shifting patterns of production and trade flows. In this evolving scenario, industrial clusters – geographically concentrated networks of interconnected firms, suppliers, and institutions – have emerged as key drivers of competitiveness, innovation, and regional development. From Italy's artisanal districts to Southeast Asia's export manufacturing hubs, clusters represent different yet powerful forms of industrial organizations, which are capable of getting through the complexities of global value chains (GVCs).

This thesis discusses the role of industrial clusters in global value chains through a comparative analysis of two international characteristic cases: the Montebelluna footwear cluster in Italy and the Vietnamese textile and footwear clusters. On one side, Montebelluna exemplifies a high-value, knowledge-intensive district with deep historical roots in craftsmanship and design; while, on the other side Vietnam represents a dynamic and efficient manufacturing platform that has rapidly integrated into global trade networks. These contrasting models provide valuable insights into how clusters adapt to market pressures, leverage specialization, and engage in international cooperation.

This research work is structured across four chapters. First and foremost, Chapter 1 provides the theoretical foundation of industrial clustering by exploring the fundamental characteristics of industrial districts and the evolution of supply chain strategies in the knowledge economy of clusters. Chapter 2 and 3 present a critical analysis of the real case studies of respectively Montebelluna and Vietnam, analyzing their growth trajectories, innovation systems, and roles within global production networks. Finally, the conclusive chapter presents a comparative analysis of the two clusters, revealing the structural strengths and weaknesses of each model, while also exploring the potential opportunities for cross-cluster collaboration and suggesting directions for future research.

Through a comparison of these two distinct yet complementary models of industrial cluster development, this thesis aims to discover a deeper understanding of how local production systems can both play an important role and succeed in globalized industrial ecosystems. Additionally, it seeks to highlight the strategic relevance of clusters in shaping resilient, sustainable, and innovation-driven value chains among an increasingly unpredictable global economy.

Chapter I - INDUSTRIAL CLUSTERS FROM LOCAL TO GLOBAL VALUE CHAINS

Are industrial clusters simply geographic concentrations of firms? Absolutely not, they are vibrant and interactive systems of innovation, collaboration, and in part also competitive pressure. This first chapter presents the theoretical foundations of industrial clusters, upon which the entire thesis is built. Then, it explores the concept of industrial clusters as dynamic and territorially embedded systems that foster innovation, competitiveness, and economic resilience. Continuing the discussion of the defining characteristics of clusters – namely, geographical proximity, specialization, and knowledge spillover effect – the chapter describes how these structural factors combine to form distinctive ecosystems of interlinked firms, institutions, and labor markets.

It further investigates the evolving nature of cluster-based procurement and supply chain management, emphasizing the shift toward smart, sustainable, and collaborative sourcing approaches in the contemporary knowledge economy. At the same time, this section addresses the increasing internationalization of industrial clusters, which have transcended their traditional local or national boundaries and are actively engaged in transnational production, knowledge, and innovation networks. This global interdependence reshapes the role of clusters as key actors in global value chains, thereby influencing their strategies in the context of international sourcing, international procurement, foreign investment, and cross-border collaboration.

By bringing together classical cluster theory with contemporary debates on digitalization and sustainability, this chapter provides the analytical frameworks necessary to interpret the empirical case studies that follow. Eventually, it serves to describe industrial clusters not only as local production systems but as active nodes within global value chains, a theme that is central to the comparative dimension of the thesis.

1.1 Key theories and concepts related to industrial clusters

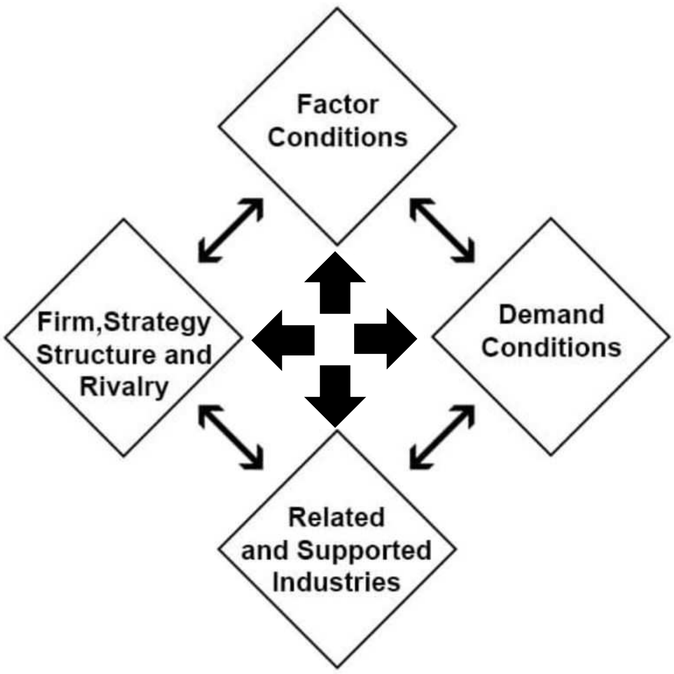
Industrial clusters have long been a subject of research across various disciplines, including economic geography, business strategy, and regional development. The concept in object refers to a concentrated network of interrelated companies and supporting institutions within a specific industry, connected through shared characteristics and complementary strengths. These clusters contribute to economic growth, facilitate innovation, and strengthen regional competitiveness by creating environments, that encourage knowledge sharing and efficient resource utilization. As a matter of fact, the success of every company is affected by a system of supporting firms, infrastructure, and institutions around it. Here lies the importance of industrial clusters, in their ability to promote specialization and foster collaborative networks that drive productivity and technological progress.

Clusters thrive on local dynamics, where a critical mass of actors fosters rich interactions among employees through labor pooling, strengthens supply chains between firms, and enhances collaboration with economic identities such as agencies and institutions. Moreover, the increasing division of labor between general contractors and specialized suppliers further accelerates cluster development, while reinforcing synergies within the local economy. Sustaining these relationships requires long-term commitment, which is maintained through mutual trust, institutional frameworks, and supportive arrangements. Not only local dynamics but also local conditions play a crucial role in shaping clusters, particularly in an era of heightened global market complexity, characterized by diversity, variability, uncertainty, and risk. Flexibility is an essential tool for adaptation, with outsourcing emerging as a key strategy, which is driven by the modularity and technical fragmentation of production.

1.1.1 Michael Porter's theories

Industrial cluster theoretical frameworks have evolved considerably over the years, with scholars providing different perspectives on their formation, advantages, and long-run sustainability. Michael Porter (1998) provides one of the most impactful contributions to cluster theory in his book titled "The Competitive Advantage of Nations". This author defines clusters as geographically proximate groups of interconnected companies, specialized suppliers, service providers, and associated institutions in particular fields that both compete and collaborate[1]. Consequently, clusters enhance productivity, innovation, and new business formation by creating synergies in a geographical region. In order to analyze these synergies, Porter's Diamond Model (see Figure 1) establishes four key determinants of competitive advantage at both regional and national levels: factor conditions, demand conditions, related and supporting industries, and finally firm strategy, structure, and rivalry. They interact dynamically and thus determine the success of the clusters in each economic context.

Figure 1. The Porter’s diamond model.



Source: Author.

Factor conditions are the presence of quality and specialized inputs required for industrial growth. These consist of human and capital resources, physical and administrative infrastructure, information systems, and scientific and technological infrastructure, as well as natural resources. Their presence in a cluster enables the more

[1] Porter, M. E. (2000), *Location, competition, and economic development: Local clusters in a global economy*, Economic Development Quarterly 14 (1): 15- 34.

efficient acquisition of specialized inputs by firms, thus reducing transaction costs and stimulating innovation. A strong local demand also plays a fundamental role in shaping the competitive advantage of firms in a cluster. Porter emphasizes that clusters tend to develop where there is a core group of sophisticated customers who compel firms to innovate their products and services continuously; and some clusters arise because of exceptional local demand in niche markets, which allows firms to develop specialized know-how that can subsequently be applied in global markets. Besides, consumers in clusters tend to have advanced demands that anticipate global trends, thereby giving local businesses a first-mover advantage in addressing international demand.

Continuing onto the following key determinant, the presence of a well-developed network of local suppliers and allied industries considerably increases the competitiveness of a cluster. Industrial clusters enjoy high inter-firm cooperation, knowledge spillovers, and supply chain efficiencies because a density of skilled local suppliers allows firms to source high-quality inputs and specialized services, thereby generating synergies (in contrast to isolated, stand-alone industries). As a matter of fact, in a successful cluster, the intense competition among locally established firms leads companies to invest in continuous improvement and innovation, in order to raise their productivity and create distinctive capabilities. Furthermore, the existence of proper institutions and policies makes the environment advantageous to business, therefore guaranteeing sustained investment in the development of infrastructure and human capabilities. Porter's theory points out the significance of geographic closeness, specialized assets, and rivalry dynamics in facilitating industrial achievement.

Clusters that exhibit these features have a tendency to establish long-term competitive advantage, which makes them more durable when challenged with global competition. By facilitating collaboration among companies, institutions, and suppliers, clusters significantly enhance innovation, efficiency, and responsiveness to markets, thereby promoting long-term economic growth. This Porter’s framework has been applied across a range of industries, including technology clusters such as Silicon Valley and German and Italian manufacturing clusters, thereby illustrating how clusters that manifest these characteristics are likely to establish powerful competitive advantages, which in the long run lead to economic growth and make them more resilient against foreign competition.

1.1.2 The Marshallian externalities

One of the crucial antecedents of the important insights of Porter's work lies in the industrial district theory formulated by Alfred Marshall in 1890. The benefits commonly classified under the notions of division of labor and large-scale production can be quite as easily achieved by the agglomeration of many establishments of small/moderate size in one district as by the building of a few large factories.

This theory explains the term Marshallian externalities as the benefits and gains that are realized due to the geographical agglomeration of similar firms in a location. In illustrating his explanation, the author specifies three main benefits arising from industry agglomeration: labor market pooling, knowledge spillovers, and the presence of specialized suppliers. The first citated, labor market pooling because enables the firms within a cluster to choose from a diverse and specialized labor pool. Not only does this availability maintain the cost of hiring new employees low, but it also reduces the risks of training, thereby enabling the firms to compete successfully in a competitive market.

Besides, knowledge spillovers are defined as the natural and casual diffusion of valuable information and experience among the various firms within the cluster, this process results in innovation and brings substantial efficiency gains. Moreover, in general, the efficiency is brought by the presence of specialized suppliers. By providing indeed high-quality, industry-specific inputs in an easily available modus operandi, suppliers allow companies to optimize their production processes and stay competitive in the market. All these externalities work together to provide self-enforcing advantages. With clustering of firms increasing more and more, they thus attract other complementary businesses and highly skilled labor, which is crucial for their growth and long-term sustainability.

1.1.3 Clusters as social systems by Becattini

Building on Marshall's core work, Becattini (1979) developed the concept of industrial districts by highlighting the importance of social and cultural processes that shape their development. His work stresses the value of trust, social networks, and shared values as key factors that facilitate the creation of favorable business areas. Becattini argues that industrial districts should be understood not just as economic phenomena but as social systems in which cultural and historical factors are part and parcel of shaping industrial organization and durable growth.

This argument is highly relevant to the case of Italian industrial districts, where social capital and informal networks play a major role in enhancing the competitiveness of industries like fashion and footwear. The development of industrial districts in Italy has an intrinsic relation with the increasing relevance of the small firm and the rising issues with the Fordist model based on mass production and rigid pyramidal organization. During an era characterized by increased market volatility and rapid changes in consumer tastes, businesses had to adopt more flexible production techniques to maintain their competitive advantage. The industrial district model allowed decentralized specialization, as businesses could quickly react to changing conditions through local coordination, as opposed to the prolonged, centralized decision-making systems.

Emphasizing the importance of social factors, one of the key features of industrial districts is that they are based on different forms of knowledge, including codified knowledge (formalized technical knowledge) and especially tacit knowledge (experiential and socially embedded knowledge). This combination enables learning processes, fosters innovation, and enhances adaptability, thus creating a competitive advantage founded on localized knowledge exchange

The author also conceptualizes industrial districts as productive communities wherein firms operate in an environment typified by trust, loyalty, and shared knowledge, thus reducing transaction costs and favoring repeated collaboration. Involving the local social context is essential for long-term viability for the industrial district model. As Becattini has correctly observed, in order that the industrial district may develop, it is required that the type of population consisting of small firms combine with the inhabitants resident in the same territory, and who, in their turn, foster the social and cultural traits (social values and institutions) suitable to a process of industrialization based on the bottom-up[2]. This bottom-up methodology differentiates industrial districts from traditional top-down industrialization models because it relies on the natural growth of businesses that are rooted in the social and cultural life of the community.

By incorporating both social and economic variables, Becattini's model provides a comprehensive explanation of the causes of the long-lasting competitiveness of certain clusters. His conclusions have substantial relevance in present-day circumstances, particularly in those industries where flexibility, specialization, and knowledge exchange are essential to ensure competitive advantage globally. Whereas Porter's work focuses on competitive factors, Becattini's study brings in the value of cooperative relations and social networks as critical ingredients that support the resilience and durability of industrial clusters.

1.1.4 Paul Krugman's recent contribution

Another economist who has contributed to clusters theories is Paul Krugman. His influence with the New Economic Geography (NEG) approach (1991) offers a market-based explanation for industrial clustering that complements, as well as contrasts, with previous theory, including that of Marshall and Becattini. While Marshall emphasized external economies of scale and Becattini later introduced social and cultural factors, both – like most economists of their time – conceptualized the economy as if it were located in a single point in space.

Conversely, as Paul Krugman (1998, p. 9) puts it: "*If one had to define the philosophical difference between the 'new' economic geography and the location theory that preceded it, it would be this: the new literature insists on models that are general equilibrium, and*

[2] Becattini G. (1991). *Italian Industrial Districts: Problems and Perspectives*. Taylor & Francis, Ltd., London.

in which spatial structure emerges from invisible-hand processes".[3] This statement highlights a fundamental shift in the way spatial economics is approached, since traditional location theory often relied on partial equilibrium models and treated spatial patterns as given or externally determined. In contrast, the new economic geography emphasizes general equilibrium frameworks where the interactions between multiple markets – such as labor, goods, and transport – are considered simultaneously. Notably, spatial patterns, like industrial clusters, are not assumed, instead, they naturally arise due to decentralized decision-making processes. In other words, geography is shaped by the invisible hand of the market, because individual agents react to economic incentives despite any centralized intervention.

Delving into the theoretical foundations of New Economic Geography, Krugman's model departs from traditional trade theory by incorporating increasing returns to scale, monopolistic competition, labor mobility, and transportation costs into a general equilibrium framework.[4] Firms, operating under economies of scale, benefit from concentrating production in locations where they can serve larger markets at lower average costs. Using the Dixit-Stiglitz model of monopolistic competition, NEG assumes that consumers value variety, and firms produce differentiated goods – conditions that encourage agglomeration near demand centers.

At the core of Paul Krugman's New Economic Geography lies an attempt to explain why economic activity tends to cluster in specific regions, creating pronounced spatial disparities between *core* and *peripheral* areas. His significant "core-periphery" model demonstrated that, under certain conditions, industries would concentrate geographically, leading to regional divergence. Before addressing to this point directly, it is necessary to consider other fundamental assumptions, for example the iceberg transport costs, where part of the good effectively "melts away" during shipment, incentivizing firms to locate closer to consumers in order to minimize distribution

[3] Krugman P., (1998), What's New about the New Economic Geography? *Oxford Review of Economic Policy*, 14(2), pp. 7-17
[4] Krugman P. (1991a), "Increasing Returns and Economic Geography", *Journal of Political Economy*, 99(3), pp. 483-499

losses.[5] Equally important is labor mobility: workers are assumed to move toward regions offering higher real wages, which reflect both nominal earnings and the local cost of living. Hence, this mobility initiates a circular process – firms locate where markets are large, workers follow firms for better wages, and their presence expands the market further.

Accordingly, two key pecuniary externalities sustain this agglomeration:

1. The market access effect occurs when firms benefit from being close to large markets, that increases their potential customer base and thus revenue. This creates incentives to cluster production near areas of high demand, lowering average costs through economies of scale.
2. The price index effect benefits workers by expanding the variety of available goods, reducing the consumer price index and consequently increasing real wages. Therefore, labor is attracted to the region, reinforcing the agglomeration process.[6]

These externalities generate a positive feedback loop where firms and workers co-locate, producing a self-reinforcing cycle of concentration.

In more practical terms, when a framework with two regions, two sectors (e.g., agriculture and manufacturing), and two types of labor (e.g., immobile farmers and mobile workers) is assumed, economic forces tend to favor the geographical concentration of manufacturing production. Due to economies of scale and transportation costs, it becomes more profitable for firms to locate in the region with greater market potential – that is, where demand is already higher – since it minimizes distribution losses and, on the other hand, maximizes returns. This agglomeration leads to an even greater availability of differentiated goods in the larger market, reinforcing its attractiveness.[7]

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[5] Fujita M., Krugman P., Venables A. (1999), "The Spatial Economy", *Cities, Regions, and International Trade*. Cambridge, Mass.: MIT Press

[6] Redding S. (2009), "The Empirics of New Economic Geography", *CEP Discussion Paper No 925*

[7] Fujita M., Krugman P. (2004), "The New Economic Geography: Past, Present and the Future", Papers in Regional Science 83, pp. 139-164.

In essence, the centripetal forces driving this concentration arise from circular causation:

- Forward linkages reflect workers' incentive to locate near consumer goods producers in order to access a wider and cheaper variety of products (formalized as the market access effect).
- Backward linkages capture the incentive for producers to cluster in regions with a dense customer base, in doing so they can benefit from higher demand and network effects (found in the price index effect).

When these linkages are sufficiently strong to offset the centrifugal force – mainly represented by the spatial immobility of agricultural labor – the model predicts a core-periphery equilibrium. In this outcome, all manufacturing activity becomes concentrated in a single region (the core), while the other remains agricultural (the periphery). Such an outcome is more likely to emerge when:

- Transport costs for manufactured goods are sufficiently low,
- Product differentiation among varieties is high (making variety more valuable), or
- The share of expenditure on manufactured goods in total consumption is relatively large.[8]

However, NEG also recognizes the counterbalancing role of the centripetal forces that pull economic activity together, while promoting concentration, and the centrifugal forces that push it apart, raising dispersion. Therefore, the final equilibrium spatial configuration – whether dispersed or concentrated – depends on the interplay between these centripetal and centrifugal forces, with transport costs playing a critical role; e.g., when transport costs are high, firms tend to be dispersed to serve local markets; as transport costs fall, centripetal forces dominate, and agglomeration becomes more likely.[9]

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[8]Ehnts D., Trautwein H. (2012), "From New Trade Theory to New Economic geography: A Space Odyssey", *Œconomia, 2-1,* pp. 35-66.
[9] Krugman P. (1991a), "Increasing Returns and Economic Geography", *Journal of Political Economy*, 99(3), pp. 483-499

Ergo, an important implication of Krugman's NEG models is the existence of multiple equilibria. Depending on historical accidents or small initial differences, one region may emerge as a dominant core, it becomes increasingly concentrated with economic activity, while others remain peripheral, remaining economically marginal or lagging in development.[10] As a consequence, regional inequality may persist or even worsen over time, because of the self-reinforcing processes, due to pecuniary externalities. Moreover, once a core region is established, reversing the periphery's decline becomes difficult without major shocks or deliberate counter-agglomeration policies, suggesting that early interventions in infrastructure or connectivity can have long-lasting spatial impacts.

To better understand the internal mechanics of New Economic Geography, Table 1 summarizes the New Economic Geography model, outlining its core assumptions, agglomeration mechanisms, and spatial outcomes. By distinguishing centripetal and centrifugal forces and formalizing pecuniary externalities, it illustrates how industrial concentration and regional divergence arise. The table also clarifies conditions for multiple equilibria and core-periphery dynamics, influenced by transport costs, labor mobility, and product differentiation.

Table 1. Formal Structures of NEG.

Component	*Description*
Assumptions	- Two-region model with mobile labor and immobile agriculture - Increasing returns to scale in manufacturing - "Iceberg" transportation costs
Market Structure	Monopolistic competition (Dixit-Stiglitz model): firms produce differentiated goods and face production costs
Pecuniary Externalities	1. Market Access Effect: Firms benefit from locating near large markets to reduce per-unit costs

[10] Krugman P., (1991b), *Geography and Trade*, Leuven: Leuven University Press

	2. Price Index Effect: Workers benefit from greater variety and lower prices in larger regions → labor mobility
Centripetal Forces	- Economies of scale - Thick labor markets - Forward and backward linkages - Knowledge spillovers and other pure external economies
Centrifugal Forces	- Immobile Factors - Land and housing prices - Congestion costs and other pure diseconomies
Multiple Equilibria and Outcomes	Depending on parameters and initial conditions: - Symmetric dispersion: firms and workers evenly spread across regions - Asymmetric agglomeration: concentration in one region
Policy Sensitivity	Infrastructure and early interventions can shift system toward more equitable or more concentrated outcomes, having large and perhaps lasting effects

Source: Elaborated by author, based on works by Krugman (1991a, 1991b); Fujita, Krugman & Venables (1999); Fujita & Krugman (2004).

As the next chapters will illustrate, Vietnam's trajectory of rapid export-oriented industrialization has resulted in the development of prominent industrial clusters - particularly in Ho Chi Minh City and the Red River Delta – which exhibit agglomeration effects driven by foreign direct investment, port access, and localized supplier networks. Nevertheless, despite being developed for earlier stages of industrial capitalism, the NEG framework remains a powerful tool for understanding the spatial dynamics and transformation of developing economies, like Vietnam, in the context of wider economic systems.[11]

[11] Hassink R., Gong H. (2019), "New Economic Geography", *Wiley-Blackwell Encyclopedia of Urban and Regional Studies.*

1.1.5 Local buzz and global pipelines

Bathelt, Malmberg, and Maskell's (2004) "local buzz and global pipelines" is more dynamic and network-based in theorizing industrial clusters and the dynamic interaction between local involvement and globalization. The authors move the previous theory ahead by recognizing the contribution of knowledge flows and international connections as being part of maintaining competitive advantage in a cluster. One of the most important components of their model is local buzz, or the ongoing exchange of information, casual contact, and shared experience among firms, employees, and institutions within a cluster. Collective learning and innovation are encouraged in this localized environment, as firms are aided by face-to-face contact, social networks, and a knowledge-sharing culture ingrained in them. The close presence of businesses supports the rapid spread of ideas, encouraging spontaneous cooperation, hence without the need for formal agreements. This is in line with earlier theories of industrial districts, in particular Becattini's emphasis on trust, social capital, and shared values as the key elements for fostering innovation and resilience in a localized economy. However, what sets this model apart is that it recognizes that local buzz alone is not sufficient for sustained competitiveness, especially in a globalized economy. As Bathelt et al. (2004, p. 38) argue, “firms in clusters are not only embedded in local interaction but also actively build linkages to the outside world in order to gain knowledge and new competencies”[12]. They introduce the idea of global pipelines, which refers to strategic links between clusters and external markets, research centers, and international companies. Such pipelines enable firms to access advanced technologies, various knowledge sources, and new business possibilities, thereby keeping clusters from being closed or stale. In contrast to purely localized approaches, this model recognizes that external knowledge is required to prevent lock-in effects, which occur when over-reliance on internal networks results in technological stagnation and diminished adaptability.

[12] Bathelt, H., Malmberg, A., & Maskell, P. (2004). *Clusters and knowledge: Local buzz, global pipelines and the process of knowledge creation*. Progress in Human Geography, 28(1), 31-56.

This double vision is especially important in the current economic landscape, where even historically dominant clusters need to interface with global supply chains, international trade networks, and cross-border collaborations to remain competitive. For example, high-tech industry clusters such as Silicon Valley or the automotive industry in Germany sustain their competitive advantage not just through local synergies but also through global partnerships with universities, research, and development laboratories, and, last but not least, multinational corporations. In the same way, traditional manufacturing clusters, such as Italy's fashion and footwear clusters, are supported by global pipelines that enable companies to stay attuned to emerging trends and markets.

While this model is a convincing synthesis of local learning and global integration, it also leaves questions about how companies balance internal integration and external openness. Maintenance of productive global pipelines demands investment in global networking, participation in global trade fairs, and strategic alliances, which may not be as accessible to all firms in a cluster, especially small ones.

The model also points out potential threats from excessive dependence on global linkages since disruptions in international trade or supply chains – such as those faced with the COVID-19 pandemic – can challenge clusters dependent on external inputs. Despite the above difficulties, the local buzz and global pipelines model remains a strong contribution to cluster theory and provides a holistic view of how companies leverage both local synergies and international connectivity. It is keen to stress the dynamic nature of modern industrial clusters where cross-regional embeddedness and global integration are not at odds but rather complementary mechanisms that facilitate sustained innovation and economic resilience.

1.2 Industrial clusters recurrent features

Industrial clusters have always exhibited distinct characteristics that contribute to drive economic dynamism, such as geographical proximity, sectoral specialization, and shared resources, and their success. These recurrent features not only enhance efficiency, facilitate knowledge transfer, and promote long-term sustainability, but also create environments that foster innovation and resilience, especially enabling industries to adapt to changing market conditions.

Within these networks, firms benefit from specialized suppliers, skilled labor and consequently localized spillover effects, where the exchange of knowledge accelerates technological advancements and process improvements. Over time, the synergies between firms create a self-reinforcing cycle of growth, positioning clusters as vital engines of industrial and economic development.

1.2.1 Geographical concentration

A defining feature of industrial clusters is geographical concentration, which provides internal firms with strategic advantages by fostering proximity to suppliers, customers, and research institutions. This spatial arrangement can only facilitate and improve the communication and collaboration between the actors, with faster decision-making and more effective problem-solving, maintaining focus on integrated supplier network. As firms interact daily and build face-to-face relationships, this supplier-buyer network allows all businesses within the industrial cluster to purchase and manage raw materials and semi-finished components more efficiently, while minimizing transportation costs and particularly lead times.

Beyond the previous logistical benefits, geographical clustering effect strengthens localized competitive advantages by granting firms access to specialized infrastructure, financial services, and government support tailored to industry needs. As a matter of fact, many successful clusters further capitalize on this dynamic by establishing joint research and development (R&D) facilities, common training centers, and shared logistical hubs, in order to foster innovation and reinforce long-term industrial growth of the ecosystem.

1.2.2 Clusters' specialization and "coopetition"

Specialization is another fundamental characteristic of industrial clusters, as they typically form around a core industry, in which all the firms concentrate on different aspects of the process: research and development, production, distribution, and innovation. This division of labor allows companies to refine their expertise, enhance product quality, and develop niche markets. For instance, in regions known for textile manufacturing, firms may specialize in fabric production, dyeing, finishing, and apparel manufacturing, working in synergy to strengthen the cluster's overall competitiveness. Moreover, specialization fosters continuous innovation and technological improvements, enabling firms to integrate new technologies, production techniques, and materials to maintain a competitive edge, reinforcing their position in global markets. As industries evolve, clusters serve as dynamic incubators for emerging sub-sectors, allowing firms to adapt to changing market trends while keeping access to skilled labor and essential resources.

A crucial aspect of clusters is the balance between collaboration and competition, often referred to as "coopetition". Firms within a cluster compete for market share, talent, and resources while simultaneously collaborating in areas such as research, workforce training, and infrastructure development. By working together, firms can collectively address industry challenges, share best practices, and develop cutting-edge technologies. For example, in highly competitive clusters, firms often form strategic alliances in order to cope with complicated matters such as sustainability, technological upgrades, and supply chain efficiency. At the same time, competition within clusters drives firms to differentiate themselves, adopt new strategies, and enhance their products and services. This duality between competition and cooperation ensures that clusters remain dynamic learning environments, with businesses pushing the boundaries of innovation while benefiting from shared industry knowledge.

1.2.3 Clusters' knowledge spillovers

Clusters also facilitate knowledge spillovers, which occur through multiple interactions among the actors within the IC. Employees moving between collaborative research projects, industry conferences, trade fairs, and particularly firms' relationships contribute to the rapid diffusion of know-how, ideas, and technological advancements, allowing companies to stay at the forefront of industry trends and adapt to changing market demands.

Clusters can be seen as cognitive systems, i.e. systems characterized by an endogenous and widespread innovative capacity and by an endogenous and widespread circulation of knowledge.[13] Moreover, the process of knowledge transfer and combination within industrial districts is a key factor in sustaining their long-term competitiveness and encourage technological advancements. They highlight the interplay between tacit and codified knowledge in shaping the dynamics of industrial districts; especially tacit knowledge, which is embedded in social relationships and experiential learning, and plays a fundamental role in fostering innovation[14]. In contrast with codified knowledge, that can be easily transmitted through formal mechanisms and processes, tacit knowledge requires close personal interaction and trust-based relationships among firms and workers within the district. This close relational dimension ensures that industrial districts maintain their innovative capacity by promoting localized learning processes and cumulative knowledge development.

Furthermore, "Local buzz and global pipelines" model complements this perspective by addressing the need for industrial districts to integrate local knowledge dynamics with international knowledge flows. They argue that even though local buzz – informal interactions, shared experiences, and face-to-face communication – fosters rapid knowledge diffusion within clusters, this is not sufficient to ensure long-term competitiveness in an increasingly globalized economy[15]. Global pipelines, defined as strategic external linkages with firms, research institutions, and markets beyond the cluster, are necessary to access new ideas, technological advancements, and specialized expertise. These external connections prevent knowledge lock-in and allow firms to remain at the forefront of innovation by integrating external knowledge into their localized production systems.

[13] Camuffo A., 6 R., (2011). *Italian Industrial Districts as Cognitive Systems: Are They Still Reproducible?*
[14] Camuffo A., Grandinetti R., (2004). *A theoretical model of knowledge transfer and combination within industrial districts*.
[15] Bathelt, H., Malmberg, A., Maskell, P. (2004). *Clusters and knowledge: local buzz, global pipelines, and the process of knowledge creation*. Progress in Human Geography.

Aa a consequence, this external knowledge assimilation often leads to groundbreaking innovations, as companies gain insights from competitors and research institutions, in order to refine their processes and products accordingly.

1.2.4 Focus on skilled labor

In today's world, a further essential feature of clusters is their ability to attract and retain what is known as skilled labor. The concentration of industry-specific employment opportunities within clusters makes them attractive destinations for highly skilled professionals seeking career growth and especially long-term stability. As a consequence, firms within clusters benefit from a shared labor pool of specialized workers, which helps reduce recruitment costs and ensures the availability of qualified and specialized expertise nearby.

On top of that, many clusters actively promote collaborations with universities and technical institutes, ensuring that human resources are constantly trained in line with evolving cluster and industry needs and technological advancements. As industries develop, these collaborations become increasingly important because they continuously create a steady pipeline of talent through specialized trainings and courses, and prepare workers for technological transitions, such as automation, digitalization, and the upcoming sustainability initiatives. Within clusters, this results in the presence of an experienced and adaptable workforce, which further reinforces their position as centers of industrial excellence.

Summing up: geographical concentration, specialization, coopetition, knowledge spillovers, and skilled labor attraction all contribute to a dynamic industrial ecosystem where internal firms can thrive and, at the same time, stimulate economic development across regions, by increasing competitiveness at the firm level. As global industries continue to evolve, understanding and leveraging the features of clustering will remain essential for policymakers and business leaders alike. By encouraging innovation, efficiency, and resilience, clusters will continue to play a crucial role in shaping the future of industrial development.

1.3 Supply chain dynamics and cluster integration into GVC

In the previous paragraph it was already highlighted how the interconnectedness within a cluster is the natural consequence of a plethora of companies' presence on the same ground. The effectiveness of this concentration depends on orchestrated approaches to sourcing materials, optimizing supplier relationships, and improving logistics. These are all fundamental elements to improve efficiency and competitiveness. Furthermore, local suppliers allow reducing transaction costs, the need for inventory and eliminates the burden related to import issues[16].

1.3.1 Proximity and collaboration between firms

Anyhow, proximity's most important pro is the opportunity it gives to have face-to-face interactions, which are often overlooked even though their positive influence on the cluster's environment is undeniable[17]. De facto, face-to-face interactions allow firms within clusters to build solid relationships with key suppliers, ensuring stable access to high-quality raw materials and components. Reduced lead times, better pricing negotiations, and improved supply chain reliability are all positive outcomes related to firms' proximity to suppliers, along with facilitated just-in-time manufacturing practices, which are particularly important to minimize inventory costs while ensuring timely production.

Procurement activities are affected as well by firms' collaboration. For instance, companies that decide to rely on joint purchasing agreements and shared logistics infrastructure might experience efficiency improvements and costs might decrease significantly. These shared systems provide firms within clusters with more tools to navigate volatility and maintain business continuity, especially during hard times. At the same time, this approach allows companies to have more bargaining power when dealing with suppliers, and at the same time distribution networks and transportation might positively be affected. As a matter of fact, even though economic uncertainty and

[16] Halse L.L., (2017). *The evolution and transformation of industrial clusters: a conceptual model*, International Journal of Manufacturing Technology and Management.
[17] Ketelhöhn, N. (2006). *The role of clusters as sources of dynamic externalities in the US semiconductor industry.* Journal of Economic Geography, Vol. 6, No. 5, pp. 679.

global disruption represents a huge risk for every company, it is undisputable that the ones operating within collaborative clusters have more tools at their disposal to cope with them.

1.3.2 Innovation in the supply chain management

Moreover, the emergence of smart procurement systems, driven by the adoption of digital smart technologies and data-driven decision-making, enables companies to anticipate supply chain disruptions, optimize sourcing strategies and enhance supplier performance more effectively (e.g., streamline operations, reduce waste, and enhance transparency). Advanced analytics, blockchain technology and digital platforms facilitate seamless collaboration between businesses, allowing them to share knowledge, improve forecasting accuracy, and increase supply chain resilience.

The transition toward knowledge-driven procurement also influences human capital and workforce dynamics within clusters. Firms increasingly seek highly skilled professionals with competencies in digital supply chain management, integrating new technologies, and implementing sustainable procurement practices and sourcing. As a result, clusters must continuously invest in education and training programs that align with the evolving demands of the knowledge economy.

Innovation in supply chain management is another key element within industrial clusters and companies are often encouraged to find innovative sustainable sourcing and procurement practices and circular economy initiatives. For this reason, it is anything but surprising that an increasing number of firms is adopting green procurement strategies, which focuses on environmentally friendly materials, energy-efficient processes, and waste reduction systems. Therefore, it is safe to say that finding environmentally responsible procurement strategies is a priority and the outcomes depend on firms’ adaptability to tightening regulatory requirements and corporate social responsibility (CSR) standards, that relies on sourcing recycled materials, reducing carbon footprints, and improving waste management systems. Furthermore, companies should invest in this field not only because of regulatory requirements and corporate social responsibility initiatives: what is even more important to them is the rising of a customer base whose sensitivity on the topic heavily affect how the firms are perceived overall.

Summing up, procurement strategies and supply chain management within industrial clusters play an essential role in ensuring their success and sustainability across time. Through supplier collaboration, digitalization, and sustainable sourcing, firms within clusters can enhance efficiency, reduce costs, and strengthen resilience against global market fluctuations. As industrial clusters continue to evolve, adopting innovative procurement practices will remain a key factor in ensuring long-term competitiveness and growth. Nowadays, firms are trying to diversify their supplier bases, adopting flexible production systems, and investing in digital tools to mitigate risks and ensure business continuity. Resilience in procurement and supply chain management is a key focus for industrial clusters, particularly in the wake of global disruptions such as the COVID-19 pandemic.

As a final remark, according to the conceptual model proposed by Halse, the evolution and transformation of industrial clusters involve continuous adaptation to external influences, including global supply chain disruptions and shifting economic conditions. As clusters mature, firms increasingly adopt flexible procurement strategies and diversified supplier networks to mitigate risks and enhance resilience.[18]

1.3.3 Global value chains and internationalization

This internationalization of supply chains has fundamentally reshaped the competitive landscape of industrial clusters. Focusing on the network, from traditionally grounded in local embeddedness, shared norms, and proximity-based collaboration, clusters now have increasingly been integrated into transnational production networks. Actually, GVCs are characterized by the spatial fragmentation of production and the functional dispersion of value-adding activities.[19] This transformation requires a shift in analytical perspective: from viewing clusters as closed, self-reliant systems, to understanding

[18] Halse L.L., (2017). The evolution and transformation of industrial clusters: a conceptual model, International Journal of Manufacturing Technology and Management.
[19] Gereffi, G., Humphrey, J., & Sturgeon, T. (2005). *The governance of global value chains*. Review of International Political Economy, 12(1), 78-104.

them as “nodes in Global Value Chains”, where their performance and upgrading paths are deeply influenced by global buyers, standards, and of course market dynamics. While some clusters succeed in capturing higher value-added activities and expanding their global relevance, others risk being confined to low-margin, labor-intensive segments. Participation in global value chains clearly reshapes the way firms innovate, upgrade, and interact with global markets, making the dynamics of cluster evolution increasingly complex and context dependent.

In brief, clusters are no longer territorially bounded or self-sufficient systems; rather, they are interconnected linkages embedded in global networks. Within this framework, three key upgrading trajectories are identified: process upgrading, which entails more efficient and technologically advanced production methods; product upgrading, involving the creation of more sophisticated or customized goods; and functional upgrading, where firms expand into strategic activities such as branding, design, or marketing.

The accessibility of these trajectories is strongly influenced by how value, knowledge, and power are distributed across participating firms, in other works by the governance structure of the GVC – which could be producer-driven, network-based or buyer-driven – the latter meaning how global buyers used explicit coordination to help create a highly competent supply-base upon which global-scale production and distribution systems could be built without direct ownership.[20]

In this context, it is fundamental to offer a crucial analytical framework of governance in GVCs, which can help explaining how different forms of buyer-supplier relationships shape the capacity of local firms to upgrade. There are different typologies of relations between buyers and suppliers, from arm’s length market relations, where supplier and buyer do not develop close relationships; network, in this case firms co-operate in a more close relationship, frequently dividing essential value chain competences between them; quasi-hierarchy, here only one firm exercises a high degree of control over other

[20] Gereffi, G. (1994) The Organization of Buyer-Driven Global Commodity Chains: How U.S. Retailers Shape Overseas Production Networks, in G. Gereffi and M. Korzeniewicz (eds), *Commodity Chains and Global Capitalism*, Westport: Praeger, pp. 95–122.

firms in the chain, usually identifying the characteristics of the product to produce, and sometimes specifying the processes to be followed; and hierarchy, where the lead firm takes direct ownership of some operations in the chain.[21] Clusters integrated into quasi-hierarchical chains, as is often the case in developing countries, may gain from process and product upgrading due to close buyer oversight and knowledge transfer. However, local firms embedded in quasi-hierarchical value chains often depend on powerful global buyers, who dictate production standards and timelines. Additionally, they often face substantial barriers to functional upgrading, particularly when key strategic activities such as branding or design remain under the control of lead firms abroad. While this can lead to faster upgrading in terms of quality and delivery capacity, it can also trap suppliers in low-margin, production-oriented roles if they are not able to move into branding, marketing, or R&D.

In contrast, other clusters – where firms retain greater control over product development and market orientation – are better positioned to capture higher value-added segments of the chain, even if they rely on international partners for production at scale.

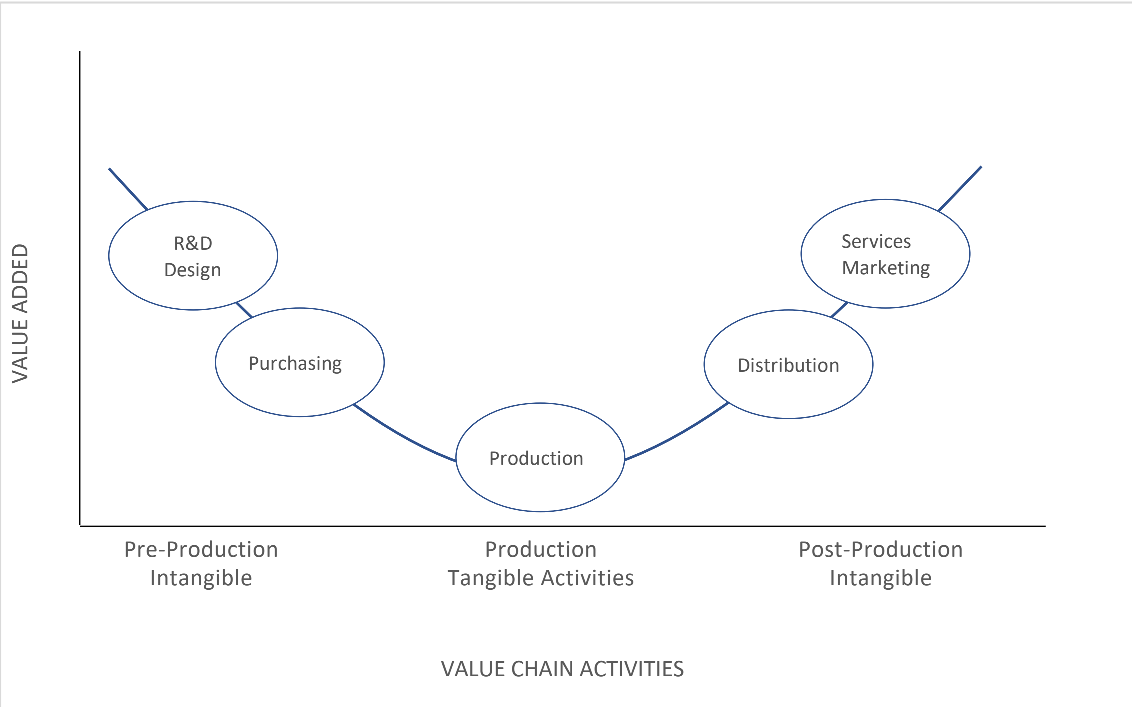
This strategic tension – between local embeddedness and global coordination – is a defining characteristic of modern industrial clusters. On the one hand, proximity to local suppliers, institutions, and labor markets facilitates knowledge spillovers, informal learning, and rapid innovation cycles. On the other, integration into GVCs offers access to international capital, cutting-edge technologies, and export markets. The challenge lies in balancing these forces: maintaining the territorial cohesion that fosters innovation, while leveraging global connections for scale and competitiveness.

These dynamics are clearly visible in the case studies explored in Chapters 2 and 3. Montebelluna, as an italian industrial district is interacting differently with the rest of the world, rather than what used to do in the past. As a matter of fact, international outsourcing is now a distinctive trait. Leading firms now need to outsource some stages of production to exploit rather than simply bend to the potential of the cheap labour

[21] Humphrey, J. and Schmitz, H. (2002) 'How Does Insertion in Global Value Chains Affect Upgrading in Industrial Clusters?', *Regional Studies* 36(9)/ pp. 1017–27.

available around the world.[22] In doing so, Montebelluna has managed to preserve high-value functions such as R&D, prototyping, and product customization, while outsourcing standardized production to lower-cost countries – a strategy that aligns with the "smile curve" theory of value distribution in GVCs, in which the highest value-added activities (design, innovation, brand management) remain in the home cluster, while cost-intensive manufacturing is outsourced to trusted production hubs abroad (see Figure 2 for reference). Vietnam, by contrast, has emerged as a cost-efficient manufacturing hub through the attraction of foreign-invested enterprises and participation in free trade agreements. Yet, many Vietnamese firms remain confined to cut-make-trim roles, with limited access to the branding, design, or distribution segments that generate the highest margins.

Figure 2. Smile Curve in GVCs.



Source: Author.

[22] Corò G., Micelli S., Industrial Districts as Local Systems of Innovation (June 2007). Ca' Foscari University of Venice Economics Working Paper No. 06/WP/2007, consulted in SSRN: https://ssrn.com/abstract=999503 or http://dx.doi.org/10.2139/ssrn.999503

Industrial clusters can navigate internationalization through a variety of strategic pathways. In cases where increased global competition undermines competitiveness in mass-market segments, a viable and effective response may involve repositioning toward high-end design and branding. For instance, the Arezzo gold jewelry district in Italy has successfully pursued this strategy, allowing firms to maintain global relevance despite declining price competitiveness. Additionally, the integration of sustainability certifications and the adoption of digital marketing platforms – such as in the furniture cluster of Friuli-Venezia Giulia – can significantly enhance access to international markets.[23] These forms of adaptation not only open new niche markets, but also align the cluster with evolving buyer expectations, particularly in environmentally conscious regions such as Northern Europe.

On top of that, integration into global value chains has a dual role: facilitating growth while simultaneously presenting structural constraints. On the one hand, it creates opportunities for knowledge transfer and access to international markets. On the other, it often places clusters in asymmetrical relationships with powerful lead firms, particularly in buyer-driven chains, such as textiles and footwear. In these contexts, upgrading is frequently limited to production-related improvements, while higher value-added functions remain concentrated in advanced economies.

At the same time, upgrading outcomes depend not only on chain governance and whether the lead firms support the repositioning of the cluster,[24] but also on the institutional capacity of local clusters. Supportive public policies, access to finance, cooperative training initiatives, and innovation intermediaries can significantly influence whether firms succeed in leveraging their GVC participation. The combination of global pipelines and local institutional support plays a crucial role in determining whether integration into GVCs becomes a path toward sustainable upgrading – or a mechanism of dependency and stagnation.

[23] De Marchi V., Gereffi G., Grandinetti R., (2018). Evolutionary trajectories of industrial districts in global value chains, *Local Clusters in Global Value Chains* (pp. 33-50). Routledge

[24] Humphrey, J. and Schmitz, H. (2000) 'Governance and Upgrading: Linking Industrial Cluster and Global Value Chain Research', *IDS Working Paper*, 120, Brighton: Institute of Development Studies, University of Sussex

In summary, the evolution from localized production systems to globally connected industrial clusters is neither linear nor uniform. It reflects a broader shift in industrial organization, especially it depends on how well firms and supporting institutions can leverage external knowledge, meet international standards, and retain core competencies. In this light, the internationalization of supply chains is not simply a threat to cluster survival, but a dynamic process of strategic adaptation – one that holds significant potential for long-term upgrading and resilience.

The ability to anticipate and respond to supply chain challenges is essential for maintaining competitiveness in rapidly evolving industries.

In other words, the ability of clusters to adapt and respond to supply chain challenges is a testament to their strength as economic ecosystems.

Chapter II - THE MONTEBELLUNA FOOTWEAR CLUSTER

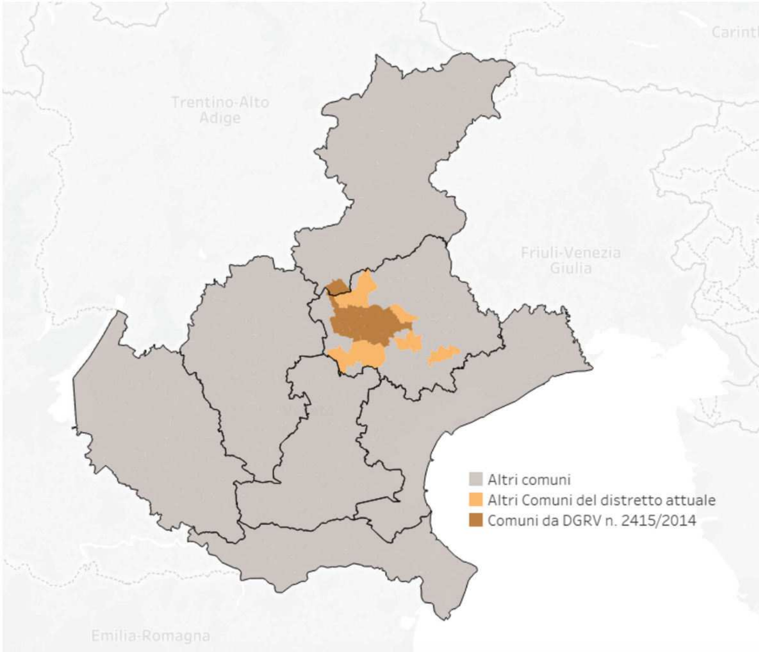
Following the theoretical overview in Chapter 1, this section explores how these dynamics materialize within the Montebelluna footwear district. At the core of northeastern Italy, it is exemplified how tradition and innovation can merge into a globally competitive industrial cluster. This chapter offers a detailed study of a paradigmatic example of a European industrial district that has successfully adapted to changing global conditions while preserving its identity rooted in craftsmanship and innovation. The analysis begins with the historical evolution of the district, from artisanal production in the early 20th century to its emergence as a world leader in technical and outdoor footwear. Particular attention is given to the cluster's structural features: its dense network of specialized small and medium-sized enterprises (SMEs), the role of key anchor firms, and the importance of relational proximity and shared knowledge in sustaining competitiveness. Furthermore, this section examines how firms within the Montebelluna cluster have responded to structural and systemic challenges, particularly those coming from rising labor costs, increasing environmental and sustainability requirements, and the accelerating pace of digital transformation in the global manufacturing landscape.

By exploring both the strengths and vulnerabilities of this district, this chapter contributes to a more nuanced understanding of how traditional clusters navigate globalization, while maintaining relevance in high-value market segments, and presents Montebelluna not only as a case of excellence, but also as a microcosm of the broader tensions facing European industrial districts in the 21st century.

2.1 History and development of the Montebelluna cluster

The Montebelluna Sportsystem district, located in the Veneto region of northeastern Italy (see Figure 3 for context), is a model case of regional industrial specialization and adaptability. In this area, it represents one of the major dynamic areas of production specialization of Made in Italy.

Figure 3: District identification.



Source: Distretto dello Sportsystem (2019)[25]

As a matter of fact, the union of various Municipalities close to each other in an efficient economic system has brought to the territory a very high degree of wealth and productivity. The district is a complex and evolving production ecosystem, distinguished by its resilience, ability to innovate, and enduring competitiveness in global markets. For example, the technological innovations of the 1960s, such as the introduction of the use of plastic, combined with a centuries-old artisan tradition for footwear, made the District of the Treviso province a cutting-edge and highly competitive industrial hub. Montebelluna's transformation from a small artisanal hub to a world leader in the production of technical and sports footwear reflects broader shifts in Italy's industrial landscape and offers valuable insight into the dynamics of localized production systems. This transformation also highlights how strategic geographic positioning, embedded social capital, and continuous investment in both tangible and intangible resources contributed to the district's international success. What began as a fragmented group of family-run workshops evolved over time into a cohesive, innovation-driven network of firms that operate with global reach and technological sophistication. This evolution

[25] In grey: other municipalities; in yellow: other municipalities part of the current district; in brown: municipalities officially identified by regional resolution in 2014. Distretto dello Sportsystem (2019)

was shaped not only by economic incentives and consumer demand but also by cultural factors, such as a strong local work ethic, a tradition of craftsmanship, and a sense of community identity tied to the production of high-quality footwear. These cultural assets acted as a glue for the industrial system, fostering cooperation, loyalty, and pride in local manufacturing excellence.

2.1.1 The beginnings of Montebelluna between 19th century and mid 20th century

The historical roots of Montebelluna's footwear industry have their origins in the ancient shoemaking tradition of the Republic of Venice, although the first official documents date only to the early 19th century[26]. Initially, production was small-scale and highly dependent on family labor and local supply chains but thanks to the geographical setting the district fostered a natural focus on outdoor and mountaineering footwear. As a matter of fact, the concentration of companies specializing in footwear in this area originates from factors linked to its optimal geographical position: Montebelluna is, in fact, halfway between the areas where raw materials are sourced (the leathers of the Bassano and upper Vicenza areas) and the places where finished products are consumed (the pre-Dolomite foothills and the north-eastern Alps), factors which have undoubtedly favored the development of this historic tradition. The interwar period saw modest growth in the sector, but it was only after World War II that Montebelluna began to consolidate as a distinctive industrial district.

The postwar Italian economic boom, or "economic miracle," in the 1950s and 1960s laid the foundations for Montebelluna's industrial rise. National infrastructure development, increased disposable income, and the growing popularity of winter sports created favorable demand conditions. During the 1950s, the Montebelluna District began specializing in the production of ski boots without, however, ceasing to produce traditional mountain shoes. On the contrary, it is thanks to these that Montebelluna managed to reach a moment of world fame: in 1954 the Italian expedition led by Ardito

[26] Montagner, M. (2017). Innovare l'identità e il marketing territoriale dello SportSystem. In F. Panozzo, *Memoria e storia del Distretto dello SportSystem di Montebelluna*, pp. 17-74. Venezia: Edizioni Ca' Foscari.

Desio climbed K2 wearing Dolomite boots, produced in the cluster.[27] Other champions contribute to the promotion of the District and, particularly, the 1956 Winter Olympic Games in Cortina D'Ampezzo prove to be an important channel for the diffusion of skiing and attract the attention of the entire world, especially the American market. It is in this context that we witness the transition from a production that was still purely artisanal to increasingly industrial-scale production and operations methods.

2.1.2 Cluster's growth in the late 20th century

During the 1960s, the demand for ski boots grew at an exceptionally rapid pace, reflecting broader societal shifts such as the increasing popularity of winter sports and the rise of mass tourism in alpine regions. Sales increased from approximately 180,000 pairs in 1963 to an impressive 700,000 pairs by 1969.[28] Thanks to this rapid growth, ski boots became the leader product of the local footwear industry and even the motivation for profound transformation in the Montebelluna cluster, while the sector of mountain boots experienced only average modifications during this period.

This moment marked a decisive break from the past, characterized by a big wave of significant innovations that redefined both products and production processes. One of the most notable improvements was the introduction of polyurethane injection molding: a pioneering technique that revolutionized ski boot manufacturing. As a matter of fact, this transition was not merely a technical upgrade, it represented a true technological leap that shifted the cluster's identity from one rooted in artisanal craftsmanship to one driven by industrial innovation and efficiency. As a result of this process, significant refinements have been achieved, such as greater standardization, better performance, and faster production (compared to the traditional leather and stitching methods). Of course, this innovation also reduced production costs and enhanced the structural properties of the boots, meeting the evolving demands of athletes and recreational skiers alike. As a result, the region witnessed a rapid growth of a dense network of small and medium-sized enterprises specialized in various aspects

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[27] Dolomite, 1954 La leggendaria conquista del K2, (2020), consulted in https://www.dolomite.it/it/it/news/dolomite/1954-karakorum

[28] Montagner M., (2017), Innovare l'identità e il marketing territoriale dello SportSystem, *Memoria e storia del Distretto dello Sportsystem di Montebelluna* (pp. 17-74).

of production, including the design and development of plastic molds, the creation of metallic components and buckles, product assembly, and the coordination of logistics and distribution. This network facilitated the emergence of synergies among these enterprises, which in turn lead to a dynamic, flexible, and highly specialized production ecosystem.

By the late 1970s, Montebelluna had emerged as the uncontested global leader in ski boot manufacturing, accounting for over 70% of world production.[29] This dominance was not only economically significant – generating employment, exports, and innovation – but also symbolically important, because it elevated the region as a model of industrial specialization and collaborative growth in a complicated globalized economy.

The 1980s introduced competitive pressures that forced structural transformation. In addition to external threats, the district had to face internal tensions such as generational turnover in family businesses, limited scalability of artisanal production models, and the need to incorporate new managerial practices. As consumer expectations evolved – especially toward customization, comfort, and design – local firms were compelled to adopt more sophisticated R&D and marketing capabilities. These challenges, however, served as catalysts for modernization and global integration.[30] Over the years globalization shifted the geography of production, and cost competition from Eastern Europe and Asia began to affect the profitability of traditional manufacturing. Montebelluna's reaction, rather than delocalization alone, was strategic repositioning. Many firms retained high-value activities such as R&D, prototyping, logistics, and design in the district while outsourcing labor-intensive stages of production abroad. This strategy echoes the concept of the "smile curve" developed in the previously presented value chain theory: the most value-added segments – like branding, innovation, and design – were kept locally, while commoditized functions were globalized. In this way, the entrepreneurial organization of Montebelluna

[29] Zaslowsky, Dyan (November 1989). "Getting in Gear For the Slopes". *The New York Times*. p. XX12.
[30] Montagner M. (2017). "Innovare l'identità e il marketing territoriale dello SportSystem". In F. Panozzo, *Memoria e storia del Distretto dello SportSystem di Montebelluna*, pp. 17-74. Venezia: Edizioni Ca' Foscari.

demonstrated its ability to learn, adapt, and strategically reposition itself through targeted investments and international partnerships.

Policy also played a crucial role in this transition. Starting in the late 1980s and continuing into the early 2000s, local institutions and industry stakeholders began implementing initiatives to mitigate the effects of competition and relocation. These included financial support for innovation, creation of cluster-specific consortia, and incentives for participation in international trade fairs. One example is the funding allocated through regional innovation hubs, which allowed SMEs to access technologies previously available only to larger corporations. Furthermore, Montebelluna's alignment with European regional development policies enabled the district to benefit from EU structural funds, particularly for digitalization and sustainability projects, as "The 6th EU Research Framework Programme". [31] Regional institutions, in collaboration with the European Union, supported industrial upgrading through targeted incentives, training programs, and export promotion schemes. Collaborations with universities – such as the University of Padua and Ca' Foscari University of Venice – became instrumental in reinforcing local knowledge systems and sustaining innovation capacity.

2.1.3 Montebelluna's key elements of development

The district also benefited from Italy's broader tradition of localized industrial development. This tradition, deeply rooted in Italy's regional development models, emphasized the importance of SMEs embedded in local communities and linked through cooperative relationships. Similar to other Italian clusters, like the Prato textile district and the Sassuolo ceramics cluster, Montebelluna developed a strong internal cohesion and a rare ability to combine formal and informal knowledge throughout the years. Of course, this integration promoted a vibrant environment for continuous learning and innovation, where tacit knowledge – shared through daily interactions, apprenticeships, and local networks – was complemented with more formalized research and technological development. On top of that, these agglomerations thrived on localized trust, specialized labor pools, and cumulative expertise; indeed, they benefit from

[31] European Commission, (2002), The 6th EU Research Framework Programme, consulted in https://ec.europa.eu/commission/presscorner/detail/en/memo_02_152

increasing returns and network externalities that enhance competitiveness over time[32]. In Montebelluna's case, these characteristics translated into a resilient and self-reinforcing system capable of adapting quickly to changing market dynamics and evolving with technological and market shifts while maintaining its unique industrial identity.

As the cluster evolved from a traditional, craft-based economy to a globally recognized hub for sports footwear, its development was shaped not only by technological innovation but also by the deep integration of industrial activity with the local community. As a matter of fact, Montebelluna serves as a clear example of a local production system where industrial development and the social fabric are deeply interconnected. The embeddedness of economic activity within the territory allowed the district to evolve beyond mere cost-based competitiveness, moving instead toward forms of innovation and collaboration grounded in trust, long-term relationships, and social cohesion. Within this system, a shared culture and set of values emerged among entrepreneurs, workers, and families, fostering mutual understanding, facilitated informal knowledge exchange, and reinforcing a strong work ethic recognized across the entire value chain. This close synergy between the manufacturing processes and the local community created a powerful and resilient economic engine that external competitors could not easily match. Moreover, the district did not only thrive on physical infrastructure and labor availability but also on intangible assets like localized knowledge, tacit know-how, and a deeply industrial tradition. These circumstances heightened the overall ability to respond to changes in market and technological conditions, contributing to the adaptability along with overall productivity of the territory.

Its anticipated importance of human capital became increasingly evident and essential as the district transitioned toward a knowledge-based economy. The accumulation and diffusion of know-how – ranging from design and materials science to production techniques and logistics – formed the basis of innovation in the cluster. Rather than

[32] Krugman P., (2010). *The New Economic Geography, Now Middle-aged. Regional Studies, Taylor & Francis Journals, vol. 45(1), pages 1-7.*

depending on formal R&D institutions, knowledge in Montebelluna was often developed and transmitted through informal networks, learning-by-doing, and close collaboration among firms, suppliers, and employees. Such a dense network of interactions made the district a ground fertile enough for the development of complex and specialized competences, allowing it to sustain high levels of product quality, technological advance, and functional integration.

Economic complexity in the district did not come from diversification as such, but from being able to combine specialized capabilities in more and more complex configurations. The presence of a numbers of niche producers, each contributing unique competencies, created an environment for production that was flexible, innovative, and subject to cross-firm learning. Simultaneously, family culture and close social relationships were central to maintaining trust, lowering transaction costs, and ensuring continuity over generations. These social dynamics were essential in the long-term competitiveness of the district and in the development of a strong sense of belonging and territorial identity within the context of clearly defined and geographically delimited area.

This unique combination of social cohesion, accumulated knowledge, and productive specialization formed the basis of Montebelluna's historical success and continues to define the enduring strength of the cluster today.

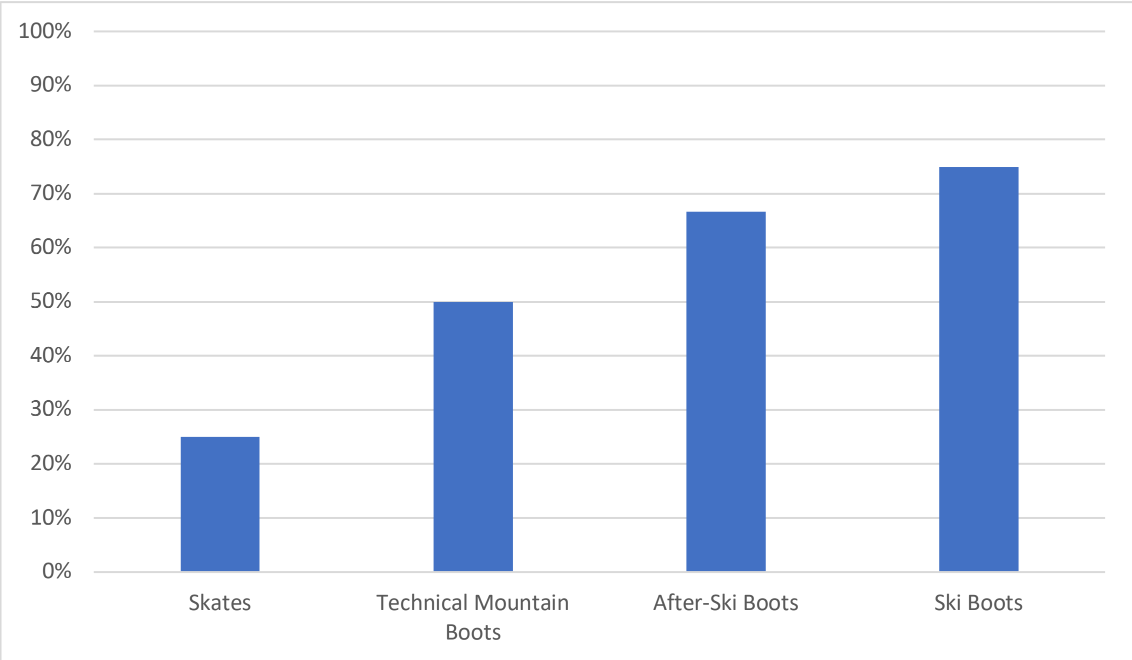
2.2 Key Players, specialization, and innovation strategies

With a total of 622 total businesses and 7.931 people employed[33], Montebelluna's Sportsystem district is home to some of the world's leading companies in technical and sports footwear. Other data, that needs to be taken into account, is the impressive turnover of around €1.9 billion, with foreign markets accounting for a substantial share,

[33] data relating to CORE business activities as defined by Veneto Regional Council Resolution 2415/14, only for Ateco (core activity) codes 14.2, 15.1, 15.2 and 32.3 + connected activities relating to Ateco codes 13, 14 (excluding 14.2) and 74.1 Source: Office of Statistics, Treviso and Belluno Chamber of Commerce and Infocamera (Italian Business Register) data (Dec 2022, Istat – Office of National Statistics, Veneto Lavoro Regional Work Institute).

to be more precise around 75% of total sales.[34] What is even more impressive is what is illustrated in Figure 4, namely that Montebelluna is the place where are manufactured one fourth of the world's skates, around half of the world's technical mountain boots, two thirds of after-ski boots, three-quarters of ski boots and a consistent percentage of the world's motorcycle boots.[35]

Figure 4. Global production share by product category.



Source: Author.

These figures underscore Montebelluna's strategic importance as a global hub for the production of high-quality, high-performance specialized sports footwear, where export plays a critical role and underlines the international breath of the cluster.

[34] Bettiol M., Chiarvesio M., Di Maria E., Micelli S., (2018), Manufacturing, where art thou? Value chain organization and cluster-firm strategies between local and global, *Local Clusters in Global Value Chains* (pp. 155-174). Routledge

[35] De Marchi V., Gereffi G., Grandinetti R., (2018). Evolutionary trajectories of industrial districts in global value chains, *Local Clusters in Global Value Chains* (pp. 33-50). Routledge.

2.2.1 Leading actors in the cluster

At this point, to properly understand the efficiency of this cluster it is necessary to consider the firms that strove within it throughout the years: names like Dalbello, Garmont, Geox, La Sportiva, Salewa, Scarpa, and Tecnica Group exemplify the cluster's strength in high-performance product categories. The latter, for instance, controls multiple brands and integrates R&D, design, and marketing functions across its portfolio. Scarpa has gained a reputation for innovation in alpine footwear and mountaineering equipment, supported by its deep investment in sustainability and user-centered design. Moreover, Salewa, a South Tyrolean brand with a very strong design and development presence in the Montebelluna district, is known for its innovative alpine footwear and technical equipment tailored for mountaineering and trekking. As part of the Oberalp Group, it combines its performance-focused R&D and technologies with sustainability efforts – using recycled and low-impact materials – while highlighting the company's integration of engineering innovation with practical mountaineering needs.

As mentioned in the previous paragraph, it is important to emphasize the presence of a diverse mix of companies in the cluster: including firms originally founded in Montebelluna, but also international players that have invested in the district to leverage its local expertise and contextual knowledge. These global firms have done so by acquiring local businesses or setting up their own R&D centers within the area. Leading international brands such as Decathlon, Fila, Nike, and Timberland have established research and development departments in Montebelluna, actively engaging in partnerships and collaborative initiatives with local firms.[36]

In order to illustrate the different assortment and strategic roles of companies within the Montebelluna cluster, the following Table 2 provides an overview of some of the key firms operating in the area and categorize them based on their origin – whether local or external – specifying the type of facility they have established in the Sportsystem. This overview highlights one more time the hybrid nature of the cluster, where local heritage

[36] Buciuni G., Finotto V. (2016), "Innovation in Global Value Chains: Co-location of Production and Development in Italian Low-Tech Industries," *Regional Studies*, Taylor & Francis Journals, vol. 50(12), pp. 2010-2023.

brands coexist and collaborate with national and international players, reinforcing Montebelluna's role as a global hub for sports and outdoor footwear production.

Table 2. Key firms operating in the Sportsystem cluster and type of facility

Company	*Origin*	*Type of Facility in Montebelluna*
Dalbello	Local (Casella d'Asolo)	R&D, Production
Geox	Local (Montebelluna)	Headquarter, Design, Logistics
Nike	External (USA)	Production of football shoes for "Top of the Line" players
Scarpa	Local (Asolo)	Production, R&D, Operations
Tecnica Group	Local (Giavera)	Headquarter, R&D, Sales and Marketing, Accounting, HR
La Sportiva	External (Ziano di Fiemme)	Outlet Store, Production (Meet Italia)
Salewa	External (Bolzano)	Sourcing, R&D and Purchasing Offices, Collaboration Hub
Vibram	External (Varese)	Technical Partnerships, Vibram Workspace for Innovation and Product Testing

Source: Elaborated by Author, based on company websites, public records and articles, and data from Assosport (2023).[37]

In addition to companies, other stakeholders also play a vital role within the Montebelluna cluster. One notable example is The Club of Italian Districts, established in 1994, which has been instrumental in fostering localized systems within the cluster.

[37] Details consulted in Tecnica Group, https://www.tecnicagroup.com/it/hq-detail-italy/; La Sportiva, https://www.lasportiva.com/it/meetitalia, https://www.lasportiva.com/it/storia; Salewa Footwear Division, https://www.oberalp.com/it/eventi/20anni-footwear-division-montebelluna; Geox, https://www.linkedin.com/company/geox-spa/about/; Vibram Workspace Montebelluna, https://www.vibram.com/it/brand/br_where_we_are.htmlScarpa, https://www.linkedin.com/company/scarpaspa/; Dalbello S.r.l. a Socio Unico, https://www.linkedin.com/company/dalbello/;

The club has significantly strengthened connections with key decision-making bodies at both local and national level.[38]

2.2.2 The importance of specialization

The cluster's specialization lies in technically demanding products. Ski boots, hiking boots, trail running shoes, and hybrid urban-performance models require multi-material construction, ergonomic fitting, and resistance to extreme conditions. These requirements have driven firms to adopt advanced technologies such as digital foot scanning, 3D prototyping, and biomechanical testing. In-house innovation is complemented by strategic alliances with research labs and sports science institutions. Within this framework, a feature that comes up as particularly important is knowledge (both codified and tacit). In fact, the cluster exemplifies the transition observed in advanced industrial economies since the 60s onwards: from systems rooted in natural resources and standardized production inputs to those driven by intellectual capital, learning processes, and continuous innovation. The central position played by knowledge is expressed not only in product development itself but in organizational transformation as well. As a matter of fact, firms adopt flexible work practices, rely on highly skilled labor, and compete in international markets by emphasizing high product quality, customization, and technological sophistication. This knowledge-intensive trajectory aligns the district of Montebelluna with broader changes in global industrial dynamics, where competitive advantage increasingly derives from the capacity to generate, absorb, and apply specialized knowledge.[39]

On top of that, the district's strong community orientation not only encourage a sense of shared identity and belonging among actors, but also contributes to its stability and strong identity. A case in point is family-run businesses, which often last generations, maintaining a continuity of values and local embeddedness that is extremely rare in global supply chains. These intergenerational connections contribute significantly to building and maintaining trust among the various stakeholders involved, leading to long-term investment strategies, continuity in quality standards, and strong employee loyalty

[38] Fondazione per le qualità italiane, https://symbola.net/#
[39] Powell W. W., Snellman K., (2004). *The Knowledge Economy.*

– all of which translate into competitive advantages in a globalized, often volatile, marketplace. Assuming that detailed knowledge of the production processes, of the internal structure and of the network are the intrinsic power of the district; it is reasonable to conclude that manufacturing continues to live in Montebelluna thanks to the district's strong community foundation, which supports the strong presence of R&D, design, prototyping, quality management, and supply chain management – essentially all the functions that surrounds manufacturing operations.

What is even more important to highlight is that communities and the environment in which companies operate are deeply interconnected. The usual community-oriented language used by businesses in marketing and social responsibility is absolutely not sufficient, as real impact requires genuine engagement. In order to do that successfully the environment needs to be understood. Therefore, it is fundamental not to considerate it merely as a competitive space: in fact, the environment is a multicultural, dynamic context shaped by shared experiences, values, and histories.

To create lasting value, companies must move beyond transactional approaches and become active participants in the communities they influence. This means building relationships based on trust, shared goals, and mutual development. When businesses engage authentically, they contribute to local networks, collaborative initiatives, and social resilience[40]. A true community strategy involves recognizing the community as a partner, not just a beneficiary.

2.2.3 Innovation within the cluster

Moving on from the idea of community to the concept of open innovation we can consider the interaction between the two as linked by a red cable that connects majority of the actors involved in the Montebelluna's cluster: in fact, it is through constant interaction that companies manage to spark innovation, otherwise acting in isolation they would not take advantage of the cross-fertilization of ideas and entering new

[40] Acosta F. J., (2024). The Community in Business: Strategic Relationship Between Companies and Environment and Marketing.

products in the market would require more time.[41] For this very reason, the cluster is characterized by a high degree of trust and informal cooperation, elements that are often cited as intangible assets of successful industrial districts.

In this context, Open Innovation (OI) plays a central role in sustaining the cluster's competitiveness. OI allows firms, especially SMEs, to access external knowledge and resources through collaborations with other firms, universities, or institutions. These inter-organizational knowledge flows – enabled by geographic proximity and mutual trust – support faster experimentation, reduce transaction costs, and empower even the smallest firms to contribute to the innovation process.

As a matter of fact, clusters like Montebelluna provide fertile ground for OI by facilitating entrepreneur-to-entrepreneur exchanges and knowledge spillovers that would be difficult to replicate outside such embedded ecosystems. This bottom-up dynamic, driven by local actors rather than top-down policy design, reinforces the region's innovation capacity and resilience over time.[42]

More in detail, the most important recent innovation in the footwear cluster industry that heavily influence the Montebelluna's district is the so-called "plastic revolution" started by Nordica (today one of the brands of Tecnica Group). In the 1960s, when Nordica introduced plastic ski boots, designed and made by Bob Lange, skiing changed for the better. Unlike stiff, weather-prone leather models, plastic offered something more: a way to fine-tune flex and stiffness, giving skiers better control and comfort.

Furthermore, Nordica led this shift, starting with the buckle-fastened boots in 1960 and the fully plastic Astral Slalom in 1972, featuring one of the first inner liners and a five-buckle design. Then came the legendary Grand Prix, which introduced internal ribbing for better flex and stability. Later, the Dobermann set the bar higher for what concerns race boots with offset cuff rivets and a thicker shell for smoother flex. These weren't

[41] Canel E., "Saper fare e innovazione", (2017), In F. Panozzo, *Memoria e storia del Distretto dello SportSystem di Montebelluna*, pp. 105-162. Venezia: Edizioni Ca' Foscari.
[42] Radziwon, A. (2023). *Open innovation in regional innovation clusters and entrepreneurship ecosystems*. In H. Chesbrough, A. Radziwon, W. Vanhaverbeke, & J. West (Eds.), The Oxford Handbook of Open Innovation. (Chapter 25, pp. 423–437). Oxford University Press.

mere technical upgrades, they were bold reinventions that reshaped how ski boots performed. That leap in material and design helped shape the modern ski experience and remains one of the sport's defining innovations.[43]

Moreover, it needs to be addressed that these sources of innovation have results which flow according to how they are perceived from athletes, trainers, rescue teams, and more broadly all those key customers that test prototypes. In other words, feedback from professional users give companies a huge insight into which products of theirs have the most potential.

Finally, sustainability has emerged as a major driver of innovation. Companies are increasingly using bio-based materials, adopting eco-certifications, and implementing circular economy principles

In the footwear industry, sustainability has become a key concern, involving environmental, social, and economic dimensions. Sustainable practices are becoming more and more essential in the industry encompassing measures such as reducing the use of harmful chemicals, lowering energy use and noise in factories, while improving workers' conditions. At the same time consumer expectations around sustainability are also rising, driven by growing awareness and, as a result, companies must adapt and demonstrate greater transparency regarding product origins and ethical production methods. Sustainability is now viewed not as a fixed goal but as an ongoing process that must extend to all production stages – from raw material sourcing to final packaging. However, globalized supply chains complicate what might otherwise appear to be a straightforward goal, as most shoes are now made in countries with differing regulatory standards, making responsible and conscious consumption more difficult to achieve.[44]

One particularly inspiring initiative in the Montebelluna district is "Recycle Your Boots", which is a three-year project (2021 - 2024) co-funded by the European Union's LIFE Programme and spearheaded by Tecnica with six partners, including the Sportsystem

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[43] O'Neill D., (2018). *A Heritage of Strength. Eighty years of bootmaking culminates in the Nordica Promachine*, consulted in https://freeskier.com/stories/nordica-heritage-of-strength

[44] Polese F., Ciasullo M. V., Troisi O., Maione G., (2019). "Sustainability in footwear industry: a big data analysis", *Sinergie, italian journal of management*, 37, pp. 149-170.

Foundation. Its goal is to bring circular-economy thinking to ski-boot production, a sector long plagued by hard-to-recycle mixed materials. The project sets up collection points in shops and online, gathering used boots of any brand. These boots are then dismantled, processed, and, wherever possible, recycled or given a second life in new applications.[45]

Overall, the district represents a truly impressive and constantly evolving cognitive deposit, fueled by the ability of individual companies that make use of the typical mechanisms through which knowledge circulates in the district: from the reverse engineering of products to the mobility of human resources from one company to another, from relationships between companies or even just interpersonal ones to the spin-offs that are still observed in the district, although rarer than in the past. Knowledge circulates and enters into combination creating new knowledge, remembering that also in this area the local-global dialectic plays or rather, has always played, an essential role. This is demonstrated by the true excellence achieved by the Sportsystem in creating useful relationships – in terms of acquiring information, knowledge, and experience – with experts and athletes of many sports disciplines.

2.3 The cluster's role in the global supply chain

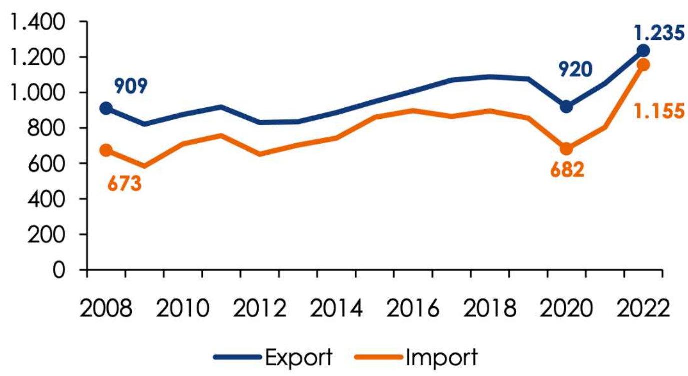
What enables a traditionally local industrial district like Montebelluna to maintain a leading position within increasingly complex and globalized supply chains? There is no doubt that Montebelluna's role in the global supply chain is complex and it is a result of decades of strategic innovation, localized expertise, embedded territorial knowledge, and collaborative international linkages. The success of the district is not only due to its manufacturing capability but especially because it has been an innovator of global production chains while keeping in control high-value-added activities such as R&D, design, prototyping, and strategic brand management. The firms in the district have developed supply chain strategies that are responsive and flexible, which enable them

[45] Fondazione Sportsystem, https://fondazionesportsystem.com/progetti/recycle-your-boots/

to succeed in a globalized environment where there is uncertain demand, fast-changing technologies, and rising sustainability expectations.

To place Montebelluna's role in the context of broader GVC trends, the latest economic export statistics must be considered. Between 2009 and 2022, trade flows in the Montebelluna district showed a generally positive path, where exports have consistently outperformed imports. As shown in Figure 5, exports rose from €909 million in 2009 to €1.235 billion in 2022, reflecting the district's strong international integration and specialization.[46]

Figure 5. Montebelluna District: Evolution of trade between 2009 and 2022.



Source: Intesa Sanpaolo by Assosport (2023).

Nonetheless, the first quarter of 2024 revealed remarkable challenges, with exports declining by 21.2%, largely due to a demand reduction in major destination markets, such as Germany and Austria. Moreover, this contraction was accompanied by a 7.1% decrease in production volumes along with the employment level.[47]

In the second quarter, while the overall downward trend persisted, there were early signs of recovery. In spite of the continued contractions in the district's primary export destinations – France, Germany, and the United States – the export decline narrowed to

[46] Assosport (2023), Calzatura sportiva e sportsystem di Montebelluna: le sfide di competitività sui mercati internazionali, consulted in https://www.assosport.it/wp-content/uploads/2024/12/Intesa_Sanpaolo_Osservatorio_Economico_Sportsystem_2022.pdf
[47] La Conceria, (2024), Montebelluna district marks -21.2% in the first quarter, consulted in https://www.laconceria.it/en/footwear/montebelluna-district-marks-21-2-in-the-first-quarter/

13.9%, supported by strong growth in several secondary markets – namely Poland (+56%), Spain (+14%), China (+26%), and the Netherlands.[48]

Preliminary figures for the final quarter of 2024 largely confirmed these trends, indicating a modest stabilization in the district's export performance, though persistent volatility remains. [49]

Despite these setbacks, the outlook provided by the Research Department of Intesa Sanpaolo remains positive. For the five-year period 2024–2028, a forecasted average annual growth rate of 2.7% in exports of Italian manufactured goods is expected. Under this scenario, future investments in technology and sustainability will play a crucial role in keeping pace with the competitiveness. Enterprises within the Montebelluna cluster appear to have the resources to overcome these challenges: economic and financial indicators showed an improvement in 2022 compared to the pre-pandemic levels in 2019, both in terms of profitability – reflected by an increase in the median EBITDA margin from 7.7% to 8% – and in capitalization, through the equity-to-liabilities ratio, which moved from 31.9% to 34.5%. Among the various sectors, the sporting goods section including boots and skis recorded the highest level of added value per employee, with a median of €70,500 in 2022.[50]

2.3.1 Montebelluna's position as a strategic hub

The Montebelluna cluster exemplifies how localized industrial systems can thrive in a globalized world by focusing on innovation, specialization, sustainability, and strategic coordination. One of the defining features of Montebelluna's role in the global supply chain is its ability to act as a strategic hub for product conception and development,

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[48] Intesa Sanpaolo, (2024), Monitor dei distretti industriali del Triveneto al secondo trimestre 2024, consulted in https://group.intesasanpaolo.com/it/newsroom/comunicati-stampa/2024/12/monitor-distretti-industriali-del-triveneto-al-secondo-trimestre

[49] Intesa Sanpaolo, (2023), Monitor dei distretti industriali triveneti al IV trimestre 2022, consulted in https://group.intesasanpaolo.com/it/newsroom/comunicati-stampa/2023/06/monitor-distretti-industriali-triveneti-al-iv-trimestre-2022--ex

[50] Camera di commercio Treviso Belluno, Sportsystem Economic Observatory. Sportsystem Foundation presents economic and social data for 2023 and an evolutionary interpretation, (July 2024), consulted in https://www.trevisobellunosystem.com/en/news/sportsystem-economic-observatory-sportsystem-foundation-presents-economic-and-social-data-for-2023-and-an-evolutionary-interpretation/

even if some phases of production have been delocalized. While many clusters around the world struggle to hold on to core competencies in the context of international competition, Montebelluna has effectively safeguarded the heart of its value system – knowledge, innovation, design, and high-quality control – by embedding these activities into the local ecosystem. Firms based in Montebelluna manage complex international production networks, coordinating inputs from multiple countries while maintaining brand and product leadership from their home base.

Accordingly, Montebelluna is deeply integrated into global value chains. As already emphasized, firms that control design, branding, and standards-setting are better positioned to extract and retain value in global markets.[51] Montebelluna firms often occupy this position, acting as lead firms within vertically disintegrated production networks. This dynamic reflects what has been described as the evolutionary adaptation of industrial districts, which must continuously redefine their role within global production networks in response to shifting external conditions and internal learning processes[52].

In addition, Montebelluna-based firms are increasingly taking part in co-creation initiatives with international clients. For example, some companies design customized products for major brands and retailers in North America and Japan, incorporating feedback from those markets directly into their design cycles. This integration reflects again a "glocal" approach – thinking globally while acting locally – that enhances responsiveness and fosters loyalty in international partnerships. As a matter of fact, local learning and selective global engagement are crucial mechanisms that allow clusters to not only survive but thrive within complex international value systems, especially when firms act as knowledge gatekeepers and maintain strong connections with local institutions: exactly the strategy that Montebelluna's firms have pursued.

Montebelluna's resilience and ability to maintain a central role in global supply chains despite international competition is a testament to its dynamic capabilities. In point of

[51] Gereffi, G., Humphrey, J., & Sturgeon, T. (2005). The governance of global value chains. *Review of International Political Economy*, 12(1), 78-104. https://doi.org/10.1080/09692290500049805
[52] De Marchi V., Gereffi G., Grandinetti R., (2018). Evolutionary trajectories of industrial districts in global value chains, *Local Clusters in Global Value Chains* (pp. 33-50). Routledge.

fact, firms in the district have consistently shown the capacity to reconfigure operations and integrate new technologies. During the years, these abilities are particularly evident in their response to global crises, such as the 2008 financial downturn and the COVID-19 pandemic, during which firms accelerated digitalization, diversified markets, and shifted towards more sustainable business models to mitigate risks. Moreover, companies in the district have increasingly strengthen collaborative links both locally and internationally – by investing in collaborative R&D projects, joint ventures with foreign partners, and multi-sectoral innovation – in order to reinforce their absorptive capacity for external knowledge. This dynamic response highlights the strategic importance of a firm's ability to anticipate shifts in the market, identify new opportunities or threats, and respond effectively by reorganizing resources, if needed. Actually, in highly competitive and fast-evolving environments, it is not merely the possession of specific resources that ensures long-term success, but rather the ability to integrate, build, and continuously reconfigure internal processes and external collaborations in response to changing conditions. In particular, companies that exhibit these three main abilities – sensing opportunities and threats, seizing them through resource mobilization, and transforming their organizational structures to maintain evolutionary fitness over time[53] – are able to evolve with the context, preserving their relevance and performance over time.

2.3.2 Montebelluna as a learning platform

Montebelluna firms have precisely demonstrated these capabilities: they sensed the threats posed by globalization, seized new market opportunities by innovating and repositioning their brands, and transformed their production models to embed themselves more firmly in global value chains. The capacity to integrate, build, and reconfigure competencies has thus become a hallmark of competitive firms and clusters in the modern economy, allowing Montebelluna to thrive where others have declined. Thanks to this capacity, another important aspect of Montebelluna’s global role is highlighted: its function as a learning platform. Through partnerships with global universities, business schools, and industry associations, the district exports not only

[53] Teece D.J., Pisano G., Shuen A. (1997). Dynamic capabilities and strategic management.

products but also managerial models and training methodologies. As a matter of fact, international representatives and experts frequently visit Montebelluna to study its industrial model and understand how such a small territory can maintain global relevance through continuous innovation and specialization. Building on these dynamic capabilities, Montebelluna firms have also developed highly sophisticated supply chain structures. Their approach reflects a strategic balance between local anchoring and global expansion, ensuring that high-value activities are retained within the district while production processes are efficiently distributed across international locations.

Looking now at the typical supply chain structure, three stages are involved: high-value activities such as R&D and branding are retained locally; semi-automated production and component assembly are often relocated to lower-cost European or Asian countries; final assembly and distribution may be globalized depending on market demand. This tiered structure allows firms to optimize costs while preserving core competencies. As a matter of fact, Montebelluna firms engage with global partners across multiple continents: e.g., outsourced production often takes place in Romania, Hungary, Vietnam, and China, while relationships are governed by strong oversight mechanisms and long-standing partnerships. Lead firms from the cluster establish technical guidelines, conduct training for offshore teams, and frequently visit partner facilities to ensure standards are met. This is a clear example of what can be called "relational governance" in global value chains, where trust and repeated interactions play a significant role in maintaining quality and coordination across geographies[54].

Montebelluna's positioning in global supply chain is further strengthened by its strategic integration of digital technologies. The adoption of new technologies, including ERP systems, blockchain for tracking, and digital twins for prototyping has significantly improved transparency, responsiveness, and operational efficiency across the supply chain. These technologies allow firms to track carbon emissions, monitor supplier performance, and customize orders in real time. Moreover, the use of advanced analytics and artificial intelligence-driven forecasting tools simplifies the management

[54] Gereffi, G., Humphrey, J., & Sturgeon, T. (2005). The governance of global value chains. Review of *International Political Economy*, 12(1), 78-104.

of inventory complexities and meet increasingly strict global sustainability standards. As a matter of fact, digitalization enables districts like Montebelluna to align closely with the evolving requirements of global consumers and institutional stakeholders, strengthening their competitive advantage in a fast-changing global markets.[55]

Moreover, it is important to emphasize that the cluster in object acts as a showroom on a worldwide basis. Trade fairs such as ISPO Munich and Outdoor Retailer in the US are key and viral platform where Montebelluna companies exhibit their products and maintain visibility in global markets. International buyers, distributors, and brand partners frequently visit Montebelluna to witness innovations in person, establish relationships, and hopefully collaborate to develop future collections. As a matter of fact, it is in these exact occasions that global brands tend to interact with the local firms with the aim of innovative product development, pilot testing, and limited series manufacturing. This latter approach is particularly true in niche segments like ski mountaineering and trail running, where performance requirements are high and consumer preferences are rapidly evolving.

Over and above that, Montebelluna firms belong to active global advocacy organizations and standard-setting bodies. The increasing significance of international certification, social responsibility, and traceability in production has led Montebelluna-based companies to implement overall systems of sustainable purchasing and quality assurance that go well beyond the letter of the law. Not only are these companies adhering to international standards, but they are also influencing them through their technological dominance and encouraging cooperation with European organizations and associations within the industry. This claim is further supported by the strong local institutional ecosystem, that has helped businesses adapt to international trade complexities. By being members of global committees involved in sports equipment, safety standards, and environmental certifications, companies have a say in the regulatory environment of global markets. This thereby positions the cluster as not just a producer of products but also as a source of global standards and best practices.

[55] De Marchi V., Gereffi G., Grandinetti R., (2018). Evolutionary trajectories of industrial districts in global value chains, *Local Clusters in Global Value Chains* (pp. 33-50). Routledge.

This dynamic ability can be summed up by Durante, who observes: "*If by district we mean a closed territory in which a certain number of companies manufacture a certain product, the Sportsystem appears to be reduced compared to twenty years ago. If by district we mean an organism that has lengthened the supply chain looking for production sources far from its center, the Sportsystem has grown in a formidable way. I calculate that for every employee in Montebelluna there are 8 others outside the district that contribute to making the Sportsystem alive and vital*".[56] This observation highlights the district's exceptional ability to expand its economic force beyond traditional geographical boundaries: rather than seeing globalization as a threat, Montebelluna has took advantage of it to build an extended, distributed production network that is able to maintain strong linkages with its local core. This illustrates a flexible model of industrial organization, in which competitiveness depends on the ability to effectively managing distant resources while preserving local knowledge and innovation.

Its success offers valuable lessons for emerging clusters around the world – particularly in how to build industrial ecosystems that are both globally connected and locally grounded.

[56] Original version: "se per distretto s' intende un territorio chiuso nel quale un certo numero di aziende fabbricano un certo prodotto, lo Sportsystem rispetto a vent' anni fa appare ridimensionato. Se per distretto si intende un organismo che ha allungato la filiera cercando fonti produttive lontane dal suo centro, lo Sportsystem è cresciuto in modo formidabile. Io calcolo che per ogni addetto a Montebelluna ce ne siano altri 8 fuori distretto che concorrono a rendere vivo e vitale lo Sportsystem" Durante, A. (2000). *Montebelluna SportSystem Distretto cosmopolita*. Montebelluna: Montebelluna SportSystem.

Chapter III - INDUSTRIAL CLUSTERS IN VIETNAM

Chapter 3 turns the focus to a contrasting model of cluster development: the textile and footwear clusters of Vietnam. These clusters represent one of the most dynamic expressions of late-industrializing strategies in Southeast Asia, where state-led reforms, foreign investment, and export orientation have driven rapid industrial growth. The chapter explores the spatial structure of Vietnam's clusters, highlighting the concentration of firms in key regions such as Ho Chi Minh City, Binh Duong, and Long An. It continues with an analysis on the dual nature of the cluster structure, with foreign-invested enterprises dominating high-value production and domestic firms often operating in lower segments of the value chain. The role of trade agreements, such as the EVFTA and CPTPP, is examined as a key driver of global integration, alongside emerging challenges related to sustainability compliance, technological upgrading, and domestic value capture.

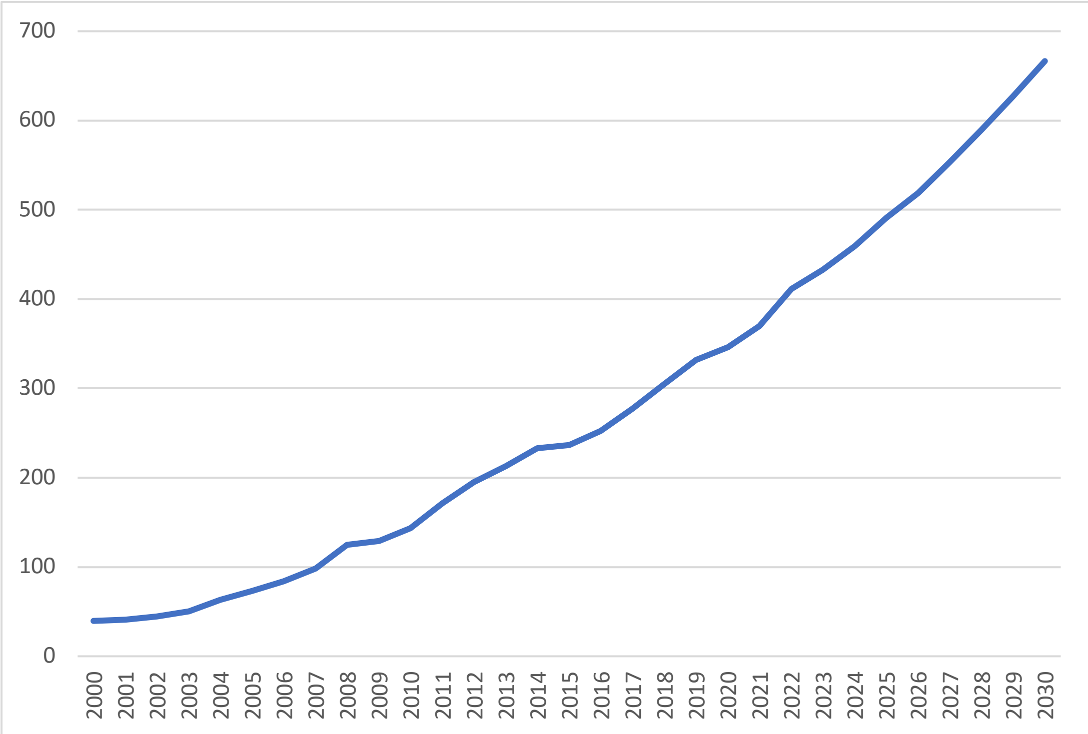
Through this empirical lens, the chapter highlights both the opportunities and constraints facing Vietnam's clusters as they seek to transition from low-cost production centers to innovation-oriented ecosystems. It sets the stage for the comparative insights developed in the next chapter.

3.1 Analysis of the textile and footwear clusters: structure, key players, and market trends

Vietnam, located on the eastern edge of mainland Southeast Asia, has experienced profound economic transformation over the past several decades. Beginning in the late 1980s, a series of market-oriented reforms marked a turning point in the country's development trajectory, shifting it from one of the world's poorest nations to a lower middle-income economy with rapid industrialization and export growth.

An analysis of Vietnam's economic performance between 2000 and 2023 reveals a clear trajectory of structural transformation. As illustrated in Figure 6, the country's GDP in current prices rose sharply from approximately $39 billion in 2000 to over $430 billion in 2023,[57] a substantial and continuous growth that indicates its successful integration into the global economy and reflects its transition from a low-income to a middle-income status.

Figure 6. GDP, current prices (Billions of U.S. dollars).



Source: Elaborated by author, based on data from IMF.

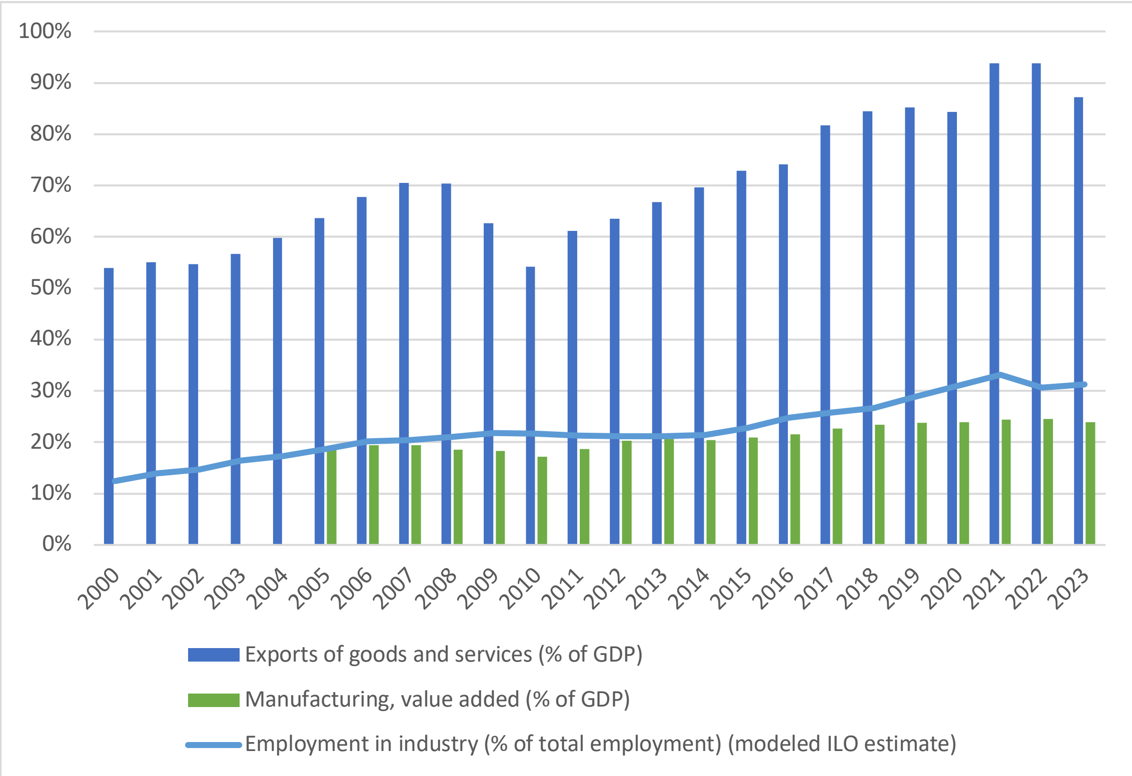
Central to this transformation has been the rise of the manufacturing sector, particularly in export-oriented industries such as textiles, garments, and footwear, which have come to play a central role in Vietnam's economic development.

As figure 7 provides further insight into Vietnam's transformation, it is evident that exports of goods and services increased steadily from around 54% to over 90% of GDP, underlining the importance of international trade in shaping Vietnam's growth model. Notably, two minor dips in this trend can be observed: the first in 2010, which reflects a surge in GDP driven by domestic demand as the country rebounded from the global

[57] IMF (2025), *GDP, current prices*, consulted in https://www.imf.org/external/datamapper/NGDPD@WEO/VNM

financial crisis, and the second in 2020, resulting from trade disruptions during the COVID-19 pandemic. In both cases, the decline in the export-to-GDP ratio was not due to a collapse in exports, but rather to shifts in relative growth dynamics and external shocks – factors that do not contradict the overall positive trend.

Figure 7. Exports of goods and services, Manufacturing - value added, Employment in industry.



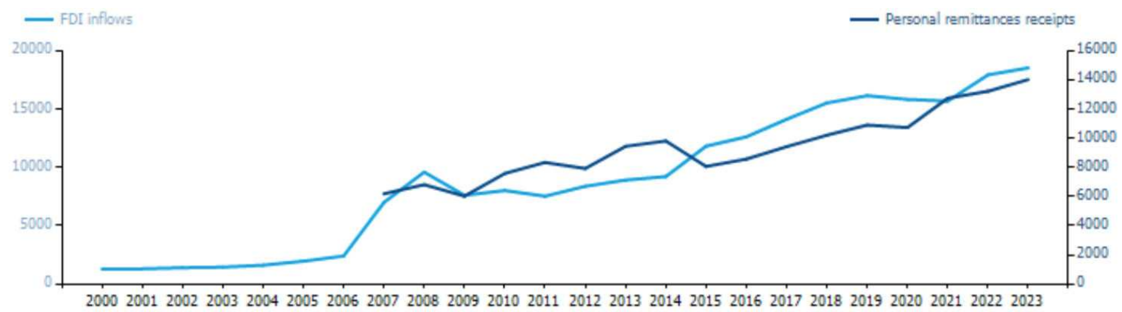
Source: Elaborated by Author, based on data from World Bank Group.

At the same time, manufacturing value added as a share of GDP followed a gradual but positive trend, increasing from around 15% in the early 2000s to over 20% in recent years. Although this growth is more moderate than the increase in exports, it nonetheless reflects a meaningful strengthening of the domestic manufacturing base and growing production capabilities. Moreover, Vietnam's industrial expansion has had quite positive implications for employment too. The share of industry in total employment increased consistently from around 12% to nearly 30%,[58] indicating the country's ability to absorb a significant portion of its labor force into industrial activities. This shift suggests an ongoing process of structural change, with labor moving away from low-productivity sectors such as agriculture toward higher-productivity manufacturing jobs, often concentrated in emerging industrial clusters.

Together, these indicators support the view that Vietnam is not only participating in global value chains but is also progressively enhancing its domestic production capabilities, with potential for further upgrading and value capture in the upcoming years.

Furthermore, Vietnam’s transformation has been strongly supported by sustained financial inflows, particularly in the form of foreign direct investment (FDI). As illustrated in Figure 8, FDI inflows have shown a generally upward trend over the past two decades, despite some volatility caused by global economic conditions.[59] Thanks to these flows, there has been a significant expansion of industrial clusters and an increase in technology transfer, which consolidated Vietnam’s position in global value chains. Moreover, this sustained investor interest reflects confidence in Vietnam’s macroeconomic stability, labor force, and pro-investment policies.

Figure 8. Financial flows trends (millions of US$).

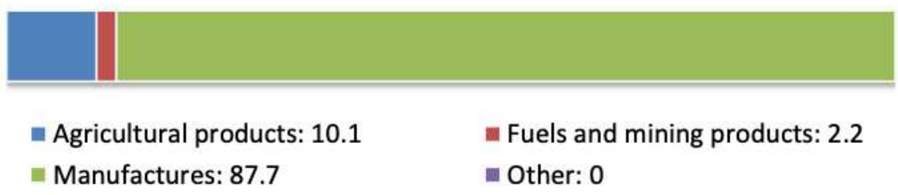


Source: UNCTAD (2025), General Profile: Viet Nam.

[58] World Bank Group (2025), *DataBank – World Development Indicators*, consulted in https://databank.worldbank.org/reports.aspx?source=2&series=NE.EXP.GNFS.ZS&country=VNM#
[59] UNCTAD (2025), *General Profile: Viet Nam*, consulted in https://unctadstat.unctad.org/CountryProfile/GeneralProfile/en-GB/704/index.html

A closer examination of Vietnam's current economic structure confirms the leading role of manufactured products in its export composition. As illustrated in Figure 9, manufactured goods accounted for the vast majority of Vietnam's merchandise exports in 2023, significantly surpassing those from agriculture and resource-based sectors.

Figure 9. Merchandise exports by product group.



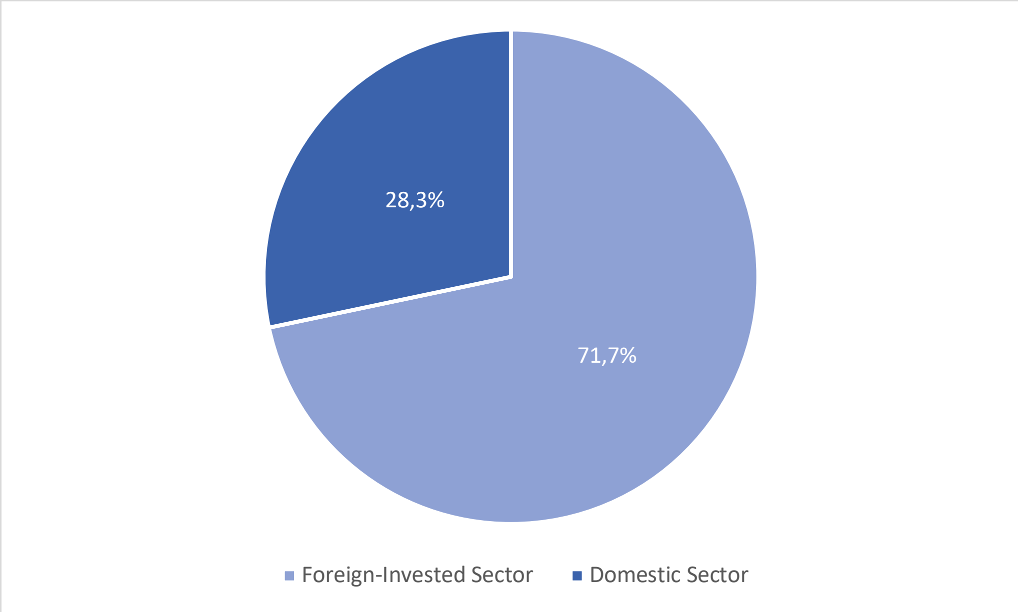
Source: WTO (2023), Trade Profiles 2023.

Building on this strong industrial base, Vietnam continued to perform remarkably well in 2024. According to the General Statistics Office (GSO), the country's GDP grew by 7.09% compared to the previous year – an impressive result that ranks among the highest annual growth rates recorded since 2011, only trailing those of 2018, 2019, and 2022. This performance underscores Vietnam's resilience and reaffirms its role as one of the most dynamic economies in the region.

Export activity also followed an upward trajectory, with total export turnover of goods reaching 405.53 billion USD, up 14.3% over the previous year. The domestic sector contributed 114.59 billion USD, up 19.8%, accounting for 28.3% of the total, while the foreign-invested sector – covering both manufacturing and crude oil – generated 290.94 billion USD, an increase of 12.3%, representing 71.7% of Vietnam's overall exports, [60] as shown in Figure 10. These figures highlight Vietnam's increasing competitiveness on the global stage, as it outpaces key regional economies such as China, South Korea, Thailand, and Indonesia, whose export growth rates ranged from 1.33% to 12.7% during the same period.

[60] National Statistics Office (2024), Socio-economic situation in the fourth quarter and 2024, consulted in https://www.nso.gov.vn/en/highlight/2025/02/socio-economic-situation-in-the-fourth-quarter-and-2024/

Figure 10. Vietnam's Total Exports in 2024.



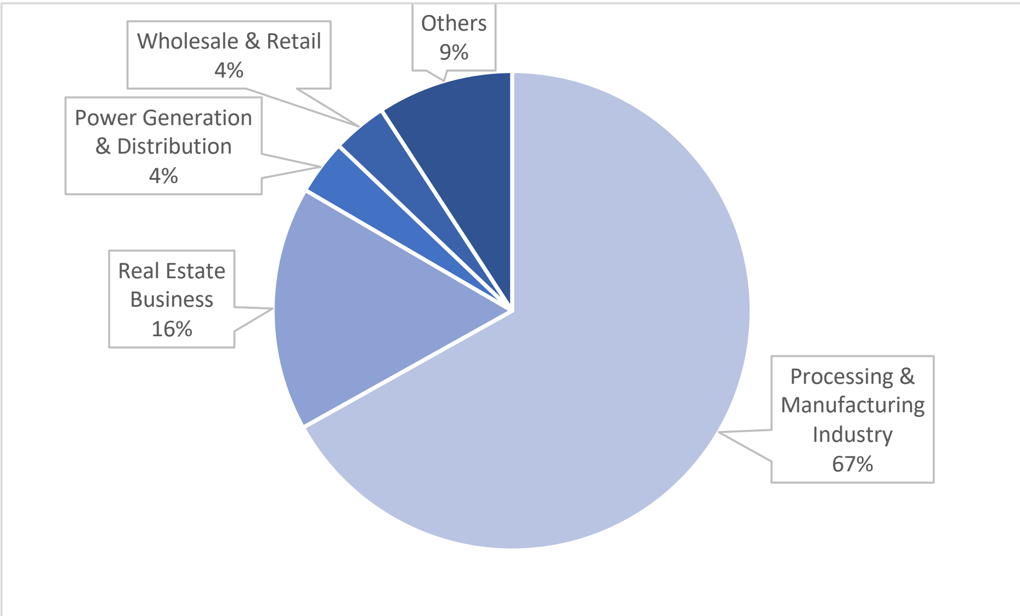
Source: Elaborated by Author, based on data from National Statistics Office.

In parallel, FDI remained a crucial pillar of Vietnam's industrial development. Data from the Foreign Investment Agency (FIA) under the Ministry of Planning and Investment show that FDI flowed into 18 out of 21 economic sectors, with the processing and manufacturing industries attracting the largest share – nearly 25.58 billion USD, an annual increase of 9.4%. This sector alone accounted for almost 67% of total FDI inflows (see Figure 11 for details), up 1.1% from the same period last year.

Foreign investors had invested in 56 provinces and cities nationwide this year. On a regional level, Bac Ninh emerged as the top for FDI attraction and led with 5.12 billion USD (13.4% of the national total), followed by Hai Phong (4.94 billion USD, 12.9%) and Ho Chi Minh City (3.04 billion USD, 8%). Other significant recipients included Quang Ninh, Hanoi, and Binh Duong – provinces and cities that benefit from strong infrastructure, a skilled labor force, efficient administrative processes, and proactive investment promotion policies.

Looking ahead to 2025, this positive momentum, coupled with ongoing recovery efforts and improved investor confidence, suggests a favorable outlook for Vietnam's industrial and economic trajectory/outlook.

Figure 11. Foreign Investments by major invested sectors.



Source: Elaborated by Author, based on data from National Statistics Office.

Against this backdrop of robust economic performance and expanding global trade integration, it is particularly important to examine the role of Vietnam's key export-oriented sectors. Nowadays, the textile and footwear industries stand out as two of Vietnam's most dynamic and strategically important industrial clusters. They still contribute not only to foreign trade and job creation but also to the country's deeper integration into global value chains as a key manufacturing and assembly hub for international brands, while also underscoring the importance of continued efforts in technological upgrading and domestic value capture. In recognition of their significance to the country's strategic and industrial development, it is essential to examine the organizational models that support these sectors. In this context, the cluster-based development model in Vietnam has played a key role in enhancing the competitiveness of the textile and footwear sectors.[61]

These clusters are characterized by a distinct geographical concentration of firms operating within the same or related sectors, which fosters specialization and efficiency

[61] Nguyen, H., & Tran, D. (2021). Industrial Clusters and Competitive Advantages: A Case Study of Vietnam's Textile and Footwear Sectors.

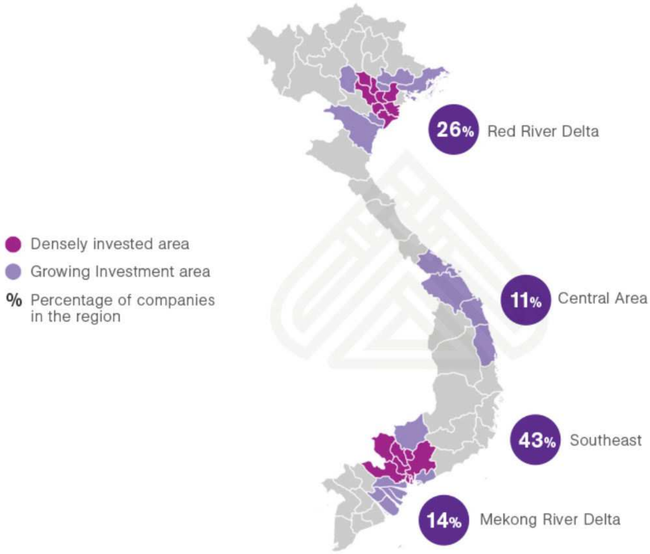
inside the regions. They exhibit strong forward and backward linkages – facilitating coordination across supply chains, from raw material suppliers to final product exporters.

3.1.1 Structure: physical geography and a multi-tiered network

Starting from a geographical point of view, as shown in Figure 12, Vietnam's textile and garment production is spatially clustered in the country's two historic industrial poles – the South-East (including Mekong River Delta) and the Red River Delta. Metropolitan centers such as Ho Chi Minh City, Dong Nai, and Ha Noi host dense varieties of suppliers, contract manufacturers, and service firms that have co-evolved with decades of industrial investment and rapid urbanization. The resulting agglomeration economies provide firms with ready access to skilled labor, specialized subcontractors, and shared technical services, while proximity to major logistics corridors – including National Highway 1A, the North–South railway, and deep-sea ports like Cat Lai and Hai Phong – reduces lead times and transport costs.

Of course, shorter distances between key actors in the supply chain enable faster coordination, quicker delivery cycles, and greater flexibility in responding to shifting market demand – an increasingly critical factor in an era defined by time-to-market pressures and cost sensitivity.In addition, the concentration of activity inside export-processing zones and purpose-built industrial parks streamlines customs procedures and compliance, further reinforcing these regions' role as gateways to global markets.

Figure 12. Garment and Textile Clusters.



Source: Vietnam Briefing.

On regards to the footwear industry, it is particularly concentrated in the southern provinces of Binh Duong, Tay Ninh, and Long An, where land availability, infrastructure, and quick access to neighboring Cambodia have attracted numerous foreign-invested enterprises. These southern clusters benefit from proximity to the Port of Cat Lai and Tan Son Nhat International Airport, both of which serve as key logistics hubs for high-volume exports to Europe and United States. Meanwhile, some provinces in the northern region, such as Hung Yen, Hai Duong, and Bac Ninh, are increasingly emerging as alternative manufacturing centers, thanks to lower labor costs and their proximity to the Chinese border, which can facilitate the import of machinery, materials, and components.

In recent years, cluster development has extended to central provinces such as Quang Nam, Quang Ngai, and Thua Thien-Hue, areas historically less industrialized but now attracting investment due to new infrastructure corridors, including the North-South Expressway and the development of deep-water ports like Chu Lai and Chan May. These regions are becoming strategic locations for investors seeking to diversify supply chains away from congested urban centers while still benefiting from favorable labor dynamics and government-backed industrial zoning. Together, these locational advantages underpin Vietnam's competitiveness in textile and footwear and illustrate how spatial clustering amplifies both operational efficiency and export orientation.

Beyond physical geography, the structure of these clusters often reflects a multi-tiered network that underscores the complexity and interdependence of Vietnam's industrial ecosystem. At the top tier are large anchor firms – particularly foreign-invested enterprises (FIEs) – which operate under FOB or OEM arrangements and set production standards while driving integration into global value chains. These lead firms typically serve international brands and are supported by a dense network of second- and third-tier suppliers that provide components, packaging, logistics, and finishing services. This typology is well illustrated in Figure 13, which presents the hierarchy of Vietnam's garment and footwear supply chains. It shows how lower-tier subcontractors, often domestic or informal, carry out labor-intensive and low-margin tasks such as cutting, sewing, or trimming. These firms tend to operate with lower technological capacity and limited regulatory oversight, especially in terms of labor and environmental standards, compared to their foreign-invested counterparts. Despite their functional differences, all tiers are highly interdependent, and this modular yet unequal structure contributes to the clusters' overall responsiveness and efficiency. Moreover, regional distinctions persist: northern clusters are more closely integrated with China-centered value chains, while southern clusters are more embedded in ASEAN and trans-Pacific export flows. The result is a fragmented but functionally coordinated system, where opportunities for upgrading are unevenly distributed and heavily influenced by governance structures within global supply chains.

Figure 13. Footwear Supply chain in Vietnam

Source: Do Quynh Chi, (2017). Trade regimes and labour standards in the garment, footwear and electronics supply chains in Vietnam. FES Vietnam.

3.1.2 Key players, both internal and external

Over the last two decades, both sectors have increasingly moved away from industries dependent on labor-intensive activities and low-cost production, focusing more on advanced manufacturing centers that are now heavily important for many world's leading brands. The nature of this transformation has been both quantitative, as could be seen considering the rising export volumes, and qualitative, marked by significant improvements in production capabilities, digitalization, and compliance standards. Actually, the key behind the rise of Vietnamese manufacturers stands in the adoption of lean production processes, digital inventory systems, and sustainability protocols: all necessary to meet the growing expectations of global buyers such as Nike, Adidas, H&M, and Decathlon. Simultaneously, while cost competitiveness remains essential, firms are now also evaluated on responsiveness, innovation capacity, and adherence to international labor and environmental standards, this clearly emphasizes a crucial shift toward higher value-added production.

How has this shift taken place? Actually, it was led by a diverse landscape of key players. In the footwear sector, foreign-invested enterprises such as Pou Chen, Ching Luh, and Tae Kwang Vina deal consistently with large-scale production for global brands under OEM or FOB contracts, often setting the standards for technology, labor practices, and sustainability. In the textile and garment sector, major Vietnamese firms like Vinatex, TNG and Viettien have gradually moved toward partial vertical integration, improving their capabilities in design, logistics, and export management.

Meanwhile, a growing number of Vietnamese manufacturers are beginning to launch their own brands which main focus are the domestic and regional markets; what they do is enter the middle and premium segments, supported by rising demand and increased digital marketing capabilities[62]. Out of many examples we could mention Biti, which successfully managed to build consumer-facing identities in both domestic and regional markets, demonstrating that local firms are capable of developing beyond subcontracting roles. This development clearly marks a significant step toward greater

[62] Nguyen Vu Anh Thu, (2024). *The footwear Market in Vietnam: Trends and Opportunities*.

autonomy and value capture, something that was quite unexpected just a few years ago. As a matter of fact, these improvements were particularly fruitful in the footwear sector, where differentiation and brand identity can play a decisive role in market competitiveness.

These examples underscore the hybrid structure of Vietnam's clusters. On one hand, large multinational corporations and FIEs dominate high-value segments of the supply chain and play a pivotal role in linking Vietnam to global production networks. On the other hand, there is a dense ecosystem of small and medium-sized enterprises, that support the broader production system by providing labor, inputs, and services. This dual structure brings both opportunities and challenges: while it enables rapid technology transfer and market integration, it can also constrain the upgrading potential of local firms[63]. Many Vietnamese SMEs remain confined to low-margin, labor-intensive tasks, such as cut-make-trim operations, with limited access to higher-value activities like product design, branding, or direct market access.

3.1.3 Vietnam's alignment to global market trends

Vietnam's textile and footwear clusters reflect not only geographical diversity but also distinct stages of industrial development and institutional maturity. The textile sector, with its earlier integration into global supply chains, has built more stable export linkages over time, while the footwear industry has only more recently embraced advanced manufacturing technologies and aligned itself with global market trends in sustainability and performance innovation.

First and foremost, when referring to the competitiveness of Vietnam's footwear sector, a combination of multiple factors needs to be taken into account: skilled labor, an industrial tradition that proved to be resilient in time, proximity to raw material hubs and supply chains in East and Southeast Asia, and sustained government support as key assets for attracting investment[64]. Nevertheless, both sectors face significant challenges

[63] Pham, L., Nguyen, T., & Bui, H. (2020). *Sustainability and Competition in Vietnam's Footwear Industry: A Cluster Perspective*. Journal of Business and Economic Research, 18(3), 88-104
[64] Xuan Thi Thanh Phan, Cuong Hung Pham & Long Pham, (2016). *The Competitive Advantages of Vietnam Footwear Industry: An Analysis.*

in moving beyond assembly functions – particularly in terms of building capabilities for independent product development, branding, and direct retail distribution. Despite these limitations, Vietnam's industrial clusters continue to exhibit strong competitive advantages that reinforce their strategic role in global production networks. Actually, the expansion of very tangible infrastructure, such as roads, ports, and logistics corridors, alongside the proliferation of export processing zones (EPZs) and industrial parks, has optimized operations and dramatically improved connectivity across the clusters. Furthermore, institutional actors like LEFASO and VITAS have been more and more active and their contribution has to be addressed as they provided market intelligence, facilitated industry dialogue, and promoted Vietnamese products abroad. These support structures not only strengthen vertical and horizontal coordination within clusters but also play a growing role in advancing their long-term upgrading and international visibility.

Furthermore, digitalization and evolving consumer markets are reshaping how Vietnam's textile and footwear clusters engage with global value chains. In fact, an increasing number of producers are adopting ERP systems, digital design software, and e-commerce platforms to streamline production, enhance transparency, and improve responsiveness to international buyers. This technological shift is not only improving supply chain coordination but also enabling more direct-to-consumer (D2C) models and customized product offerings. Simultaneously, Vietnam's expanding middle class and rising domestic consumption are generating new market opportunities for local brands to scale beyond subcontracting. As mentioned above, companies like Biti's have capitalized on these shifts by combining manufacturing capacity with digital marketing and retail innovation.

Eventually, environmental performance, labor conditions, and energy efficiency have become critical factors in maintaining access to international markets, consequently, firms are now subject to intensified pressure from global buyers to meet stringent social and environmental standards. Fortunately, this transformation is not merely market-driven, but, by degrees, it is also supported by the Vietnamese government's commitment to green industrial development, embedded in strategies promoting green growth, sustainable production, and circular economy principles. Anyhow, a more detailed discussion of these dynamics will be presented in sub-chapter 3.3 “Sustainability challenges and transitions in Vietnam’s textile and footwear clusters”.

These trends reflect the broader trajectory of Vietnam’s industrial transformation. The country’s textile and footwear clusters have evolved from low-value, labor-intensive assembly hubs into increasingly strategic nodes in global production networks. Their continued success now depends not only on cost competitiveness but also on the ability to upgrade technologically, comply with sustainability standards, and develop stronger domestic capabilities in design, branding, and R&D. However, other challenges remain to be overcome – especially in reducing dependence on imported raw materials, allowing SMEs to have multiple options to access innovation, and maintaining regulatory alignment with key export markets.

As Vietnam plans to have a more central role in the value chain, strengthening the technological, organizational, and institutional foundations of these clusters will be critical to sustaining long-term competitiveness in an increasingly complex and fast-evolving global landscape.

3.2 Growth and innovation strategies adopted by Vietnamese clusters

Vietnamese textile and footwear clusters have undergone significant transformation over the past two decades, not only in scale and productivity but also in the sophistication of their innovation and growth strategies. This development has been driven by a strategic blend of domestic policy initiatives, foreign direct investment, integration into international trade frameworks, and the country’s strategic positioning in global value chains. In recent years, clusters have adopted a range of strategies aimed at moving beyond low-cost manufacturing toward higher-value, innovation-oriented, and more sustainable forms of production. Since the early 2000s, Vietnam has undergone a profound transformation from a centrally planned economy to a more open, market-oriented system. This shift was accelerated by the country’s accession to the World Trade Organization (WTO) in 2007, which opened the door to deeper global trade engagement and institutional reform. In parallel, Vietnam's participation in multiple free trade agreements (FTAs) has further liberalized trade flows and incentivized export-led industrial development.

3.2.1 Government supporting clusters' growth

The Vietnamese government has actively supported this transformation by attracting FDI, offering tax incentives, and establishing export processing zones and industrial parks to facilitate manufacturing growth. As a result, global firms in the footwear and textile industries have set up large-scale operations across the country, helping transition these sectors from low-value subcontracting to high-capacity, export-oriented manufacturing bases. FDI has not only brought in capital, but also modern technology, production know-how, and access to international markets. According to the World Bank (2024), these sectors are pivotal to Vietnam's industrial upgrading pathway. This vision is reflected in national development strategies extending through 2025 and toward 2035, which prioritize value addition, technological upgrading, and the creation of dynamic innovation ecosystems within key industrial clusters. As outlined, national priorities include upgrading production capabilities – diversifying products and actively developing sources of raw and auxiliary materials – developing supporting industries, and fostering technological innovation in key manufacturing sectors, including textiles and footwear, and boosting the exploitation of traditional export markets, in order to take full advantage of Vietnam upon joining bilateral and multilateral trade agreements[65]. State support has been directed toward infrastructure investment, vocational training, export promotion, and policy incentives for sustainable development. This has enabled clusters to develop forward-looking strategies that align with both domestic goals and international standards.

At the firm level, many Vietnamese enterprises – especially those integrated into global value chains – have begun to shift from basic OEM (original equipment manufacturing) roles toward ODM (original design manufacturing) and OBM (original brand manufacturing). This evolution is particularly visible in larger firms or joint ventures,

[65] Industrial Development Strategy through 2025, vision to 2035. https://vietnam.gov.vn/period-20112020/industrial-development-strategy-through-2025-vision-to-2035-10054959

which have the financial and technical resources to invest in R&D, design, and product differentiation[66]. Meanwhile, smaller firms tend to rely on upgrading through collaboration, subcontracting with lead firms, or forming business alliances that support learning and knowledge transfer.

3.2.2 Innovation and Free Trade Agreements

Innovation in these clusters is not limited to technology. It includes process innovation, such as the integration of lean production systems and just-in-time inventory management, as well as market innovation, like developing private labels or entering new international markets. As a matter of fact, the pressure from foreign buyers – especially those from the EU and North America – has been a decisive force in pushing firms to adopt international standards, automate operations, and invest in cleaner technologies[67]. In this regard, buyers act as de facto governance agents in value chains, shaping not only what is produced but how it is produced.

In addition, Vietnam's extensive network of free trade agreements has opened new opportunities for clusters to innovate through exposure to foreign markets, playing a vital role in enhancing the competitiveness of its export-oriented clusters. FTAs are legally binding arrangements between countries that aim to reduce or eliminate tariffs and other trade barriers, while often including rules on services, investment, intellectual property, and labor standards. For Vietnam, they have served not only as trade enablers but also as catalysts for institutional reform and industrial upgrading.

A major turning point came in 2015, when Vietnam concluded two landmark "new generation" FTAs in parallel: the Trans-Pacific Partnership (TPP), involving the United States and 10 other Pacific Rim countries, and the EU-Vietnam Free Trade Agreement (EVFTA). Both agreements were exceptionally comprehensive, covering areas such as investment protection, services liberalization, intellectual property rights, and labor and environmental standards. Although the U.S. later withdrew from the TPP in 2017,

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[66] Nguyen, H., & Tran, D. (2021). *Industrial Clusters and Competitive Advantages: A Case Study of Vietnam's Textile and Footwear Sectors*. Asia-Pacific Business Review, 27(1), 23-41.
[67] Pham, L., Nguyen, T., & Bui, H. (2020). *Sustainability and Competition in Vietnam's Footwear Industry: A Cluster Perspective*. Journal of Business and Economic Research, 18(3), 88-104

dismantling the original agreement, the labor reforms and transparency commitments made during Vietnam's accession process have had lasting institutional effects – particularly regarding freedom of association and the modernization of labor laws. Vietnam subsequently joined the CPTPP (Comprehensive and Progressive Agreement for Trans-Pacific Partnership), the TPP's successor, which continues to offer preferential access to markets like Japan, Canada, and Australia.

One of the most impactful trade policy developments, however, has been the implementation of the EU-Vietnam Free Trade Agreement (EVFTA). This is considered the most ambitious FTA the EU has ever concluded with a developing country, and it has significantly reduced tariffs for Vietnamese exporters to the European Union. The EVFTA stipulates that 99% of all tariffs between the EU and Vietnam will be eliminated, with 65% of tariffs on EU-bound Vietnamese goods lifted immediately and the remainder phased out over seven years[68]. For instance, sectors like textiles, garments, footwear, and electronics are expected to benefit the most from these policies, although rules of origin provisions aim to prevent indirect tariff-free access for third countries like China (such as the requirement of weaving and sewing conducted in Vietnam). it is important to underline that these rules are intended to encourage the development of complete value chains within Vietnam, enhancing local value addition and industrial capacity.

Among the key mechanisms facilitating this preferential access is the EUR.1 movement certificate, which allows eligible Vietnamese exporters to benefit from reduced or zero-duty rates when exporting textiles, garments, and footwear to EU member states. This certificate proves the origin of goods and confirms compliance with the rules of origin set by the agreement. The widespread adoption of the EUR.1 certificate has provided a considerable cost advantage to Vietnamese suppliers compared to competitors in countries without similar agreements. For example, several Vietnamese footwear manufacturers have been able to export directly to Italian retailers and distributors with a 0% import duty, as long as the products meet the rules of origin under the EVFTA and are accompanied by the EUR.1 certificate. This has strengthened Vietnam's appeal as a

[68] Do Quynh Chi, (2017). The missing link in the chain? *Trade regimes and labour standards in the garment, footwear and electronics supply chains in Vietnam*. FES VIetnam

sourcing destination for Italian and European brands seeking competitive pricing without compromising on quality or compliance. As a result, Vietnamese manufacturers are better positioned to attract European buyers seeking not only cost efficiency but also predictable access under a stable legal trade framework.

The EVFTA also includes legally binding labor and sustainability chapters, as well as a reference to the 2012 Vietnam-EU Partnership and Cooperation Agreement, which contains provisions on human rights and workers' rights. Although the EU favors a promotional rather than punitive approach – often offering financial and technical assistance to support labor reform – the agreement includes a conditional mechanism by which failure to ratify and implement core ILO conventions (including 87, 98, and 105) could, in theory, trigger suspension. While such enforcement remains rare, the symbolic and regulatory pressure embedded in the EVFTA has already contributed to Vietnam's ratification of international labor standards and improvements in transparency and industrial relations. FTAs, like the ones mentioned above, do not only improve market access but also raise the bar for compliance, transparency, and traceability, prompting firms to invest in more robust operational systems.

Human capital development also plays a crucial role in enabling innovation and sustaining competitiveness across Vietnam's industrial clusters. In recent years, workforce skills have become as critical as infrastructure or investment in determining a region's ability to attract and retain high-value manufacturing. The expansion of technical and vocational education and training (TVET) programs – often developed in collaboration with international NGOs, bilateral donors, and global brands – has helped improve workers' adaptability to evolving production technologies, sustainability standards, and digital tools such as ERP software, automated cutting technologies and e-commerce platforms for B2B and B2C transactions. Organizations like LEFASO and VITAS have taken an active role not only in policy advocacy but also in organizing capacity-building initiatives, including training sessions on international labor standards, compliance, lean manufacturing, and environmental certification procedures. These efforts are particularly relevant for SMEs, which often lack internal resources to independently invest in workforce development.

Yet, challenges remain. There is often a mismatch between formal training curricula and the real-world demands of fast-evolving production processes, especially in fields such as design, logistics, and quality control. Many firms still rely heavily on on-the-job learning, which limits the pace and scalability of skills transfer. The World Bank (2024) stresses that to support Vietnam's ambition to become a high-income country, the country must move beyond basic vocational training and invest in advanced technical education, STEM programs, and managerial skill development[69]. A more strategic alignment between education systems, industrial policy, and private sector needs will be essential to ensure that human capital becomes a driving force – not a bottleneck – for industrial upgrading and innovation.

To sum up, it can be said that Vietnamese textile and footwear clusters are actively transitioning from low-cost production models toward more innovation-intensive and sustainable growth paths. Moreover, the joined actions of policy support, buyer expectations, technological adoption, and domestic entrepreneurship has clearly enabled clusters to diversify their strategies and better prepare to global market pressures. While challenges remain – particularly for SMEs with limited resources – it is undeniable that the overall trajectory points to a more resilient, competitive, and forward-looking industrial ecosystem.

3.3 Sustainability challenges and transitions in Vietnam's textile and footwear clusters

As global brands increasingly prioritize sustainability, Vietnamese textile and footwear clusters face mounting pressure to align with environmental, social, and governance (ESG) standards. While the country's cost-competitive advantages have long anchored its position in global value chains, its continued relevance now depends on the ability of firms – both foreign and domestic – to integrate responsible production practices. This transition toward sustainable manufacturing represents not only a challenge but also a

[69] The World Bank, (2024). VIET NAM 2045, TRADING UP IN A CHANGING WORLD - Pathways to a High-Income Future, consulted in https://www.worldbank.org/en/news/press-release/2024/11/21/world-bank-report-outlines-path-to-high-income-for-viet-nam-through-higher-value-trade-and-economic-reforms

strategic opportunity for Vietnam to move up the value chain and strengthen its global competitiveness.

3.3.1 Market-driven sustainability

One of the most visible drivers of sustainability adoption in Vietnam's clusters is the influence of international buyers. Markedly, CSR adoption in emerging countries in developing regions is largely driven by external forces, specifically pressures from parent companies, international market, and international agencies.[70] As a matter of fact, brands such as Nike, Adidas, H&M, and Decathlon impose strict social and environmental compliance requirements as part of their global sourcing strategies. Vietnamese firms – especially those in export processing zones – are under growing pressure to meet standards related to emissions, water treatment, labor conditions, and chemical use. They are adopting environmentally friendly practices, including the use of recycled materials, wastewater treatment systems, solar power, and eco-labeling schemes.[71] These initiatives are not merely ethical or regulatory responses – they are increasingly seen as competitive differentiators. For instance, gaining certifications like Global Organic Textile Standard (GOTS), OEKO-TEX, WRAP, SA8000, Higg Index or ISO 14001 often determines eligibility to work with high-end international brands and, consequently, maintaining access to high-value export markets and participate in global supply chains.This transformation is not solely market-driven, it is also supported by the Vietnamese government's commitment to green industrial development, embedded in strategies promoting green growth, sustainable production, and circular economy principles. Efforts are being made to improve wastewater treatment, reduce carbon emissions in production, and foster the use of eco-friendly materials and renewable energy in industrial parks.

However, these changes are uneven across the cluster landscape. While larger/leading firms and foreign-invested enterprises are generally better equipped to meet these

[70] Xuan, L., Khoa, T., Lieu, N. (2018), Drivers for and obstacles to corporate social responsibility practice in Vietnam - A study in small and medium enterprise exporters. *VNU Journal of Economics and Business*, 34(2), 86-101.
[71] Doan, T. M. H., & Vu, T. A (2023). Sustainable Supply Chain in the Textile and Garment Industry of Vietnam. *Economics and Business Quarterly Reviews*, 6(3), 222-236.

international requirements – compliance is often managed through centralized corporate systems, with easy access to capital and technical support – smaller domestic medium-sized enterprises still face considerable barriers, including lack of funding, training, complexity of certification, limited technical knowledge, and fragmented institutional support. This absence of cluster-wide governance mechanisms weakens coordination on sustainability goals, hindering the diffusion of best practices across the supply chain.[72] In many cases, Vietnamese suppliers remain locked into low-value functions and focus on compliance rather than innovation-driven sustainability – limiting their potential for functional upgrading.

3.3.2 Reaching CSR's goals: obstacles and aids

Among the main obstacles to the diffusion of sustainability practices is the limited awareness of Corporate Social Responsibility among many employees, which leads to a lack of support for the company's investments in community-related activities; moreover, many enterprises consider CSR a barrier because the enterprise's approach to CSR implementation is not long-term strategic, therefore, the connection between CSR activities and core business activities of enterprises is very loose.[73]

The issue of social sustainability needs to be brought up as well. There is no doubt Vietnam has made considerable progress in improving labor conditions, however, persistent challenges remain in areas such as worker safety, overtime practices, and collective bargaining. Trade agreements such as the CPTPP and EVFTA include binding commitments on labor rights, including freedom of association and the elimination of forced labor. On paper, these agreements were fundamental to stimulate institutional reforms, but it is necessary to state that unfortunately enforcement remains uneven.

On the matter, the European Union has taken a cooperative approach rather than punitive one, offering technical assistance in order to help Vietnam implement ILO

[72] Pham, L., Nguyen, T., & Bui, H. (2020). Sustainability and Competition in Vietnam's Footwear Industry: A Cluster Perspective. Journal of Business and Economic Research, 18(3), 88-104.
[73] Hung T. H., Nguyen P. M., Luu T., Nguyen A. T., "Corporate Social Responsibility in Vietnamese Companies: An Exploration of Practices, Motivations and Barriers", International Review of Management and Marketing, 15(3), 406-414.

conventions. However, it is clear that some gaps remain between formal legislation and on-the-ground realities, particularly in subcontracted or informal segments of the supply chain.[74]

Furthermore, at the policy level, the Vietnamese government has developed significant initiatives to promote sustainable industrial transformation. One that deserve to be mentioned is the National Green Growth Strategy (NGGS) for the period 2021-2030. This strategy aims to restructure Vietnam's economy towards sustainability by reducing greenhouse gas emissions – per unit of GDP by at least 15% by 2030 compared to 2014 levels, and by 30% by 2050[75] – enhancing energy efficiency and fostering a green and carbon-neutral economy, emphasizing the development of sustainable infrastructure, the promotion of circular economy practices, and the integration of advanced technologies and digital transformation across industries.

In alignment with the previously explained NGGS, the government has also introduced what is known as the National Action Plan on Green Growth, that lists specific tasks and responsibilities for ministries and sectors in order to achieve the outlined goals. For instance, export processing zones and industrial parks are being upgraded with wastewater treatment facilities and energy-efficient systems, particularly in provinces such as Binh Duong and Dong Nai. Furthermore, associations like the aforementioned LEFASO and VITAS are actively promoting sustainability by offering training programs, developing guidelines, and facilitating access to certification schemes for member companies.

Notably, the textile and footwear industries, which are significant contributors to Vietnam's export economy, are engaging in collaborative efforts to enhance sustainability. In 2024, the Ministry of Industry and Trade, in partnership with LEFASO, VITAS, and international organizations, signed a Memorandum of Understanding to promote sustainable development within these sectors. This collaboration focuses on

[74] Schweisshelm, Erwin. 2015. Vietnam's Trade Agreements with the EU and the US. FES Vietnam.
[75] Nguyen H. C., Nguyen T. L. (2024), "The Circular Economic Development Policy Aims to Implement Vietnam's National Strategy on Green Growth", *International Journal of Social Science Research and Review*, Volume 7, Issue 7, 2024, pp. 89-97.

fostering resource efficiency, adopting circular economy models, and aligning with international environmental and social standards.[76]

Another important step in strengthening Vietnam's sustainability transition is the institutional push toward more structured and transparent sustainability reporting practices. The Sustainability Reporting Handbook for Vietnamese Companies, developed by the International Finance Corporation (IFC) in collaboration with the State Securities Commission (SSC), Vietnam's stock exchanges, and the Association of Chartered Certified Accountants (ACCA), plays a key role in this sense. The handbook consists in a practical and useful guide to help Vietnamese firms understand, manage and disclose their environmental and social performance, while taking first steps towards meeting their sustainable development goals. While initially targeted at listed companies, the document offers a framework that can be applied by SMEs and export-oriented firms in the textile and footwear sectors seeking to meet buyer and investor expectations. The handbook emphasizes that sustainability reporting—covering topics such as emissions, labor practices, and resource efficiency—can not only improve transparency and attract investment but also enhance operational performance and long-term competitiveness.[77]

According to the IFC, companies that excel in managing sustainability risks tend to perform better financially as well. As Vietnam's clusters mature and engage more deeply with global partners, such frameworks offer a pathway toward aligning local practices with international standards, encouraging firms to evolve from basic compliance to full integration of ESG considerations into their core strategies.

[76] IDH (2024), *Vietnam's Textile and Footwear Industries Join Forces for Sustainable Future: MoU Signed to Drive Circular Economy and Energy Efficiency*, consulted in https://idh.org/news/vietnams-textile-and-footwear-industries-join-forces-for-sustainable-future-mou-signed-to-drive-circular-economy-and-energy-efficiency

[77] Sustainability reporting handbook for Vietnamese companies: IFC advisory services in East Asia and the Pacific (English). Washington, D.C.: World Bank Group. http://documents.worldbank.org/curated/en/179691468328537687

3.3.3 Sustainability as a competitive differentiator

Yet, there are signs of emerging opportunities. Sustainability is increasingly seen not just as a requirement, but as a competitive differentiator. Firms that can demonstrate responsible sourcing, reduced carbon footprints, and ethical labor practices are better positioned to attract long-term contracts, especially from European buyers operating under ESG-focused procurement rules. Briefly, a company may have high profits, but if it has poor working conditions or negatively impacts the environment, it will not attract investor interest. Some Vietnamese companies are beginning to invest in eco-friendly materials, biodegradable packaging, and waste-to-energy initiatives. Others are experimenting with digital traceability platforms to provide end-to-end transparency in sourcing and production. These shifts point toward a potential evolution from compliance-based approaches to proactive sustainability leadership, particularly if supported by stronger public-private collaboration.

Over the past decade, Corporate Social Responsibility has undergone notable development in Vietnam, as more companies incorporate social and environmental concerns into their core business strategies. This shift is largely driven by increasing awareness of sustainable development among consumers and stakeholders. In addition, export-oriented Vietnamese firms face mounting pressure from international trade partners to comply with CSR standards. A key point to highlight is that, governmental support and alignment with global sustainability frameworks have also played a significant role in fostering CSR adoption across the country.[78]

Despite these encouraging developments, significant barriers remain. The inconsistent implementation of regulations and the lack of awareness among local businesses regarding the strategic advantages of CSR continue to limit widespread adoption.[79]

[78] Le, Q.L., Nguyen, L.H., Dinh, V.H., Luong, T.T.H., Pham, T.K.L., Nguyen, T.H.L. (2023), Factors affecting corporate social responsibilities disclosure of listed companies in Vietnam. Cogent Business & Management, 10(1), 2160578.

[79] Nguyen, V.H., Vu, N.H. (2023), Corporate environmental responsibility and innovation: Empirical evidence from Vietnam. International Journal of Emerging Markets, 18(10), 4524-4544.

Moreover, cultural, and social factors, shape both the perception and practice of CSR within the Vietnamese context.[80]

In sum, the sustainability transition in Vietnam's textile and footwear clusters is a complex, ongoing process shaped by external demands, institutional responses, and internal firm capabilities. While challenges remain – particularly for SMEs – there is a growing recognition that long-term competitiveness will increasingly depend on the ability to integrate sustainability into core production models. Concluding, sustainability should not be seen as a cost of doing business per se, but as a strategic pathway for industrial upgrading, global differentiation, and resilient value chain participation.

3.4 Applying Porter's diamond framework to Vietnam's footwear industry

To summarize what has been discussed in the previous sections, the competitive position of Vietnam's footwear industry within global value chains can be further outlined through Porter's Diamond framework. As explained in section 1.1.1, this model helps clarify how national and regional conditions shape the international competitiveness of industries through the interaction of four key elements: factor conditions, demand conditions, related and supporting industries, and firm strategy, structure, and rivalry.

During the years, Vietnam has persistently and step by step built a favorable environment for the growth of export-oriented manufacturing, with particular emphasis on the footwear sector, which has in fact evolved significantly. The country enjoys various strengths, including plenty of low-cost labor as well as increasingly developing infrastructure in key industrial provinces (e.g., Bac Ninh, Binh Duong, Hai Phong). Vietnam is also strongly attracting large and sizable foreign direct investment inflows, particularly in processing and manufacturing sectors, which further enhance its economic development. The increasing compulsion for adherence to international

[80] Hoang, A., Nguyen, D.T., Le, P.U. (2024), Economic policy uncertainty and corporate social responsibility: Evidence from emerging countries. Cogent Business & Management, 11(1), 2375625.

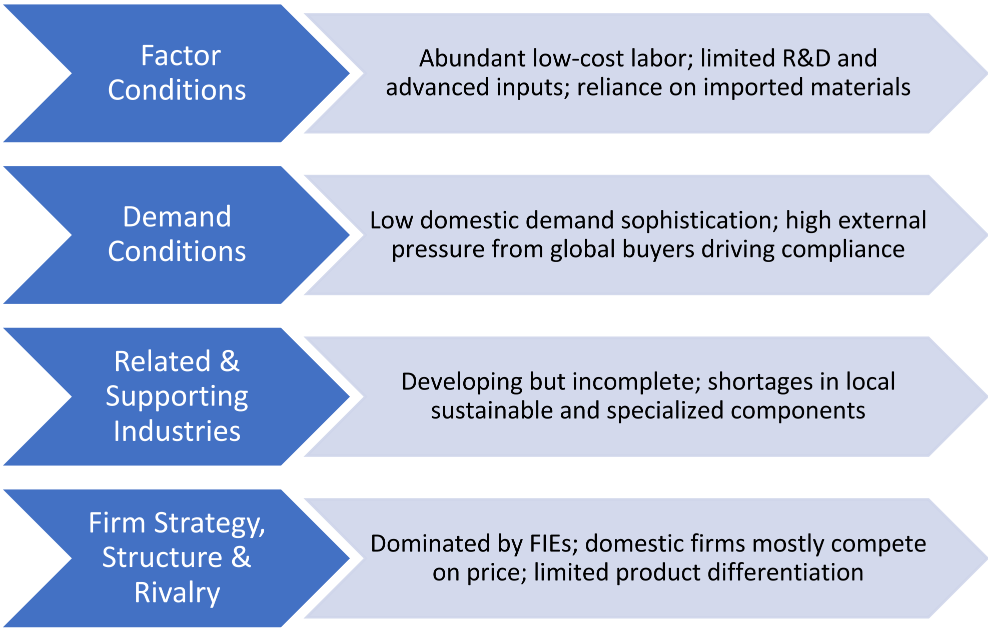
standards – especially from major international brands that outsource their products from Vietnam – has significantly encouraged local suppliers to invest more in quality control procedures, obtain sustainability certifications, and implement digital traceability systems. This external pressure, along with the facilitating programs implemented by the government aimed at simplifying industrial upgrading and offering training programs, has empowered the improvement of companies in the area. However, these upgrades have not been uniform across the entire sector, thereby providing varying levels of improvement among different firms.

Furthermore, Vietnam's integration into global value chains has been significantly helped and facilitated by a series of trade agreements, such as the European Union-Vietnam Free Trade Agreement (EVFTA) and the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). Moreover, this integration is supported by a broad and complex network of subcontracting relationships that have developed with foreign-invested firms producing within the country. However, it must be noted that the presence of highly innovative or design-intensive local businesses within Vietnam remains relatively limited, and the process of upgrading their competencies continues to be a significant challenge to most SMEs. Furthermore, competitive pressure from regional peers, such as countries like Indonesia and Bangladesh, forces Vietnamese manufacturers to persist in investing in improving productivity, fostering innovation, and meeting ESG standards.

Although there are still some gaps in institutional arrangements and ongoing disparities in quality that need to be plugged, the Vietnamese footwear sector has several favorable conditions that reinforce its potential for global competitiveness, particularly in mid-range and mass-market segments.

This overall assessment is summarized in the below Figure 14.

Figure 14. Porter's diamond framework for the case of Vietnam footwear industry.



Source: Author.

Chapter IV - COMPARATIVE ANALYSIS BETWEEN VIETNAM'S AND MONTEBELLUNA'S CLUSTERS

What happens when two distinct cluster models – one built on knowledge and quality, the other on scale and global connectivity – interact in global value chains? This chapter presents a comparative analysis of two distinct yet highly successful industrial cluster models: the Montebelluna footwear district in Italy and the textile and footwear clusters in Vietnam. Although they operate in different geopolitical, economic, and cultural contexts, both clusters have emerged as key nodes in global value chains and offer valuable insights into the dynamics of localized industrial development.

The purpose of this comparison is to evaluate how the two cluster models differ in terms of industrial organization, innovation capacity, and supply chain configuration, and to identify the respective strengths and weaknesses of each system. Special attention is given to their institutional environments, the role of foreign and domestic actors, and their ability to adapt to global market pressures such as sustainability demands, digital transformation, and shifting consumer preferences.

The final section explores the existing and potential connections between the two clusters, focusing on supply chain complementarities, opportunities for collaboration, and the challenges that arise in cross-regional business relationships. In particular, the analysis identifies the potential gains to outdoor brands – many of which are headquartered in or near Montebelluna – through partnerships with Vietnamese suppliers, while also emphasizing the strategic importance of retaining resilience, guaranteeing quality standards, and innovation across value chains.

Based on both case studies, this chapter offers a multidimensional perspective on cluster competitiveness, illustrating how localized strengths can be leveraged within global production frameworks.

4.1 Industrial organization, innovation, and supply chain structures

Starting from the Montebelluna cluster, it clearly exemplifies a mature, high-value industrial district, which is rooted in Italy’s tradition of small and medium-sized enterprise system. The cluster in object is composed of a dense network of firms that collaborate vertically and horizontally, often through informal ties and long-standing relationships. Its organization is decentralized yet highly coordinated, with firms specializing in specific functions such as design, prototyping, or component manufacturing. In addition to that, the core strength of Montebelluna’s organizational model lies in its ability to combine craftsmanship, technological expertise, and market responsiveness, enabling high levels of product customization and fast adaptation to niche market trends.

In contrast, Vietnam’s cluster structure is more hierarchical and dualistic. The upper tier is dominated by foreign-invested enterprises that operate under FOB or OEM contracts for major international brands. These firms often bring in advanced technologies, global standards, and managerial know-how; meanwhile, the handling of cut-make-trim operations with limited value capture is frequently managed by a large number of domestic SMEs, which occupy lower positions in the supply chain. Therefore, the Vietnamese government has actively supported the development of industrial zones, export processing areas, and vocational training programs to promote investment and upgrade capacity. Eventually, while the country’s integration into global value chains has been rapid, the path toward greater autonomy and internal innovation remains a work in progress.

From an innovation point of view, Montebelluna firms benefit from embedded knowledge systems and a culture of continuous experimentation. Innovation here is not necessarily the result of formal R&D departments but emerges through learning-by-doing, supplier–producer interaction, and customer feedback loops. The presence of key brands like Tecnica Group, Scarpa, and Salewa stimulates innovation among component suppliers and subcontractors. This type of ecosystem fosters not only product innovation but also process innovation, particularly in sustainability, digital prototyping, and materials engineering. Moreover, public-private partnerships with universities and research centers in the Veneto region also contribute to reinforcing this dynamic.

The Montebelluna cluster exemplifies what can be defined as a local knowledge economy – a system where innovation results not only from formal R&D structures, but especially from the deep accumulation of tacit know-how, craft culture, and long-standing inter-firm collaboration. As seen in Chapter 1.3, knowledge economies thrive on face-to-face exchanges, shared learning processes, and the social embeddedness of expertise. Montebelluna's SMEs and lead firms operate in a dense cognitive environment, where trust, tradition, and iterative experimentation enable continuous adaptation. Montebelluna's strength lies in its ability to generate and retain knowledge locally, transforming specialized capabilities into strategic differentiation in the global marketplace.

This stands in contrast to externally driven innovation models imported via foreign investment and compliance requirements, such as those found in Vietnam. While some leading firms have begun investing in R&D and product development capabilities, much of the sector's innovation is transferred from abroad through supply chain requirements and foreign ownership structures. Compliance with international environmental and labor standards – often dictated by buyers – has led to the adoption of green production practices and digital quality control systems. Still, challenges persist in fostering local innovation, especially among SMEs that lack access to financing, skilled labor, and long-term strategic planning.

Supply chain architecture further distinguishes the two models. Montebelluna's supply chains are compact and locally embedded, and this of course promotes a faster communication, shared logistics, and synchronized production cycles. Actually, leading firms retain high control over design, branding, and distribution, while delegating non-core production tasks either to local partners or to delocalized facilities in Eastern Europe or Asia. This results in a hybrid model, which supports agility, brand consistency, and cost optimization, and at the same time reinforces the district's role as a center for high-value functions in the global supply chain.

On the other hand, Vietnam's supply chains are more extended and globally spread, reflecting its role as a manufacturing hub for mass production. Vietnamese clusters are in fact optimized for efficiency, scale, and cost competitiveness, and they increasingly use digital platforms and ERP systems to manage operations across vast distances. Yet, this latter configuration also exposes firms to higher risks from global disruptions and fluctuating buyer demand. Furthermore, while infrastructure and logistics have improved, the reliance on imported raw materials – especially fabrics and chemicals – still limits vertical integration in areas that could otherwise be strategic.

Another advantage of the efficiency of the Montebelluna cluster is its geographical compactness: short distances between suppliers, designers, and manufacturers allow for immediate coordination, shared logistics infrastructure, and greater agility in managing prototyping or small production runs. By contrast, Vietnam's cluster model is geographically dispersed, with production spread across multiple provinces and industrial areas. Even though this supports scalability and access to low-cost labor pools, it often results in longer lead times, greater logistical complexity, and consequently more dependency on large-scale infrastructure. Briefly, the two typologies can be summarized as follows: Montebelluna's compact geography enhances its capacity for rapid innovation cycles and just-in-time production, whereas Vietnam's configuration is better suited for high-volume, cost-optimized operations.

In sum, whilst the Italian district represents a design- and knowledge-intensive cluster built on embedded local capabilities, Vietnam illustrates a scale-oriented, export-driven system shaped by global integration and policy-led development. As shown in Table 3, each model exhibits distinct strengths and challenges in terms of innovation, industrial structure, and supply chain configuration – providing complementary advantages in a potential cooperative framework.

Table 3. Comparative Overview – Montebelluna vs. Vietnam Clusters

Dimension	*Montebelluna Cluster (Italy)*	*Vietnam Textile & Footwear Clusters*

Industrial Organization	SME-based, specialized, horizontal coordination	Hybrid structure (FIEs + domestic SMEs)
Innovation Model	Endogenous, learning-by-doing, design-driven	Externally driven, compliance- and FDI-led
Knowledge Economy	Strong local knowledge spillovers, tacit know-how	Dependent on foreign input and training
Geographic Structure	Compact, high-density cluster	Geographically dispersed, multi-regional
Supply Chain Configuration	Localized, flexible, high control	Global, large-scale, buyer-driven
Key Strengths	Customization, premium positioning, agility	Scale, cost-efficiency, integration into GVCs
Key Challenges	High labor costs, limited scalability	Low local value addition, SME upgrading

Source: Author.

4.2 Strenghts and weaknesses of each system

As previously discussed, Montebelluna and Vietnam present two distinct industrial models, each shaped by different developmental trajectories, institutional frameworks, and particularly degrees of integration within global value chains. While Montebelluna reflects a deeply rooted European model of territory embedded specialization, the Vietnamese textile and footwear clusters illustrate a late-industrializing strategy characterized by rapid global integration and foreign direct investments. The comparison between these two systems highlights not only their strengths and weaknesses, but also the different pathways through which clusters contribute to innovation, value creation, and competitiveness in a globalized economy. This section thus explores the core features of both models, assessing how their structures translate into resilience, upgrading potential, and long-term strategic positioning.

An outstanding strength of Montebelluna lies in its high degree of sectoral specialization and sustained innovation capacity. The cluster has evolved over decades, developing from a simple center of artisanal craftsmanship into an international hub for technical and performance footwear (but not only footwear) with global recognition. This transformation has been made possible by strong inter-firm cooperation, cumulative know-how, and a dense network of SMEs operating along the entire value chain – from design and prototyping to component production and branding. The local ecosystem fosters a high degree of tacit knowledge transfer, which supports continuous innovation and rapid adaptation to shifting market trends, particularly in niche segments like alpine and outdoor footwear. Furthermore, Montebelluna benefits from the proximity to key European consumer markets and maintains close relationships with premium brands and distributors. This territorial embeddedness reinforces feedback loops between market demands and production capabilities, enhancing the district's agility and responsiveness.

Institutional support also plays a crucial role in Montebelluna's competitiveness. From public-private partnerships with technical universities and local training centers, which ensure a steady supply of skilled labor aligned with the cluster's evolving needs, to regional governance mechanisms, that promote collaboration in R&D, sustainability projects, and export promotion; firms benefit not only from market-based interactions but also from supportive local institutions that enhance cluster performance. In recent years, many initiatives in digital prototyping, sustainable materials, and eco-design have emerged, showing that the cluster preserves strong innovation potential even in the face of rising global pressures.

However, Montebelluna also faces structural limitations that constrain its long-term scalability. Like other industrial districts in high-income countries, the cluster suffers from high labor and production costs, making it less attractive for large-volume, cost-sensitive segments. As a result, many firms have pursued partial delocalization strategies – relocating labor-intensive processes to Eastern Europe or Asia – which has introduced dependencies that may weaken local value retention and consume some of the cluster's core knowledge linkages.

Additionally, Montebelluna's limited demographic base and compact geographical area present significant limitations in terms of spatial expansion and the potential for large-scale industrial development. As a consequence of these structural constraints, Montebelluna has shaped the cluster's reliance on specialization and niche markets rather than mass production. Despite the specialization in the whole cluster, a number of small and medium-sized enterprises lag in the adoption of digital technologies and sustainable production practices, suggesting that the benefits of modernization are not uniformly distributed across all firms. These gaps could become increasingly problematic as environmental regulations grow more stringent and international buyers raise more expectations regarding supply chain transparency and adherence to ESG standards. For sure, the failure to meet these evolving expectations may compromise the cluster's long-term competitiveness in global markets.

With regard to the Vietnamese textile and footwear framework, a rapid growth has been achieved by leveraging cost efficiency, labor availability, and favorable positioning within global trade networks. This country has successfully positioned itself as a major hub for export-oriented manufacturing, supported by low labor costs, strategic proximity to regional supply chains, significant FDI inflows, and last but not least the presence of large multinational manufacturers, that have brought modern production technologies, advanced logistics, and managerial know-how into the cluster. Moreover, agreements such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership and the EU–Vietnam Free Trade Agreement have further strengthened the country's global trade integration, offering preferential access to key markets and attracting further investment in infrastructure and human capital development.

Attention must also be directed toward the sustainability aspect: Vietnam is rapidly positioning itself as a sustainable manufacturing base, especially for international brands seeking traceable, ESG-compliant supply chains. Despite some sustainable initiatives, like the Green Growth Strategy (2021-2030) and the Sustainability Reporting Handbook represent important institutional tools and particularly support this transition, the adoption of sustainable strategies remains slow, with a large number of small and medium enterprises lacking the necessary funding and expertise to go beyond basic compliance.

Unfortunately, the Vietnamese model exhibits also other important weaknesses, especially in its ability to climb the value chain and engage in higher-value functions. Even with rapid export growth, many domestic firms remain locked into low-value segments, like cut-make-trim operations, where profit margins are slim and opportunities for innovation are extremely limited. De facto, local SMEs often lack access to finance, technology, and skilled labor, inhibiting their ability to invest in R&D or, eventually, develop their proprietary brands. Additionally, these limited opportunities for vertical integration and supply chain autonomy are due to the cluster's heavy dependence on imported inputs – principally fabrics and specialized components.

Meanwhile regulatory complexity and institutional fragmentation can also constrain the possibility of long-term progress. Although Vietnam has made significant steps in infrastructure development and industrial policy, lots of challenges persist in coordinating local governance with international expectations. In addition to that, foreign buyers often drive or initiate capacity-building programs, rather than embed them in a coordinated and cohesive national innovation system. These asymmetries raise urgent questions about the long-term sustainability of the current growth model and the risks of overdependence on foreign countries and their capital and demand.

Meanwhile another important consideration arises, how do the two models perform in terms of resilience and adaptability? Actually, Montebelluna's compact geography, relational governance, and strong local identity offer distinct advantages: the intertwined nature of the cluster facilitates mutual trust, quick communication, and flexible adjustments to disruptions, as demonstrated during the COVID-19 pandemic, when firms quickly reorganized production locally and maintained high product standards despite global supply chain interruptions. Vietnam, on the other hand, has demonstrated resilience primarily through scale and diversification, with a broad export portfolio and network of trade partners, which enabled the country to absorb external shocks more effectively than some regional competitors. However, the same global exposure also revealed vulnerabilities, particularly regarding delayed raw material shipments, labor shortages, and energy disruptions.

Overall, Montebelluna excels in product innovation, quality, and knowledge retention, but it is constrained by cost pressures and scale limitations. At the same time Vietnam offers scale, cost-efficiency, and global integration, yet still struggles with innovation autonomy and upgrading challenges. These two models reflect complementary logics of competitiveness – one built on high value and embedded expertise, the other on scale and trade integration. All of this information is comprehensively summarized in Table 4.

Recognizing and leveraging these complementarities could offer pathways to strategic collaboration, which has the potential to enhance mutual competitiveness and resilience, as will be examined in greater detail in the following section.

Table 4. Strengths and Weaknesses of Montebelluna and Vietnam Clusters

Cluster	*Strengths*	*Weaknesses*
Montebelluna	• High product specialization and innovation. • Strong local networks and embedded know-how. • Proximity to European brands and markets. • Flexibility and rapid customization.	• High production and labor costs. • Limited scalability and global reach. • Uneven digital and green transformation among SMEs.
Vietnam	• Cost efficiency and large-scale production • Integration into global value chains • Attractive policy environment and FDI inflow	• Limited domestic value addition • Innovation dependence on foreign actors • Supply chain exposure to imported inputs

	• Strategic export location and trade agreements • Increasing sustainability at country level	• Uneven SME upgrading and sustainability adoption

Source: Author.

4.3 Cooperation and connection between the two: supply chain opportunities and challenges

How can two industrial clusters – rooted in vastly different economic and institutional environments – successfully cooperate within global supply chains to create shared value? Certainly, the Montebelluna and Vietnamese clusters operate in significantly different economic, institutional, and developmental contexts, but they demonstrate highly complementary features that open the door to robust, mutually and beneficial cooperation and value creation. As illustrated in the previous section, the contrasting advantages of the two countries form a natural starting point for transnational supply chain partnerships, especially for international firms with solid foundations, that aim to balance innovation, flexibility, and cost competitiveness in an increasingly demanding global environment.

In point of fact, many companies in the Montebelluna district have developed strong and long-term sourcing relationships with Vietnamese partners over the last few years, particularly in the technical footwear sector. Firms such as La Sportiva, known for cutting-edge product design and outdoor performance technologies, have took advantage of this type of partnership and outsourced their manufacturing processes to certified Vietnamese suppliers capable of producing at scale without compromising strict quality and complying to upcoming environmental standards. This cooperation model, known as the "smile curve" framework, enables Italian firms maintain strategic control over high-value activities like R&D, branding, and product development, while leveraging Vietnam's strengths in cost-intensive manufacturing, operational efficiency and particularly workforce availability.

Another fundamental element of this cooperation is the development of efficient and digitally coordinated supply chain systems. For instance, the integration of ERP platforms, digital forecasting tools, and quality assurance systems has hugely improved coordination between clusters and simultaneously reduced lead times. Moreover, the legal and institutional framework created by trade agreements and tools such as the EUR.1 certificate, discussed in Chapter 3, has significantly lowered trade barriers and encouraged tighter economic integration. As a result, Vietnamese exporters benefit from preferential tariffs when accessing European markets – provided they comply with rules of origin – meanwhile, for Italian brands, this translates into cost savings, improved logistics and a more predictable regulatory environment. Within this context, it is pertinent to add that Montebelluna firms with lean production models and limited domestic labor pools particularly benefit from this arrangement, as it supports business continuity without compromising on quality or compliance.

Meanwhile, an additional notable opportunity in this partnership lies in the diversification of sourcing strategies. By incorporating Vietnamese manufacturers within their supply chains, Sportsystem's firms can efficiently mitigate risks associated with over-reliance on subcontractors located in other regions of the world, such as Eastern Europe or China, and therefore reduces vulnerability to geopolitical or logistical disruptions worldwide. On the other side, from the Vietnamese perspective, the partnership offers a variety of significant advantages: for instance, it brings stable demand for their products – crucial for long-term planning – reputational benefits and often access to technical training, process upgrades, and stringent quality assurance protocols. This type of dynamic can stimulate capacity building among Vietnamese small and medium enterprises, but also foster continuous innovation and compliance to international standards, thereby strengthening their competitiveness in the global footwear industry.

Despite all these positive and promising synergies, that have been established, there exist several critical barriers and structural limitations, which may limit the full realization of cooperative potential between the two clusters. For instance, differences in culture and regulation – particularly concerning labor rights, environmental enforcement, and industrial certifications – introduce serious complexity and challenges for cross-border collaborations. Unfortunately, these differences not only increase operational costs but also require careful management in order to avoid possible legal and reputational risks, especially in the recent light of tightening international compliance frameworks.

For the time being, communication challenges – both linguistic, spatial and managerial – still represent an often underestimated obstacle to what could be a constantly successful collaboration. As a consequence, these multicultural barriers can disrupt knowledge transfer, delay innovation processes, and lead to costly misunderstandings during various stages of product development, especially when timelines are compressed and coordination among multiple stakeholders must be precise.

Moreover, strictly on the Vietnamese side, asymmetrical development among suppliers in meeting the advanced and evolving expectations of international buyers is one of the principal obstacles to deeper cross-country collaboration. While some South-East Asian firms are improving in areas like traceability and ESG compliance, many of them are still constrained by structural, technical, and cultural factors that limit their ability to align with international standards. Unfortunately, such inconsistency in supplier capabilities can lead to significant bottlenecks across the supply chain, particularly when coordination and reliability are essential for meeting tight production schedules and high-quality standards. Consequently, these disruptions may damage buyers' trust, thereby making it more difficult to establish and maintain reliable long-term partnerships.

Of course, correctly addressing these communication and development gaps is therefore essential in order to unlock the full potential of this international economic cooperation.

Conversely, firms in Montebelluna face their own risks. An over-reliance on outsourcing – particularly if pursued without a clear and robust strategic framework – could compromise brand identity, disrupt quality control mechanisms, and ultimately weaken market positioning. These challenges may not only disrupt operational efficiency but also threaten the integrity of the “Made in Italy” label, which plays a crucial role in the market appeal of Montebelluna products. In high-value, design-driven sectors like footwear, where differentiation relies heavily on craftsmanship, innovation, and brand narrative, the loss of control over production can significantly weaken firms' ability to deliver distinctive value. As consumer expectations around authenticity, quality, and sustainability continue to rise – driven by raising awareness on topics like ethical production practices and environmental impact – any perceived decline in these areas may not only result in instant reputational damage but may also lead to a longer-term decrease of buyer loyalty and trust.

Therefore, while opportunities for cooperation are clearly evident at global level, it is important to recognize that realizing them requires thoughtful and coordinated efforts in order to direct these asymmetries correctly. For instance, addressing institutional gaps, fostering mutual learning, and investing in relationship-building mechanisms will be essential to move from simple transactional exchanges to deeper forms of strategic collaboration.

Nevertheless, the potential for strategic collaboration remains strong, especially when supported by bilateral cooperation frameworks, public-private partnerships, and joint capacity-building initiatives. For example, some proactive approaches may include co-branding, joint ventures or exchange schemes between clusters to speed up one another's learning and technology transfer. Shared platforms for training, sustainability innovation, and digital integration could also reinforce trust and standardization across borders. Table 5 provides a summary of the key opportunities and challenges in the collaboration between the two clusters.

As global industries move toward more circular, digitally connected, and environmentally responsible supply chains, partnerships between clusters like Montebelluna and Vietnam’s footwear hubs could serve as a promising model for cross-continental industrial collaboration – where innovation and scale come together, and tradition evolves alongside transformation.

Table 5. Opportunities and Challenges in Montebelluna–Vietnam Cluster Cooperation

Aspect	*Opportunities*	*Challenges*
Supply Chain Synergies	• Cost-efficient, high-quality production in Vietnam. • Just-in-time design and development in Italy • Trade facilitation via EVFTA and EUR.1 certification	• Coordination complexity • Cultural and regulatory differences • Ensuring consistent standards across partners
Innovation and Capacity	• Transfer of know-how from Montebelluna to Vietnam • Joint product development • Training in sustainability and quality	• Uneven technological maturity • Supplier upgrading requirements • Risk of IP weakening if not carefully managed
Strategic Resilience	• Diversification of supplier base for EU firms • Stable demand and partnerships for Vietnamese producers • Shared digital tools	• Exposure to global logistics disruptions • Need for trust-building and long-term relationship investment

Source: Author.

The above analysis has outlined many aspects of both complementarity and divergence between the Montebelluna and Vietnamese clusters but it is the strategic interaction on these dimensions that unlocks the complete potential of their collaboration. From industrial organization and innovation dynamics to trade integration and supply chain risk management, each system reflects different yet compatible strengths. Far from operating independently, these clusters are now deeply engaging with globalized production networks, where mutual learning and exchange can drive competitive advantage on both sides.

The following summary Table 6 synthesizes the core findings of Chapter 4. It presents a side-by-side comparison of structural characteristics, value creation strategies, and partnership potential across the two clusters. More than a static snapshot, the table is intended as a tool for reflection – highlighting how regional specialization and global integration can coexist, and how firms and policymakers can leverage cluster complementarities to foster resilient, innovative, and sustainable industrial ecosystems.

Table 6. Comparative Summary of Montebelluna and Vietnamese Clusters

Category	*Montebelluna's Footwear Cluster*	*Vietnam Textile & Footwear Clusters*
Industrial Structure	Dense SME network, high specialization, localized coordination	Hybrid structure: FIEs dominate upper tiers; domestic SMEs in lower value chain roles
Innovation Dynamics	Endogenous, tacit knowledge-driven, design- and product innovation-centered	Externally driven, compliance-based, with increasing focus on green and digital practices
Knowledge Economy	Strong local learning processes, embedded know-how, economie della conoscenza	Relies heavily on foreign knowledge transfer; local innovation still developing
Geographical Configuration	Compact cluster, close proximity supports rapid coordination and JIT practices	Geographically dispersed across multiple regions; optimized for scale and export flows
Supply Chain Orientation	High-value, flexible supply chains; some delocalization for cost efficiency	Cost-efficient, large-scale production networks with international dependencies
Key Strengths	Quality, customization, design excellence, brand heritage	Low costs, global integration, strong infrastructure, trade agreements (e.g., EVFTA)

Key Weaknesses	High labor costs, limited scalability, digital and green unevenness across SMEs	Low domestic value capture, supplier upgrading gaps, reliance on imported inputs
Resilience Factors	Flexibility, strong firm relationships, local control over core functions	Policy support, FDI inflows, large-scale logistics infrastructure
Opportunities for Cooperation	Productive partnerships via design-production synergies; trade incentives (e.g., EUR.1)	Capacity-building, long-term partnerships, entry into premium segments
Challenges to Integration	Maintaining brand identity and IP when outsourcing	Upgrading SMEs, meeting strict EU standards, coordinating across time zones

Source: Author.

Conclusions

This thesis has investigated the evolving role of industrial clusters in the global economy through a comparative analysis of the Montebelluna footwear district in Italy and the Vietnamese textile and footwear clusters. By combining theoretical analysis with empirical case studies, the research highlights how localized industrial systems can remain highly relevant – and even gain new strategic importance – in a world increasingly shaped by global value chains, digital transformation, and sustainability urgencies.

A first core conclusion relates to the complementary nature of the two cluster models analyzed. As shown in Chapter 2, Montebelluna represents a territorially embedded, knowledge-intensive industrial district characterized by deep specialization, strong inter-firm cooperation, and an enduring commitment to design excellence and innovation. The cluster has developed a powerful ecosystem that facilitates tacit knowledge exchange, rapid prototyping, and responsiveness to premium market demands – particularly in the outdoor and technical footwear segments. Its high levels of institutional thickness, relational proximity, and craftsmanship are key assets that contribute to its competitiveness, despite structural limitations such as high labor costs and limited scalability.

In contrast, the Vietnamese clusters examined in Chapter 3 illustrate a geographical dispersed network, highly globalized and scale-oriented model, shaped by decades of economic reform, proactive trade integration, and foreign direct investment. These clusters definitely benefit from cost competitiveness, developed logistical infrastructure, high labor flexibility and international partnerships, positioning Vietnam as a leading global supplier for international firms like Nike and Adidas. However, the analysis also identifies endless challenges, including a reliance on low-margin activities like cut-make-trim production, a limited capacity for domestic innovation, and uneven implementation of sustainability standards – particularly among second-tier suppliers.

The comparative framework developed in Chapter 4 underscores how the strategic strengths and unique capabilities of one cluster model effectively complement the development needs of the other. Montebelluna's core competencies – such as brand-building, product development, and knowledge retention – are precisely the areas where Vietnamese clusters seek to upgrade. Conversely, Vietnam's ability to provide large-scale, cost-efficient, and increasingly compliant manufacturing capacity offers Montebelluna firms a valuable complement to their high-value operations. These dynamics reveal strong potential for deeper transnational collaboration – not merely in transactional outsourcing, but through joint innovation platforms, sustainability partnerships, and long-term supplier development programs. As discussed in Section 4.3, tools such as the EUR.1 certificate under the EU-Vietnam Free Trade Agreement (EVFTA) significantly reduce trade barriers and make collaboration between the two more cost-effective and predictable.

Yet another key finding is that both cluster models are under growing pressure to embrace digital transformation and international sustainability agendas. Montebelluna's SMEs are unevenly adopting digital supply chain tools and environmentally sustainable production techniques, despite recent advances in product innovation and traceability. On the other hand, Vietnam, advancing rapidly in ERP adoption and compliance efforts, continues struggling to vertically integrating its supply chain and ensuring fair innovation diffusion across firms. Both cases illustrate the need for cluster-level governance and more institutional support – through training programs, industry associations, and policy frameworks – to promote sustainable development and knowledge-intensive growth.

From a broader theoretical perspective, this thesis reinforces the argument that industrial clusters are moving from geographically delineated production systems to globally interconnected pillars of value creation. Within this dynamic context, clusters operate not in isolation, but as integral components of international production networks, hence contributing to complex global value chains. As outlined in the research, the evolution toward knowledge-based economies within clusters redefines competitiveness, going beyond costing or scale to include the capacity to learn, innovate, and cooperate strategically across borders. In fact, through cooperation between clusters, global production networks are facilitated, and complex international value chains enhanced, ultimately creating more sophisticated international production systems. This perspective is especially relevant in the current global context, as it is increasingly characterized by supply chain disruptions, evolving trade policies, and increasing expectations related to ESG performance.

Looking forward, future research could deepen the understanding of how industrial clusters are evolving in the face of rapid technological, economic, and geopolitical change. One promising direction would be to explore how digital platforms, such as AI-powered supply chain tools, B2B collaboration hubs, and blockchain traceability systems, are reshaping interactions between lead firms and suppliers within and across clusters. As digitalization increasingly influences procurement, logistics, and innovation management, understanding how clusters adapt – or lag – in the adoption of these technologies is crucial. Additionally, further investigation into the implementation of ESG frameworks within clusters could clarify how sustainability is diffused at territorial level, and what institutional or financial support mechanisms are most effective for enabling this transition, especially among SMEs.

Another important area of study is the resilience of clusters in times of crisis – from pandemic disruptions to geopolitical shocks such as trade wars, energy insecurity, or conflicts. Researchers could analyze how clusters with different organizational structures respond to such pressures and which governance or relational strategies (e.g., diversification, nearshoring, redundancy) prove most effective in maintaining performance. In this context, assessing the evolution of supply chain risk management strategies across clusters with different levels of technological sophistication could be especially valuable.

Qualitative interviews or cluster mapping fieldwork would give deeper insight into the contribution of trust, learning, and learning-by-doing in sustaining competitive advantage in cross-border partnerships. More in-depth analysis of capacity-building activities or supplier development programs, for instance, would enable the determination of best practices and institutional bottlenecks. Moreover, looking at the disclosure of transnational cluster networks – such as inter-regional cooperation platforms and EU-Asia industrial forums – may be of significant insights towards understanding how industrial policy is increasingly being shaped by global-local linkages rather than purely national interests.

Meanwhile, another key consideration is the possible collaboration between the Montebelluna and Vietnamese clusters within emerging global value chains, which not only appears feasible but also to be mutually rewarding. The integration of Montebelluna's design-driven and innovation-intensive capabilities with Vietnam's scalable and increasingly compliant manufacturing base can lead to the development of new forms of industrial symbiosis. As GVCs move toward more resilient, transparent, and environmentally responsible configurations, these two clusters – each with distinct yet complementary strengths – could co-create competitive advantages through shared digital platforms, traceability systems, and low-impact materials within new global value chains. This kind of collaboration among clusters, supported by instruments like the EU-Vietnam Free Trade Agreement and public-private governance initiatives, has the potential to define a new model of international industrial collaboration rooted in strategic coordination, mutual learning, and the creation of sustainable value.

To this end, new forms of cooperation within global value chains should be explored, extending beyond traditional buyer-supplier relationships to include co-investments in digital infrastructure, training programs, and ESG compliance frameworks. Such collaboration could involve the joint development of environmentally certified products, traceability systems, and circular economy initiatives, aligning with both international sustainability regulations and countries' green transition goals. Additionally, public-private partnerships and interregional cluster alliances could play a critical role in institutionalizing these collaborations, ensuring that benefits are shared not only between large firms but also among SMEs.

Eventually, the future of industrial cluster research lies in capturing the complex, multi-scalar, and dynamic nature of production ecosystems as they operate across borders – linking tradition with innovation, locality with globality, and competitiveness with sustainability.

In conclusion, the comparative study of Montebelluna and Vietnam demonstrates that industrial clusters, far from being outdated, are adapting, and reasserting their importance in a complex global economy. Their ability to connect localized knowledge with international production, and to combine resilience with flexibility, positions them as crucial building blocks of the next generation of sustainable, innovation-driven global value chains.

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