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**MEASURING ESG READINESS IN EUROPEAN  
ENVIRONMENTALLY SENSITIVE SMEs THROUGH A  
CUSTOM-TRAINED LARGE LANGUAGE MODEL**

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# Abstract

This study develops a theoretical and operational framework for assessing Environmental Social Governance (ESG) readiness in European small and medium-sized enterprises (SMEs). ESG readiness is conceptualised as the combination of organisational resources, structures, cultural orientations, and external pressures that enable the effective implementation of sustainability practices beyond mere reporting. Grounded in Organisational Readiness for Change, Institutional Theory, and Legitimacy Theory, the framework examines three core dimensions: Organisational Capacity, Environmental Pressure, *and* Organisational Culture.

This study focuses on 197 unlisted SMEs, not subject to mandatory sustainability disclosure, to address the following research questions: *To what extent do unlisted European SMEs that voluntarily adopt sustainability reporting standards demonstrate adequate ESG readiness to implement the reporting process effectively? How does ESG readiness shape the quality, depth, and internal coherence of SMEs' sustainability disclosure?*

The goal of this study is to identify the enabling factors that support genuine ESG engagement and to distinguish substantive practices from symbolic compliance by developing and training a Large Language Model (LLM).



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# Introduction

Small and medium-sized enterprises (SMEs) are central to the EU economy. Representing about 99% of all businesses, they provide a substantial share of employment and contribute significantly to value added across the EU's business economy (European Commission, Joint Research Centre, 2024). In the European context, where the industrial base is highly fragmented and shaped by micro and family-owned firms anchored in local communities, studying SMEs provides critical insight into the everyday mechanisms that sustain economic and social activity (European Parliament, 2024).

They ensure more than 67% of employment and produce about 60% of total added value, assuming key functions in the competitiveness of production chains, local innovation, and green and digital transition processes that the EU has placed at the centre of its development strategies. Unlike large companies, often concentrated in high-tech sectors and equipped with complex managerial structures that benefit from economies of scale, SMEs are deeply rooted in the local fabric. They are considered as companies that contribute to the development of territorial skills, support social cohesion, and shape flexible, adaptive business models aligned with the needs of the communities in which they operate.

In many European countries, and especially in countries characterised by industrial districts or local economies based on small and medium enterprises, SMEs are not only economic actors but real agents of territorial development. In this scenario, one of the central elements of the current European debate emerges: the growing attention to the role of SMEs in relation to the sustainable transition and the achievement of the climate and social objectives set by the European Green Deal (European Commission, 2019).

Sustainability, understood in its integrated meaning of environmental, social, and governance (ESG) performance, can no longer be reserved only for large companies or multinationals. The collective impact of SMEs on natural ecosystems, local communities, and socioeconomic processes is highly relevant. Recent estimates show how SMEs contribute to over 60% of the environmental impact in the EU and up to 70% of global pollutant emissions, data that can be explained not so much by the intrinsically polluting nature of each enterprise, but by their high number and their concentration in production sectors with high environmental sensitivity (Corazza, 2017; Guerrero-Baena et al., 2024).

This data highlights a structural paradox, although SMEs are perceived as less structured organisations and less responsible for socio-environmental impacts, they contribute significantly to environmental pressures, despite having historically been excluded from the

main European regulations on non-financial reporting (Ravell and Blackburn, 2007; Álvarez Jaramillo et al., 2018).

This paradox strongly emerges in the strategic tension that has characterized SME behaviours in recent years: on the one hand, they must face competitive needs related to traditional economic constraints (reduced margins, price volatility, limited access to credit, global competition); on the other, they are increasingly subject to regulatory, market, and social pressures that require greater transparency, a structured commitment to sustainability, and the adoption of more mature governance tools.

In this way, SMEs find themselves having to balance almost divergent objectives: on the one hand, ensuring growth and operational continuity in the short term; and on the other, adapting to a society that increasingly places sustainable strategies, investment in innovation, responsible management practices, and systems for monitoring non-financial performance at the centre of corporate expectations.

This tension is particularly evident in sectors defined by the scientific literature as environmentally intensive such as chemicals, energy, manufacturing, and utilities (Branco and Rodrigues, 2008), where pressures from European regulations, supply chains, and local stakeholders are particularly stringent (Nicolò and Cervilla-Bellido, 2025).

Given the previous considerations, environmental sustainability has therefore taken on a fundamental role for SMEs, transforming from an accessory theme, predominantly linked to corporate social responsibility, into a competitive factor capable of influencing reputation, access to credit, positioning within value chains, and the ability to meet stakeholder expectations.

The growing complexity of international markets, consumers' attention to more sustainable products and processes, the interest of financial institutions in ESG parameters, and the regulatory push of the European Union have made sustainability a key factor even for smaller enterprises, which increasingly adopt ESG practices voluntarily, despite the absence of formal obligations (Garrido-Ruso et al., 2024). In particular, SMEs operating in production contexts where international visibility is high, such as exporting industrial districts or supply chains integrated with global markets, tend to perceive sustainability as an indispensable element for maintaining competitiveness and credibility.

The increasing diffusion of sustainability practices among SMEs, however, does not yet correspond to a uniform or fully structured behaviour. The barriers that hinder a systemic adoption of sustainability by SMEs are numerous and consolidated: insufficient financial resources, limited availability of internal technical skills, difficulties in accessing adequate

technical tools, limited ability to attract specialised managerial profiles, and lack of organisational structures capable of supporting complex processes. To this must be added the absence, until recently, of significant regulatory pressure: for a long time, sustainability reporting was perceived as an obligation reserved for large enterprises, while SMEs remained on the margins of this process (Álvarez Jaramillo et al., 2018).

Despite structural difficulties, a growing number of SMEs have, in recent years, begun to undertake voluntary sustainability reporting.

The motivations behind this choice are varied and often interconnected. For some companies, ESG disclosure serves as a strategy to strengthen corporate reputation and consolidate their relationships with the territory and stakeholders (Parker et al., 2009). For others, motivations derive mainly from pressures from international supply chains, which demand increasingly detailed information on the environmental and social performance of their suppliers (Cantele and Zardini, 2020).

Furthermore, some enterprises use sustainability reporting to access facilitated financing or to differentiate themselves in highly competitive markets (Michelon and Parbonetti, 2012), where the ability to demonstrate attention to the environment and society can constitute a significant advantage (Guerrero-Baena et al., 2024).

In some cases, sustainability reporting also responds to risk management needs, especially in sectors where environmental and social impacts can generate sanctions, conflicts with local communities, and high reputational costs (Cho and Patten, 2007).

Despite positive forces, voluntary reporting by SMEs is still very heterogeneous. Reports published by companies vary considerably in format, informational content, analytical depth, data quality, and methodological coherence.

While some SMEs adopt advanced tools for impact assessment, integrate sustainability into governance, and develop detailed reports, others limit themselves to synthetic documents lacking informative indicators or drafted without clear reference to recognised standards.

This heterogeneity derives not only from sectoral or dimensional diversity but also from the absence of a regulatory framework guiding the reporting of unlisted SMEs toward common criteria, reducing informational ambiguity and facilitating comparability.

To understand the reasons for this scenario, it is important to analyse the evolution of the European regulatory framework on sustainability reporting, which in the last ten years has undergone a radical transformation, shifting from a model based almost exclusively on voluntariness to a more structured and binding system.

This path is represented primarily by Directive 2014/95/EU, better known as the Non-Financial Reporting Directive (NFRD) (European Commission, 2014). Entering into force in 2014, it introduced for the first time a non-financial reporting obligation in Europe, requiring public-interest entities with more than 500 employees to disclose information related to environmental, social, human-rights, anti-corruption, and board diversity issues.

This directive therefore represented a significant change in the European landscape, as it formalized the need to integrate non-financial information into corporate reporting processes, helping raise awareness of the role of sustainability in business management.

Although important, the NFRD had relevant structural limitations. First, its extremely narrow scope excluded almost all European SMEs, both listed and unlisted. Second, the regulation left too much discretion in choosing standards and frameworks to adopt, leading to a heterogeneous and hardly comparable informational landscape. Third, the lack of binding indicators and the almost non-existent control mechanism reduced the directive's effectiveness in promoting structured reporting, limiting its impact on transparency for investors and stakeholders. As a result, many companies, including those subject to obligations, adopted minimal or purely formal approaches, contributing to the perception of non-financial reporting as a mere bureaucratic requirement rather than a strategic process.

A step forward was taken with the introduction of the Corporate Sustainability Reporting Directive (CSRD) Directive (EU) 2022/2464 in 2022. The CSRD represents one of the most ambitious reforms in the history of European corporate law, marking the shift from a voluntary or semi-voluntary reporting model to a fully integrated, comparable system anchored to rigorous methodological principles.

The CSRD expanded the range of companies subject to reporting obligations, including all large enterprises, listed SMEs (except micro-enterprises), and non-EU companies with significant turnover generated in Europe. Moreover, the Directive introduced the obligation to include sustainability information in the management report, thus encouraging greater integration between financial and non-financial reporting.

One of the most innovative elements of the CSRD is the obligation to adopt the European Sustainability Reporting Standards (ESRS), developed by EFRAG (EFRAG, 2023). In this scenario, the ESRS represent the EU's first attempt to create a unified, detailed, and comprehensive framework for sustainability reporting.

The structure is based on a modular system distinguishing between general, thematic, and sectoral standards, accompanied by emphasis on the principle of double materiality.

The element of double materiality represents one of the most relevant conceptual evolutions introduced by the CSRD, as it requires companies to report not only on the financial impacts associated with ESG issues, but also on the impacts the company generates on society. This is highlighted as a profound transformation that places sustainability at the centre of corporate strategy and affirms the need for reporting that is not only performance oriented but also socially responsible.

But, as innovative and necessary as it is, the CSRD also raises relevant questions about the capacity of companies, especially SMEs, to effectively integrate the new provisions. If on the one hand this Directive represents an important step toward transparency and comparability, on the other, it risks creating an even greater divide between large enterprises, equipped with adequate organisational structures, advanced information systems, and dedicated resources, and SMEs, often lacking the skills and tools necessary to meet such stringent requirements.

It is in this context that one of the most relevant innovations of recent years is positioned, the introduction of the *Voluntary Sustainability Reporting Standard for SMEs* (VSME), published by EFRAG (EFRAG, 2024).

The VSME therefore represents the first European standard explicitly dedicated to unlisted SMEs and micro-enterprises, which, as mentioned earlier, constitute the largest share of the European economic fabric. It has a profoundly different logic than the ESRS while maintaining coherence with them. The VSME is based on a modular, proportionate, and flexible framework that aims to facilitate voluntary ESG reporting even for the smallest enterprises. Its objective is twofold: first, to provide SMEs with a methodologically solid but not excessively complex tool; second, to guarantee stakeholders reliable and comparable information without burdening companies with high administrative costs. In this sense, the VSME positions itself as a bridge between the need for information transparency and the operational capacity of SMEs, addressing a historical gap in the European landscape.

The introduction of the VSME does not occur in a regulatory vacuum but is part of a much broader evolutionary trajectory, characterized by increasing integration between European policies on sustainability, industrial strategy, access to finance, and innovation.

Its significance was subsequently amplified with the adoption of the Omnibus Package (European Commission, 2023) in 2025, a corrective measure aimed at reducing the informational burden imposed by the CSRD, postponing deadlines for newly included companies, and introducing procedural simplifications to facilitate the application of the ESRS.

In this sense, the Omnibus Package represents an implicit acknowledgement of the need to calibrate regulation by balancing transparency and proportionality, especially for less structured business realities.

Although it does not modify the structure of the CSRD, it nonetheless indicates greater sensitivity to companies' ability to implement standards and opens the way to a phase of regulatory alignment in which the role of SMEs is more significant.

In this framework, the VSME is not just a technical tool but a true mechanism of regulatory inclusion. For the first time in the history of European non-financial reporting policies, unlisted SMEs have an official standard consistent with the ESRS structure. Its voluntary adoption allows SMEs to report sustainability information in a structured way, improve transparency, and respond to stakeholder demands without being subject to the complex obligations of the CSRD.

This defines a radical change: sustainability is no longer a domain reserved for large enterprises but becomes a practice accessible even to the thousands of European companies operating on a small scale.

However, the effectiveness of the VSME largely depends on SMEs' ability to adopt it in an authentic, structured, and oriented way. The existence of a standard, even if proportionate and simplified, does not automatically ensure that companies possess the resources, skills, and willingness necessary to implement it. On the contrary, the risk that many SMEs adopt the VSME as a mere formal exercise, intended exclusively to satisfy external expectations or meet bank requirements, is concrete and documented. This risk is not new: it is a phenomenon already known in previous voluntary reporting systems, where many companies produced superficial reports lacking meaningful indicators or unsupported by effective organizational processes.

To prevent voluntary reporting by SMEs from becoming mere "greenwashing" or a purely symbolic activity, it is necessary to understand the internal conditions that determine its effectiveness. It is here that the concept of *Organisational Readiness for Change* (Weiner, 2009), derived from the literature, assumes a central role.

The introduction of the VSME, along with the evolution of the regulatory framework, creates a system of pressures from institutions and society that is increasingly complex. But the actual response of SMEs depends on their ability to integrate sustainability into their organisational structure, decision-making processes, and corporate culture. In this work, readiness therefore represents the filter through which companies absorb, interpret, and translate into practice the new regulatory drivers.

The concept of readiness does not refer merely to the willingness to change. It concerns the combination of willingness and actual ability to adopt new and complex practices.

On the one hand, companies must be motivated to implement sustainability reporting; on the other, they must possess the resources, skills, organisational structures, and information systems necessary to do so effectively. It is a multidimensional construct involving the cognitive, cultural, and operational spheres of an organisation. In the absence of readiness, even the most accessible standards risk failing to achieve their transformative objectives.

The way SMEs respond to European regulations can be analysed through the lens of *Institutional Theory* (DiMaggio and Powell, 1983), which helps explain how companies react to institutional pressures. European regulations, from the NFRD to the CSRD and the VSME, constitute clear forms of coercive pressure, pushing companies to modify their behaviour to align with rules, expectations, and procedures defined at the supranational level.

At the same time, there are normative pressures, linked to social and professional expectations, and mimetic pressures, deriving from companies' tendency to imitate behaviours considered legitimate and socially acceptable.

In this interplay of forces, SMEs do not act in isolation but interpret and negotiate these pressures based on their context, resources, and relational networks.

Likewise, *Legitimacy Theory* (Lindblom, 1994; Deegan, 2002) helps explain why many SMEs choose to undertake voluntary reporting pathways even in the absence of regulatory obligations. Sustainability reporting is not just an informational mechanism: it represents a tool through which companies build, maintain, or restore their legitimacy within the socioeconomic system (reference). Publishing a sustainability report means communicating to stakeholders that the company is aware of its impacts, considers certain social expectations, and acts responsibly.

For many SMEs, especially those belonging to sectors with high environmental sensitivity, legitimacy represents a fundamental asset for ensuring operational continuity (Suchman, 1995). Thus, the bridge between Institutional Theory, Organizational Readiness for Change, and Legitimacy Theory is highlighted by European regulations that generate institutional pressures and push companies toward non-financial reporting; this enables companies to build or strengthen their legitimacy; but the ability to effectively respond to such pressures and build legitimacy depends on readiness, that is, the internal capacity of the company to integrate these changes.

SMEs that do not possess a sufficient level of readiness therefore risk adopting the VSME, or any other standard, in a superficial or symbolic way, compromising the quality of disclosure and reducing its value for stakeholders.

The introduction of the VSME thus constitutes an important moment to analyse the behaviour of unlisted European SMEs and understand the real capacity of the European entrepreneurial fabric to face sustainability challenges. The transition toward sustainability cannot be achieved solely through policies aimed at large companies, rather, it requires more active and conscious involvement from SMEs, which represent the widest and most widespread segment of the European production system. For this to happen, it is necessary to understand not only what SMEs declare in their reports but also how ready they really are to integrate sustainability into their business practices.

This work, therefore, does not concern simply the presence of new standards or the evolution of the European regulatory framework, but the actual capacity of SMEs to respond to such stimuli.

Sustainability today is not just a set of management practices or informational obligations; it is a concept that requires companies to rethink their identity, reconfigure internal processes and practices, and develop more advanced forms that are consistent with social expectations.

For SMEs, this change may represent an opportunity for differentiation, innovation, and reputation building, but it may also constitute a risk if not properly addressed.

Sustainability reporting, in fact, does not generate value if it is not supported by real integration of ESG principles into governance and operational practices. In the absence of real readiness, it risks being ineffective, inconsistent, or even counterproductive.

In this work, readiness is used as a key lens for understanding the behaviour of unlisted enterprises in the face of the new regulatory scenario. It concerns not only the availability of material resources (human capital, information systems, technical skills) but also the cultural and strategic dimension, meaning the organisation's ability to perceive sustainability as a coherent element of its identity and evolutionary path.

A company truly ready to report its sustainability has developed an internal level of maturity such that sustainability is integrated into decision-making processes, strategic planning, and operational routines.

Conversely, a company that is not ready tends to produce superficial and inaccurate reports, risking compromising its credibility and generating mistrust among stakeholders. This concept is particularly relevant in the case of unlisted SMEs that voluntarily choose to report using the VSME. Voluntary adoption of reporting indeed offers an opportunity to analyse companies' motivations, their real ability to manage sustainability-related themes, and the degree of integration between statements contained in reports and actual organisational practices.

In the absence of a regulatory obligation, the decision to publish a sustainability report represents an important signal: it indicates that the company perceives sustainability as a reputational element, or that it considers it necessary to respond to the expectations of banks, clients, investors, and local communities. However, this decision does not guarantee that the company can implement coherent and credible sustainability management processes.

In this sense, the research underlying this thesis fits into the broader debate concerning the capacity of unlisted European SMEs to actively and consciously participate in the sustainable transition. In a context where Europe has taken ambitious commitments regarding climate neutrality and the transformation of production systems, understanding the position of SMEs is fundamental for assessing the real scope of European policies and identifying potential gaps in support strategies.

SMEs serve not only as recipients of European regulations but also as key agents of transformation. Their capacity to implement sustainable practices and communicate these efforts transparently will greatly impact the overall effectiveness of EU policies. If sustainability is to become a structural element of Europe, it is essential to ensure that SMEs are able to understand, integrate, and implement ESG principles effectively.

From this perspective, this study aims to explore and analyse the degree of organisational readiness of unlisted European SMEs that voluntarily adopt sustainability reporting, with particular attention to the recent introduction of the VSME. The objective is not simply to assess the completeness of published reports, but to understand the organisational elements that influence the quality and coherence of sustainability disclosure.

The research aims to identify the internal dimensions, related to capacity, culture, resources, and strategic vision, that determine overall readiness and, consequently, the effectiveness of reporting. Building on these considerations, two research questions guide this study: 1) *To what extent do unlisted European SMEs that voluntarily adopt sustainability reporting standards demonstrate adequate ESG readiness to implement the reporting process effectively?* 2) *How does ESG readiness shape the quality, depth, and internal coherence of SMEs' sustainability disclosure?*

Starting from these questions, the contribution of this work is both theoretical and empirical. On the theoretical level, it aims to integrate the concept of readiness with the perspectives of Institutional and Legitimacy Theory, providing an interpretive framework that helps understand SMEs behaviours. The theoretical contribution thus consists in showing readiness not only as an internal prerequisite but also as something that mediates the relationship between institutional pressures and legitimisation strategies.

At the empirical level, the thesis presents an analysis based on a sample of reports from unlisted European SMEs, developed using a Large Language Model (LLM) and, above all, analysed not through basic text analysis but through contextual semantic analysis. The goal is to provide concrete evidence of SMEs' real ability to implement sustainability reporting coherently, going beyond the simple description of report contents.

Finally, the study also intends to contribute to the institutional debate and the design of support policies for companies. Understanding SMEs' ESG readiness and the factors that shape its effectiveness can help policymakers, business associations, and regulators design better support tools, reduce unnecessary reporting burdens, and foster a framework that enables meaningful sustainability adoption across European SMEs.

In conclusion, this thesis fits into a key historical moment for sustainability in Europe. The introduction of the VSME and the evolution of the European regulatory framework represent a turning point in sustainability reporting, expanding opportunities for companies and redefining social expectations toward them.

However, firms' ability to address these challenges ultimately depends on their organisational readiness, an aspect that has received limited attention in prior research. Examining the readiness of SMEs that voluntarily adopt sustainability reporting clarifies not only where European SMEs stand today but also their capacity to sustain the transition over time.

# Literature Review

## **The role of internal dynamics in sustainability reporting processes**

Over the last two decades, literature on sustainability reporting has devoted increasing attention to SMEs, recognising that their adoption of sustainability disclosure practices follows a different logic than that of large companies. Studies have shown that SMEs are defined by a particular organisational context, characterised by more flexible structures, centralised decision-making processes, a strongly personalistic culture and resource management that often strikes a precarious balance between operational needs and innovation capacity (Murillo and Lozano, 2006; Perrini and Tencati 2006; Del Baldo, 2012).

These characteristics strongly influence their ability to understand, communicate and implement sustainability initiatives. Therefore, understanding how the internal dynamics of SMEs shape the construction of sustainability reporting systems is an essential step in interpreting their actual readiness to implement the practices reported in non-financial reports.

### *Organisational and cultural leadership*

Unlike large companies, where sustainability activities are managed within dedicated departments with specialised staff and standardised procedures, in SMEs, attention to environmental, social and governance issues often stem from the personal convictions, individual values or ethical sensibilities of the entrepreneur or management team (Lepoutre and Heene, 2006; Del Baldo, 2012).

Several studies have shown that the entrepreneur plays a decisive role in promoting or hindering the adoption of sustainability practices (Murillo and Lozano, 2006; Aragón-Correa et al., 2008). In SMEs, sustainability is an extension of the founder's vision and identity.

This central role played by entrepreneurs also has implications in terms of sustainability disclosure. First, sustainability tends to be interpreted as an integral part of corporate culture rather than as a set of formalised practices. Entrepreneurs' commitment to values can be a strength when directed towards sustainability practices, as it encourages consistent behaviour and voluntary initiatives even in the absence of external pressure (Jenkins, 2006; Bos-Brouwers, 2010). However, this characteristic can also have the opposite effect in contexts where the internal culture is dominated by a strong operational priority and sustainability is

perceived as an additional burden that is difficult to integrate into an already limited organisational structure (Rossi and Luque-Vílchez, 2020).

The cultural dimension of this type of company plays a key role in the process of building non-financial reporting systems. Companies characterised by a culture oriented towards learning, collaboration and transparency show a greater propensity to undertake structured disclosure processes (Girella et al., 2019). In these contexts, the willingness to experiment with new tools, collect data, formalise procedures and involve staff encourages the adoption of sustainability practices. Conversely, in SMEs dominated by an operational culture focused on managing emergencies and solving day-to-day problems, sustainability disclosure tends to be episodic, fragmented or even non-existent.

A further cultural element concerns the relationship between SMEs and their stakeholders. Relationships with the local community, customers and business partners influence the perception of sustainability and the way it is communicated. Since many businesses operate in limited geographical areas, proximity to their stakeholders can strengthen their motivation for transparency and accountability, but at the same time makes it more complex to formalise reporting processes based on technical and standardised criteria (Perrini and Tencati, 2006; Del Baldo, 2012).

The literature has also shown that the flexible and informal nature of SMEs is both an asset and a limitation. It is an asset because it allows entrepreneurs to quickly introduce new practices and tools without having to deal with complex approval procedures or internal resistance. However, it is a limitation because this same informality prevents the construction of robust information systems, the definition of dedicated roles and the standardisation of data collection and verification activities (Tilley, 2000; Jenkins, 2006).

Therefore, the personal and cultural dimension of SMEs represents the basis for the development of all other internal dynamics related to sustainability. In this regard, organisational readiness does not arise solely from the availability of technical resources, but from a deep intertwining of entrepreneurial identity, shared values, decision-making logic, and corporate culture. In this sense, SMEs represent an environment in which the construction of sustainability disclosure systems is as much a technical-organisational process as it is a cultural process, influenced by beliefs, habits and worldviews that shape the evolutionary trajectory of the company.

### *Internal resources, competencies and operational capabilities*

However, the internal dynamics of SMEs related to the development of sustainability reporting systems are not limited to cultural and value aspects alone.

A significant portion of the literature highlights how these companies' ability to develop sustainability disclosure processes is influenced by the availability of resources, internal technical expertise, the structure of information systems, and the maturity of organisational processes. These elements constitute the operational side of the company, determining whether a company is able to translate a value-based orientation towards sustainability into systematic practices for measuring, monitoring, and communicating its performance.

Another recurring theme that emerges from the literature is the scarcity of internal resources. SMEs typically operate with lean administrative structures, in which employees perform multiple and often simultaneous tasks, leaving little room for managing complex activities such as collecting, systematising and verifying ESG data (Baumann-Pauly et al., 2013; Battisti and Perry, 2020). The absence of a department or human resources dedicated to sustainability, in its broadest sense, is one of the main operational barriers, as reporting requires a set of multidisciplinary skills, from measuring environmental impacts to managing information systems, from risk analysis to external communication. In fact, numerous studies have shown that when these skills are not available internally, SMEs tend to postpone the adoption of reporting tools or approach them in a limited, episodic or purely descriptive manner (Bos-Brouwers, 2010).

Resource management does not only concern professional skills, but also includes the financial resources needed to invest in technological tools, external consultancy or training activities. Given the competitive pressure and financial constraints that characterise many SMEs, investments in sustainability are often considered a lower priority than day-to-day operational needs (Rossi and Luque-Vilchez, 2020). In fact, this approach is consistent with the managerial approach of SMEs, which is strongly oriented towards survival and the efficient management of available resources. However, this approach significantly limits the possibility of developing structured and systematic reporting processes.

In addition to often limited human and financial resources, corporate information systems also play an important role. These systems represent the technical infrastructure necessary to collect, process and store data on emissions, energy consumption, waste management, social aspects and governance. Arena and Azzone (2012) and Massa et al. (2015) highlight how the maturity of information systems directly influences the quality and consistency of the data produced.

However, the literature shows that in SMEs such systems are often limited to accounting or administrative functions, without the integration of modules dedicated to sustainability (Giovannoni and Maraghini, 2013). In this context, the collection of non-financial data tends to be fragmented, manual, based on inconsistent documentation and lacking cross-checks, making it difficult to ensure the comparability of information over time.

Another critical issue is linked to this trend, namely a lack of resources. Many SMEs find themselves operating with technological tools that are obsolete or unsuitable for the systematic monitoring of ESG performance. This limits not only the production of reliable data, but also the ability to respond to requests from customers, partners or production chains that require greater transparency along the supply chain. Companies without advanced information systems are thus at a disadvantage in seizing the opportunities offered by sustainability disclosure and tend to perceive reporting as a complex, costly and unmanageable activity (Cardoni and Kiseleva, 2023).

The level of formalisation of internal processes is also closely linked to the above. In SMEs, informal management is a distinctive feature and, as highlighted by Tilley (2000) and Jenkins (2006), it is both a strength and a weakness. On the one hand, informality allows for greater decision-making agility and can facilitate the rapid introduction of new tools; on the other hand, it limits the adoption of standardised procedures, hinders the documentation of processes and makes it difficult to ensure continuity and consistency in the production of non-financial information (Gelbmann, 2010; Witek-Crabb, 2012).

Furthermore, these skills do not only concern technical aspects but also involve the company's ability to learn and develop new knowledge through processes dedicated to sustainability practices. The literature on organisational learning in SMEs shows that reporting can become a powerful catalyst for internal development.

The collection and analysis of ESG data encourages companies to reflect on their performance, identify areas for improvement and consolidate more sustainable practices (Massa et al., 2015).

The picture outlined above, therefore, shows that in SMEs, the ability to develop sustainability reporting processes is strongly influenced by operational and structural factors.

Furthermore, internal readiness does not depend solely on the entrepreneur's will or corporate culture but requires a combination of tangible and intangible factors: adequate resources, functional IT tools, formalised processes and skills capable of translating sustainability into measurable and communicable activities. The absence of even one of these elements can compromise the entire process, making it difficult for SMEs to structure reliable, consistent disclosure systems geared towards continuous improvement.

### *Organisational maturity and decision-making processes*

Another aspect highlighted in the literature concerns how SMEs develop their organisational capabilities over time and how this evolution influences their ability to adopt structured sustainability reporting processes.

In this regard, internal dynamics are not static and are transformed through learning cycles, gradual investments, experiences and paths that shape the company's predisposition to integrate sustainability practices into decision-making processes. Therefore, readiness could be a gradual and cumulative process.

Several studies have highlighted how the presence of existing management systems relating to quality, safety or the environment can be an important enabling factor for sustainability reporting. In this regard, Rossi and Luque-Vilchez (2020) show how SMEs with established procedures and an organisational culture geared towards formalisation are more willing and able to integrate ESG practices into their internal processes.

This phenomenon suggests that SMEs develop their reporting capacity not suddenly but by gradually building an organisational foundation that makes it possible to introduce more advanced tools.

Girella et al. (2019) highlight, however, that companies with greater organisational maturity tend to incorporate sustainability progressively, integrating it into learning, coordination and control processes. In these organisations, sustainability is not perceived as a separate or ancillary activity, but becomes part of the overall management system, reducing obstacles related to lack of information or the complexity of requirements.

Internal decision-making is another key element in building organisational readiness. The strong centralisation typical of SMEs gives entrepreneurs the responsibility of defining strategic priorities and allocating resources to sustainability initiatives. Murillo and Lozano (2006) and Del Baldo (2012) emphasise that this centralised decision-making makes leadership a decisive factor of influence.

In fact, the personal predisposition of top management towards innovation, ethics and transparency can encourage the formalisation of reporting processes; conversely, in the absence of such an orientation, disclosure activities risk remaining marginal or sporadic. The decision-making process also influences the company's ability to respond to external pressures from customers, supply chains or business partners. For this reason, SMEs with more open and collaborative decision-making processes tend to view such pressures as opportunities for

growth and improvement; conversely, companies with more defensive leadership or a focus solely on regulatory compliance struggle to integrate these stimuli in a structured manner. The literature also highlights how organisational maturity influences the ability to maintain continuity and accuracy in reporting. Companies with standardised procedures are able to ensure a more stable and reliable flow of information, which is essential for the regular production of sustainability reports (Arena and Azzone, 2012).

Conversely, in companies characterised by informal management and unstructured processes, the production of ESG information tends to be sporadic and lacking in adequate quality control. This lack of continuity can compromise the credibility of disclosures and hinder the consolidation of organisational learning necessary to improve long-term performance.

Another important factor concerns the ability to develop internal skills incrementally. The literature suggests that when companies first embark on measurement and reporting, they often lack a sufficiently structured knowledge base. However, participation in voluntary initiatives, pressure from supply chains and interaction with external actors, such as consultants and accountants, can facilitate the gradual acquisition of new skills (O'Reilly et al., 2024; 2025). In fact, SMEs that manage to develop internal learning mechanisms, even minimal ones, are more likely to consolidate disclosure over time and integrate it into decision-making processes.

The evolutionary capacity of SMEs is also linked to their exposure to changing institutional or market contexts. Several studies show that increasing regulatory complexity and rising social expectations have prompted companies to develop the skills needed to respond to demands for transparency (Cardoni and Kiseleva, 2023; Ortiz-Martínez and Marín-Hernández, 2024). However, these stimuli are only effective when the company has a sufficient organisational basis to implement them. In SMEs that do not have a formalisation-oriented culture, established processes or a minimum level of information infrastructure, the complexity of regulatory requirements has the opposite effect: it generates resistance, postponement or merely symbolic adoption of reporting.

Finally, the role of organisational learning is a key element in the most recent literature. The introduction of ESG measurement systems triggers a learning process that involves not only top management, but also employees and internal stakeholders. This process contributes to the development of new skills, the formalisation of internal procedures and the spread of a culture oriented towards continuous improvement (Massa et al., 2015; Girella et al., 2019).

SMEs that manage to transform reporting into a collective learning mechanism show a greater predisposition to adopt increasingly advanced tools and to progressively integrate themselves into international standards.

Evidence from the literature therefore suggests that SME readiness can be a dynamic and cumulative process. More mature companies, from an organisational point of view, with pre-existing management systems, leadership sensitive to sustainability and other characteristics, show a greater ability to integrate ESG practices into decision-making processes. Conversely, those operating with informal structures, limited resources and a poor information base struggle to develop consistent and continuous reporting processes.

Therefore, sustainability in SMEs cannot be considered an isolated element, but rather the product of a complex set of internal dynamics that reinforce each other, determining the possibility, or otherwise, of creating credible and improvement-oriented reporting systems.

### *Digitalisation, regulatory and social pressures*

In recent years, literature has highlighted how, in terms of sustainability, the internal dynamics of SMEs are influenced by external changes that shape their evolution.

Among these factors, the growing digitalisation of processes, the transformation of the European regulatory framework and pressures from production chains are particularly significant. These three elements do not replace internal dynamics, but act as catalysts or amplifiers, strengthening or weakening the company's ability to structure sustainability reporting processes.

Digitalisation is one of the most significant drivers of transformation for SMEs. The growing availability of digital tools has facilitated the adoption of more advanced management systems and, in some cases, has enabled companies to develop rudimentary but functional forms of ESG data tracking and storage. However, the most recent studies show that digitalisation only translates into real benefits when companies already have a minimally formalised internal structure. Momtaz and Parra (2025), analysing Spanish SMEs, point out that the adoption of digital systems is more effective in companies with pre-existing control and monitoring processes, while in SMEs without such foundations, digitalisation does not produce significant results and risks increasing perceived complexity.

The issue of digitalisation is also linked to companies' ability to guarantee the quality of non-financial data. Companies with integrated information systems are better able to process consistent, up-to-date and comparable data over time, which is essential for producing reliable reports (Cardoni and Kiseleva, 2023). However, many SMEs continue to operate with obsolete or fragmented IT tools, which do not allow for efficient information gathering. Recent literature highlights how the lack of digitisation is not simply a technical problem but reflects a structural

limitation of the company: the absence of a culture oriented towards formalisation and the inability to integrate technological solutions into daily management processes.

Alongside digitisation, the regulatory and institutional framework plays an important role. Although most unlisted European SMEs are not yet subject to mandatory requirements, the growing regulatory focus on sustainability is creating an environment that influences how companies perceive the need to measure and communicate their ESG performance.

Recent studies show that, even in the absence of formal obligations, many SMEs have begun to interpret growing institutional pressure as a signal of the strategic direction of the market and stakeholder expectations (Ortiz-Martínez and Marín-Hernández, 2024; Di Tullio et al., 2025). However, this regulatory influence does not produce uniform effects, as companies with greater organisational maturity tend to interpret the regulatory transition as an opportunity to improve their information processes; on the other hand, SMEs with more fragile structures perceive regulatory developments as an element of further complexity, often reacting with resistance or adopting defensive behaviours, such as green hushing.

The role of supply chains and business partners also emerges as another key dimension in the most recent analyses. Increasingly, companies are requesting information from their suppliers on environmental, social and governance issues, putting indirect but growing pressure on SMEs to standardise their reporting processes.

Studies conducted by Álvarez Jaramillo et al. (2018) and Setyaningsih (2024) show that, in the absence of adequate internal capabilities, many SMEs respond to such pressures reactively, producing minimal or non-comparable information, often prepared solely to meet the specific requests of trading partners.

These pressures help to highlight one of the main contradictions that has emerged in the literature, namely the gap between the information needs of external contexts and the actual capacity of companies to produce consistent and verifiable data. Companies that are more integrated into international supply chains show a greater propensity for process formalisation and information standardisation; however, they represent a minority. Most SMEs, especially those that are less digitised or less mature organisationally, struggle to respond continuously to external information requests, highlighting a structural weakness in the construction of long-term sustainable reporting systems.

Furthermore, the literature highlights how the combination of digitalisation, regulatory pressure and external demands produces different effects depending on the level of organisational readiness of the company. SMEs with pre-existing management systems, formalisation-oriented cultures and leadership sensitive to ESG issues are able to leverage these stimuli to

consolidate and improve their reporting processes. Conversely, companies with more fragile structures, lacking technical expertise and adequate information tools, tend to respond with minimal or symbolic actions, failing to establish a stable process for collecting and communicating non-financial information.

## **Internal and external barriers hindering sustainability reporting**

The literature on SMEs has also devoted increasing attention to analysing the barriers that hinder their ability to adopt sustainability reporting practices.

SMEs face constraints that arise, among other things, from their organisational structure. Studies show that these barriers are not isolated elements, but a set of interconnected factors that profoundly affect a company's ability to structure systems for measuring and communicating non-financial performance (Hillary, 2000; Scagnelli et al., 2023; Baumann-Pauly et al., 2013).

Understanding the nature and complexity of these barriers is essential for interpreting SMEs' readiness and identifying the conditions that enable effective advancement towards more mature forms of reporting.

### *Structural and resource barriers*

The first type of barrier identified in the literature refers to the structure of companies themselves and, in particular, to the scarcity of economic, financial, human and technological resources.

Generally, SMEs operate with small workforces, where technical skills are distributed across the board and staff tend to perform multiple functions.

This configuration makes it difficult to devote time, energy and professionalism to an activity such as sustainability reporting, which requires systematic data collection, analytical skills, methodological knowledge and continuous updating with regard to international standards (Gelbmann, 2010; Battisti and Perry, 2020).

The scarcity of economic resources is also a significant limitation. Preparing a non-financial report requires investment in regulatory tools, consulting services, management software and, in some cases, external assurance services.

For many, these investments are perceived as costly, especially in contexts characterised by intense competitive pressure and reduced operating margins (Baumann-Pauly et al., 2013). This leads to a tendency to consider reporting as a non-priority activity compared to daily operational

needs, with the consequent postponement or abandonment of activities dedicated to sustainability disclosure.

A further barrier is the lack of professionals dedicated to sustainability. Unlike large companies, where formalised roles exist, in SMEs sustainability is often the responsibility of the entrepreneur, the administrative manager or staff without specific training (Rossi and Luque-Vílchez, 2020). This lack of specialist skills contributes to a limited understanding of standards, measurement methodologies and the strategic implications of disclosing sustainability practices. In this context, the construction of a report tends to be fragmented, episodic and lacking in adequate quality control.

Time constraints also represent a significant barrier. Studies show that the typical workload of SMEs leaves little room for activities not directly related to production, sales or administrative management. Reporting, perceived as an additional commitment that is not immediately profitable, is often sacrificed in situations of operational pressure (Scagnelli et al., 2013). The literature shows that the time required to collect data, verify information, draft the document and update it periodically is one of the main obstacles to the continuity of sustainability disclosure.

In this regard, it is emphasised that SMEs perceive reporting as overly complex or disproportionate to their size (Hillary, 2000). The breadth of international frameworks, the difficulty of understanding their logic, and the lack of tools proportionate to the organisational reality of SMEs generate a sense of inadequacy that often discourages the initiation or consolidation of disclosure processes.

### *Organisational, cultural and process barriers*

Another part of the literature is dedicated to barriers to sustainability reporting that derive from the organisational and cultural characteristics that distinguish this type of business. The informal nature of management processes, the centralisation of decisions, the lack of a formalisation-oriented culture and the lack of awareness of the strategic value of disclosure are elements that profoundly affect a company's ability to adopt structured reporting tools.

One of the most recurrent barriers identified in the literature is the informal management of business processes. Many small businesses operate through loosely structured procedures based on direct communication, flexible responsibilities, and informal decision-making processes.

Although this informality allows for greater operational agility, it represents a significant obstacle to the introduction of systems geared towards the systematic collection and analysis of

ESG data (Tilley, 2000; Jenkins, 2006). The lack of standardised procedures, criteria and formalised roles makes it difficult to establish a consistent and verifiable flow of information, which is necessary to produce reliable and comparable reporting over time.

As previously discussed, a further element concerns the centralisation of decision-making, which is almost always focused on the role of the entrepreneur or management team, which is decisive in defining strategic priorities, allocating resources and adopting new management practices. If leadership shows sensitivity towards sustainability, the company tends to develop more responsible behaviours; however, when management perceives sustainability as a cost, an external obligation or a non-strategic issue, reporting is marginalised or treated as an episodic fulfilment (Aragón-Correa et al., 2008; Parker et al., 2009). The strong dependence of SMEs on entrepreneurial centralisation therefore constitutes a cultural barrier that has a decisive impact on the level of involvement of the company in reporting processes.

Closely linked to centralisation is the weak formalisation of processes, which represents one of the main limitations to structuring a coherent reporting system. The formalisation of procedures, roles and responsibilities is an essential prerequisite for the collection and communication of ESG data. However, in small and medium-sized enterprises, formalisation is often limited to mandatory accounting or tax compliance, while sustainability is managed through undocumented operating practices, which prevent the construction of a stable and reproducible information system (Giovannoni and Maraghini, 2013). This lack of formalisation is not only an organisational problem but reflects a management culture focused on the immediate and day-to-day operations, in which medium- to long-term activities such as reporting sustainability-related information are difficult to accommodate.

The literature also highlights barriers related to a lack of awareness of the benefits of reporting. Many companies do not perceive disclosure as a useful strategic tool for strengthening their reputation, improving dialogue with stakeholders, increasing competitiveness or attracting new customers and partners. Reporting is often seen as a cost with no tangible returns, rather than an opportunity for organisational learning and continuous improvement (Perrini and Tencati, 2006; Cantele and Zardini, 2020).

This perception is particularly widespread in less innovative companies or those with a management culture focused solely on regulatory compliance and represents a cognitive barrier that severely limits the adoption of reporting practices.

Another organisational barrier concerns the lack of data quality management systems. The preparation of sustainability reports requires accurate and verifiable information, collected according to consistent criteria. However, many SMEs operate with fragmented, heterogeneous

or outdated data, collected through non-integrated tools or manual processes that are prone to errors (Marco-Fondevila et al., 2019; Singh et al., 2021).

The absence of a structured information system not only makes reporting complex but also hinders the monitoring and periodic review of ESG performance, limiting the possibility of developing a continuous and improvement-oriented process.

The literature also highlights how a defensive approach to transparency often reinforces cultural and organisational barriers. Some SMEs fear that disclosing their performance could expose them to criticism, reputational damage or overly burdensome accountability demands. This defensive attitude, accentuated in recent years by the public debate on the “authenticity” of sustainability initiatives, can lead some companies to adopt a green hushing behaviour, omitting information to avoid misunderstandings or disputes (Di Tullio et al., 2025). This phenomenon demonstrates that the barriers are not exclusively technological or structural but also involve perceptual and psychological dimensions that profoundly influence a company's choices.

#### *Information, technological and institutional barriers*

The barriers to sustainability reporting in SMEs are not limited to resources or organisational culture but also include a complex set of obstacles related to information systems, technological infrastructure and the regulatory and institutional framework within which these companies operate. These barriers not only affect the technical capacity of the company to collect and manage ESG data but also influence the perception of risk associated with transparency and the organisation's willingness to communicate non-financial information voluntarily and continuously.

One of the most significant barriers concerns the quality, availability and management of internal data. The literature highlights how many companies do not have adequate information systems for collecting, storing and verifying data on environmental, social and governance performance. In many cases, ESG data is collected manually, using non-integrated spreadsheets or scattered documents, without cross-checking or periodic updates (Santos, 2011, Singh et al., 2021). This fragmentation of information not only hinders the preparation of a coherent report but also increases the risk of errors and inconsistencies and, above all, makes it difficult to create the historical database needed to monitor progress over time.

Added to this is the poor digitisation of internal processes, which represents a significant limitation in the production of non-financial information. Recent studies show that many SMEs still operate with outdated administrative software or systems that lack specific sustainability

features, preventing the automated collection of ESG data and making its management more costly (Massa et al., 2015). Companies without adequate technological tools find it difficult to respond to requests for information from customers, business partners or production chains that require greater transparency on environmental and social performance. In this sense, technology is not only an operational tool, but an integral part of a company's ability to cope with increasing requirements and increasingly complex standards.

Digitisation does not automatically solve the information problems of SMEs. Momtaz and Parra (2025) observe that the effectiveness of digital tools depends largely on the organisational maturity of the company: when internal processes are not very formalised or the corporate culture is not oriented towards standardisation, technology is used in a superficial or inconsistent manner, without producing a real improvement in information flows. The lack of internal training or adequate technical skills further exacerbates this critical issue, turning digitalisation into a potential complicating factor rather than an enabling element.

A further set of barriers stems from the regulatory and institutional framework, which, while focusing primarily on large companies, also exerts indirect pressure on SMEs. Although many of them are not yet subject to CSRD requirements, the growing importance of ESG issues in the European context has generated increasingly high expectations from stakeholders, customers and financial institutions (Ortiz-Martínez and Marín-Hernández, 2024). However, most SMEs perceive the regulatory framework as distant from their operational capabilities, considering it overly complex and not applicable to their context (Guidi et al., 2025). This perception reinforces the idea that reporting is a burdensome activity that is disproportionate to the size of the company, contributing to an attitude of resistance, postponement or merely symbolic adoption of reporting processes.

Regulatory pressure can also generate undesirable effects, linked to the perception of reputational risk and uncertainty about the interpretation of standards. In some cases, SMEs fear that the disclosure of non-financial information may expose them to criticism, disputes or accusations of inconsistency with stakeholder expectations. Parker et al. (2009) highlight how the introduction of the CSRD has intensified these concerns, giving rise to the phenomenon of green hushing, i.e. the conscious choice to remain silent or minimise positive environmental information to avoid misunderstandings or reputational conflicts. This dynamic shows how barriers to disclosure are not only technical or organisational but also include perceptual and psychological aspects that significantly influence corporate behaviour. Alongside regulatory pressures, supply chains and business partners also exert a strong influence on the ability of SMEs to adopt reporting practices. Many companies are in fact stepping up their requests for

ESG information from their suppliers, especially in sectors characterised by high dependence on the supply chain. However, in the absence of adequate tools and a structured information base, SMEs often respond reactively, producing minimal or fragmented information, without being able to fully integrate these requests into their internal processes (Álvarez Jaramillo et al., 2018; Setyaningsih, 2024). This creates a significant gap between the information needs of supply chains and the actual capacity of SMEs to meet them.

Finally, information and technological barriers interact with the organisational culture of the company, generating a complex set of obstacles that reinforce each other. SMEs that do not have integrated information systems, that operate with informal processes or that do not perceive the strategic value of reporting tend to consider reporting as an activity unrelated to management practices. This attitude reduces internal motivation to invest in appropriate tools, slows down the acquisition of skills and prevents the development of continuity in information processes.

Taken together, these barriers not only prevent the disclosure of non-financial activities but also influence how the company interprets sustainability, responds to external pressures, and builds its readiness for more mature and structured processes. This inevitably leads to significant heterogeneity, as some SMEs are able to leverage digitalisation and regulatory pressures to evolve, while others remain trapped in a state of resistance or minimal adoption, unable to fully seize the opportunities of sustainability reporting.

#### *Interaction between internal and external barriers and readiness conditions*

The barriers to sustainability reporting in SMEs do not operate in isolation. Studies show that the internal obstacles explored above constantly interact with external constraints, such as institutional pressures, supply chain demands and stakeholder expectations. This interaction gives rise to complex configurations that define the position of the company along a continuum of readiness for sustainability (Stoian and Gilman, 2017).

Understanding the nature of these interdependencies is key to interpreting the different levels of maturity of SMEs and how they respond to internal and external pressures.

A recurring dynamic, highlighted in the literature, indicates that limited economic and human resources tend to postpone investments in adequate digital or information tools, and this lack prevents the development of a stable information flow, necessary for measuring and communicating ESG performance (Cantele and Zardini, 2020). The poor quality of data, often collected manually, unverified or fragmented, hinders organisational learning and awareness of

corporate impacts (Marco-Fondevila et al., 2018). In the absence of this awareness, the decision not to invest in tools and skills is further reinforced. In this way, a lack of resources, weak information systems and poor analytical capacity feed into each other, keeping the company in a state of low organisational maturity.

Alongside what can be defined as internal vicious circles, institutional vicious circles also emerge. SMEs that perceive European legislation as complex, beyond their capabilities or excessively burdensome tend to develop behaviours of resistance or minimal compliance (Rodríguez-Gutiérrez et al., 2021). This reactivity often leads to the production of very limited or non-comparable non-financial information, which does not contribute to the development of a true internal information system or promote the growth of skills. The result is a growing gap between what is required by regulations or stakeholders and what the company can produce, a phenomenon that amplifies the perception of inadequacy and slows down the adoption of structured reporting practices.

Barriers become even more critical when they encounter a fragile internal structure. For example, SMEs without adequate information systems or with an organisational culture that is not very formalised find it difficult to respond to requests from production chains, lead companies or commercial partners. As shown by Álvarez Jaramillo et al. (2018), companies with limited internal capabilities often produce minimal, reactive or fragmented information without integrating sustainability into their management processes. In such cases, external pressures do not stimulate learning but accentuate perceived complexity, generating counterproductive effects.

A further element that emerges in recent studies concerns the perception of reputational risk, which profoundly influences the disclosure behaviour of SMEs. Uncertainty about data accuracy, fear of criticism or the idea of not being sufficiently sustainable can lead some companies to disclose the bare minimum or even not disclose at all, a phenomenon identified in the literature as *green hushing* (Di Tullio et al., 2025). This behaviour is particularly common in SMEs without formal data verification mechanisms, as the absence of internal controls makes any form of public exposure risky. In these situations, an internal barrier (the fragility of information systems) and an external barrier (reputational risk) combine to produce a defensive attitude that limits the growth of organisational maturity.

The readiness of SMEs is not only influenced by the absence of barriers, but above all by the company's ability to develop internal conditions that allow them to be managed. Companies with leadership sensitive to sustainability, a culture open to learning and processes, even minimally formalised, show a greater ability to transform external pressures into opportunities

for growth (Del Baldo, 2012). In these cases, regulations, supply chain demands or social expectations can act as catalysts for the introduction of more advanced management and reporting tools. Conversely, in companies lacking such internal conditions, the same stimuli generate confusion, resistance or merely symbolic behaviour.

### **Internal and external drivers as motivation for sustainability reporting**

The literature on SMEs highlights that the adoption of sustainability reporting practices stems from a multitude of factors, such as culture, entrepreneurial values, territorial structure and relationships with the production chain (Murillo & Lozano, 2006; Morsing & Perrini, 2009; Álvarez Jaramillo et al., 2018, which complementarily influence organisational behaviour.

This integration of distinct but interconnected elements suggests that the propensity for sustainability disclosure is deeply rooted in the identity characteristics of the company and its operating context (Parker et al., 2009; Corazza, 2017).

Internal drivers, attributable to the entrepreneur's personal values, the pursuit of ethical consistency, reputational objectives or organisational learning processes, often form the basis for interest in sustainability (Del Baldo, 2012; Jenkins, 2006; Santos, 2011). At the same time, external drivers such as emerging regulatory pressures, customer or lead company demand, and growing stakeholder attention contribute to directing this interest towards more structured forms of information and transparency (Parker et al., 2009; Stoian & Gilman, 2017; Marco-Fondevila et al., 2018). The interaction between these dimensions generates heterogeneous paths: some SMEs voluntarily undertake reporting to anticipate market trends, while others approach it gradually in response to competitive or institutional pressures.

Placing internal motivations and external drivers together allows us to interpret disclosure in SMEs not as a linear phenomenon, but as the result of a complex decision-making process, shaped by multiple and overlapping forces (Jenkins, 2006; Morsing and Perrini, 2009). This perspective is fundamental to understanding the different levels of readiness observable in the productive fabric, as it highlights how reporting choices reflect both the values and identity of SMEs and the systemic dynamics of the context in which they operate.

### *Internal motivations towards sustainability reporting*

Internal motivations are one of the most significant factors that encourage small and medium-sized enterprises to embark on sustainability reporting, even in the absence of regulatory obligations or structured external pressures. The literature highlights how the deeply personal and value-based nature of SMEs plays a central role in shaping the company's strategic choices, especially in areas such as sustainability, where the identity component takes on greater importance than purely technical and managerial considerations (Morsing and Perrini, 2009). In this context, SMEs behaviour cannot be understood only through rational or economic incentives; it also involves motivations tied to values, organisational culture, leadership, and internal learning. Unlike large companies, SMEs are characterised by a strong overlap between entrepreneurial vision and corporate culture, which makes the personal sensitivity of the leader a crucial determinant of the orientation towards sustainability. Del Baldo (2012), for example, shows how the entrepreneur's willingness to make the right decisions can be a decisive impetus for initiating sustainability performance measurement and communication practices. In these contexts, sustainability is not perceived as an external obligation, but as an extension of the organisation's identity.

Alongside ethical values, another important internal element is the search for consistency and identity legitimacy. Many SMEs want to show their employees, the local community and their business partners that there is consistency between what they say and what they actually do. Voluntary reporting thus becomes a tool through which the company strengthens its credibility and consolidates the trust of internal and external stakeholders (Jenkins, 2006). Disclosure is not only a technical practice, but a means of constructing a narrative consistent with the company's values and the image it wishes to project to the outside world.

A third element that emerged in the studies concerns the willingness of SMEs to learn from themselves. Reporting is not only a means of communication but also represents an internal learning process that allows the company to become aware of its impacts, strengths and areas for improvement. Gelbmann (2010) observes that, in practice, many SMEs undertake reporting activities to identify operational inefficiencies, improve resource management and strengthen internal control systems. In this sense, reporting becomes a tool for organisational self-reflection that supports the growth and professionalisation of the company.

The literature also highlights another key motivation, namely the search for reputation and positive visibility. Although many SMEs do not operate with complex branding strategies, the possibility of strengthening their image with customers, suppliers, credit institutions or local

communities is a strong incentive towards transparency practices. Santos (2011) points out that many SMEs adopt reporting as a tool to demonstrate reliability, seriousness and commitment to ethical practices. This reputational motivation is particularly relevant in areas with strong social cohesion or in sectors where relationships with local customers and stakeholders are a distinctive feature.

A further internal driver is the desire to improve internal management through the systematisation of information. Sustainability reporting, even in its most embryonic forms, forces the company to organise data that, in the absence of a formal process, often remains scattered among unstructured documents, Excel spreadsheets or the tacit knowledge of employees. Gelbmann (2010) points out that many SMEs discover, during the reporting process, operational inefficiencies or information gaps that become opportunities to improve management processes. In these cases, reporting functions as a sort of internal mechanism that leads the company to organise itself better regardless of external pressures.

Alongside these motivations, other studies highlight how reporting is often adopted to promote a more aware and participatory organisational culture. Del Baldo (2012) shows that sustainability-oriented SMEs often use reporting to engage employees, create internal awareness and reinforce responsible behaviour. The data collection process can become an opportunity to spread knowledge and responsibility, triggering collective learning that goes beyond the individual dimension of the leader.

Finally, recent literature emphasises that voluntary reporting can be interpreted as a choice of strategic self-determination. In contexts characterised by growing attention to ESG performance, some SMEs prefer to anticipate market trends and strengthen their internal readiness in order to be prepared for any future transparency obligations or requests. Setyaningsih (2024) points out that, even in SMEs in emerging countries, the desire to maintain strategic autonomy with respect to regulatory pressures can be an internal motivation for undertaking voluntary reporting. This strategic anticipation represents proactive behaviour that goes beyond merely responding to external pressures.

#### *External drivers influencing sustainability reporting*

While internal motivations represent the most identity and value-based dimension of SMEs' propensity towards sustainability reporting, external drivers constitute the set of environmental, institutional and relational conditions that guide or accelerate this propensity. The literature highlights how SMEs are immersed in economic and social ecosystems in which various actors,

customers, suppliers, production chains, institutions and local communities exert pressures and expectations that significantly influence organisational behaviour. These external factors, which are often interconnected, help determine whether and to what extent a company moves towards more structured forms of ESG disclosure.

One of the most significant external drivers is represented by demands from production chains, which in recent years have intensified the collection of environmental and social information from suppliers. In particular, in the manufacturing and agri-food sectors, the growing focus on supply chain sustainability has led many leading companies to request documentation on their partners' ESG performance. Studies conducted in international contexts show that for many SMEs, these requests are the main impetus for formalising their information processes (Álvarez Jaramillo et al., 2018). In these cases, disclosure does not arise from an internal need, but from the need to maintain commercial relationships, access new markets or respond to the sustainability policies of large client companies.

A second important driver concerns competitive pressure and market expectations. Although many SMEs operate in local contexts or niche markets, the growing interest in sustainable products and services has prompted many companies to communicate their environmental and social practices as a lever for differentiation. Santos (2011) highlights how transparency can translate into a competitive advantage, especially in sectors where perceived quality and reputation play a decisive role in consumer choices. In this sense, voluntary reporting becomes a tool for increasing commercial attractiveness, improving positioning and strengthening stakeholder confidence.

External drivers also include the growing attention of local stakeholders, especially in contexts where SMEs play a central role in the community. As noted by Morsing and Perrini (2009), many SMEs operate in local ecosystems characterised by strong social ties, where the ability to maintain a good reputation and collaborative relationships with institutions, citizens and associations is a key factor for business continuity. In these contexts, voluntary reporting can be seen as a response to expectations of transparency and accountability, helping to strengthen the legitimacy and reputation of the company in the local area.

Another very important external driver is related to institutional pressures, which are becoming increasingly important in the European context. Although many SMEs are not yet directly involved in the obligations arising from the CSRD, the growing attention of institutions towards sustainability is generating increasingly high expectations of companies. Rodríguez-Gutiérrez et al. (2021) show how SMEs perceive increasing pressure towards forms of accountability, even where legislation does not impose stringent obligations. This indirect regulatory pressure

can translate into the need to anticipate institutional demands by adopting more robust information systems and producing reports even in the absence of formal obligations.

Alongside more formal institutional pressures, there are also “softer” forms of external pressure linked to the spread of international standards, guidelines and best practices. Gelbmann (2010) highlights how exposure to international frameworks, even if only through customer or market demands, can push SMEs to develop a greater awareness of the need to structure their information processes. Although many small businesses find such frameworks complex or burdensome, their spread nevertheless helps to define a direction that many SMEs feel they must at least partially follow.

Competitive and institutional dynamics are often intertwined with the role of intermediary actors, such as consultants, accountants, trade associations or public bodies that support SMEs in their reporting processes. O'Reilly et al. (2024; 2025) highlight how these actors play a crucial role in translating external demands into operational practices. For many SMEs, the adoption of a sustainability report is only possible thanks to the technical and methodological support provided by external professionals, who facilitate the selection of indicators, data collection and document preparation.

Furthermore, a particularly relevant external driver is the growing media and reputational exposure of the issue of sustainability. Increased public and media attention to the environmental and social behaviour of companies is helping to strengthen expectations of transparency, including for SMEs. Jenkins (2006) shows that, although not subject to the same exposure as large companies, SMEs are nevertheless sensitive to reputational risk. In this sense, reporting can be adopted as a form of preventive response to potential criticism or to demonstrate a concrete commitment over time.

The external drivers influencing voluntary reporting by SMEs constitute a multidimensional set of pressures, expectations and stimuli that come from different actors and operate on different levels. These external pressures do not act uniformly, but interact with the internal characteristics of SMEs, helping to shape heterogeneous disclosure paths that reflect the complexity of the context in which small and medium-sized enterprises operate.

### *Internal and external drivers as a dynamic system towards readiness*

The literature on sustainability reporting in SMEs clearly shows that internal and external pressures do not operate as independent forces, but as components of an interconnected system that shapes, to a greater or lesser extent, the choices made by companies in terms of disclosure.

The readiness of SMEs towards sustainability, understood as their predisposition, ability and willingness to undertake reporting processes, arises precisely from the interaction of these elements. The entrepreneur's values, organisational culture, reputation, supply chain pressures, regulations and market expectations influence each other, generating heterogeneous and often non-linear evolutionary paths.

One of the most significant contributions of the literature is that which highlights the hybrid and complementary nature of motivations for sustainability. SMEs with leadership that is sensitive to ethical and environmental issues tend to interpret external pressures not as constraints, but as stimuli to strengthen their commitment and gain greater visibility. Del Baldo (2012) shows how a strong internal value orientation can transform regulatory requirements, stakeholder expectations or supply chain pressures into opportunities to structure and improve reporting processes. In these cases, external pressures act as accelerators of a process that has already begun internally.

Conversely, in SMEs with a less formalised culture or without leadership sensitive to sustainability, the same pressures can generate resistance, confusion or merely symbolic behaviour. Gelbmann (2010) highlights how SMEs without a minimum information base struggle to respond to external demands, producing partial or non-comparable information. In these contexts, drivers such as supply chain pressures or regulatory guidelines do not foster readiness but rather accentuate the perception of sustainability as a complex and disproportionate endeavour, reinforcing internal inertia.

The interaction between internal and external pressures also manifests itself through progressive and cumulative processes, in which the company develops organisational capabilities gradually. Álvarez Jaramillo et al. (2018) show that in SMEs in emerging countries, the interaction between regulatory pressures, market demands and internal willingness to improve produces incremental paths of learning and formalisation of processes. Companies begin by responding to external stimuli with minimal practices, but once they have acquired greater awareness and skills, they evolve towards more structured systems. Similar dynamics can also be observed in European SMEs, where the interaction between context and internal initiative generates processes that strengthen management capabilities.

Another element highlighted by the studies is the role of reputation as a point of contact between internal motivations and external pressures. Reputation is not only an internal value desired by the company, but also an element that is continuously negotiated with the context. Morsing and Perrini (2009) observe that SMEs operating in areas characterised by strong social cohesion interpret disclosure as a tool for consolidating trust, legitimacy and relationships,

while those involved in global supply chains perceive transparency as a necessary condition for maintaining their competitive position. In both cases, reputation acts as a bridge: it arises from internal motivations but takes shape in external relationships.

The dynamics of interaction also emerge in the relationship between internal learning and external stimuli. Santos (2011) points out that many SMEs initiate reporting processes to respond to requests from customers or business partners, but in doing so they develop new skills and a greater awareness of their own impact. The external push, therefore, triggers an internal learning process that makes the company more ready to respond to future requests. In this sense, sustainability in SMEs does not proceed through sudden leaps, but through small transformations that emerge precisely from the interaction between internal pressures and capabilities.

It is interesting to note that in some cases external pressures can be transformed into new internal motivations, creating a positive feedback effect. O'Reilly et al. (2024; 2025) show that the support of consultants and intermediaries not only helps SMEs to understand external demands, but also contributes to developing internal sensitivity, professionalisation and strategic interest in sustainability. This demonstrates how the boundaries between internal and external are permeable and are continuously reshaped through the company's operational experience.

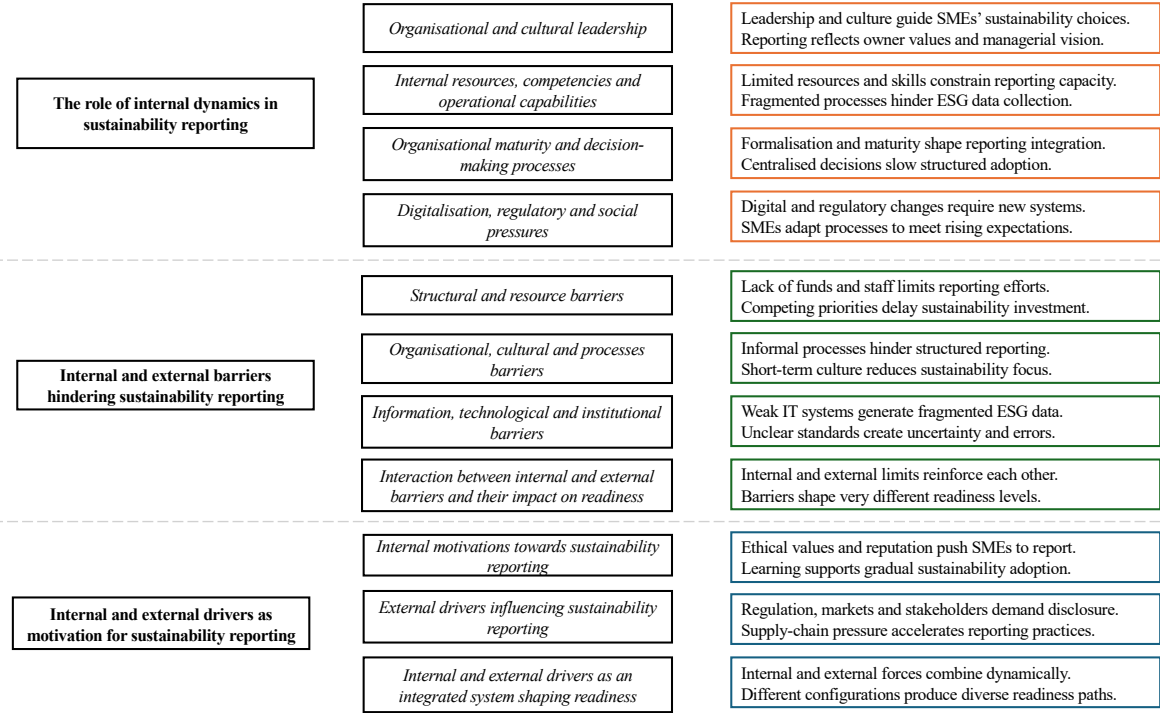
Finally, the literature highlights how the readiness of SMEs depends crucially on the combination of internal and external drivers, rather than their isolated presence. Jenkins (2006) emphasises that sustainability in SMEs emerges in contexts where internal culture, stakeholder relations and competitive pressures converge, creating an environment conducive to change. Conversely, when internal and external drivers are misaligned, reporting tends to remain fragmented, episodic or merely compliance oriented.

The interaction between internal motivations and external drivers is at the heart of SMEs' readiness for sustainability reporting. SMEs evolve when values, culture, learning and leadership meet stimuli from the market, regulations, stakeholders and the supply chain. Throughout this process, companies develop organisational capabilities that enable them to transform pressures into opportunities, progressively increasing their maturity and building more autonomous and structured sustainability pathways.

Figure 1 summarises the three thematic strands identified in the literature review, presenting a concise overview of the key dimensions and mechanisms that shape SMEs' sustainability reporting behaviour for each strand. It visually integrates internal dynamics, barriers, and

drivers, offering a synthetic interpretation of how these factors converge to influence SMEs' readiness for sustainability reporting.

Figure 1. Literature summary. Source: author's elaboration.



# Theoretical Foundations of ESG Readiness

## Institutional Theory

Institutional Theory has its roots in mid-twentieth-century organisational sociology, at a time when organisational thinking was beginning to shift towards a broader understanding of its role within society.

In this perspective, a seminal contribution is that of Selznick (1949, 1957), who shows how organisations are deeply influenced by the values, pressures and expectations of the social environment. He describes the process of institutionalisation as the transition through which an organisation ceases to be merely a tool created to pursue technical ends and becomes a subject with its own identity, bearing norms and meanings that are rooted in the organisational culture. In this sense, the organisation does not merely implement procedures but incorporates their meaning, embracing the values that society considers relevant.

Berger and Luckmann (1966) contribute to consolidating the foundations of Institutional Theory by showing how social reality is not given but constructed through processes of typification, objectification and internalisation.

When applied to organisations, this perspective suggests that many rules, procedures and organisational models do not necessarily represent the most efficient solution, but become *institutions* precisely because they are shared and socially reproduced, to the point of being perceived as the only legitimate way of acting. This dimension of naturalisation of practices is the basis on which the institutional mode of organisational action rests. What actors do does not depend solely on rational calculations, but on certain practices being considered appropriate, normal or inevitable in a given historical context.

On this basis, *neo-institutionalism* emerged in the 1970s and 1980s, profoundly reformulating the way organisations are viewed. Meyer and Rowan (1977) argue that organisations operate in environments made up of “rationalised myths”. That is, a set of rules, professional standards, customs and cultural screens that society perceives as rational and necessary, regardless of their actual operational usefulness. To gain legitimacy, resources and recognition, organisations tend to adopt these myths, formally incorporating them into their structures. However, this produces a paradox that Meyer and Rowan point out. Formal structures and procedures are not always functional for daily activities, their purpose is not necessarily to improve efficiency, and they often also have a symbolic function that serves to demonstrate compliance with institutional expectations. This gives rise to the concept of *decoupling*, i.e. the disconnect between what the

organisation formally declares and what it actually does. This separation prevents the organisation from having to sacrifice technical efficiency in order to rigidly adapt to institutional models, but at the same time allows it to appear compliant with these models in the eyes of the institutions.

A further contribution to the development of Institutional Theory was made by DiMaggio and Powell (1983) with the introduction of the concept of *institutional isomorphism*. Observing the tendency of organisations to become increasingly similar to each other over time, DiMaggio and Powell identified three forms of institutional pressure that push organisations towards homogeneity: *coercive, normative and mimetic*.

*Coercive pressures* stem from formal obligations, regulations, binding rules and demands from actors such as states, regulatory agencies or supranational bodies.

Normative pressures, on the other hand, are generated by professionalisation, i.e. professional associations, trade associations, standard setters and epistemic communities that produce shared models of good governance and appropriate behaviour, which organisations feel the need to adopt in order to be recognised as legitimate.

Finally, *mimetic pressures* characterise the most uncertain contexts, when organisations face complex and unstructured problems and tend to imitate the practices of companies perceived as leaders or more stable, in the hope of achieving similar results. Mimetic isomorphism explains, for example, the rapid spread of certain managerial practices, not because they are necessarily efficient, but because they are followed by everyone and deviating from this model would entail a reputational cost.

This conceptualisation by DiMaggio and Powell is a key part of the theory, not only because it describes the mechanism through which organisations become similar, but because it highlights that institutional rationality is different from technical rationality. Organisations do not choose structures or policies to maximise efficiency, but because they appear to be institutionally compliant.

Zucker (1987) further consolidates this approach by emphasising the cultural nature of institutions. Institutional rules are not only external constraints imposed on actors, but also represent cognitive patterns internalised by them, which they perceive as natural, unavoidable and non-negotiable. When a practice becomes an *institution*, the actors who put it into practice do not evaluate it on the basis of its usefulness but adopt it because “it has always been done this way” and not adopting it would entail a cost to their identity. Zucker shows that the strength of institutions derives from their cognitive roots, making it extremely difficult to change them even when there are technical or economic reasons to do so. This highlights how institutional

conformity is not necessarily the result of conscious external pressures but can also derive from processes of deep internalisation that define what actors consider obvious.

Starting in the 1990s, Scott (1995) systematised previous contributions through the model of the three pillars of institutions: regulatory, normative and cultural-cognitive. In this way, he shows that institutions are complex systems in which these three pillars coexist and reinforce each other, and that an organisation must therefore simultaneously address legal obligations, moral expectations, and ingrained cognitive patterns.

The conceptual evolution of Institutional Theory developed by Selznick, Meyer and Rowan, DiMaggio and Powell, Zucker and Scott allows us to understand how organisations adopt structures, practices and systems that are not necessarily efficiency-oriented but strongly influenced by the institutional environment.

Institutional conformity becomes a condition for organisations to access resources, maintain legitimacy and ensure long-term survival. At the same time, the presence of *rationalised myths* and internalised cognitive patterns means that many practices are adopted not because of their usefulness but because they are perceived as the only plausible option.

Institutional Theory, understood in this way, explains not only why organisations conform to external pressures, but also why these pressures take different forms and intensities in different sectoral and geographical contexts.

The application of Institutional Theory to sustainability disclosure builds on the premise that organisational behaviour is embedded in institutional environments that shape taken-for-granted rules, norms and shared understanding of appropriate conduct.

From this perspective, sustainability reporting does not emerge merely as a strategic or efficiency-driven decision, but as the outcome of institutionalisation processes through which certain practices become normalised and taken for granted within organisational fields.

Higgins and Larrinaga (2014) provide a clear institutional interpretation of sustainability reporting by conceptualising disclosure as a socially constructed practice shaped by institutionalised discourses and field-level expectations. Their analysis shows that reporting practices evolve in response to institutional pressures that define acceptable forms of transparency, thereby stabilising specific narratives and reporting formats over time. Disclosure thus reflects an alignment with institutionalised meanings rather than a neutral representation of organisational performance.

This interpretation is further developed by Dumitru et al. (2017), who explicitly frame sustainability reporting as a process influenced by institutional pressures and isomorphic dynamics. Their study highlights how organisations adapt disclosure practices to comply with

regulatory frameworks, professional norms and internationally recognised standards, reinforcing convergence across reporting practices. In this sense, disclosure becomes an institutional artefact that reflects conformity to dominant expectations within the organisational field.

Ben-Amar and Chelli (2018) also adopt an institutional lens to explain variations in sustainability disclosure, showing how firms respond to institutional environments characterised by increasing regulatory scrutiny and normative expectations. Their findings suggest that disclosure practices are shaped by the need to align with institutionalised models of transparency promoted by regulators and standard setters, contributing to the diffusion and consolidation of sustainability reporting as an institutionalised organisational practice.

A similar institutional logic underpins the work of García-Sánchez et al. (2016), who analyse the role of national and supranational institutional contexts in shaping disclosure practices. Their results indicate that sustainability reporting is strongly influenced by institutional arrangements, such as regulatory frameworks and professional guidelines, which define the boundaries of appropriate organisational conduct. As these arrangements become institutionalised, disclosure practices converge towards standardised models that are increasingly perceived as mandatory.

La Torre et al. (2018) interpret integrated and sustainability reporting as part of a broader process of institutionalisation of accountability. They argue that reporting frameworks become embedded in organisational routines through the interaction of regulatory initiatives, professional discourse and cognitive expectations. As a result, disclosure practices are progressively internalised by organisations as natural components of organisational accountability, reinforcing institutional homogeneity within and across organisational fields.

Gallego-Álvarez and Pucheta-Martínez (2020) further support this view by showing that sustainability disclosure reflects institutional pressures that promote conformity with dominant reporting models. Their analysis highlights how firms adopt similar disclosure practices not necessarily because of their efficiency, but because they are widely recognised as appropriate and taken for granted within the institutional environment. This dynamic is consistent with neo-institutional arguments regarding the diffusion of practices through mimetic and normative mechanisms.

More recent contributions, such as Posadas et al. (2023), emphasise the role of institutional pressures in the standardisation of sustainability reporting practices. Their work shows how the increasing formalisation of reporting requirements and the diffusion of international standards

contribute to the homogenisation of disclosure across organisations, reinforcing the institutional nature of sustainability reporting.

Within this stream of literature, the contributions of Nicolò et al. (2024; 2025) are particularly relevant, as they explicitly ground their analyses in Institutional Theory to explain the evolution of sustainability disclosure and related organisational practices. Building on neo-institutional insights, these studies show how organisations adapt disclosure structures in response to pressures exerted by regulators, standard setters, professional communities and rating agencies operating at the field level. Nicolò et al. document clear patterns of institutional convergence, whereby firms progressively align with dominant institutional models in order to ensure field-level alignment and coherence.

Importantly, Nicolò et al. (2024;2025) draw on and extend prior institutional research that emphasises the role of standardisation, professionalisation and taken-for-grantedness in shaping disclosure practices. Sustainability reporting is interpreted as a rationalised and institutionalised response to evolving expectations regarding transparency and accountability, rather than as a purely discretionary communication strategy.

Taken together, these studies suggest that sustainability disclosure is primarily an institutionalisation process where specific reporting practices become broadly accepted, stabilised, and regarded as standard. As disclosure standards become institutionalised, organisations internalise the expectation that transparency constitutes a fundamental component of appropriate organisational behaviour. Institutional Theory, therefore, provides a robust framework for interpreting the diffusion of sustainability reporting as a compliance-oriented response to institutional pressures that operate at multiple levels.

In this perspective, sustainability disclosure reflects the cumulative influence of regulatory frameworks, professional norms and cognitive schemas that define what it means to act appropriately within a given organisational field. Disclosure becomes a mechanism through which organisations publicly demonstrate their alignment with dominant institutional logics and contribute to the reproduction of these logics over time.

This interpretation is particularly relevant to this study, as it enables the assessment of ESG readiness to be situated within the institutional contexts in which organisations operate. Readiness to implement sustainability practices cannot be separated from the extent to which organisations internalise and respond to institutionalised expectations regarding transparency, accountability and responsible conduct.

## Legitimacy Theory

The concept of legitimacy in organisations stems from institutional sociology, where, as early as the 1950s, the idea emerged that organisations cannot be understood solely as technical instruments geared towards efficiency but must be interpreted as social actors rooted in a context of norms, values and expectations.

In this scenario, Selznick's (1957) contribution is considered seminal: by analysing the process of institutionalisation, he shows how organisations tend to progressively absorb the values of the environment in which they operate, developing their own identity distinct from the formal objectives for which they were created.

The enterprise, therefore, is no longer just a technical entity pursuing economic goals, but also becomes a subject that incorporates socially shared meanings and whose survival also depends on its ability to respond to the expectations of the community.

Subsequently, between the 1960s and 1970s, the concept of legitimacy was further developed. Dowling and Pfeffer (1975) formalised an idea that would later become central to the subsequent elaboration of *Legitimacy Theory*. Namely, in order for an organisation to continue to operate and benefit from social support, there must be consistency between its value system and that of society in the broadest sense. It is not enough to consider the efficiency of the enterprise from a technical or economic point of view; it must also appear appropriate in relation to the dominant cultural standards. Legitimacy is therefore an essential condition for the organisation to obtain resources, reduce external opposition and ensure its continuity over time. This conceptualisation leads us to consider legitimacy as something that does not intrinsically belong to the organisation but is recognised by external parties (Chen and Roberts, 2010). It is the judgement of stakeholders, understood in a broad sense, which includes not only investors or customers, but also local communities, the media, regulators and public opinion, also defined as the *relevant public*.

Moreover, this judgement varies according to social, regulatory and cultural changes. The legitimacy granted to a company may be considered acceptable at a given historical stage, but may no longer be so at another, resulting in the need for the company to modify its behaviour and communication strategies.

In the 1990s, Lindblom (1994) further refined this conceptualisation, defining legitimacy as the condition in which an organisation's activities are perceived as consistent with the value system of the society in which the company operates.

Being *congruent* emphasises that legitimacy implies an alignment between what the company does (or claims to do) and what society considers desirable or morally acceptable. From this perspective, legitimacy is not an objective attribute, but a perceptual construct: what matters is not so much the “reality” of corporate practices, but how external observers interpret them. This implies that companies must not only develop behaviours that are aligned with social expectations but also communicate them clearly and effectively.

The metaphor of the *social contract*, taken up and developed in the field of accounting and non-financial reporting (Deegan, 2002), allows us to represent this dynamic in clearer terms.

According to this metaphor, society grants companies a licence to operate, i.e. the right to use resources, generate profits and influence the environment, provided that they do not violate collective values and contribute, to some extent, to social welfare.

The *social contract* is not formally written or subject to agreement but is continuously renegotiated based on organisational behaviour and emerging expectations.

If the company is perceived as “no longer aligned” with certain expectations, society may decide to revoke the licence, either explicitly or implicitly, by imposing greater regulatory constraints, boycotts, reputational sanctions or forms of divestment.

In this context, Suchman (1995) presents the most relevant conceptual synthesis on legitimacy. She defines legitimacy as a generalised perception that an entity's actions are appropriate or adequate within a socially constructed system of norms, values, beliefs and definitions. In this conceptualisation, the emphasis is on the *generalised* nature of perception. Legitimacy does not derive from the judgement of a single actor, but from a sufficiently broad social consensus that makes the organisation accepted as part of the institutional landscape. With this new conceptual development, the idea that legitimacy is primarily a perceptual phenomenon, dependent on the collective interpretation of the company's actions, is consolidated.

A further contribution by Suchman (1995) concerns the distinction between *pragmatic, moral and cognitive* legitimacy. *Pragmatic legitimacy* is based on a utilitarian calculation by stakeholders, who judge the organisation to be legitimate to the extent that it responds to their immediate interests (e.g. by guaranteeing economic returns or providing products and services deemed useful).

Moral legitimacy, on the other hand, is based on an ethical judgement; in this case, the organisation is considered legitimate when its actions are evaluated as correct in the light of shared moral principles or standards of justice.

Finally, *cognitive legitimacy* represents the most profound form in which the organisation is taken for granted. The company is so integrated into the cognitive models of social actors that

its existence is not even questioned. Therefore, depending on the legitimacy at stake, the strategies that the company can adopt to build, maintain or repair its legitimacy also vary.

In this case, companies use legitimacy as a strategic resource: they do not passively accept social judgements but seek to influence them through symbolic and substantive actions, such as communication practices.

The link between legitimacy and disclosure is developed in the literature on non-financial reporting. Deegan (2002, 2019), O'Donovan (2002), Cho and Patten (2007) highlight how companies use voluntary reporting, particularly environmental and social reporting, as a tool to influence stakeholder perceptions and demonstrate compliance with the social contract. From this perspective, sustainability reports are not only considered a means of providing information, but also a mechanism of legitimisation aimed at showing that the company is acting responsibly with regard to emerging environmental and social concerns.

Instead, the concept of the “legitimacy gap”, developed from the reflections of Lindblom (1994) and subsequently explored in depth by Deegan (2019), describes the distance between perceived organisational behaviour and society's expectations.

The gap emerges when the community believes that the company is not behaving in a manner consistent with shared values, for example, by excessively pursuing profit at the expense of collective well-being.

A widening of the legitimacy gap exposes the organisation to significant risks such as loss of trust, regulatory pressure, protests from local communities, damage to reputation and, in the most extreme cases, a crisis of survival.

When faced with a legitimacy gap, companies can respond by adopting different strategies. One of these consists of immediately changing organisational behaviour, for example by investing in more sustainable technologies, reducing emissions or strengthening worker protection policies.

Another strategy, which is often intertwined with the first, concerns communication. Companies intensify their disclosure practices to demonstrate that they are effectively addressing perceived problems and are committed to improvement.

In this way, sustainability reporting can be interpreted as a response to the need to bridge the gap between the organisation's actions and society's expectations, repositioning the company in a narrative of responsibility and commitment.

The dynamics described above take on specific significance when considering SMEs.

Historically, although the literature on sustainability disclosure and legitimacy has focused primarily on large listed companies, in recent years there has been growing attention to the role

of SMEs in sustainability processes. Those operating in environmentally intensive sectors are often part of complex value chains, where stakeholders demand increasingly stringent environmental and social standards.

In this context, disclosure for SMEs can become a tool through which companies seek to reassure both local stakeholders and actors upstream and downstream in the supply chain, demonstrating that they are aligned with new perspectives on environmental and social responsibility.

The greater vulnerability of SMEs in terms of financial, human and organisational resources makes legitimacy management particularly challenging, as they do not have the sophisticated communication and reputation management structures typical of large companies. This can accentuate the risk associated with the emergence of legitimacy gaps, especially when operating in local contexts characterised by strong public attention to environmental issues.

Considering these reasons, recent literature has begun to question how the specific characteristics of SMEs influence the use of disclosure as a legitimacy tool (Morsing and Spence, 2019; Crossley and Elmaghri, 2021).

In recent developments in Legitimacy Theory, part of the literature has explored how organisations respond to pressure from stakeholders through diverse strategies ranging from symbolic to more substantial actions (Ashforth and Gibbs, 1990; Cho et al., 2015).

Suchman (1995) observed that organisations can resort to a set of tactics to build, maintain and repair their legitimacy. These tactics do not always bring about concrete changes in production processes or operational practices, but they are equally effective in changing stakeholders' perceptions of the company. These observations introduce the possibility that legitimacy management is not necessarily related to real transformations in organisational performance but can also be pursued through communicative and symbolic tools, such as sustainability reporting.

The distinction between *substantive* and *symbolic* actions is important for interpreting corporate behaviour correctly. The former indicate actual changes in the company's management, governance and operational policies (e.g. investments in clean technologies, reduction of emissions).

The latter, on the other hand, focus on how organisational behaviour is disclosed, without necessarily intervening in the underlying practices (e.g. emphasis on ethical values, sustainability reports full of declarations of intent, creation of internal committees) (Meyer and Rowan, 1977).

Implementing symbolic strategies does not imply that they are irrelevant or ineffective. On the contrary, considering legitimacy as a perceptual construct, companies can still influence stakeholder perceptions even without immediately changing their practices. It is precisely this insight that makes *Legitimacy Theory* particularly useful and important for interpreting sustainability disclosure practices, especially in sectors where companies face increasing social scrutiny.

For example, Cho and Patten (2007) highlight how companies exposed to greater environmental risks increase the amount and transparency of sustainability information disclosed, even in the absence of actual improvements in their real performance. However, reducing disclosure to a mere symbolic strategy would be misleading.

Much of the literature on sustainability reporting (Cho et al., 2012; Boiral 2013; Michelon et al., 2015) has shown that reporting practices occupy a space where substantive and symbolic elements are intertwined. Companies rarely adopt only a symbolic strategy or only a substantive strategy, but rather combine both depending on environmental pressures, internal capabilities, stakeholder expectations and perceived risks. This leads us to understand sustainability disclosure not only as a means of communication but also as a way to guide corporate decisions towards more sustainable behaviour.

The strategic role of disclosure becomes clear when considering the variety of pressures that a company receives from different stakeholders and the community. The media, for example, play a key role in shaping public perception, as they amplify negative incidents or help to highlight organisational behaviours that would otherwise be difficult to observe. Patten (1992) and Deegan, Rankin and Tobin (2002) show that the number of companies reporting sustainability information increases significantly following widely publicised negative events, suggesting that companies use this type of communication to mitigate the loss of legitimacy resulting from such events.

At the same time, institutional pressures and regulatory bodies also help to modulate a company's behaviour.

With the increase in regulatory requirements on sustainability, the introduction of increasingly widespread standards and the adoption of new ESG rating systems, disclosure becomes a means by which companies demonstrate compliance with these pressures.

The adoption of standardised reports, such as those based on the Global Reporting Initiative Standard (GRI), or the integration of sustainability information into financial documents, are a response to the need to demonstrate alignment with emerging regulatory expectations.

Investors have also played a significant role in defining disclosure strategies. The importance attached to sustainable investments and ESG criteria has made transparency an essential requirement for attracting capital, especially in sectors perceived as environmentally risky. Companies that do not adequately communicate their environmental performance or demonstrate a credible commitment to sustainability risk being penalised in the financial markets. This is prompting many companies to take a more proactive approach to non-financial reporting, not only for reputational or regulatory reasons, but also for economic reasons.

When SMEs are taken into consideration, the picture becomes even more complicated, as these types of companies play a strategic role in the value chain but at the same time have limited resources to implement advanced sustainability management systems or produce detailed reports (Borga et al., 2009; Cantele and Zardini, 2020; Guidi et al., 2025).

This means that sustainability disclosure is often adopted as a solution to respond quickly to pressure from outside and from key stakeholders.

Although the literature, as reported in the previous chapter, traditionally emphasises the difficulty these types of companies have in adopting sustainability practices, other studies show how they have progressively taken on an active role in the production of environmental and social information.

In this case, sustainability disclosure not only meets stakeholder or regulatory requirements but also becomes a tool for building a narrative of responsibility that counteracts the negative perception associated with these sectors. In fact, in sectors where reputational risk is particularly high, the ability to articulate a coherent and credible narrative is essential to maintaining stakeholder confidence.

Even when SMEs are not directly subject to more stringent regulatory requirements, they are indirectly affected by regulatory action through requests from supply chain partners, who in turn must demonstrate that they operate in accordance with the required standards.

Another important variable is reputational risk and the perception that companies have of their own reputation. Many SMEs also consider disclosure as a means of anticipating potential critical issues, communicating their improvement initiatives transparently before negative events emerge that could undermine their legitimacy.

The role of disclosure is becoming increasingly important in a context where stakeholder expectations are increasingly complex and varied. Companies can no longer limit themselves to satisfying a small group of stakeholders; they must respond to a wide audience, including investors, customers, local communities, the media, public authorities and regulatory bodies.

Considering these findings from the literature, legitimacy can be defined as a multi-level process that requires companies to balance a multitude of sometimes divergent expectations. From this perspective, disclosure is not simply the transmission of information, but a practice through which the organisation builds a relationship with its institutional environment, seeking to influence the way in which its actions are interpreted.

It is not limited to providing information; it also helps define what the company is and what it aspires to become in the eyes of its stakeholders. Studies in this field highlight how the language used in sustainability reports can play an important role in strengthening or redefining stakeholders' perceptions of the company. O'Donovan (2002) shows how companies modify their communication not only to respond to operating conditions, but also to present their activities as part of a responsibility-oriented approach. Similarly, Milne and Patten (2002) highlight how disclosure can be used to influence investors' judgements through the selection of favourable information, thus minimising controversial aspects (Cho and Patten, 2007).

This does not necessarily imply an intention to manipulate stakeholders, but it does demonstrate how organisations use sustainability disclosure as a tool to manage their external relations.

The use of these communication strategies does not always coincide with concrete improvements in environmental or social performance, which has raised a wide debate on the risk of greenwashing practices. (Lyon and Maxwell, 2011; Delmas and Burbano, 2011; Cho et al, 2012).

This highlights the fine line between legitimate and deceptive strategic communication. From the perspective of Legitimacy Theory, the phenomenon of greenwashing merely confirms the central idea in the construction of legitimacy: if legitimacy is a resource and its loss can threaten the survival of the company, it is understandable that some organisations, especially those most exposed, attempt to protect it through communication tools that emphasise the positive aspects of their activities.

The dynamics of legitimacy become particularly complex when we look at specific sectors. The literature shows that the most sensitive companies have to deal with particularly high social expectations and a greater risk of public criticism.

These companies are often forced to account not only for their current performance, but also for their past performance, as the sector in which they operate carries with it a reputational legacy that in turn influences public perception.

Another element that emerges from the literature concerns *the temporality of legitimacy*. Legitimacy is not a static phenomenon, but a dynamic process that evolves over time. Companies must not only achieve legitimacy, but also maintain it and, if necessary, restore it.

Maintaining legitimacy requires the organisation to continue to demonstrate consistency with social expectations, even when external conditions change. Such consistency is particularly difficult to ensure in contexts characterised by rapid changes in social norms, production technologies or regulatory standards. Deegan (2019) shows how some companies, after suffering critical episodes that undermined their reputation, sought to restore legitimacy through intense communication aimed at emphasising their willingness to change.

This process of *legitimation as repair* is typical of sectors characterised by high perceived risk, where stakeholders are particularly attentive to the initiatives taken after a damaging event.

Companies adopt different repair strategies depending on the nature of the perceived damage. If the damage is moral in nature, for example following behaviour considered ethically inappropriate, the literature suggests that companies tend to resort to more visible substantive initiatives, as symbolic communication alone would risk being perceived as manipulative. If, on the other hand, the damage is mainly cognitive, i.e. linked to a perception of inconsistency with industry standards, companies may adopt more intense communication strategies that emphasise their compliance with institutionalised models. These dynamics confirm that legitimacy is strongly influenced by the nature of social expectations and the type of stakeholders exerting pressure on the organisation.

In the current economic and institutional scenario, pressure for greater transparency is further reinforced by regulatory action. The European Union, in particular, has adopted a series of legislative initiatives in recent years (Directive 2014/95/EU, Directive 2022/2464) that have redefined the relationship between businesses and society. Although these directives are primarily aimed at large companies, they also influence small and medium-sized enterprises through an indirect effect: large groups require increasingly detailed information from their suppliers, imposing standards that spread throughout the entire supply chain. SMEs that are unable to provide such information risk being excluded from supply networks or suffering a competitive disadvantage.

In the broader context of the theories used in the literature on non-financial reporting, Legitimacy Theory is seen as a resource that companies not only seek but must constantly protect, as it profoundly affects access to capital, stable commercial relationships, market opportunities and, more generally, the ability to operate without obstacles in the socio-institutional context. This awareness has led many scholars to consider legitimacy not only as a symbolic attribute, but as a structural element of the organisation, closely linked to managerial choices, decision-making processes and the ways in which the company relates to its environment. Over time, legitimacy has become a cross-cutting concept that spans governance

policies, competitive dynamics and the construction of corporate identity, assuming increasing relevance, especially in contexts characterised by profound socio-cultural changes.

Studies exploring the link between legitimacy and organisational strategy highlight how companies, in an attempt to secure a solid and recognised position, are guided not only by economic efficiency objectives, but also by the need to comply with the regulatory and cultural expectations of the environment in which they operate. This dual logic emerges clearly from Meyer and Rowan (1977), who show how organisations adopt formal structures and procedures recognised as appropriate by the institutional environment, even when such structures do not necessarily improve operational performance. In this sense, the adoption of institutionalised practices and models takes on a symbolic function that allows the organisation to demonstrate its compliance, increasing its cognitive legitimacy and reducing the risk of being perceived as deviating from industry standards.

In a market that is increasingly sensitive to environmental and social issues, compliance with reporting standards becomes itself a form of legitimisation, helping to make the company comparable to organisations considered virtuous or responsible.

Similarly, legitimacy also operates as an element that influences internal dynamics and organisations. The need to maintain a legitimate position reduces companies to reviewing their governance, developing different decision-making structures and strengthening supervisory mechanisms, broadening the spectrum of stakeholders considered in decision-making processes (Aguilera et al., 2007; Aras and Crowther, 2008; Rodrigue et al., 2013).

With regard to changes in internal mechanisms, sustainability committees are considered in the literature as indicators of governance that is more sensitive to the implementation of sustainable practices.

The literature on the subject highlights controversial evidence, as committees can sometimes take on a predominantly symbolic function (Rodrigue et al., 2013; Orazalin, 2020), while others point out that these committees can effectively facilitate a decision-making process that is more attentive to environmental and social risks (Velte and Stawinoga, 2020; Hussain et al., 2018).

This ambivalence reflects the essence of Legitimacy Theory, which emphasises that what determines the effectiveness of these structures is not their existence as such, but the organisation's ability to make them credible in the eyes of stakeholders.

In this regard, the literature also highlights how stakeholder participation in corporate decision-making processes is not only a practice of social responsibility but also a tool for building legitimacy (Deegan and Blomquist, 1974; Morsing and Schultz, 2006).

Participatory processes enable companies to better understand the expectations of social actors, anticipate potential critical issues and build consensus around their strategies. This allows for continuous and direct communication with stakeholders, thus becoming an integral part of the legitimisation process, taking the form of a continuous dialogue rather than a one-way flow of information.

In a context where social norms are rapidly evolving, as is currently the case with sustainability issues, Legitimacy Theory allows us to interpret organisational transformations as a response to external pressures generated by society.

Growing public awareness means that companies must constantly defend their legitimacy. In order not to lose it, they must adapt not only to formal regulations but also to informal standards derived from the relevant public.

Companies that suffer a loss of legitimacy often undertake internal reflection processes that can lead to significant changes in structure and governance. These changes may not be immediately visible to the outside world, but over time they can translate into greater attention to sustainability issues, more transparent governance or direct stakeholder involvement in decision-making processes. In this way, legitimacy can be perceived as a driver of organisational change, stimulating companies to improve their practices in order to avoid future reputational crises.

Although Legitimacy Theory presents countless doubts about its strength, the literature has also recognised limitations in this perspective (Tilling, 2004; Cho et al., 2015). One of the main ones is the risk of overestimating the importance of institutional pressures compared to other variables that influence organisational behaviour (internal resources, economic logic, competitive structure of the sector).

The emphasis on communication as a tool for legitimisation can lead to neglecting the real effects of environmental and social performance, creating a gap between image and reality, which could prove problematic in the long term. It sometimes risks adopting an exclusively deterministic view of organisational behaviour, attributing to companies a rationality that, in practice, can be influenced by cultural, political or contingent factors.

Despite these limitations, Legitimacy Theory has nevertheless proved to be a very useful interpretative lens for understanding corporate behaviour in a constantly evolving social context. It allows us to grasp complex dynamics and interpret sustainability reporting as a process of negotiating legitimacy.

For this reason, Legitimacy Theory represents one of the most solid theoretical pillars for analysing corporate behaviour, especially in sectors subject to high public scrutiny or characterised by a significant environmental impact.

## **Organizational Readiness for Change**

The concept of organisational change has been a central theme in organisational literature for decades. Only with the evolution of psychological and sociological studies applied to management did the idea emerge that organisations change simply because new procedures, regulations or technologies are introduced. Companies change when they are ready to do so. It is precisely this element, *readiness for change*, that becomes the subject of analysis with the development of *Organisational Readiness for Change (ORC)*, a construct that shifts the focus from change as a linear process to change as a phenomenon rooted in the perceptions, beliefs and capabilities of organisational actors.

In fact, ORC stems from the observation that many change initiatives fail not because of their complexity but because of the absence of a fundamental prerequisite, namely the psychological readiness and ability of the organisation to commit collectively to change.

Unlike traditional management theories, which emphasised the adoption of formal tools or the implementation of new structures, ORC considers change to be a collective process that depends on individuals' shared perception of the usefulness of change and the organisation's ability to implement it.

The seminal contribution to this theory comes from Weiner (2009), who defines readiness as a collective psychological state that incorporates two fundamental elements: change commitment and change efficacy. The former concerns the willingness of organisational actors to actively engage in change; the latter, on the other hand, refers to their perceived ability to translate the idea of change into action.

Viewed in this way, these elements are intertwined, as commitment to change tends to be sustainable only when actors perceive that they have the resources, skills and operating conditions necessary to achieve it.

Weiner's reflection is part of a broader strand of research on organisational change that has its roots in Lewin's theories (1947), Coch and French's analyses of resistance to change (1948) and more recent contributions by Armenakis et al. (1993).

What distinguishes *ORC* from the perspectives is that *readiness* is not simply a set of conditions that facilitate change but is itself a collective psychological construct, rooted in perceptions shared by members of the organisation.

When there is a high level of readiness, actors are more likely to mobilise energy, face difficulties and maintain the behavioural consistency necessary to bring about change. Conversely, change tends to be implemented superficially or even blocked.

This approach therefore has the capacity to explain why many organisational initiatives produce apparent rather than real change. In fact, the organisation may formally adopt a new policy, implement software or draw up new protocols, but if readiness is low, these changes will always remain limited to the formal level and fail to translate into effective, concrete and lasting behaviour. This phenomenon, known in Institutional Theory as decoupling, finds a psychological explanation in *ORC*, namely that the gap between the form and substance of change is not only an organisational strategy but the product of insufficient readiness.

Organisational actors may superficially adhere to change in order to conform to institutional expectations, while maintaining their operational behaviours unchanged, as they do not consider it realistic or appropriate to adopt new practices. In this sense, *ORC* provides an interpretative key to decoupling by integrating the cognitive and motivational dimensions of the actors participating in change.

Weiner's conceptualisation emphasises a collective dimension of *readiness*. It is not enough for some individuals to be ready; readiness must be distributed, shared and disseminated across groups and organisational units. This collective nature therefore implies that *readiness* is influenced by a set of organisational factors ranging from internal culture to leadership quality, from communication to organisational climate and from the presence of resources to the clarity of objectives. Therefore, *ORC* is not reduced to an individual attribute but must be understood as an emerging phenomenon that arises from processes of interaction and collective interpretation.

These elements make *ORC* a powerful construct for interpreting phenomena in which the organisation is called upon to translate formal statements into operational behaviours. Readiness acts as a bridge between intentions and actions, explaining why some organisations can implement complex and transformative practices, while others, despite communicating similar objectives, fail to produce effective change.

This link between intention and implementation is also relevant in the context of sustainability disclosure, an area characterised by a gap between what companies communicate in their reports and what they actually achieve in practice.

The effective implementation of these initiatives requires widespread changes, such as the creation of new skills, the redefinition of organisational roles and the revision of operational processes. All these elements are highly sensitive to the readiness of the organisation and difficult to implement in the absence of change commitment and change efficacy.

Considering the above, the role of readiness is considered fundamental for SMEs, especially unlisted ones.

Unlike listed SMEs and large companies, unlisted SMEs have limited resources, less formalised structures and more flexible but also more vulnerable decision-making processes.

In this context, readiness can be a determining factor that separates companies capable of truly implementing ESG practices from those that limit themselves to symbolic compliance.

In SMEs, readiness depends not only on good leadership or internal culture, but also on external institutional pressures, the role of customers, supply chain dynamics and the perception of the usefulness of change. The sectoral context also amplifies the importance of readiness. In the chemical sector, rather than mining or utilities, regulatory and reputational pressures make sustainability disclosure not only a strategic choice but also an institutional requirement. However, the ability to translate this requirement into action depends on internal readiness.

The *ORC* can be useful in explaining why, despite the adoption of increasingly complex disclosure standards and models, many companies show a significant gap between what they declare and what they implement. In this sense, readiness allows us to understand this gap as a phenomenon rooted in the collective perception of actors and their perceived ability to address operational challenges.

In this sense, *ORC*, which is used to explain whether and to what extent companies are actually able to transform these pressures and statements into concrete action, aims to complement and integrate the other two theories used to support this study, as *Legitimacy Theory* explains why companies adopt forms of disclosure, and *Institutional Theory* explains where the pressures for change come from.

In this study, readiness is considered the internal driver of the adoption of sustainability practices. In the absence of readiness, companies may adopt advanced forms of disclosure for legitimacy reasons, but without actually implementing the underlying operational practices. Conversely, with high readiness, the company tends to follow up on its statements by translating formal commitments into organisational behaviours that affect ESG performance. In this way, readiness becomes the variable that explains the transformative capacity of disclosure: it is not communication itself that guarantees a company's sustainability practices, but the internal preparation that enables it to achieve them.

Weiner's theoretical framework marks one of the most significant turning points in the conceptualisation of readiness within organisations, as it offers a formalised and specific model that explains the collective behaviour of actors when the organisation is faced with significant change.

The strength of this perspective lies in focusing not on change as an event or set of technical activities, but on the psychological predisposition and perceived capacity of the organisation to engage effectively in the transformation process.

In the literature (Holt et al., 2007; Weiner, 2009), readiness is a collective construct. It is the outcome of a shared interpretative process that leads actors to evaluate two dimensions: *change commitment* and collective confidence in the ability to implement it, which lies in *change efficacy*. *Change commitment* refers to the belief that change is desirable, appropriate and necessary; it therefore represents the motivational dimension of the phenomenon.

Change efficacy, on the other hand, represents the cognitive and operational component of readiness, as it concerns the perception of possessing the resources, skills, technical capabilities and operational conditions necessary to bring about change. These two dimensions are not independent but reinforce each other: the willingness to commit to change is only sustainable if the actors perceive that they have the resources and capabilities to carry it out; at the same time, the perception of efficacy can strengthen motivation, as actors tend to engage more actively when they believe change is realistic.

This link between commitment and efficacy enables ORC to explain why some organisations successfully implement complex changes, whereas others experience significant difficulties. Readiness, in fact, influences the quality of actions undertaken by actors during the change process. When it is high, individuals are more likely to actively engage, collaborate, support colleagues, maintain consistency over time and overcome obstacles, thus contributing to the effective implementation of change. When readiness is low, actors may appear to comply with the proposed initiatives formally but lack the real commitment necessary to translate them into action, resulting in inconsistent results or only superficial changes.

Weiner also points out that readiness is a *situated phenomenon*, i.e., it depends on the specific context in which the change is to be implemented. It is not a generic resource but varies according to the nature of the change, the perceived complexity, the organisational history, the available resources, and the internal cultural context. In other words, an organisation may be ready to face some changes but not others, and this readiness stems from a collective assessment process that takes into account both past experiences and current conditions. This is why

readiness is a dynamic construct: it is not a stable attribute of the organisation, but changes over time in response to internal and external conditions.

In the literature, change efficacy is derived from three fundamental categories: available resources, task knowledge and the internal situation. Resources represent the material dimension of readiness: time, skills, tools, information, funding and personnel. Without adequate resources, the perception of efficacy is reduced, regardless of the willingness to commit. Knowledge of tasks, on the other hand, is linked to the clarity of the change: actors must know what is required of them, understand the process and feel prepared in terms of the necessary skills. Internal situations, such as the organisational climate, cooperation between units, leadership support and mutual trust, profoundly influence the perception of efficacy, as they determine the quality of interaction between actors.

Change commitment, on the other hand, is derived from three other elements: the assessment of the need for change (discrepancy), the assessment of its appropriateness, and the assessment of its benefits (valence). Actors must perceive a gap between the current situation and the desired situation, believe that the proposed solution is appropriate to bridge that gap, and attribute value to the benefits of change. These beliefs are not formed individually, but through collective *sensemaking* processes, in which actors interpret signals, discuss, share experiences and reach convergent conclusions.

In this way, ORC offers a powerful theoretical model because it combines the motivational and operational dimensions of change into a unified construct that, in turn, allows us to understand the collective behaviour of the organisation.

Applying Weiner's conceptualisation to the sustainability disclosure strand highlights a critical and often overlooked dimension in the disclosure literature, namely the gap between communication and implementation.

Indeed, organisations may be exposed to intense institutional pressures to adopt advanced disclosure practices to demonstrate compliance.

However, the fact that a company communicates the adoption of sustainability practices does not automatically guarantee that it is ready to implement them. In this way, readiness becomes the interpretative key that allows us to distinguish between companies that use disclosure as a tool for institutional alignment and companies that, on the contrary, accompany communication with actual organisational change.

In the context of listed SMEs, readiness can vary significantly even among companies of similar size and sector. Some companies may perceive sustainability as a strategic opportunity, investing in new skills and building internal support systems; others, on the other hand, may

formally adhere to customer demands or regulatory pressures without having the resources or capabilities to translate these commitments into action.

This phenomenon can obviously generate forms of symbolic compliance, as also stated in the literature on Legitimacy Theory, in which disclosure becomes the main tool through which the company aligns itself with institutional pressures, without this leading to significant changes in operational practices.

The evolution of the construct of *Organisational Readiness for Change* has generated a body of studies that explore the determinants, dynamics and outcomes, thus extending the perspective introduced by Weiner and integrating it with a series of contributions from the fields of organisational behaviour, occupational psychology, human resource management and leadership. However, the expansion of this literature has made it possible to understand that readiness is not only a cognitive or motivational predisposition, but the result of a combination of factors that include culture, leadership, internal communication, etc.

From this perspective, change becomes not the fulfilment of a project imposed from above, but a process that takes shape through the commitment of the actors and their shared assessment of the concrete possibility of achieving the transformation.

Contributions subsequent to Weiner's formulation have emphasised the centrality of leadership as a determinant of readiness. In particular, Armenakis et al (1993) highlight how leaders play a crucial role in shaping the collective beliefs that support change, influencing both the perception of the need for change and confidence in its feasibility. Effective leadership helps to build what Weiner (2009) defines as “change commitment” through clear communication of strategic direction, the ability to provide shared interpretations of objectives, and a willingness to actively support the process. At the same time, leaders influence “change efficacy” by offering technical support, resources, and development opportunities that enable actors to perceive change as achievable. This dual function has also been confirmed by Rafferty et al (2013), who argue that transformational leadership increases both collective motivation and the perceived ability to implement change. Consequently, in uncertain or turbulent contexts, clear, consistent and reliable leadership is recognised as one of the essential conditions for strengthening readiness, while a lack of leadership or inconsistency tends to compromise it even when organisational resources are theoretically adequate.

At the same time, organisational culture is also a determining factor in building readiness. Jimmieson et al. (2006) show that organisations characterised by cultures oriented towards learning, experimentation and participation have higher levels of readiness, as actors are accustomed to questioning established routines and perceiving change as a natural part of

organisational life. Conversely, hierarchical, centralised or strongly traditional cultures tend to hinder change, generating both cognitive and behavioural resistance. Culture acts not only through values, but also through symbols, meanings and everyday practices that influence the perception of the need for change and confidence in its feasibility. As Weiner observes, organisations with long histories or those deeply rooted in their routines often encounter more significant cultural obstacles, as members perceive the current way of operating as stable, familiar and therefore safer than the alternatives proposed by change.

Another element in building readiness is internal communication. Harris and Mossholder (1996) emphasise that change requires intense communication, not only to convey technical information, but also to build sensemaking processes that enable actors to understand and internalise the meaning of change. When communication is clear, timely and consistent, it promotes convergence of interpretations, reduces uncertainty and strengthens both commitment and perceived efficacy. Conversely, vague or contradictory communications undermine readiness by fostering doubts, misunderstandings and perceptions of misalignment. These aspects are also confirmed by the meta-analysis by Holt et al. (2007), which identifies the quality of internal communication as one of the main antecedents of beliefs favourable to change.

The literature also highlights the decisive role of trust. Lines (2004) demonstrates that vertical trust (towards leadership) and horizontal trust profoundly influence the willingness of actors to engage in change. Trust mitigates the perception of risk, reinforces the idea that the effort will be shared and valued, and contributes to the perception that the organisation is capable of dealing with the difficulties that change entails. Choi (2011) confirms that trust is a key antecedent of change efficacy, as actors are more likely to believe in the feasibility of change when they perceive consistency, support and fairness in internal relationships.

In the context of SMEs, the dynamics described take on peculiar characteristics. As noted by Jones et al. (2005), SMEs are characterised by less formalised structures and greater relational closeness between leaders and employees. This configuration can amplify readiness when there is internal cohesion and strong leadership, but it can also reduce change efficacy when there is a lack of resources, technical skills or roles dedicated to change management. Rafferty et al. (2013) reiterate that in SMEs, the role of leadership is particularly influential, as the perception of change is more closely linked to the beliefs and credibility of the entrepreneur or top management.

The distinction between readiness and resistance to change, clarified by Choi (2011), is particularly relevant in companies operating in highly environmentally sensitive sectors.

Readiness implies a positive psychological disposition, while resistance represents a response based on fear, uncertainty or the perception of change as a threat. In many cases, resistance in SMEs emerges when demands for change come from outside, as is the case with the adoption of sustainability practices, and are not accompanied by an internal interpretation process capable of integrating these demands into organisational meanings.

Shea et al. (2014) highlight the distinction between readiness and institutional compliance: an organisation may formally adhere to external norms and pressures but lack the motivation and capabilities necessary to implement change in a substantive way. This concept is particularly relevant in the context of sustainability, as many SMEs respond to regulatory and mimetic pressures by producing reports or adopting formal procedures, without having the readiness necessary to carry out the corresponding operational transformations.

Organisational Readiness for Change takes on central importance when applied to the context of sustainability practices and, in particular, to the growing gap between what companies declare in their reports and what they actually implement in their daily practice. The ORC perspective is the missing piece that explains why institutional pressures and legitimacy imperatives do not automatically produce behaviour consistent with publicly stated commitments. While Institutional Theory clarifies the source of the pressures that drive companies to adopt disclosure models, and Legitimacy Theory explains why these pressures often translate into intense communication activity, ORC allows us to understand whether and to what extent companies are actually able to transform these pressures and statements into substantial change.

The adoption of an integrated theoretical model thus shifts the focus from simply analysing the communication behaviour of companies to understanding the internal conditions that determine their operational capacity. ORC shows that institutional compliance, often visible through reporting, can represent an external and formal response, not necessarily accompanied by a real commitment to change production processes, organisational culture or governance systems.

The conceptual integration between the three theories can be reconstructed by following a clear logical path. Institutional pressures, coming from European regulations, professional standards, international organisations, large customers and supply chain actors, generate a growing perception among companies of the need to adopt sustainability practices. Institutional Theory explains that these pressures take the form of coercive constraints, professional regulations and mimetic processes that push towards homogeneity in organisational behaviour. Companies respond to these pressures by adopting disclosure standards, as envisaged by Legitimacy Theory, with the aim of appearing transparent, responsible and aligned with society's

expectations. However, the presence of advanced disclosure does not necessarily imply a real ability to integrate sustainability into internal processes.

The ORC intervenes precisely at the intersection of these two theories: once external pressure has been recognised and a public commitment has been declared through reporting, the effective implementation of ESG practices depends on the organisation's level of readiness.

The role of readiness is evident in environmentally sensitive sectors. Companies in these sectors, particularly SMEs, are exposed to more intense institutional pressure than other sectors because their potential environmental impact is greater, as widely recognised in the literature on companies in sectors with a high environmental impact. However, while large companies in the sector have developed internal expertise, specific functions and governance dedicated to sustainability management, many SMEs do not have the resources necessary to carry out this transformation. In this context, ORC is the key variable in distinguishing between companies that succeed in developing an operational capacity for sustainability and companies that limit themselves to symbolic compliance. The concept of change commitment is particularly useful for understanding the behaviour of unlisted SMEs in environmentally sensitive sectors. Many companies recognise the need for change because they are exposed to a variety of pressures: European regulations, customer expectations demanding high environmental standards, supply chain requirements, growing consumer awareness and a competitive environment in which transparency is increasingly considered a market requirement.

However, recognising the need for change does not automatically imply the development of sufficient internal commitment. Commitment requires that actors perceive change as appropriate, beneficial and in line with the organisation's values and objectives. In this type of company, this commitment can be hampered by perceptions of uncertainty, cost concerns, a short-term management vision or the lack of an organisational culture oriented towards sustainability.

The second element of readiness, change efficacy, represents the operational dimension of change. SMEs must perceive that they possess or can acquire the technical skills, financial resources, and organisational capabilities necessary to implement ESG practices. However, the chemical, mining, and energy sectors require significant investments in clean technologies, waste management, energy efficiency, and advanced monitoring systems. In the absence of adequate resources or strong managerial guidance, the perception of efficacy may remain low, compromising overall readiness. Under such conditions, even with detailed disclosure, change risks remaining confined to the formal sphere.

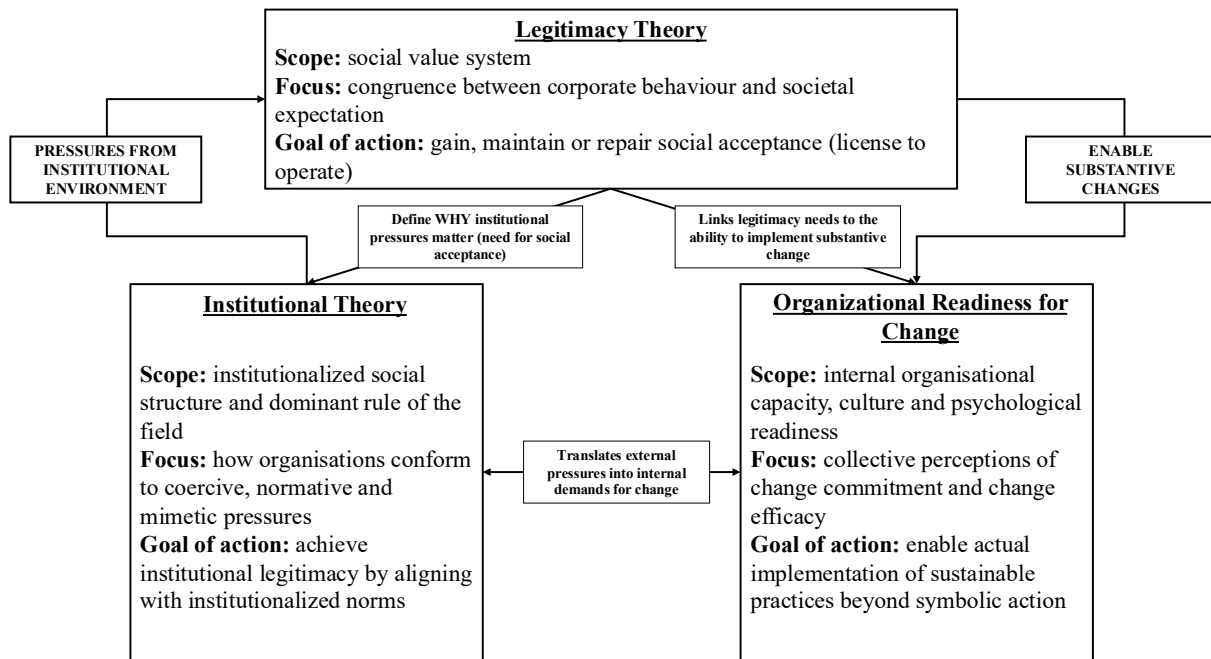
In summary, ORC allows us to understand the behaviour of SMEs not as solely reactive and driven by institutional pressures, but as a complex phenomenon that depends on internal, motivational and cognitive factors.

This perspective allows us to construct an integrated theoretical model in which institutional pressures define external expectations, the search for legitimacy determines the adoption of sustainability disclosure and, finally, readiness determines whether sustainability disclosure translates into actual implementation.

Building on these considerations, the theoretical triangle represents the conceptual basis of the ESG disclosure-readiness framework. This framework aims to interpret differences in SMEs' ability to address the sustainable transition not as differences in willingness or institutional exposure, but as differences in the level of internal organisational maturity. In doing so, ESG readiness ceases to be a simple indicator of performance or compliance. It becomes a measure of a company's ability to transform an increasingly pressing institutional context into concrete, lasting change. In this way, the framework underlying this study aims to bridge a gap in the literature on SME sustainability by offering an interpretative model that is applicable not only to environmentally sensitive sectors but also to all contexts in which the gap between disclosure and implementation is structurally critical.

Figure 2 illustrates the theoretical overview adopted in this study, showing how Institutional Theory, Legitimacy Theory and Organisational Readiness for Change jointly explain the pressures, motivations and internal capacities that shape SMEs' ESG readiness.

Figure 2. Theoretical overview. Source: author's elaboration.



# Methodology

## Purpose of the methodology section

The methodology section represents the operational foundation of the entire study and clarifies its logical structure, objectives and choices that guide the measurement of ESG readiness in unlisted European SMEs. After outlining the theoretical framework and the dimensions of the construct in the previous chapters, the second part of this doctoral thesis shows how these dimensions are translated into observable elements within the sustainability reports analysed and how this process leads to the generation of systematic empirical evidence. The aim is not only to describe the technical steps of the analysis, but also to show how each choice consistently reflects the theoretical assumptions underpinning the concept of readiness and the need to capture deeply qualitative aspects of companies' internal capacity, contextual pressures, and organisational culture. Measuring readiness is particularly complex because it does not concern directly observable behaviour but rather a latent organisational condition that can emerge through signals, statements, discursive evidence, and implicit references that companies incorporate into their official documents.

For this reason, the methodology adopted makes this complexity accessible and assessable through a structured process that starts with the theoretical definition of the phenomenon's dimensions and ends with the construction of an analysis system capable of identifying the elements that attest to the presence or absence of readiness.

This section, therefore, serves to make transparent the way in which the transition from theory to data was achieved, clarifying the consistency of the choices made and defining a replicable methodological framework, an essential condition for ensuring the scientific robustness of the entire work.

## **Research design**

The research design adopted is a mixed integrated approach, in which qualitative and quantitative components coexist in a methodological framework.

This choice stems from the inherently multidimensional nature of ESG readiness, which cannot be reduced to a purely numerical indicator or an exclusively interpretative analysis.

Readiness, in fact, encompasses structural, procedural and cultural aspects that emerge in various ways from company documents and require a solid theoretical combination and an analytical procedure capable of managing the linguistic and semantic variability typical of sustainability reports.

The methodological approach of this study was designed according to a sequential logic, in which each phase forms the basis for the next. The starting point is the development of the theoretical framework (Table 1) based on the theories outlined in the previous chapter and culminating in the definition of the three categories of readiness and their subcategories. This made it possible to identify the indicators needed to translate the theoretical concepts into empirically recognisable elements in the sustainability reports analysed.

The definition of these indicators required in-depth interpretative work, which also ensured consistent correspondence between what theory identifies as determinants of readiness and what companies communicate in their sustainability reports.

Starting from this qualitative basis, the pre-established research design led to the development of a specialised Large Language Model. This component represents the main innovative element of the proposed methodology, as it allows the defined indicators to be applied systematically, transforming the conceptual framework into an empirical measurement tool.

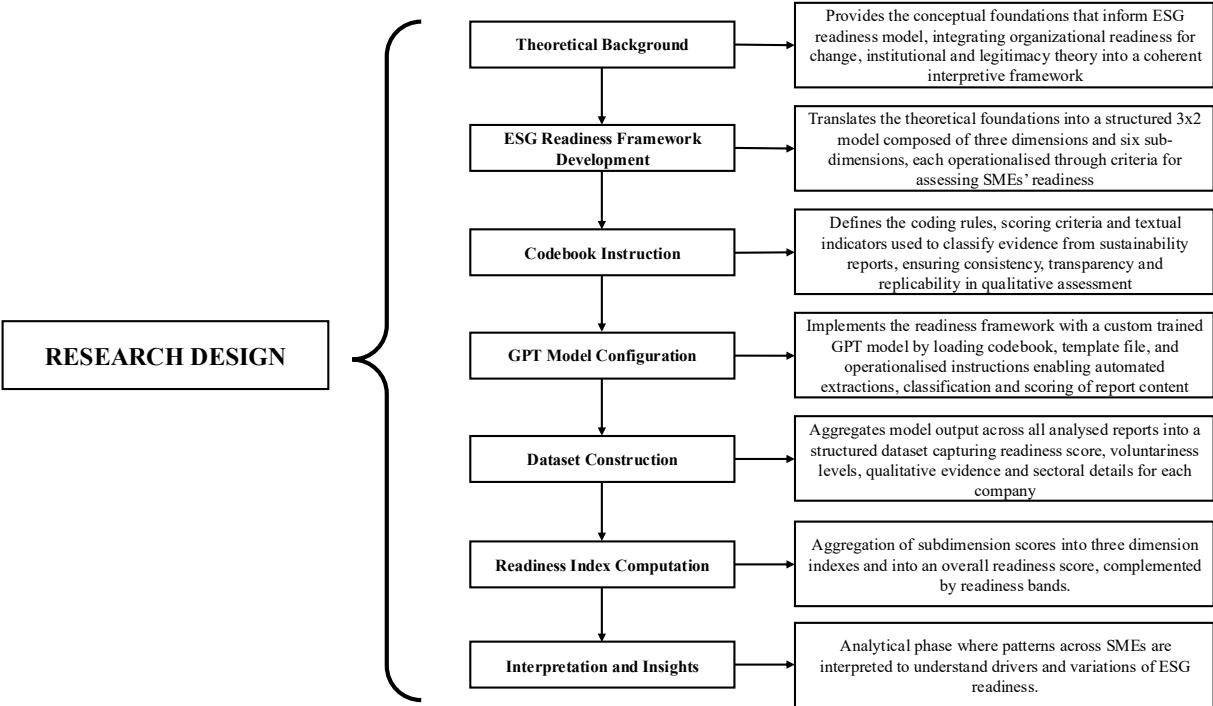
The model was designed to analyse a corpus of sustainability reports, capturing not only the information explicitly stated but also internal relationships within the texts, implicit elements that contribute to delineating readiness. This approach overcomes the limitations of traditional methods and ensures a more reliable and comparable measurement between different companies.

The research design concludes with the construction of readiness indices obtained from the scores assigned by the model to the various subcategories. Consequently, these indices represent the quantitative output of the entire process, providing a concise yet theoretically sound overview of the companies analysed.

The integration of these approaches, combining qualitative analysis with advanced technology to arrive at quantitative analysis, forms the central architecture of the research design.

Figure 3 provides a visual synthesis of the research design illustrating how the framework moves from theoretical foundations to the operationalisation of the ESG readiness framework, the development of the codebook, the configuration of the GPT-based evaluation system, and the construction of the final readiness indexes. It clarifies the sequential logic of the research design, showing how each component progressively contributes to transforming qualitative textual evidence into structured, comparable quantitative measures of ESG readiness.

Figure 3. Research design. Source: author's elaboration.



## **General Approach**

The methodological choice adopted stems from the awareness that measuring ESG readiness in unlisted SMEs is a complex challenge, as these companies are not subject to the reporting requirements typical of listed companies and have varying levels of maturity in non-financial reporting.

As a result, sustainability reports vary greatly in terms of structure, content, depth and quality of information, making it difficult to apply traditional measurement methodologies based on standardised checklists or purely quantitative analyses.

The use of a mixed approach, supplemented by an advanced linguistic model, therefore responds to the need to develop a methodology capable of capturing the complexity of the phenomenon without sacrificing the comparability of results. The theories referred to in the previous chapter highlight how readiness is influenced by a complex set of contextual and organisational factors. These factors manifest themselves through often subtle linguistic signals, which require a tool capable of reading the semantic depth of texts and identifying recurring patterns with a level of granularity that cannot be achieved with manual techniques.

At the same time, the desire to make the process replicable and transparent made it necessary to integrate the interpretative component with a computational system that reduced the discretion typical of human judgment, while maintaining the model's anchorage to the theoretical framework. The adoption of an LLM allows these requirements to be combined, offering a methodological solution that provides internal consistency to the analysis process, improves the generalisability of results and allows large datasets to be managed without compromising interpretative depth. The aim of this approach is therefore to combine the literature on readiness with the literature on non-financial reporting and, specifically, sustainability disclosure.

## **Operationalisation of ESG readiness**

### *From theories to operational framework*

The construction of the framework used in this thesis represents the most delicate methodological step in ensuring a consistent and well-founded measurement of ESG readiness. The process does not consist of simply defining a set of indicators but has been a work of conceptual translation through the alignment of the theories illustrated in the previous chapter and the empirical structure necessary to analyse the sustainability reports of unlisted SMEs.

The framework was therefore created to identify the main determinants of readiness to implement sustainability practices and the need to articulate these determinants into categories that are observable and replicable within company documents.

The starting point is the assumption, which emerged from the literature, that readiness is not simply an output of compliance, but reflects a set of organisational conditions that enable a company to absorb, interpret and respond to sustainability pressures.

This leads to the decision to divide readiness into three complementary categories: organisational capacity, environmental pressure and organisational culture. Each expresses a level of depth of the phenomenon, helping to outline a structure that considers both internal factors within the company and contextual dynamics that influence corporate decisions and behaviour.

Organisational Capacity describes the set of material resources, skills, roles and tools that an organisation deploys to address the challenges posed by the implementation of declared sustainability practices. It is based on the idea that readiness requires an adequate infrastructure capable of supporting change processes and medium- to long-term strategies.

The second dimension, Environmental Pressure, captures the forces coming from the external environment, whether regulatory, institutional, sectoral or related to the relevant public, which stimulate the company to take sustainability-oriented actions. This dimension reflects the role of social and regulatory expectations and their influence on the predisposition to change.

Finally, Organisational Culture expresses the deepest level of readiness and concerns the company's value orientation, its strategic vision and the way it interprets sustainability and the extent to which it is integrated into the shared meanings within the organisation.

Based on these three dimensions identified and derived from the three theories used, a framework structured in a 3x2 matrix was developed, where each dimension is divided into two analytical subdimensions.

The definition of this structure was based on an iterative process that required continuous verification of theoretical consistency and the ability of the indicators to adequately represent the underlying concepts. This process enables the creation of a system that links the content of sustainability reports to specific interpretative categories, providing a solid methodological basis for subsequent analysis.

The framework therefore serves as the basis for the entire measurement procedure. It provides a conceptual grammar that enables the LLM used in the empirical phase to recognise, interpret, and classify the elements relevant to readiness, with document analysis guided by a structure consistent with the theoretical objectives of the work.

Table 1 presents the 3×2 ESG readiness framework, linking each theoretical foundation to its corresponding analytical sub-dimensions and guiding questions.

*Table 1. Readiness framework. Source: author's elaboration*

<b>Dimension</b>	<b>Sub-dimension</b>	<b>Derived Theory</b>	<b>Guiding Questions</b>
<b>Organizational Capacity</b>	Change Commitment	<i>Organizational Readiness for Change</i>	<ul style="list-style-type: none"> <li>• Who drafted the report?</li> <li>• Are there systems to collect and manage ESG data?</li> </ul>
	Change Efficacy		
<b>Environmental Pressure</b>	Institutional Expectations	<i>Institutional Theory</i>	<ul style="list-style-type: none"> <li>• Why did the company choose to disclose?</li> <li>• Has the company benefited from incentives or public initiatives?</li> </ul>
	Field Conformity		
<b>Organizational Culture</b>	Value Alignment	<i>Legitimacy Theory</i>	<ul style="list-style-type: none"> <li>• Is sustainability integrated into the mission, values, or identity storytelling?</li> <li>• Are requests or expectations from the “relevant public”?</li> </ul>
	Legitimacy Communication		

### *Codebook design and measurement rules*

To operationalise the framework's dimensions, a detailed codebook was constructed to ensure consistency in the analysis process and to guide the model in classifying the content in sustainability reports.

The codebook was developed following a review of the literature on non-financial reporting and sustainability disclosure. It is defined as a document that summarises, for each dimension and sub-dimension, the operational definition, the theoretical meaning of reference and the criteria used to identify relevant textual evidence.

Its function is to transform complex qualitative concepts into recognisable and assessable categories, ensuring that the coding process is based on clear and unambiguous instructions.

This process made it possible to identify the linguistic expressions, narratives, strategic references and implicit indicators that best represent the dimensions of readiness.

Once the main categories had been identified, a scoring system was defined based on a dichotomous scale, which distinguishes between the presence and absence of the indicator, and, in addition, on a more articulated scale, useful for capturing the level of maturity of the information.

This system allows for the recognition of both the quality and depth of the evidence provided by companies, avoiding excessive simplification and enabling the model to return results that are more sensitive to differences in content.

To ensure consistency in coding decisions, the codebook also includes annotated examples, taken from the documents examined in the preliminary phase, which illustrate how theory translates into practice and which textual elements should be considered valid indicators. The examples provided are not intended to serve as a rigid reference corpus, but rather to make explicit the interpretative logic that guides the entire measurement process.

Finally, this tool plays a fundamental role in connecting the theoretical part and the system used, acting as a filter through which the linguistic model learns what to look for in the theses and how to classify the relevant information. This largely determines the accuracy of subsequent analyses and is an essential element in ensuring the transparency, replicability and methodological soundness of the process.

Table 2 presents the structure of the ESG Readiness Codebook. It defines the three main dimensions of readiness, their subdimensions, and the definitions used to guide the interpretation of textual evidence. The table also introduces the general scoring logic (0–3), which captures the maturity and substantive integration of sustainability practices.

Table 3 illustrates the measurement scales used for classifying and evaluating the evidence extracted from sustainability reports. The binary scale enables the preliminary detection of relevant indicators, while the maturity scale (0–3) assesses the depth, structure, and strategic relevance of the disclosed information. These scales ensure consistency and transparency in the scoring process.

Table 4 summarises the methodological rules provided to the GPT model to ensure a rigorous, replicable, and theory-driven assessment. These rules specify the model's role, the analytical framework, the scoring rubric, evidence requirements, language constraints, and operational boundaries, thereby establishing the procedural foundation for the empirical analysis.

Table 2. Structure of ESG readiness codebook. Source: author's elaboration.

Dimension	Sub dimension	Definition	Scoring Logic (0–3)
<b>Organizational Capacity</b>	Change Commitment Change Efficacy	Captures the organisation's overall readiness to engage in sustainability-related change, combining its willingness to commit and its internal ability to implement ESG practices. This includes explicit commitments, governance signals, coordination mechanisms, and resources supporting change.	<b>0</b> = No evidence of commitment or capability <b>1</b> = Generic or symbolic references <b>2</b> = Clear operational commitment and capability <b>3</b> = Strategic and embedded capacity for sustainability-related change
<b>Environmental Pressure</b>	Institutional Expectations Field Conformity	Reflects the extent to which regulatory, institutional, sectoral, or market forces influence the company's sustainability behaviour and disclosure. Includes expectations from regulators, industry bodies, supply chains, customers, or competitors.	<b>0</b> = No evidence of external pressures <b>1</b> = Minimal or generic references <b>2</b> = Clear external expectations and related actions <b>3</b> = Strategic alignment with institutional or sector pressures
<b>Organizational Culture</b>	Value Alignment Legitimacy Communication	Describes how sustainability is embedded in the company's identity, mission, values, and communication practices, and how disclosure is used to build legitimacy and coherence with organisational identity.	<b>0</b> = No cultural or communicative sustainability signals <b>1</b> = Symbolic or inconsistent cultural/communication signals <b>2</b> = Clear integration of sustainability into values and coherent communication <b>3</b> = Strategic identity and legitimacy oriented communication

Table 3. Measurement scales used for classifying and evaluating the evidence extracted from sustainability reports. Source: author's elaboration.

Type of Scale	Description	Scoring Values
<b>Binary Scale</b> (Presence/Absence)	Captures whether an indicator is present in the text. Used as preliminary detection logic for identifying relevant evidence.	<b>0</b> = Indicator absent <b>1</b> = Indicator present
<b>Maturity Scale</b> (0–3)	Assesses the depth, structure, and maturity of the information disclosed for each sub-dimension of the framework.	<b>0</b> = No evidence <b>1</b> = Initial / descriptive evidence <b>2</b> = Structured evidence <b>3</b> = Strategic integration

Table 4. Methodological rules provided to the GPT model. Source: author's elaboration.

Category	Rule Description
<b>Role and Goal</b>	The model acts as an ESG analyst evaluating the organizational ESG readiness of European unlisted SMEs based on their sustainability reports. The aim is to assess substantive ESG integration rather than compliance.
<b>Analytical Framework</b>	The model uses a 3×2 framework (Organizational Capacity, Structure & Governance, Culture & Intent) and evaluates six subdimensions using a 0–3 scale.
<b>Scoring Rubric</b>	Scores reflect substantive integration: 0 = Absent; 1 = Ad hoc/Embryonic; 2 = Structured but compliance-driven; 2.5–2.9 = Semi-integrated; 3 = Fully integrated. Intermediate decimal scores are allowed.
<b>Readiness Index</b>	Overall readiness is the arithmetic mean of six subdimension scores. Readiness bands: 0.0–0.9 Low; 1.0–1.9 Medium-Low; 2.0–2.4 Medium; 2.5–3.0 High.
<b>Interpretation Rules</b>	The model must evaluate context, intent, coherence, causality, and internal vs. external drivers. Avoid keyword counting and distinguish symbolic language from substantive evidence.
<b>Evidence Requirements</b>	Every score $\geq 1$ must include at least one supporting quote and page number. If no evidence is found, assign 0 and note “not disclosed.”
<b>Language Rules</b>	The model automatically detects Italian, English, German, French, Spanish, or Polish, interprets them, and outputs results in English.
<b>Use of VSME</b>	The VSME Standard is used only as contextual background to recognise terminology; scoring must not depend on compliance with any standard.
<b>Output Structure</b>	The model must generate or update an Excel file containing company metadata, subdimension scores, overall readiness, readiness band, voluntariness assessment, evidence, and notes. Append rows without overwriting previous entries.
<b>Operational Constraints</b>	The model must not invent data, use external sources, or provide narrative summaries. It must apply evidence-based reasoning and maintain academic neutrality.

## **Empirical context, sample and data collection**

### *Sample identification, selection criteria and data collection*

Defining the context is essential to understanding the consistency of the methodological choices made. As mentioned in the previous paragraphs, the objective is to measure the ESG readiness of unlisted European SMEs operating in environmentally sensitive sectors.

The literature on SMEs and sustainability disclosure (Scagnelli et al., 2013; Alvarez-Jaramillo, 2018) highlights that, unlike listed companies, unlisted companies are not subject to stringent regulatory requirements and vary greatly in terms of the quality and quantity of information reported. For this reason, building a reliable dataset requires in-depth research and a rigorous procedure for selecting the reports to be analysed.

The first step involved identifying the population, i.e. unlisted SMEs that voluntarily publish a sustainability report or similar document (e.g. sustainability report, integrated report).

The choice of these sectors also allows for the analysis of a context characterised by internal heterogeneity, since, despite sharing the attribute of environmental sensitivity, they have very different operational structures and production chains.

Once the sectoral scope had been defined, the next step involved collecting sustainability reports (where available) through a structured process that involved consulting the companies' institutional websites. The aim was to build a dataset consisting exclusively of official documents produced by the companies themselves and relating to the year 2023. This process enabled the identification of 120 companies in the sectors defined above, located in the following countries: Germany, France, Italy, Spain, the Netherlands, Poland, Sweden, Belgium, Austria and Denmark.

## **Sample description**

The sample analysed comprises 120 unlisted SMEs belonging to the following sectors: chemicals, mining, utilities, oil & gas. At the sector level, the trend in sustainability report availability shows a prevalence of companies in the chemical sector (67), followed by utilities (40), then mining (12), and, to a much lesser extent, the oil & gas sector (1).

From a geographical point of view, the companies in the sample come from a list of countries previously described, which enriches the analysis by allowing differences in national regulatory and institutional contexts to be captured. This is an interesting element, as it also allows us to observe how readiness manifests in contexts characterised by varying levels of regulatory pressure and varying maturity in implementing sustainability practices.

### *Dataset final structure*

At the end of the collection and pre-processing process, the contents of the sustainability reports were analysed by the model and organised into a structured dataset (Table 5) that brings together in tabular form the information relating to each company in the sample, including classification by sector, country and reference year of the report, as well as the scores assigned to each sub-dimension provided for in the framework. Each company, therefore, has a complete set of scores for the six subcategories of readiness, accompanied by a brief text extract from the report that justifies the scores assigned to each sub-dimension.

An important variable in the dataset is voluntariness, i.e., whether the report was published voluntarily or stems from sectoral or regulatory obligations. This information allows the readiness scores to be linked to a relevant regulatory and contextual dimension, helping to understand whether the predisposition to sustainability emerges as a response to external pressures or as an autonomous strategic choice.

The dataset thus constructed represents the starting point for the subsequent stages of the analysis, in which the scores are processed to construct readiness indices and identify recurring patterns within the sample in such a way as to allow the qualitative complexity of the reports to be translated into a systematic and comparable analytical structure, capable of providing a complex picture of the ESG readiness of unlisted SMEs.

Table 5. Description of dataset variables. Source: author's elaboration.

<b>Variable</b>	<b>Description</b>
<b>Company Name</b>	Legal name of the SME examined in the sustainability report.
<b>Country</b>	Country in which the company operates.
<b>Sector</b>	Industry classification (e.g., Chemicals, Mining, Utilities, Oil & Gas).
<b>Change Commitment</b>	Score assessing the organisation's willingness to engage in sustainability-related change, expressed through explicit intentions, commitments, or strategic orientations.
<b>Change Efficacy</b>	Score assessing the organisation's perceived ability to implement ESG practices through roles, competencies, resources, or internal coordination.
<b>Institutional Expectations</b>	Score evaluating the extent to which regulatory or institutional expectations influence the company's sustainability practices and disclosure.
<b>Field Conformity</b>	Score evaluating pressures from the sector, market, supply chain, or competitors that drive sustainability adoption or reporting.
<b>Value Alignment</b>	Score assessing the degree to which sustainability is integrated into the company's mission, values, identity, or strategic orientation.
<b>Legitimacy Communication</b>	Score assessing the transparency, coherence, and identity alignment of sustainability communication, and its role in building organisational legitimacy.
<b>Overall Readiness</b>	Arithmetic average of the six sub-dimension scores
<b>Readiness Band</b>	Categorical variable indicating the readiness level (Low, Medium-Low, Medium, High).
<b>Voluntariness Assessment</b>	Classification indicating whether the sustainability report is voluntary, mixed, or symbolic, based on contextual cues and motivations for disclosure.
<b>Evidence</b>	Short textual extract supporting the score assigned to each sub-dimension, including page reference.
<b>Notes</b>	Additional comments or methodological annotations generated during the analysis.

## **Reasons for using a Large Language Model**

The adoption of a Large Language Model (LLM) as a tool for measuring ESG readiness is the innovative element of this thesis from a methodological point of view.

This choice was determined by an in-depth assessment of the analytical requirements of the thesis, the limitations of traditional content analysis methods and the opportunities offered by new-generation technologies.

This paragraph illustrates the theoretical, methodological, and technical rationale that led to the choice to use an LLM, showing how it represents the most appropriate option for addressing the complexity of unlisted SMEs' sustainability reports, ensuring an accurate and replicable measurement of readiness.

Measuring ESG readiness requires the ability to interpret complex, unstructured and often heterogeneous texts. The sustainability reports of unlisted SMEs do not follow a uniform reporting standard, have different levels of maturity and use discursive styles that range from strategic statements to operational descriptions and implicit references to sustainability.

In this context, traditional methods of content analysis, based on word counting or thematic dictionaries, have significant structural limitations. They tend to reduce semantic complexity to a limited set of linguistic signals, failing to capture the relationship between concepts within the text and relying on the researcher's judgement, thereby unknowingly introducing interpretative bias (Siano, 2015). The limitations are even more evident when considering reports from different companies, in different languages, produced in contexts that often lack a formalised narrative structure.

Manual content analysis techniques involve a complete reading of the document, followed by the coding of relevant elements according to the categories provided by the theoretical framework. While this approach guarantees a certain depth of interpretation, it is extremely time-consuming, difficult to scale and subject to variability between different coders. Although inter-coder reliability procedures allow these differences to be measured and mitigated, they do not eliminate the underlying problem: human coding is inherently interpretative, slow and vulnerable to fatigue, inconsistency and over-interpretation. In a thesis that requires the systematic analysis of a large sample such as the one used in this study, these limitations would have compromised the very possibility of constructing a comparable and reliable dataset.

Even the use of more advanced methods of text mining and traditional machine learning has significant limitations (Lewis and Young, 2019; Shimamura et al., 2025). Approaches based on

dictionaries, term frequency or supervised algorithms allow part of the process to be automated but suffer from a fundamental limitation: they have no semantic understanding of language. They identify n-grams or recurring linguistic patterns, but do not truly understand the content of the texts, nor are they able to distinguish between a superficial mention of an ESG issue and a detailed description of policies, processes or organisational roles. Furthermore, they require large, manually annotated and balanced training datasets, which is difficult to achieve in the context of unlisted SMEs, characterised by limited and fragmented availability of official documentation.

In this scenario, the advent of LLMs has marked a paradigm shift, overcoming many of the limitations of traditional methods. Several recent studies have highlighted the ability of LLMs to capture linguistic nuances, semantic relationships, implicit references and logical connections within complex texts, thanks to a combination of computational power, advanced architectures and training processes on vast corpora.

Among the most significant contributions in this field is the work of Zhuang and Wu (2023), who show how LLMs can overcome the limitations of dictionary-based or traditional supervised learning methods, confirming that these systems are capable of interpreting complex qualitative concepts with a higher level of accuracy and consistency than previous techniques. Their study also highlights how the use of these significantly improves the ability to extract relevant information in domains characterised by long, non-standardised texts, a situation that perfectly describes the nature of the reports analysed in this thesis.

Alongside technical contributions, the most recent literature has begun to question the methodological implications of LLMs for the social sciences and sustainability studies. The work of Siano (2025) is a fundamental reference for understanding the conditions for the responsible and scientifically rigorous use of language models, emphasising the need to define transparent, replicable procedures guided by a solid theoretical framework.

The author highlights how LLMs must be integrated into a methodological governance framework that guides their applications, avoiding purely technical drifts and ensuring that computational power does not replace the necessary scientific reflection. From this perspective, the use of GPT in this thesis does not represent an act of delegation to technology, but a structured way of strengthening methodological consistency, making the translation of theoretical concepts into analysable empirical categories more robust.

The choice of LLM is based not only on its interpretative capabilities, but also on its operational flexibility. Unlike traditional models, which require comprehensive training on annotated datasets, an LLM can be adapted to specific tasks using advanced prompting and few-shot

learning techniques. This means that the model can be trained from a limited number of examples derived directly from the theoretical codebook, without the need to build a large, annotated corpus. This feature is particularly relevant in this context, where the scarcity of available data makes it impractical to build large, balanced training datasets.

Another factor that contributed to the choice of LLM is its ability to ensure internal consistency in the coding process. As highlighted by Zhang et al. (2025), advanced language models are able to apply complex classification criteria in a systematic and repeatable manner, reducing the variability typical of human coding and increasing the overall reliability of the process. This does not mean that the model is free from errors or bias, but that such errors can be identified, managed, and mitigated through an iterative validation and refinement process based on comparison with a manually coded subsample. The work of Zhang et al. also demonstrates that, compared to traditional approaches, LLMs tend to produce classifications that are more stable over time and more consistent with the operational definitions provided in the theoretical framework. The use of the GPT model in this thesis therefore lies at the intersection of theoretical needs and technological opportunities.

On the one hand, the dimensions of readiness require an analytical approach capable of capturing the discursive complexity of corporate texts; on the other hand, the availability of advanced linguistic technologies allows this analysis to be carried out in a systematic and replicable manner, overcoming the limitations of traditional methods.

Furthermore, it should be noted that the use of LLMs raises questions about the replicability of the process. Unlike traditional models, advanced language models evolve rapidly and can be updated over time, with the risk that analyses replicated at different times may produce slightly different results. To address this critical issue, the methodology adopted provides a detailed description of the prompt, the examples used for few-shot learning, and the output evaluation process, in order to ensure maximum transparency. This allows other researchers to reproduce the analysis, verify the consistency of the results and understand any emerging differences.

## **Development of GPT and ESG readiness indexes**

### *System architecture and operational pipeline*

The construction of the ‘ESG Readiness Evaluator’ represents the meeting point between the theoretical framework developed in this thesis study and the technical infrastructure designed to apply it systematically to the sustainability reports of unlisted SMEs.

The model was specifically conceived as a specialised analyst, who was given a specific role, a defined knowledge base and a set of rigorous methodological constraints.

The aim was to reproduce, in an automated but controlled form, the type of reasoning that a researcher would apply when reading a report to assess the readiness of the company in light of the dimensions and sub-dimensions of the previously defined framework. In addition to the dimensions of the framework on which the model is built, there is the cross-cutting lens of voluntariness, which allows us to interpret whether sustainability practices emerge primarily as a response to external pressures or as an expression of an autonomous and internalised commitment. The model was therefore configured in such a way as to translate these elements into explicit evaluation criteria and incorporate them into a scoring rubric that forms the core of its knowledge base.

The architecture of the model is based on three main components: 1) the instructional prompt; 2) the knowledge base; 3) the enabled technical tools.

The instructional prompt defines the role of the model, which is explicitly described as an analyst tasked with assessing the ESG readiness of SMEs based on their reports. The three dimensions and six sub-dimensions of the framework are illustrated with their meanings, and it is also specified that the assessment must be strictly anchored to the content of the report, prohibiting the use of external knowledge or the invention of information does not present in the text. The model is therefore instructed not to make hypothetical inferences, not to “fill in the gaps” in the absence of evidence, and to justify each judgement with a specific textual reference.

At the same time, the prompt establishes an orderly working procedure, which starts with reading the report, continues with the identification of relevant signals, and ends with the compilation of a standardised output file.

The knowledge base consists of three sets of documents. The first concerns the assessment rubric, which describes in detail the dimensions and sub-dimensions of readiness and the respective criteria to be assigned a score ranging from 0 to 3 for each of them, as well as the qualitative indicators to be sought in the texts.

A score of 0 corresponds to the absence of significant evidence, while increasing values reflect progressive levels of structuring, systematisation and integration of sustainability into the company's processes and culture. The second element of the knowledge base is the document drafted by EFRAG on the new VSME Standard, included not for the purpose of measuring mere compliance by companies, but to provide the model with a standard that is closer to the context under study and useful for recognising practices, tools and references typical of unlisted SME systems. Finally, the third element is a pre-structured Excel file that defines the expected output scheme. In other words, the model knows that, at the end of each analysis, it must populate a new row in the file with the scores for the six sub-dimensions of readiness, a textual assessment of voluntariness and brief evidence to support the assessments, together with a summary value of overall readiness.

From a technical point of view, the ESG Readiness Evaluator has been configured to activate only the code interpretation and data analysis tools, allowing the model to read PDFs, extract text, interact with the Excel file and save the results in a consistent manner.

On the other hand, web search, image generation and canvas functions were disabled to prevent the model from drawing on information outside the report corpus or introducing elements that fall outside the scope of the research.

In this way, the system operates in a methodologically closed environment, in which the only information base for assessing readiness is the report provided by the user and the supporting documents uploaded during configuration.

The setup phase required preliminary preparation, including drafting the rubric, preparing the Excel template, and defining all the instructions to be included in the prompt.

Once the preparation process was complete, the model underwent a series of exploratory tests, which made it possible to verify the consistency between the answers provided and the underlying theoretical framework.

Inconsistencies and ambiguities were corrected at this stage by refining the instructions to achieve behaviour as closely aligned as possible with the role of a methodologically disciplined analyst.

### *Operational flow of sustainability report analysis*

The operational functioning of the GPT is structured according to a stable and replicable workflow, beginning when the user uploads a sustainability report in PDF format and ending with the updating of the output Excel file.

From the user's point of view, the process appears relatively simple, as it is sufficient to provide the document and, if necessary, specify the name of the company and the reference year. From the model's point of view, a much more complex sequence of operations is developed, marked by phases of analysis, interpretation, classification and recording of results.

Once the report has been uploaded, the model uses the code interpretation tool to open the file, extract its textual content and make it analysable. Furthermore, as the documents are produced in different languages, the model has been trained to independently recognise the language of the text and to work while preserving the original meaning of the expressions, without translations but with an internal understanding that allows consistent evaluation criteria to be applied even in the presence of linguistic differences.

Subsequently, the report is read in its entirety and therefore the model does not merely identify keywords but is required to understand the discursive structure of the document, identifying sections, recurring themes and statements that may constitute relevant evidence for the assessment of readiness.

During this phase, the ESG Readiness Evaluator seeks answers to the guiding questions associated with the framework (Figure 4). In the case of organisational capacity, for example, the model searches for information on who drafts the report, which internal figures or functions are involved in managing ESG issues, and which tools, processes or data collection systems are mentioned.

For environmental pressure, it looks at references to customers, suppliers, institutions, banks, etc., checking whether the company justifies its reporting by referring to external expectations or requests. Finally, for organisational culture, the model focuses on the presence of the concept of sustainability in the mission, stated values, narrative and overall consistency of the discourse. Based on the evidence identified, the model assigns a score from 0 to 3 for each sub-dimension of the framework.

The score is not determined by lexical patterns, but by an assessment of the degree of structuring of the practices described: for example, sporadic and generic references to ESG issues will result in a low score, while the presence of formalised roles, established procedures or the explicit integration of sustainability in documents will lead to higher scores.

For each sub-dimension, the model is required to select a short piece of textual evidence, no longer than about forty words, accompanied by an indication of the page on which it appears. This addition serves to empirically justify the score assigned, allowing the user to directly verify the accuracy and transparency of the assessment.

In parallel with the assignment of scores for the six sub-dimensions, the ESG Readiness Evaluator produces a qualitative assessment of voluntariness. This is not measured on a numerical scale, but through descriptive categories that reflect the degree of authenticity of the company's commitment.

The model has been trained to distinguish between situations in which reporting appears to be predominantly symbolic or reactive, linked to the need to comply with minimum obligations or respond to reputational pressures, cases in which the motivation appears to be mixed or transitional, and cases in which the commitment seems to conceal a genuinely voluntary, independent approach that predates stringent regulatory obligations.

A further refined version of this classification distinguishes between mixed symbolic levels, interpreting the company's stated history, the timing of initiatives and how they are linked to the company's mission. At the end of the report analysis, the model compiles the preconfigured Excel file and adds a new row for the analysed company. This row then records the scores for each sub-dimension of readiness, voluntariness and textual evidence, with an indication of the page and, where applicable, any additional qualitative notes.

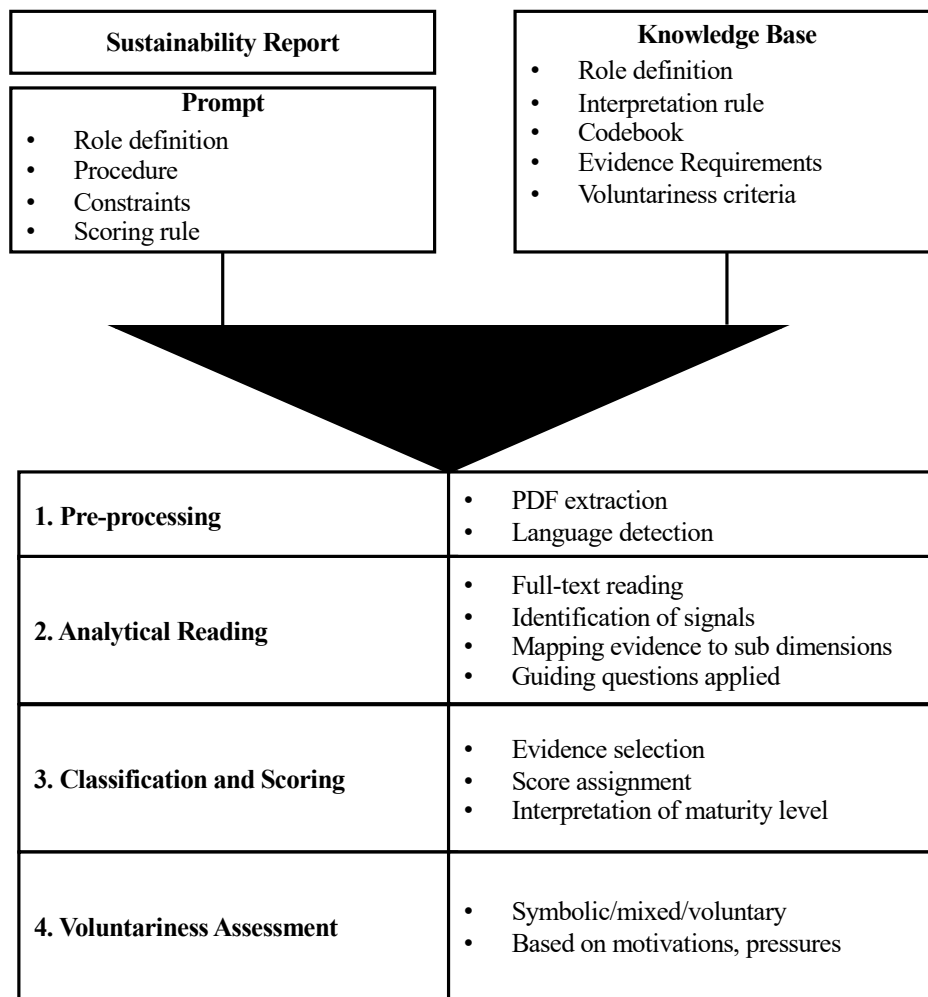
The model is also instructed not to overwrite existing rows and to progressively update the file, so that each new analysis enriches the overall dataset.

The operational flow defined in this way allows a complex and unstructured document to be transformed into a set of information, albeit concise, which is theoretically dense and aligned with the framework, so that it can be used for subsequent analysis.

At the same time, the presence of textual evidence supporting the scores assigned maintains a link with the original sources, preserving the possibility of checking, contextualising and investigating the assessments generated by the model.

Figure 4 summarises the operational pipeline of the ESG Readiness Evaluator. It visualises how sustainability reports, together with the model's instructions and knowledge base, are progressively filtered through sequential analytical phases, pre-processing, analytical reading, classification and scoring, voluntariness assessment, until they are transformed into a structured dataset of readiness indicators.

Figure 4. Pipeline of the ESG Readiness Evaluator. Source: author's elaboration



### *Development of readiness indexes and readiness band*

The construction of ESG readiness indices represents the final stage of the methodological process, in which the GPT's assessments are summarised into aggregate measures that describe each company's overall profile.

Starting from the Excel file, the transition from the scores assigned to the individual sub-dimensions to the summary indices is carried out according to a logic that preserves the conceptual structure of the framework, thus avoiding flattening theoretically distinct dimensions into a single number without any meaningful interpretation.

For each company, the scores from 0 to 3 assigned to the sub-dimensions are first used to calculate three intermediate indices corresponding to the main dimensions. For example, in the case of organisational capacity, the scores relating to internal resources and support tools are combined into a single indicator that reflects the extent to which the company has the people, roles, skills and systems in place to support its ESG initiatives. Similarly, the scores associated with environmental pressure are aggregated to represent the level of intensity of pressure from stakeholders and institutions, while those relating to organisational culture summarise the extent to which sustainability, values and mission are integrated into the company's narrative.

The three intermediate indices are expressed on a continuous scale from 0 to 3, as mentioned above, consistent with the original assessment rubric provided to the model's knowledge base, and can be interpreted as measures of relative maturity for each dimension.

Finally, the overall ESG readiness index is constructed by taking the average of the three intermediate values, according to a principle of equal importance attributed to capability, pressure and culture.

This choice reflects the theoretical idea, discussed in previous chapters, that readiness cannot be traced back to just one of the three dimensions, but is the result of the interaction between internal resources, contextual pressures and value orientation.

Once the overall index has been calculated, it is used to assign each company a readiness band, i.e. an interpretative class that allows for an intuitive distinction between low, intermediate and high levels of readiness. The thresholds separating the classes are defined based on the distribution of scores in the sample and considerations related to the assessment rubric.

Alongside the numerical index and bands, classification by levels of voluntariness offers a cross-cutting interpretation. In fact, the same company may have a medium or high level of readiness but, at the same time, show a profile of voluntariness that is predominantly symbolic or, conversely, genuinely autonomous. The combination of the readiness index and the

qualitative assessment of voluntariness make it possible to distinguish, for example, between companies that have developed structured practices but are strongly driven by external obligations or pressures, and companies that, despite operating in less restrictive contexts, have chosen to integrate sustainability into their identity and organisational strategy.

In this way, the overall output obtained not only provides a quantitative measure of readiness but also gives a representation of how the different dimensions of the framework combine within individual companies. It provides a concise but informed overview of the degree of preparedness of unlisted SMEs to face the challenges of effectively implementing sustainability practices, while maintaining the link with the original empirical material, thanks to textual evidence accompanying each assessment.

Table 6 presents the structure of the readiness indexes and the corresponding readiness bands. The three dimension-level indices derive from the average of their respective sub-dimensions, preserving the conceptual distinction of the framework. The overall ESG readiness index is calculated through an equal-weighted average of the three dimensions, while the readiness bands translate continuous values into an interpretable categorical scale. The voluntariness assessment complements these quantitative indicators with contextual qualitative insights.

Table 6. Structure of readiness indexes and readiness bands. Source: author's elaboration.

Index / Variable	Definition	Computation Method
<b>Organizational Capacity Index</b>	Measures the maturity of the organisation's internal ability to support ESG practices.	Average of: Change Commitment and Change Efficacy (0–3).
<b>Environmental Pressure Index</b>	Represents the intensity of institutional and sectoral pressures influencing sustainability behaviour.	Average of: Institutional Expectations and Field Conformity (0–3).
<b>Organizational Culture Index</b>	Captures how deeply sustainability is embedded in values, mission, and legitimacy-oriented communication.	Average of: Value Alignment and Legitimacy Communication (0–3).
<b>Overall ESG Readiness Index</b>	Synthetic measure of the company's overall readiness level across all three dimensions.	Average of the three dimension indexes (equal weighting). Range: 0–3.
<b>Readiness Bands</b>	Interpretive classification used to distinguish readiness levels.	0.0–0.9 = Low 1.0–1.9 = Medium-Low 2.0–2.4 = Medium 2.5 – 3.0 = High
<b>Voluntariness Assessment</b>	Qualitative classification reflecting whether disclosure is voluntary, mixed, or symbolic.	Based on narrative cues, motivations for reporting, regulatory context, and alignment with corporate identity.

### *Validity, reliability, limitations and ethical considerations*

The methodology adopted in this thesis aims to integrate a framework derived from scientific literature with a customised LLM for the analysis of sustainability reports, which requires careful consideration of the validity, reliability and inherent limitations of the approach.

The use of advanced technologies within a qualitative-quantitative research design introduces potential but also entails a series of challenges that must be addressed systematically to ensure the scientific soundness of the analysis.

Similarly, the use of an LLM applied to documents produced by real companies raises important ethical issues that deserve careful discussion.

This section aims to address these issues by showing how they have been integrated into the methodological approach to ensure a rigorous, transparent, and responsible approach.

The validity of the method is undoubtedly linked to the consistency between the theoretical framework and the process developed through the ESG Readiness Evaluator. The model has been designed so that each step of the assessment is anchored to the conceptual definition of the three dimensions and their sub-dimensions.

The assessment rubric, included in the GPT knowledge base, represents the theoretical anchoring mechanism as it contains operational definitions, scoring criteria and indicators directly derived from the development of the framework. In this way, the aim is to preserve the validity of the construct through a clear correspondence between theory and practice. Each score assigned by the model must be justified in the text of the report, and the requirement to accompany each judgement with verifiable textual evidence further strengthens the internal validity of the entire process.

A further element contributing to the validity of the approach concerns the structure of the dimensions created. The three components of the framework are conceptually distinct but complementary, and their coexistence avoids a partial or unbalanced measurement of readiness, which would risk being limited to the aspects most easily observable or most frequently communicated by companies.

The reliability of the system, on the other hand, concerns the stability and repeatability of the model's assessments. The design, which is closed and controlled and operates exclusively on the basis of the documents uploaded and the instructions entered in the knowledge base, ensures that the same company analysed several times always produces the same result. The model does not have access to the web and does not use external data or integrate information other than that contained in the report or directory.

This approach aims to significantly reduce the uncontrolled variability of assessments, overcoming one of the main limitations of manual coding, which is inherently subject to differences in interpretation even after calibration processes. Furthermore, the use of a pre-structured Excel file compiled directly by the model according to pre-set rules ensures standardisation of records, which further contributes to the reliability of the system.

The internal validation process, conducted by comparing manual coding on a subsample with automated coding, made it possible to verify the consistency and robustness of the model's assessments.

Discrepancies at this stage were not interpreted as a failure of the system, but represented opportunities for learning and improvement. They made it possible to identify critical points in the formulation of instructions, the clarity of the examples provided, or the way in which the definition of sub-dimensions was explained. Each iteration led to a refinement of the procedure, increasing the stability of the assessments and reducing the possibility of systematic errors. In this way, it was possible to achieve a model that balances autonomy and supervision, in which human intervention plays a verification and calibration role without compromising the automated nature of the process.

Alongside the validity and reliability of the system, it is necessary to recognise the limitations of the approach adopted for this study. The first certainly concerns the nature of sustainability reports, which are voluntary statements self-selected by companies. Considering that companies are not required to prepare sustainability reports and therefore do not report information in a standardised manner, the documents analysed may be prepared simply for communication rather than informational purposes. Although the GPT is able to detect the presence or absence of relevant signals, it cannot compensate for any lack of real information in the documents, nor can it infer undeclared behaviour. In this sense, the measured readiness reflects what the company decides to communicate and not necessarily the full spectrum of its practices. This limitation is particularly intrinsic to the logic behind reporting, regardless of the use of LLM; this is a common condition in the literature on non-financial disclosure.

A second limitation concerns the use of GPT itself as an analysis tool. Despite the model's rigorous instructions and controlled structure, it is possible to generate interpretations that are not perfectly aligned with the content of the report, especially in the presence of ambiguous or vaguely worded texts. Generative language models are, by their nature, probabilistic tools, which means that their understanding of language is broad but not infallible. The system adopted seeks to mitigate this risk by requiring direct textual evidence to be provided, thus allowing the user to transparently verify the accuracy of the assessments. However, supervision

cannot be eliminated entirely, as the model does not replace the human interpreter but amplifies their analytical capacity, always operating within a clearly defined theoretical and methodological framework.

A further limitation concerns the replicability of the model in the long term, as GPT systems are subject to external updates and modifications that could influence their behaviour. To ensure the replicability of the methodological process, this study also aims to comprehensively document the instructions, uploaded files, rubric and procedures adopted, so that others can recreate the same analytical environment with a high degree of fidelity, even in the presence of technological developments.

However, it cannot be entirely ruled out that future versions of the model will introduce slightly different behaviours, and this limitation is inherent in any research that uses dynamic computational tools. From an ethical point of view, the use of an LLM, and therefore of Artificial Intelligence, raises issues related to transparency, accountability and data protection. Transparency is guaranteed through the structure of the prompt, the obligation to justify each assessment with textual evidence and the presence of an Excel file that documents each decision of the model in a traceable manner.

Responsibility always remains with the user of the model, who must supervise the results, verify that the selected evidence is consistent, and recognise the limitations of the model. With regard to data protection, the methodology adopted does not use sensitive information, as the entire analysis is based on publicly available documents.

The GPT works in a closed environment that doesn't collect, share, or store any data that isn't uploaded directly by the user. There's no risk of privacy breaches, and no personal data is processed other than what companies already publish in their reports.

Finally, it should be emphasised that the use of the GPT is not intended to replace human evaluation or to provide a prescriptive judgement on the companies analysed. The model does not make recommendations, express ethical judgements or interpret readiness as a measure of the moral quality of companies. It performs an exclusively analytical function, aimed at making the interpretation of official documents comparable, allowing for a rigorous reconstruction of the level of preparedness of SMEs concerning sustainability challenges. Responsible use of the model requires that the researcher maintain a central role in interpreting the results, while remaining aware of the limitations and potential of automated analysis.

In conclusion, the methodology adopted in this thesis combines the advantages of advanced linguistic models with a robust theoretical framework and careful human oversight, constructing a rigorous, transparent and responsible approach to the study of ESG readiness in

unlisted SMEs. Although it has some limitations, mainly related to the nature of the documents analysed and the intrinsic characteristics of generative models, the system proves to be reliable and valid overall, capable of offering a comprehensive and theoretically sound assessment of the phenomenon. It represents an innovative and significant methodological contribution, opening up new perspectives for research on corporate sustainability and the use of artificial intelligence in qualitative content analysis.

## Results

This section systematically presents the results of the empirical analysis conducted on 120 sustainability reports of unlisted European SMEs operating in the chemical sector. The aim is to provide an in-depth analysis of readiness of the company with regard to the integration of sustainability within their organisational structure, through the application of the conceptual framework outlined in the thesis and operationalised by means of a Large Language Model (LLM) specifically trained to interpret the quality and consistency of the content reported in company documents. Since all the reports analysed belong to the same reporting year, the interpretation that emerges is not affected by diachronic or evolutionary effects and allows for the reconstruction of a cross-sectional picture of the different ways in which companies address the issue of sustainability in the current economic and regulatory context.

The model implemented assigned scores to the six subdimensions of the framework, relating to the areas of organisational change, institutional pressure and alignment subsequently generating a summary readiness index capable of expressing the overall level of readiness of companies regarding ESG issues. However, the analysis of the results is not limited to the return of quantitative values and also focuses on the ability of companies to articulate coherent narratives, the depth of the information reported and the presence of explicit connections between strategic objectives, internal processes and results achieved. The integration of numerical and qualitative dimensions allows us to grasp the complexity of the underlying organisational mechanisms, providing a picture that goes far beyond the simple measurement of the content declared in the reports.

This section is structured to guide the reader through a progressively more detailed analysis. It begins with a general description of the sample profile and the preliminary distribution of scores, before delving deeper into the dynamics emerging from a joint examination of the dimensions of the framework, observing how they intertwine in the construction of overall readiness. Subsequently, the aggregate readiness index and its distribution across different readiness bands are analysed, highlighting the recurring configurations and divergences that characterise more mature companies compared to those in the early or intermediate stages of the process. The section concludes with a qualitative analysis of the evidence extracted from the model, which allows us to understand how companies build and communicate their legitimacy, what narrative frameworks they adopt and to what extent these narratives reflect a real integration of sustainability into decision-making processes.

The overall objective of the chapter is therefore to offer a detailed, coherent and analytically sound representation of the level of readiness of European chemical SMEs, interpreting the results not as a sequence of independent values but as manifestations of a complex set of practices, pressures, organisational capacities and cultural orientations that define the overall stance of companies on the issue of sustainability.

## **Overview of the sample's profile and preliminary statistics**

The sample analysed consists of 120 unlisted European SMEs operating in the utilities, chemicals, oil & gas and mining sectors (Figure 5) selected on the basis of the availability of their sustainability reports for the same reporting year. This temporal homogeneity, combined with the presence of sectors characterised by high levels of regulation and complex value chains, allows us to observe sustainability dynamics in a synchronic framework, unaffected by regulatory changes or incremental developments in ESG processes over time. The companies vary significantly in terms of organisational size, operational complexity and organisational readiness but they share exposure to cross-cutting institutional pressures that contribute to defining a common minimum level of formalisation of environmental and social processes.

The distribution of scores assigned to the six sub-dimensions of the framework shows a general profile oriented towards medium-high levels of readiness (Table 7). The averages of the dimensions fluctuate within a narrow range between 2.75 and 2.81, with very small standard deviations (between 0.20 and 0.27), indicating a relatively limited dispersion and the presence of a large core of companies with scores close to the upper end of the expected range. In particular, Field Conformity ( $2.80 \pm 0.21$ ) and Value Alignment ( $2.81 \pm 0.24$ ) are among the highest dimensions, while Change Commitment ( $2.75 \pm 0.27$ ) and Institutional Expectations ( $2.76 \pm 0.27$ ) show slightly greater dispersion, suggesting that in some cases, stated commitments or responses to institutional pressures do not uniformly translate into fully consolidated policies or narratives. The synthetic readiness index, averaging 2.78 with a standard deviation of 0.23, confirms the presence of a high overall level of readiness, also reflected in the limited distance between the minimum (1.78) and maximum (3.00) values, with a median of 2.85 showing a distribution that tends towards the upper end of the score range.

The classification of companies into three readiness bands, Low, Medium and High, provides further interpretative elements (Figure 6). The High band includes the vast majority of companies in the sample (90 out of 120), highlighting an overall profile characterised by a wide dissemination of structured ESG management practices. Companies in this category share

scores consistently above 2.7 in all dimensions of the framework, suggesting a relatively advanced integration of ESG elements into organisational processes. The Medium band, which includes 24 companies, represents a heterogeneous group that combines elements and areas still under development: these companies exceed the minimum requirements and show a certain sensitivity to ESG issues, but their integration is not yet fully systemic or uniform. The Low band, which includes only six companies, represents cases where sustainability still appears marginal or not fully formalised, with scores below 2.3 and narratives characterised by a simpler descriptive level, less articulation of the practices adopted and a limited presence of indicators or references to international standards.

The distribution observed shows that the sample is strongly polarised towards the top, reflecting the presence of sectors characterised by historical regulatory pressures, established control systems and growing expectations of transparency from institutional and industrial stakeholders. However, the absence of a uniform distribution suggests that, even in an advanced context, there are significant differences in the depth and consistency of reporting processes. The concentration in the upper bands does not imply a homogeneous approach: many companies achieve high scores thanks to formalised practices, certifications and consolidated management schemes, while others integrate these practices into a more strategic and cultural logic, outlining qualitatively different readiness profiles that will be analysed in the following paragraphs.

Overall, the preliminary snapshot of the sample reveals a sector composed of companies that, despite having high average levels of readiness, follow different development trajectories, shaped by structural, institutional and organisational variables. This picture calls for further analysis of the internal dynamics of the framework to understand how the different dimensions contribute to defining the overall ESG readiness profile of the companies analysed.

Figure 5. Frequency of companies per sector. Source: author's elaboration.

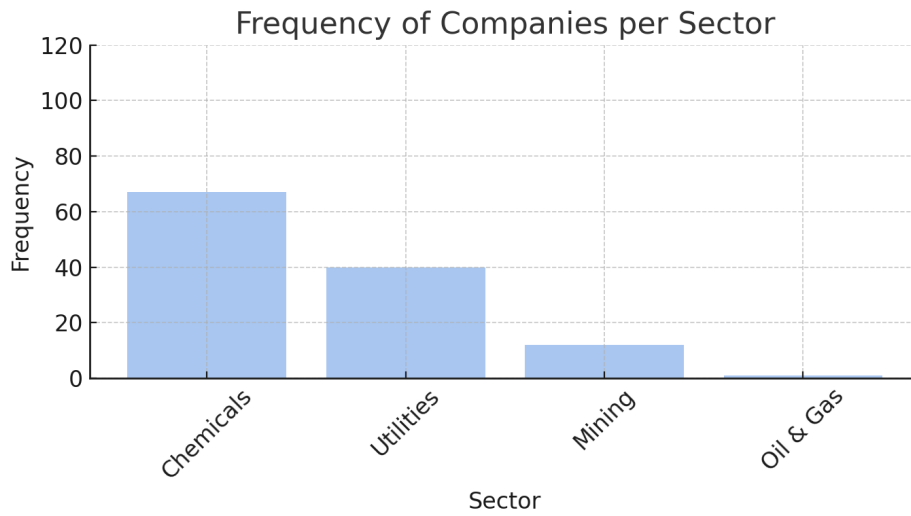


Table 7. Descriptive statistics. Source: author's elaboration

Subdimensions	Mean	Std	Min	Max
Change Commitment	2.75	0.27	1.80	3.00
Change Efficacy	2.79	0.24	1.50	3.00
Institutional Expectations	2.76	0.27	1.70	3.00
Field Conformity	2.80	0.21	1.90	3.00
Value Alignment	2.81	0.24	1.80	3.00
Legitimacy Communication	2.76	0.23	1.80	3.10
<b>Overall Readiness</b>	<b>2.78</b>	<b>0.23</b>	<b>1.78</b>	<b>3.00</b>

Figure 6. Frequency of readiness categories. Source: author's elaboration.

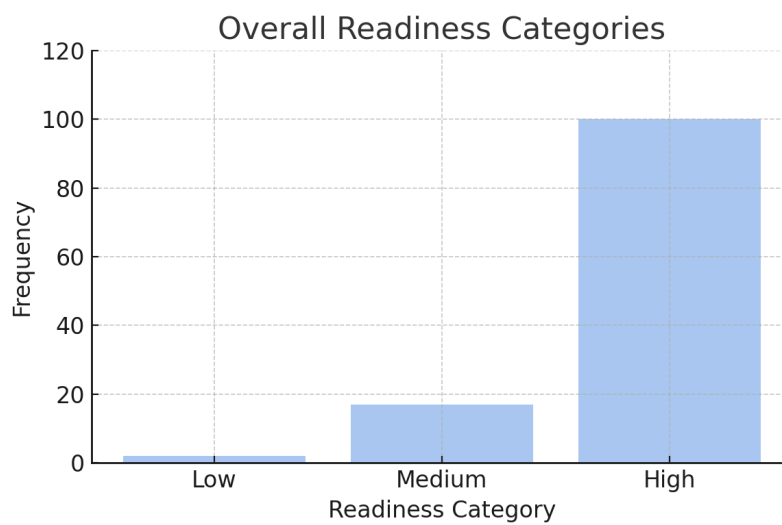
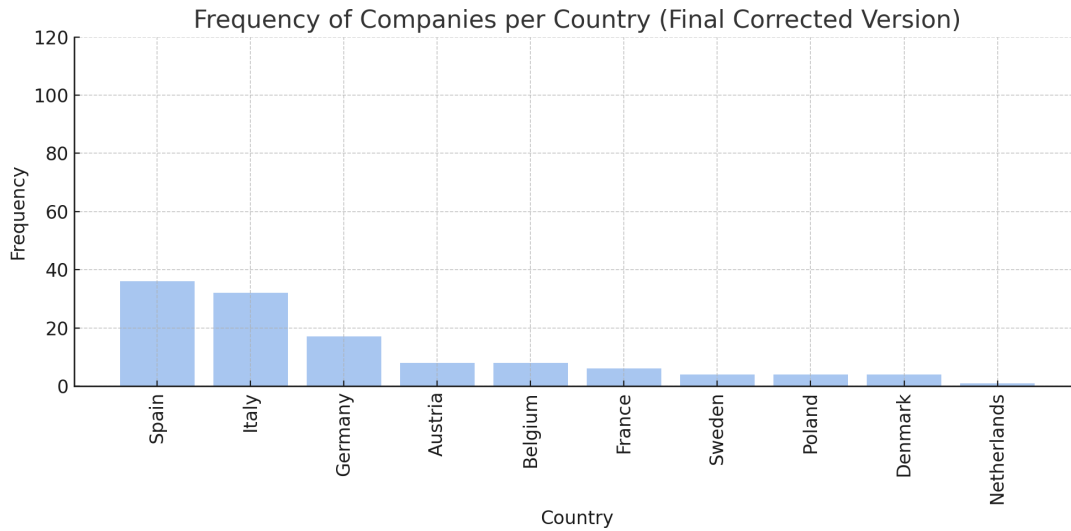


Figure 7. Frequency of companies per country. Source: author's elaboration.



## Integrated analysis of the framework subdimensions

The joint analysis of the six subdimensions that make up the readiness framework allows us to go beyond a simple description of the sample and explore how the different components combine to define the readiness profile of companies with regard to sustainability. The average values of the dimensions are all close to the upper limit of the assessment scale, but this apparent homogeneity hides complex internal configurations, in which declarative commitments, responses to institutional pressures and cultural processes do not advance at the same speed or according to linear logic. Readiness thus emerges as the result of a delicate balance between interdependent dimensions, rather than as a simple sum of high scores.

The two dimensions related to organisational change, Change Commitment and Change Efficacy, represent a first axis for interpreting these dynamics. Overall, companies express higher levels of commitment, widely signalling their intention to orient strategies, processes and investments towards sustainability. This commitment is often expressed through the definition of objectives, the adoption of dedicated policies, and references to energy transition or the reduction of environmental and social impacts along the value chain. However, the variability observed within this dimension suggests that not all companies are able to translate their stated commitment into an effective capacity to design and govern change.

Change Efficacy shows that, while a significant number of companies are able to describe dedicated structures, responsibilities, processes and tools, a not insignificant part of the sample refers to more specific initiatives, which are often poorly integrated and less supported by

monitoring and organisational learning mechanisms. The gap between commitment and efficacy is therefore a first element of differentiation between companies that have embarked on a structured transformation process and companies that are still at a stage where sustainability is mainly the subject of declarations of principle.

A second interpretative axis is provided by the dimensions that capture the relationship with the institutional environment, Institutional Expectations and Field Conformity. In this case, high average scores and limited dispersion indicate a more marked convergence in organisational behaviour. Companies in the sectors considered operate in highly regulated contexts, in which compliance with environmental, safety and information transparency requirements is not an option but a necessary condition for participating in supply chains and maintaining access to markets. The widespread presence of certifications, formalised management systems and references to recognised standards is a common distinctive feature that contributes to raising the minimum level of readiness in institutional dimensions. This does not mean that all companies interpret these requirements in the same way. In some cases, compliance translates into the construction of integrated management systems capable of interacting with corporate strategy. In others, it is limited to timely compliance, functional to meeting regulatory or contractual requirements. In any case, these dimensions show how institutional pressure plays an upward levelling role, reducing the space for completely immature behaviour, but without, in itself, guaranteeing the full integration of sustainability into decision-making processes.

The dimensions related to legitimacy, Value Alignment and Legitimacy Communication, introduce further elements of differentiation. On the one hand, value alignment appears to be supported by relatively well-established rhetoric, as many companies claim to be inspired by principles of responsibility, safety, respect for the environment, attention to local communities and the centrality of people. On the other hand, a qualitative reading of the reports suggests that the depth with which these values are integrated into operational choices and priority setting varies considerably.

Some companies clearly describe how their stated values guide their risk management, project selection, stakeholder relations and investment in innovation. Others limit themselves to general statements, without making explicit the link between the proclaimed values and actual decisions. The sub-dimension relating to the communication of legitimacy reinforces this interpretation: where sustainability is treated as an integral part of the corporate narrative, reporting is structured along coherent lines of argument, in which objectives, actions and results are intertwined. Conversely, in less mature companies, communication tends to be more

fragmented, with sections dedicated to sustainability appearing juxtaposed with the rest of the report and poorly connected to the overall strategy.

The interaction between these three areas makes it possible to distinguish not only the absolute level of readiness, but also the forms it takes in different cases. In companies that are in the highest readiness bracket, the six dimensions tend to be relatively balanced: the commitment to change is accompanied by structures and tools that support its implementation; institutional compliance is not limited to formal compliance, but is integrated into management systems that interact with the strategy; declared values are reflected in consistent narratives supported by evidence. In these cases, sustainability appears to be an element incorporated into the organisation's operating logic, not simply an external component superimposed after the fact.

Companies in the middle range, on the other hand, present less harmonious configurations. In some cases, high scores are observed in the institutional and operational dimensions, but relatively lower levels in the cultural dimensions, suggesting the presence of robust management systems that are not yet accompanied by a transformation in the way the company interprets its role and responsibilities. In other cases, on the contrary, very ambitious narratives emerge in terms of values and declarations, but these are not fully supported by structures and tools capable of translating these intentions into established practices. This asymmetry between different dimensions explains why companies with similar overall average scores may find themselves at very different stages of readiness. It is not the score alone that defines readiness, but the way in which the different components reinforce or weaken each other.

Finally, the lowest readiness band, although numerically limited, offers important indications of the limitations still present in part of the sample. In these companies, the dimensions of change and organisational culture appear less developed, with concise descriptions of the initiatives adopted, fewer formalised objectives and less structured communication. Even in this group, however, the institutional dimensions rarely fall to the minimum values, confirming the fact that the sectors considered are highly exposed to regulatory and market pressures that require compliance with minimum standards that cannot be circumvented. Low readiness therefore does not coincide with the absence of sustainability practices, but with their marginal position in relation to the dominant logic of the organisation.

Overall, the analyses show that sustainability readiness cannot be interpreted as a linear and one-dimensional attribute, but rather as the result of specific combinations of commitments, tools, external constraints and cultural orientations. The most mature companies stand out not only for their higher scores, but also for the internal consistency of their profiles, while intermediate and less mature companies are characterised by imbalances between dimensions

that reveal incomplete evolutionary paths. These considerations set the stage for the analysis of the synthetic readiness index, which allows for an aggregate reading of these configurations and a comparison of the overall levels of readiness among the companies in the sample, while keeping in mind the complexity of the underlying organisational dynamics.

## **Overall readiness and interpretation of readiness bands**

The analysis of the synthetic readiness index is the final step toward an integrated understanding of companies' ESG readiness. After observing the behaviour of the individual dimensions and the resulting configurations, overall readiness allows us to grasp the general posture of organisations, summarising in a single value their ability to align commitments, institutional practices and cultural orientations. The average index score of 2.78 shows a clear trend towards the high end of the scale, with a low standard deviation suggesting relative homogeneity of behaviour within the sample. However, as already emerged from the analysis of the dimensions, this apparent uniformity hides substantial differences in the way companies structure their approach to sustainability. For this reason, the classification into three readiness bands, Low, Medium and High, provides a more refined interpretation, capable of reflecting the complexity of the evolutionary trajectories.

The distribution across the three bands is heavily skewed towards the highest level: the High group comprises 90 companies, equal to three quarters of the sample, while the Medium band includes 24 companies and the Low band only 6.

This polarisation suggests that, in the sectors considered, sustainability is no longer a peripheral or experimental area, but an element that is now integrated into the organisational and management structure of companies.

Adherence to standards, certifications and regulatory requirements, together with growing stakeholder attention and pressure from the value chain, has led to an increase in the minimum level of preparedness, reducing the scope for completely immature behaviour. However, the fact that most companies belong to the high band does not imply that they all have the same depth or consistency in their practices. High readiness can in fact result from different paths, which only a qualitative and comparative analysis of the dimensions can distinguish.

Companies in the High band generally score high on all dimensions of the framework, but what sets them apart is not so much the height of their score as the internal consistency of their profiles.

In these cases, there is a relatively stable correspondence between stated commitment, operational capacity, institutional compliance and cultural integration. Sustainability appears to be an integral part of decision-making processes, supported by formalised roles and responsibilities, monitoring systems and narratives that explicitly link values and actions. In other words, high readiness is not a purely quantitative expression, but a system of practices and meanings that give sustainability a strategic dimension. The behaviour of companies in this band suggests that readiness is not the result of a single enabling factor, but of the alignment between different levels of the organisation: structures, culture, leadership and strategic orientation.

The Medium band, on the other hand, presents more heterogeneous configurations, in which relatively high levels in some dimensions coexist with lower values in others. Many companies in this group show strong adherence to institutional standards and have formalised management systems, but these are not always accompanied by an equally solid commitment or narratives capable of explaining the strategic significance of the initiatives adopted. In other cases, the opposite phenomenon can be observed: ambitious statements and references to corporate values are not supported by equally robust operational evidence, giving rise to an “unbalanced” profile, in which overall readiness is mitigated by a lack of integration between the dimensions. These companies often represent organisations in transition, which have begun to structure ESG initiatives but have not yet reached a level of readiness that would give stability to the processes and integrate sustainability into their daily operations. The differences observed within this group indicate that average readiness does not correspond to a single organisational model, but to a plurality of intermediate paths that can evolve in different directions.

Although companies in the Low band are in the minority, they play an important analytical role, as they provide insight into which elements are most difficult to develop in the early stages of the readiness path. In these cases, lower scores are observed, especially in the areas of change and organisational culture. The absence of detailed process descriptions, the lack of measurable objectives, the limited use of integrated narratives and a still purely descriptive approach to sustainability indicate that these companies treat ESG reporting as a requirement to be met rather than a process to be internalised. Although operating in regulated sectors, these companies tend to have a minimum level of compliance in the institutional dimensions, but without an effective ability to translate these requirements into coherent systems. This confirms that low readiness does not coincide with an absence of initiatives, but with their limited consistency and the marginality of sustainability within the organisational identity.

The presence of three such distinct groups reflect not only different levels of readiness, but also different evolutionary dynamics. High-end companies seem to have developed a systemic approach to sustainability, in which the combination of commitment, institutionalisation and legitimisation produces a relatively stable organisational structure geared towards continuous improvement. Mid-tier companies, on the other hand, are in a transition zone, characterised by unstable balances between dimensions that can either reinforce each other or, conversely, hinder each other. Finally, low-tier companies represent contexts in which the evolutionary path is still in its early stages and in which enabling factors have yet to find a structured form.

Overall readiness therefore allows us to interpret organisational trajectories not as simple progressions towards an ideal model, but as paths conditioned by structural, cognitive and institutional elements. The differences between the bands do not only concern the quantity of practices adopted, but also the quality of the relationships between the dimensions of the framework, the degree of internal alignment and the organisation's ability to transform sustainability from an external constraint into a component of its strategic identity. In this sense, the synthetic readiness index is not an end point, but a tool through which to read the complexity of the maturation processes and interpret the potential and limitations that characterise the different groups of companies.

## **Conclusion, Limitations and Future Research Development**

The aim of this thesis is to introduce an innovative and theoretically grounded approach to the analysis of ESG readiness among unlisted European SMEs operating in environmentally sensitive sectors. By combining the relevance of the legitimacy theory with a methodology grounded in the use of a custom-trained Large Language Model, the study advances the understanding of how sustainability readiness can be empirically observed and interpreted beyond a purely descriptive assessment of non-financial disclosure. In doing so, the thesis responds to the growing need to better understand how SMEs, which represent the backbone of the European productive system, are preparing to face sustainability-related regulatory, institutional, and societal transformations.

The central premise of this work is that ESG readiness should not be conceived as a one-dimensional attribute nor as a simple reflection of reporting practices. Rather, readiness emerges as a complex organisational condition resulting from the interaction between internal capabilities, external institutional pressures, and cultural orientations shaped by the pursuit of social legitimacy. Interpreted in this way, ESG readiness functions as an analytical lens through which the depth, coherence, and maturity of sustainability-related organisational processes can be assessed, allowing the study to move beyond a purely formal or compliance-based view of non-financial disclosure. This perspective contributes to the literature by framing readiness as a processual and relational construct, situated at the intersection of organisational structure, regulatory context, and societal expectations.

The empirical results show that, on average, SMEs in the sample exhibit relatively high levels of ESG readiness. This finding reflects the fact that firms operating in environmentally sensitive sectors are subject to particularly intense regulatory scrutiny and stakeholder pressure and have therefore developed, over time, a set of practices, tools, and routines that provide at least a minimum organisational basis for sustainability-related activities. Areas linked to regulatory compliance, risk management, and external accountability appear to be more structured, suggesting that environmental sensitivity plays a relevant role in shaping organisational responses to sustainability challenges.

However, a more granular analysis of the six subdimensions underlying the proposed framework reveals that similar levels of aggregate readiness may arise from markedly different internal configurations. While some SMEs display a relatively balanced alignment between strategic commitment, operational capacity, and organisational culture, others exhibit more uneven profiles, in which specific dimensions, particularly those related to cultural integration

or internal coordination, lag behind more formal or operational aspects. This evidence reinforces the idea that ESG readiness should be understood as a configurational and dynamic construct, rather than as a static condition. Readiness evolves over time through iterative cycles of learning, formalisation, and adaptation to external pressures, and similar outcomes in terms of disclosure may conceal substantial heterogeneity in underlying organisational trajectories.

From a managerial perspective, these findings suggest that ESG readiness can be interpreted as a practical diagnostic tool supporting SMEs in navigating sustainability transitions, rather than as an ex-post evaluation of disclosure quality. The multidimensional structure of the framework allows managers to identify specific organisational areas where targeted interventions are required, avoiding a uniform or purely compliance-driven approach to sustainability reporting. Depending on the configuration of readiness, firms may need to prioritise investments in internal skills, data collection and management systems, governance structures, or cultural alignment, thereby supporting more coherent and sustainable decision-making processes.

For SMEs characterised by strong regulatory exposure but weaker internal capacities, readiness assessment may guide investments towards the development of information systems and competencies necessary to support reliable sustainability-related data and decision-making. Conversely, firms displaying advanced operational capabilities but limited cultural embedding of sustainability values may benefit from initiatives aimed at strengthening internal alignment, such as the formalisation of sustainability responsibilities, internal training programmes, and the integration of ESG objectives into strategic planning processes. In this sense, ESG readiness emerges as a managerial construct that supports incremental organisational learning and adaptation, rather than as a fixed benchmark of compliance.

The results also carry relevant implications for policymakers and support institutions involved in implementing the VSME standard and the broader CSRD framework. The evidence that high levels of readiness may derive from heterogeneous organisational configurations suggests that one-size-fits-all regulatory or support measures may be insufficient to foster substantive sustainability practices among SMEs. Readiness-based assessments could instead inform the design of differentiated capacity-building tools and policy interventions, calibrated to firms' structural conditions, sectoral exposure, and organisational maturity. Such an approach may enhance the effectiveness of public policies by aligning regulatory expectations with SMEs' actual capabilities and developmental trajectories, while reducing the risk of fostering merely formal or symbolic compliance.

A further contribution of this thesis lies in showing that sustainability reporting among SMEs cannot be interpreted solely as a communication exercise. In many of the analysed cases,

disclosure practices appear increasingly intertwined with internal objectives, information systems, operational processes, and organisational narratives, suggesting varying degrees of substantive integration rather than uniform reporting behaviour. The willingness to disclose sustainability information therefore emerges as an interpretative signal of organisational readiness, particularly when disclosure is accompanied by coherent operational and cultural elements. This distinction reinforces the idea that consistent non-financial reporting, while necessary, is not sufficient to capture the effective embedding of sustainability into everyday organisational practices.

From a methodological standpoint, the study contributes to the literature by proposing a replicable analytical framework and by demonstrating the potential of a custom-trained Large Language Model as an interpretative support for the qualitative analysis of complex textual documents such as sustainability reports. The use of AI in this context is not intended as a substitute for theoretical reasoning, but rather as a tool capable of translating complex conceptual constructs into systematic empirical measures, opening new avenues for research on non-financial disclosure and organisational readiness.

Despite its theoretical and methodological contributions, this study is subject to limitations that should be acknowledged. First, the analysis is based on sustainability reports, which are voluntary documents characterised by heterogeneity in content, structure, and communicative intent. As a result, the measured levels of readiness reflect what firms choose to disclose publicly and may not fully capture the entirety of their internal practices. This limitation is inherent to studies of non-financial disclosure and calls for caution in interpreting results, particularly for dimensions related to organisational culture and internal values, which may be either emphasised or understated depending on firms' communication strategies.

Second, the use of a Large Language Model as an analytical tool introduces methodological constraints. Although the model was implemented within a controlled research design and anchored to a clearly defined theoretical framework, LLM-based analyses remain sensitive to ambiguity, narrative complexity, and textual inconsistency. The requirement to extract explicit textual evidence mitigates, but does not eliminate, the risk of interpretative bias. Moreover, the rapid evolution of language models may affect the replicability of results over time, highlighting the importance of transparency in model configuration and analytical procedures.

Third, the focus on environmentally sensitive sectors limits the generalisability of the findings to the broader population of European SMEs. Firms operating in less regulated or less scrutinised sectors may display different readiness profiles, particularly with respect to organisational capacity and cultural integration. Future research could extend the analysis to

other sectors, adopt longitudinal designs to capture the evolution of readiness over time, integrate external data sources beyond corporate reports, or compare alternative AI-based analytical approaches. These avenues would allow for a more comprehensive validation of the proposed framework and contribute to a deeper understanding of ESG readiness as an evolving organisational phenomenon.

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