

CHAPTER 9

Enhancing Resilience of Financial Institutions to ESG (Environmental, Social, and Governance) Risks

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ABSTRACT

The world is growing at a very fast pace and in today's financial scenario, ESG (Environmental, Social, and Governance) risks have transitioned from being just reputational concerns to becoming a major factor with severe financial consequences. Banks and financial institutions are facing increasing pressure from investors, customers and regulators to showcase their dedication and commitment towards sustainability and responsible business practices. Regulatory bodies worldwide are tightening their scrutiny of ESG risks, introducing new rules and reporting requirements targeted at ensuring greater transparency and accountability in the financial sector. This study examines how ESG risks influence traditional financial risks such as credit, market and operational risks and proves the interconnectedness between internal and external ESG factors. It examines the integrated nature of internal and external ESG risks and their impact on financial performance to enhance the resilience of financial institutions. By assessing current risk management practices, this study proposes a comprehensive framework for integrating ESG considerations into risk management strategies. With this approach, one can aim to foster long-term stability and promote sustainable growth within the financial industry.

Keywords: ESG Risks, Financial Institutions, Risk management, Financial Risk Assessment, Sustainability.

1.0 Introduction

The global financial environment has been recently going through a major shift in dynamics. This is due to the focus moving from purely financial metrics to a more integrated study of the institution's behaviour. At the very centre of the shift is Environmental, Social, and Governance (ESG) integration. Originally, ESG was looked upon as a framework for ethical investing, however in recent times it has evolved into a more primary assessment technique for sustainability and risk associated with financial institutions.

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1.1 Understanding ESG and ESG risks

Environmental, Social, and Governance (ESG) are a set of non-financial performance measures that include Environmental issues such as carbon footprints, climate change resilience, Social issues such as labour practices, privacy, community and Governance issues such as board diversity, executive compensation, anti-corruption policies. ESG Risks are the possible negative financial impacts to the organization that could be provoked by these issues. For example, Environmental risks appear as “physical risks,” which mean threats that can occur by natural events such as hurricanes, floods, etc. due to global warming. In social & governance risks, these appear in the form of Lawsuits, Fines and Disastrous reputation.

1.2 Materiality to financial institutions

Financial institutions including banks, investment firms, as well as insurance companies, the risks associated with E, S, and G have become financially material rather than what can be viewed as “externalities” (indirect costs or benefits). In the case of banks, ESG indicators directly affect credit risk and the quality of assets. (Atif & Searat, 2021) For insurance agencies, environmental factors determine the validity of underwriting as well as the occurrence of claims. (Chiaramonte, Dreassi, Paltrinieri, & Piserà, 2020) For investment firms, the ESG indicators play a significant role in the relevant fiduciary requirement, as lower ESG performance can result in “stranded assets,” as well as lower portfolio returns. (Gibson, Glossner, Krueger, Matos, & Steffen, 2022) Although the financial materiality is clear, the irony is that there is a lack in the literature about the examination of these risks on the three financial intermediaries mentioned (banks, investment firms and insurance agencies), specifically in relation to the risk of default, which is the likelihood of a financial institution failing to repay its debts.

1.3 The need for an integrated approach

The current model of Risk Management tends to view “ESG Risk” as a mere compliance requirement, rather than as an important factor while assessing solvency issues. There is a clear requirement for a study to be conducted to fulfil this need for creating an ESG-Risk Framework. The framework will enable institutions to:

- Measure how fluctuations in ESG factors affect traditional risk types such as market, credit, and operational risk.
- Strengthen resilience by identifying early warning signs of financial stress caused by sustainability failures.
- Standardize reporting to reduce ESG-related greenwashing, which often hides the true risk profile of many firms.

By developing a strong framework, financial institutions are prepared to manage sustainability-related risks and ensure their extra savings funds and risk appetites reflect the realities of the 21st-century economy. The goal of this study is to fill the current gap that exists within the literature by studying how ESG integration affects institutional default risk and long-term financial stability of an institution.

2.0 Literature Review

ESG factors are changing how banks evaluate a company's financial strength and overall stability. Instead of focusing only on traditional financial metrics, banks now also consider environmental, social, and governance issues to better understand long-term risks and opportunities. Traditional credit risk models rely on past financial data and are now considered as weak in capturing non-financial and qualitative risks which threaten long term solvency. Theoretical frameworks like stakeholder theory suggest that ethical management and attending to the interests of all stakeholders fosters long-term success and risk mitigation. In contrast, agency theory offers an "overinvestment" perspective, indicating that ESG activities have the potential to inflate an agency cost when managers prefer their reputation more than the profit of shareholders, thereby increasing the firm's leverage and resulting in an increase in default risk. (Korzeb, Karkowska, Matysek-Jędrych, & Niedziółka, 2025)

2.1 ESG and the stability of the financial system

Traditional bankruptcy models (such as the famous Altman Z-score model of 1968) focused more on financial ratios, but newer approaches suggest addition of ESG factors are vital for predicting the stability of institutions. (Ongena, Andries, Sprincean, & Aevoae, 2022) highlight that the performance of ESG factors is inversely related to the systematic risk, providing stability during volatile market conditions. The same goes for insurance industry as it also needs stability. (Chiaramonte, Dreassi, Paltrinieri, & Piserà, 2020) learned that sustainability has proven to play a vital role in improving the stability of the insurer during turbulent markets. In the asset management industry, the role of sustainability has been underlined by (Hartzmack & Sussman, 2018), which points out that sustainability funds can actually perform as a "loyalty" asset, since the withdrawal rates of investors tend to be lower than those of normal funds during turbulent markets.

2.2 ESG impact to credit, default, and underwriting risk

The crux of the recent literature is concerned with how ESG profiles affect a company's risk profile. In banking industry, (Atif & Searat, 2021) and (Bukreeva & Grishunin, 2024) prove that high levels of ESG disclosure are associated with lower default

risk as they improve transparency and risk management. In the insurance industry, this relationship works in a different manner, with the core being underwriting risk rather than credit risk. According to (Brogi, Cappiello, Lagasio, & Santoboni, 2022) non-life insurers that incorporate ESG factors into their underwriting activities are better prepared to assess risk accurately and price their long-term liabilities more effectively, leading to improved financial stability over time. In particular, (Palmieri, Ferilli, Stefanelli, Altunbas, & Geretto, 2024) found that certain ESG pillars, specifically “Social” and “Governance,” are increasingly essential to liability risk measurement for corporate policyholders with policy performance, indicating that those with low ESG performance ratings are at an elevated risk of legal and operational disputes.

2.3 Impact of climate change on portfolio allocation

Environmental factors are changing how much risk financial intermediaries are willing to take. Within the industry of asset management, (Gibson, Glossner, Krueger, Matos, & Steffen, 2022) and (Egli, et al., 2022) conclude that there is an increased focus on the “E” quality of companies within institutional investment holdings. This focus is to avoid “stranded assets” due to carbon pricing regulations.

For insurers, “double materiality” has become a challenge related to climate risk. According to Martí et al. (2024): “Climate-related physical risks pose a threat to the frequency of claims on the liability side, whereas transition risks pose a threat to the value of the investment portfolio of the insurer.” This requires an entirely new revamping of existing traditional models, as observed by (Kalfaoglou, 2021) who states that climate-related risks are now the main driver of long-term solvency for both lenders as well as underwriters.

2.4 Governance, reputational risk, and “ESG washing”

The Governance pillar, however still remains the anchor for managing internal risks of an institution. According to (Venturelli, Pedrazzoli, Pennetta, & De Novellis, 2025) and (Mandas, Lahmar, Piras, & Lisa, 2023), exaggerating claims related to sustainability is creating “reputational contagion,” particularly within investment firms and banks, where a lack of transparency can lead to market-wide valuation corrections, and greater regulatory scrutiny.

2.5 Performance and emerging market conditions

The financial effects of ESG are not the same everywhere. According to (Azmi, M., Houston, & Karim, 2020) show that in emerging markets, the impact of ESG on banking performance depends on the quality of a country’s institutions. In investment decisions, (Khan, Serafeim, & Yoon, 2016) state the importance of materiality, finding that firms

generate excess returns only when they focus on ESG issues that are financially relevant to a specific industry of the target company. Finally, (Korzeb, Niedziółka, Szpilko, & Pietro, 2024) and (Meiratri & Kunaifi, 2025) find that challenges in ESG integration are now key drivers of long-term default risk and financial stability across global markets.

2.6 Regulatory turning point and AI-driven ESG integration (2025–2026)

As the financial industry moves into 2026, research shows a clear shift: ESG is no longer seen as a secondary risk, but as a core financial risk on the same level with liquidity and credit risk. This shift is driven by the (European Banking Authority's ESG Guidelines, 2025) which require banks to fully integrate ESG factors into credit risk management by January 2026. (ESG risks in 2025: Responding to regulatory and supervisory pressure, 2025) describes 2025 as a turning point for European banks, as regulators moved beyond reviewing ESG policies to closely examining actual climate and environmental risk exposures in lending decisions. Similar trends are emerging in developing markets. (Hamdouni, 2025) find that AI-based FinTech tools are increasingly critical for addressing ESG data gaps, helping banks reduce excessive risk-taking and maintain stable performance during periods of rapid, innovation-driven growth.

2.7 Biodiversity and human rights as emerging ESG factors

The meaning of “materiality” has expanded in recent years. (Material E, S and G factors in 2026, 2025) identifies nature and biodiversity as the next major source of financial risk, highlighting that nature-dependent sectors such as agriculture and construction account for around 10% of global GDP and are increasingly exposed to “nature-related tipping points”. Further, (Wang, Yuxin, Dong, & Zhu, 2025) and show that the social pillar of ESG, once seen as the most difficult to measure is now closely linked to credit growth through greater transparency in human rights and labour practices. (Nguyen, Uyen, & Thuy, 2025) further find that while environmental disclosure strongly affects credit risk through non-performing loans, social transparency plays a key role in supporting long-term financial resilience, especially in the post-pandemic economic environment.

2.8 Conclusion: ESG beyond reputation

The reviewed literature clearly shows that ESG has moved beyond reputation management. (Pangaribuan & Idrianita, 2024) argue that active ESG integration is now essential for the long-term survival of banks. (Mabe & Simo-Kengne, 2025) further note that, across global banking systems, the ability to withstand FinTech-related financial stress while preserving ESG standards will shape competition in the late 2020s. As a result, the framework

proposed in this study is timely, highlighting the need for financial institutions to move from passive ESG adoption toward genuine systemic resilience.

3.0 Research Methodology

The study uses qualitative research designed on an econometric survey analysis. This approach involves collecting company metrics from financial professionals at a single point in time excluding any manipulation. By using this design, the survey can gather a wide range of information about how financial professionals understand, react to, and incorporate ESG risks into their decision-making processes. As a result, the research design helps provide a holistic understanding of an institutions response to ESG risk integration within the financial sector. The study follows a research philosophy that confirms the existence of an objective reality but accepts the presence of biases in the understanding of that reality, as the study depends on empirical data that is quantifiable. With this philosophy in mind, the study determines the relationship of ESG variables with traditional risk models through data analysis. This helps create objective findings and conclusions.

Primary data were collected in the present study through the use of a structured online questionnaire catered to a group of professionals working in financial institutions, including commercial banks, investment firms, and insurance companies.

The research population was targeted at professionals whose work describes and involves Risk Management, ESG/Sustainability, and Credit Analysis, among other related functions; hence, it is most related to tasks associated with ESG risk integration within financial institutions.

The methodologies used in the paper were both purposive sampling and snowball sampling techniques. This was because purposive sampling was used in identifying the targeted respondents with professional skills in the area of ESG and financial risk management. Even if the proposed target sample size was set somewhat higher, the analysis is grounded on 81 valuable and complete responses (N=81). While this is a small number, it is deemed a sufficient number for the undertaking, both for exploration analysis, in as much as a higher degree of seniority is considered on the part of the respondents.

This questionnaire is designed to capture both quantitative and qualitative insights into ESG risk perception, materiality, governance integration, and financial decision-making within financial institutions. The survey comprises 20 structured questions, employing a mix of binary (Yes/No), multiple-choice, ranking, and Likert-scale response formats, along with selected open-ended questions for qualitative elaboration.

The data collected was then analysed using descriptive statistical analysis to determine dominant trends among various institutions based on percentages as well as mean

ranking. The opinions gathered in the open-ended questions were analysed to determine themes in the current and future concerns among the participants in the processing of ESG risks. As a result of being an exploratory analysis and having a small sample size for analysis, this analysis seeks patterns or insights at an institutional level instead of statistical inference.

4.0 Findings/Results

The results of the primary survey were analysed to determine the extent of awareness among financial institutions regarding the risk factors associated with ESG. A total of 81 valid responses were obtained, which gave an insightful understanding of the awareness among financial institutions about the risk factors associated with ESG. The analysis focused on identifying to what extent are ESG risk factors understood, integrated into decision-making processes, and considered material to financial performance and long-term sustainability.

4.1 Participant background and understanding ESG risks

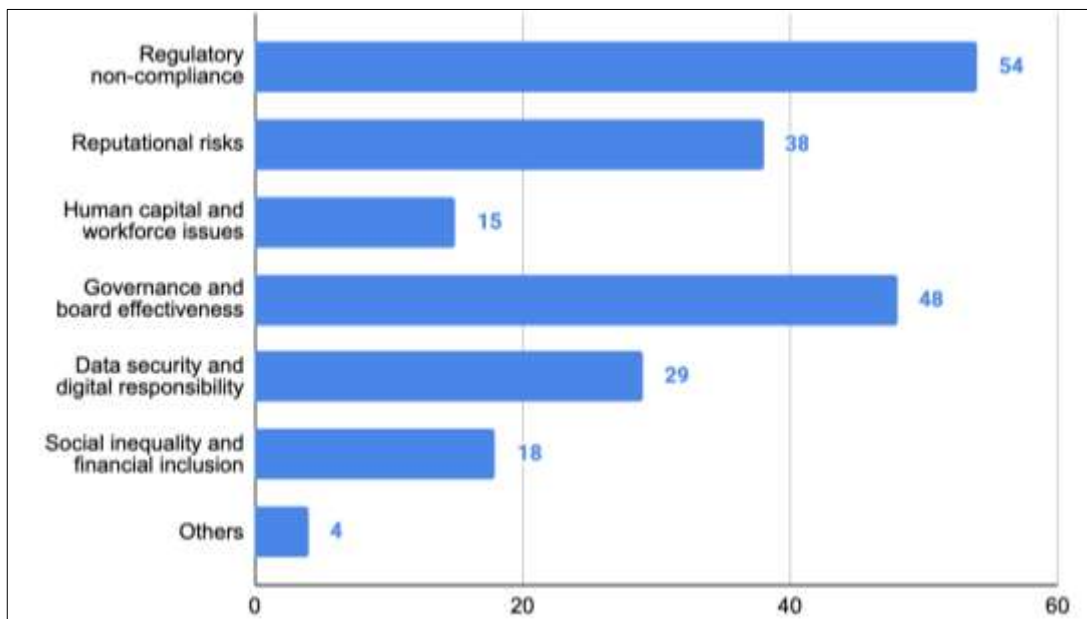
The respondent group was mostly a set of professionals in the banking and investment sectors, which is directly relevant to their risk management processes. The results of this analysis show a relatively high awareness of ESG risk, as 90.1% of respondents considered ESG issues a potential risk for their institutions. We can say that there is a recognition of ESG issues as core risk variables and ESG issues no longer pose as a concern of a reputational or voluntary nature. In addition, 86.4% of respondents expect that ESG risks will become an integrated part of financial risk management in five years, which is on the same level with credit, market, or liquidity risks. Such progressive perspective can be reflected by an evolution in risk paradigms that confirms the argument proposed in the literature that states that ESG risks are transitioning from secondary towards systematic financial risks.

4.2 Understanding the relationship between ESG materiality and risk

Respondents were asked to identify the most material ESG risks currently affecting their institutions. The results highlight a strong convergence around governance and regulatory concerns:

- Regulatory non-compliance emerged as the most significant risk, identified by 66.7% of respondents.
- Governance and board effectiveness followed closely at 59.3%.
- Climate risk, encompassing both transition and physical dimensions, was cited by 53.1% of respondents.

Figure 1: ESG Risks Considered Most Material by Respondents



Source: Created by authors

These results highlight the dominant role of what can be described as a “regulatory watershed,” in which tightening legal requirements, regulatory scrutiny, and disclosure obligations act as key drivers of ESG integration. Climate risk stands out as a major concern, but it is rarely viewed as a standalone environmental issue. Instead, institutions tend to understand and manage climate risk through regulatory and governance frameworks, reflecting their close connection to compliance obligations, supervisory expectations, and internal risk controls. Overall, this highlights how closely intertwined ESG risks really are. Environmental, social, and governance factors do not operate in isolation but influence one another, with governance playing a particularly central role. Strong governance structures help institutions transform regulatory requirements into concrete ESG practices, while weaker governance can limit their ability to respond effectively to these risks.

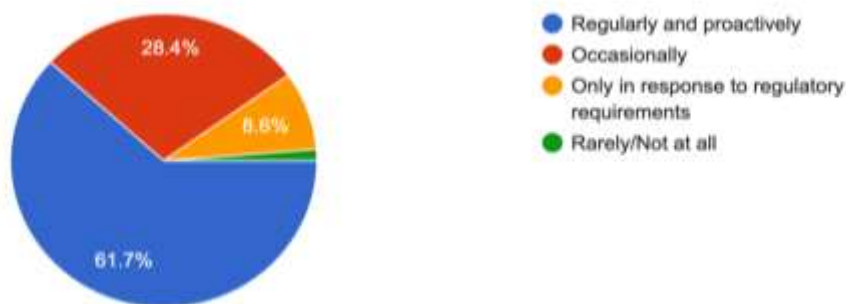
4.3 How ESG is integrated in institutional governance

The survey results show that the financial industry has moved from the concept of awareness to implementation, though the maturity level of the industry varies.

Over 50% of firms stated that they incorporate ESG risks into their existing Enterprise Risk Management structures, and an additional 44.4% stated that they have started

the process of implementation/planning. There is a clear direction in which they would like to move regarding overall risk management. Nearly half of the respondents feel that the topic of ESG risks is being discussed regularly and proactively by the top leadership, reflecting an increasing concern at the boardroom level. Also, 42% of the organisations have formed an ESG committee or department, reflecting that more and more organisations are looking for expert handling of the topic rather than general responsibility being assigned randomly to employees and management teams.

Figure 2: Level of Senior Management and Board Involvement in ESG Risk Discussions



Source: Created by authors

Despite these improvements, the pattern of response distribution indicates that the extent to which institutions have adopted the change from aligning to fully embedded operational controls varies significantly.

4.4 How ESG factors influence financial outcomes and decisions

One of the key objectives of the survey is to identify the impact that ESG factors have on financial decision-making practices. It is evident from the findings that ESG is no longer regarded as an ethical factor but is considered an integral part of financial risk management practices. Over 85% of the respondent group expressed that ESG considerations occasionally or consistently affect investment decisions, lending choices, or screening the clientele. Moreover, 58% of the firms indicated that they are actively taking steps to decrease engagement with high-carbon-emitting clientele or sectors.

Despite such progress, there still lies a significant gap with regard to quantification. Only 44.4% of the surveyed organisations reported that their institutions assessed ESG risks in monetary terms or used ESG risks in financial tools like stress testing or capital planning. We can now understand and accept the challenge faced by organisations in the successful

integration of ESG, which involves the use of mostly qualitative ESG data to provide quantifiable financial metrics.

4.5 Key challenges and anticipated ESG threats

On doing a qualitative analysis of the open-ended comments, certain ongoing challenges in ESG risk integration are brought into focus. These are being encountered in the following manner regarding the availability of data, although this was raised by 42% of the comments: Data quality and availability.

Challenges related to quantification and modelling were also frequently mentioned (37%). Many respondents explained that it still is challenging to try to convert various ESG indicators into concrete financial outcomes that have the ability to be acted upon and incorporated into various designs. As a result, ESG factors are often acknowledged in principle but not fully embedded in financial models.

Regulatory complexity emerged as another major barrier (35%). Respondents pointed to the rapid pace at which ESG standards and requirements are evolving across jurisdictions, creating uncertainty and increasing compliance burdens. This makes it harder for institutions to develop stable, long-term ESG frameworks that can be applied consistently.

Going forward, the type of risk that tends to emerge as a significant concern is risk associated with governance practices (49.4%), risk associated with environments of regulations (48.1%), or risk associated with climate change (44.4%). It seems that as a matter of tacit knowledge, its survival is based on either its governance practices or its ability to cope with a complex environment of regulations.

4.6 ESG materiality matrix analysis

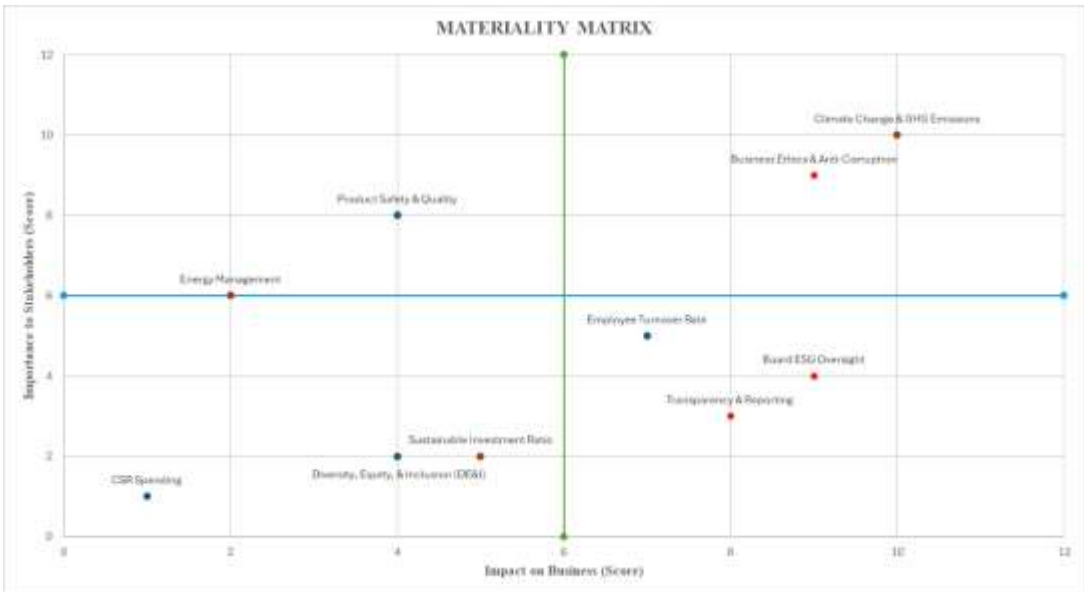
To evaluate how closely ESG priorities align with their impact on the business, a materiality matrix was developed using two key dimensions:

Vertical Axis: Importance to Stakeholders: Based on the responses to the question “How would you prioritise the following Environmental, Social, and Governance (ESG) parameters based on their significance to your institution?” Higher scores indicate a stronger level of importance.

Horizontal Axis: Impact on Business: Based on publicly available organisational and sectoral benchmarks, they reflect potential financial, operational, regulatory, and reputation-related implications of various ESG factors on financial institutions.

Both axes were scaled 1-10 to facilitate ESG comparison across these criteria. ESG issues were then identified and analysed through the use of quadrants to highlight key divergence points as well as points of convergence.

Figure 3: Constructed Materiality Matrix



Source: Created by authors

Figure 4: X-axis and Y-axis Scores, Derived from the Questionnaire and Existing Literature

Topic	Category	Importance to Stakeholders (Score)	Impact on Business (Score)
Climate Change & GHG Emissions	E	10	10
Energy Management	E	2	6
Sustainable Investment Ratio	E	5	2
Product Safety & Quality	S	4	8
Employee Turnover Rate	S	7	5
Diversity, Equity, & Inclusion (DE&I)	S	4	2
CSR Spending	S	1	1
Business Ethics & Anti-Corruption	G	9	9
Board ESG Oversight	G	9	4
Transparency & Reporting	G	8	3

Source: Created by authors

4.6.1 High-impact, high-priority ESG parameters

From the materiality matrix, it is evident that there exists a high concentration of Governance-related factors in the high-importance-high-impact quadrant, showing the high alignment between institutional perception and real-world financial relevance.

- Business Ethics & Anti-Corruption scores very high on both axes, reflecting its direct linkage to regulatory sanctions, litigation risk, capital access, and institutional credibility.
- Climate Change & GHG Emissions also occupies the strategic core, demonstrating both high stakeholder importance and high business impact. This confirms that climate risk

has transitioned from a long-term sustainability concern to a near-term financial and regulatory risk.

These results suggest that financial institutions are increasingly aware of ESG risks that have clear regulatory, legal, and balance-sheet transmission channels, and that governance and climate risks continue to occupy a central position within institutional risk hierarchies.

4.6.2 High-impact but under-prioritized parameters

Many ESG parameters have high or fair business impact but relatively lower stakeholder prioritization, which may indicate potential materiality blind spots.

For example: Product Safety & Quality - Good business impact owing to implications in litigation, reputational loss, and client trust, yet has only a medium priority.

Energy Management - It is underweighted compared with its operational importance and shows tangible cost and transition-risk implications.

This misalignment suggests the potential for an institution to be more reactive than proactive in their approach to these risks-that is, more inclined to respond after regulatory and/or market signals increase.

4.6.3 High-priority but lower-impact parameters

Certain Social ESG factors rank relatively high in perceived importance but show lower immediate business impact in the external scoring: Employee Turnover Rate, Diversity, Equity, and Inclusion (DE&I). While these parameters indeed lie at the heart of institutional culture and long-term resilience, their financial materiality seems indirect or delayed. They influence outcomes through channels such as productivity, talent retention, and reputation rather than causing immediate financial losses. Their high priority reflects a values-driven approach, shaped more by internal policies and public expectations than by direct risk transmission.

4.6.4 Low-impact, low-priority parameters

Parameters such as CSR Spending and Sustainable Investment Ratio fall within the low importance and low impact category. This implies their poor incorporation within the key frameworks in risk decision-making.

This positioning indicates that these factors are still viewed mostly as: Discretionary or reputational tools, considered peripheral to core risk management, generally less relevant to regulatory capital or financial performance.

This not only confirms the finding of the study that financial institutions focus on ESG aspects with risk and compliance implications, but it indicates the potential focus of financial institutions on philanthropic ESG aspects.

5.0 Conclusion

This research work aimed to dive into the ever-changing landscape of ESG risks in the financial sector and to propose a framework for integrating them within the traditional risk management framework. Based on the analysis of survey data and facts from recent literature, a number of key conclusions emerge.

First, ESG risks have transitioned from being largely ethical considerations to material financial imperatives. More than 90% of financial professionals recognise these risks, and 86% anticipate that, over time, ESG will be an integral part of risk management, equivalent in importance to credit and liquidity risk. A true indication that the “reputational” era of ESG is essentially over.

Second, regulatory pressure remains the main driver of this shift. The fact that “regulatory non-compliance” is rated as the most material risk on a consistent basis suggests that global mandates such as the European Banking Authority 2026 guidelines play an important role in shaping institutional ESG integration. Still, a significant “implementation gap” exists though ESG is greatly discussed at the board level, less than half of surveyed institutions have indeed managed to quantify these risks in financial terms.

Finally, it forms a basis for risk management in social and environmental domains. The survey feedback indicates a clear focus on “board ESG oversight” and “business ethics” in order to emphasize that without effective governance systems in place, organisations would struggle to cope with social complexities and climate risk challenges.

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