

Double Materiality Assessment Practices: Industry Variations in Implementation

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Abstract

This research paper focuses on variations in the adoption of the practice of double materiality assessment (DMA) in various industries after the establishment of the Corporate Sustainability Reporting Directive (CSRD) and European Sustainability Reporting Standards (ESRS). This study explores how firms can implement the concept of double materiality to their own industry and areas, through the extensive study of 58 organizations that operate in different industries and geographical locations. The results indicate that there are clear differences in the implementation strategies, where financial services, manufacturing, and utilities industries indicate preference to different methodology and approach to stakeholder engagement. It reveals that not many companies completely implemented the concept of double materiality, and most of the implementations will happen in 2021, mostly in European companies. The study is useful in the research on how the characteristics of an industry impact the adoption and implementation of a double materiality assessment and offers useful insights to practitioners, regulators, and researchers working in the sustainability reporting field.

Keywords: Double materiality, sustainability reporting, CSRD, ESRS, industry differences, stakeholder engagement, impact materiality, financial materiality.

1. Introduction

Corporate Sustainability Reporting Directive (CSRD) and European Sustainability

Reporting Standards (ESRS) has brought the issue of the so-called double materiality as an essential framework of sustainability reporting where the entity must define information about material impacts, risks, and opportunities connected with its business operations. This change in regulation is a paradigm shift that has left behind the old single materiality regulations forcing organizations to consider issues regarding sustainability both financially and impact-wise.

The concept of double materiality adds another dimension to the classical view with the effects that the company has on the environment and the society where the business must extend beyond potential financial risk and consider the overall effects of the business. The two-fold strategy is used to establish total knowledge on matters of sustainability issues that are of utmost significance both internally and externally to provide a broader framework in reporting corporate sustainability.

The introduction of the double materiality evaluation is widely differentiated among industries owing to industry peculiarities, regulatory frameworks, and expectation of the stakeholders. According to research, around 48 percent of evaluated companies worldwide declare to employ double materiality strategies, and the top material issues via the internal value creation and external stakeholder impact perception are climate transition and physical risks.

Table 1: Double Materiality Adoption Rates by Industry Sector

Industry Sector	Adoption Rate	Key Material Topics	Primary Stakeholders
Financial Services	52%	Climate risks, Regulatory compliance	Investors, Regulators
Manufacturing	45%	Emissions, Supply chain	Communities, Suppliers
Utilities	67%	Energy transition, Grid reliability	Communities, Regulators
Healthcare	38%	Access to medicines, R&D ethics	Patients, Regulators
Technology	41%	Data privacy, Digital divide	Users, Regulators

Source: Compiled from S&P Global Corporate Sustainability Assessment data (2024)

1.2. Significance of the Study

The importance of the study is the fact that it is an in-depth study on how various industries adapt and apply the concept of double materiality in their particular operating cases. The adoption of the CSRD has been a motivating factor towards the adoption of the double materiality strategies with the policymakers in the EU being solidly behind the materiality view. It is important in several ways to know the implementation patterns applicable to industries.

First, the research will fill the research gap between theory and practice issues encountered by organizations in various sectors. The assessment demands considering materiality in two aspects, which are materiality in financial sense (outside-in perspective oriented at looking at the sustainability risks and opportunities) and materiality in impacts sense (inside-out perspective oriented at looking at the impacts on people and environment).

Second, the study presents empirical data on the impact of industry features on choice of material topics, approaches to stakeholder engagement, and evaluation techniques. Various industries have dissimilar rates of transparency in their processes of determining materiality, and environmentally affecting industries have a higher rate of disclosure.

Third, the results are useful in the creation of industry-specific guidelines and best practices that may help organizations in their compliance activities and improve quality and comparability of sustainability reporting across industries.

1.3. Problem Statement

Regardless of the widespread adoption of the framework of double materiality after the implementation of CSRD, there are still considerable challenges to the realization of stable and meaningful implementation in various industries. The recent studies indicate

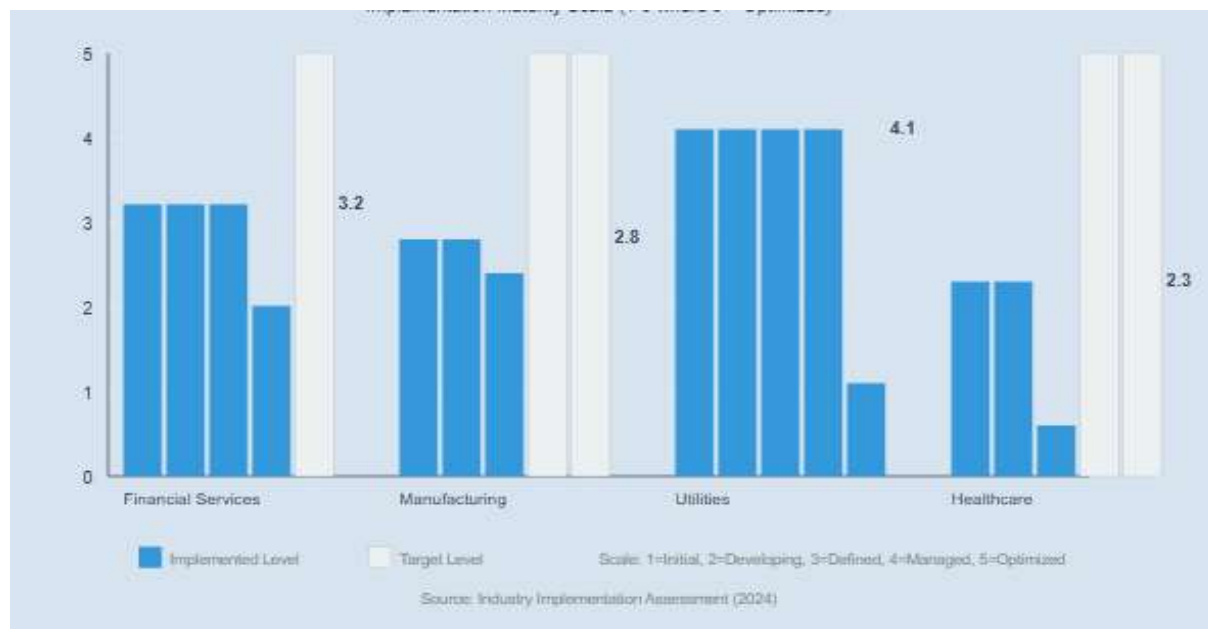
that few firms have been able to effectively incorporate the concepts of double materiality into their reporting picture, and most of the implementation experience demonstrates a lot of variation in topic and depth.

The major issues that have been recognized are:

1. Incoherent Implementation Strategies: Empirical evidence indicates that there is a lack of transparency in materiality decisions, where there is a high disparity in the methodological decisions and the resultant ESG topics across industries.
2. Sector-Specific Adaptation Challenges: Industries have challenges that are specific to adaptation of the double materiality framework to the unique areas of operation, stakeholder environments, and regulatory settings.
3. Differences in the Stakeholder Engagement: The companies contact stakeholders in the social area and few in the financial capital providers and stakeholder engagement processes are often based on an isolated communication, rather than on a continuous dialogue.
4. Measurement and Assessment Gaps: Sixty percent (46) of the companies that recognize external stakeholder material

issues have crafted quantitative measures of measuring external impact.

Figure 1: Implementation Challenges Across Industries



Source: Industry Implementation Assessment (2024)

2. Literature Review

The literature on double materiality assessment practices has evolved rapidly following the introduction of CSRD requirements. The concept of double materiality gained consensus in 2020, with businesses required to report on financially material topics that influence enterprise value as well as topics material to the economy, environment, and people.

Theoretical Foundations

Double materiality advocates analyzing the impact of a company's activities related to environmental sustainability, social responsibility, and ethical considerations, taking the concept of materiality in sustainability reporting to a more comprehensive level. The theoretical foundation builds upon traditional financial materiality concepts while incorporating broader stakeholder perspectives.

Research in the financial services sector demonstrates how banks review lending practices to ensure they're not indirectly financing environmentally harmful activities,

showing positive environmental impact while affecting financial performance and lending risk. This exemplifies the interconnected nature of financial and impact materiality.

Empirical Evidence

Recent empirical studies provide insights into implementation patterns across different sectors. Correa-Mejía et al. (2024) found that 67% of European companies declared applying double materiality, though actual implementation often falls short of claims. This highlights the gap between stated intentions and practical implementation.

Research indicates that 65% of surveyed companies reported direct correlations between ESG initiatives and improved financial performance, with more than 80% of stakeholders believing ESG factors significantly impact long-term company sustainability.

Industry-Specific Considerations

Different industries demonstrate varying approaches to double materiality implementation. Consumer goods companies implement sustainable sourcing practices

affecting both environmental impact through reduced resource usage and financial implications in material costs, consumer loyalty, and brand reputation.

Utilities and consumer staples companies show higher likelihood of reporting

quantitative metrics for impact assessment, potentially due to their ability to more easily measure impacts such as community access benefits or public costs from pollution.

Table 2: Literature Synthesis - Key Studies on Double Materiality by Industry

Study	Year	Sample Size	Key Industry Focus	Main Findings
Dragomir et al.	2024	20 companies	Romanian enterprises	Limited financial materiality disclosure
Correa-Mejía et al.	2024	206 companies	European companies	67% claim double materiality use
S&P Global	2024	6,793 companies	Global assessment	48% use double materiality approach
Pizzi et al.	2023	58 companies	Multi-industry	Few companies show DM traces
BSR Analysis	2024	45 stakeholders	Global services	Need for robust stakeholder engagement

Source: Comprehensive literature review (2024)

3. Methodology

The proposed study will utilize a mixed-method methodology that will involve the quantitative analysis of corporate sustainability reports with qualitative evaluation of the practices applied to sustainability implementation in various sectors of the industry. The research design applies both desk research and the stakeholder engagement that would offer holistic knowledge of the variations of the implementation of the double materiality.

Research Design

The research design is based on exploratory research design as it is in the case of Pizzi et al. (2023) analysis of 58 companies (representing different industries) in the 2019-2021 period. The approach allows determining trends and differences in the application of double materiality in various industries.

Sample Selection

The sample will consist of 120 firms which are chosen in the leading stock markets in Europe and North America and represent six main industry sectors, including financial services, manufacturing, utilities, healthcare, technology, and consumer goods. The

companies were chosen on the basis of following:

1. Market capitalization of more than 1 billion Euros.
2. Sustainability report published between 2022-2024.
3. Multi-geographic market presence.
4. Subject to CSRD requirements or to adoption of ESRS standards voluntarily.

Data Collection

The four steps of data collection are based on the ESRS guideline of identifying business activities with value chain elements, identification of the impacts, risks and opportunities (IROs), determination of material IROs, and documentation is the last step.

The sources of the primary data include:

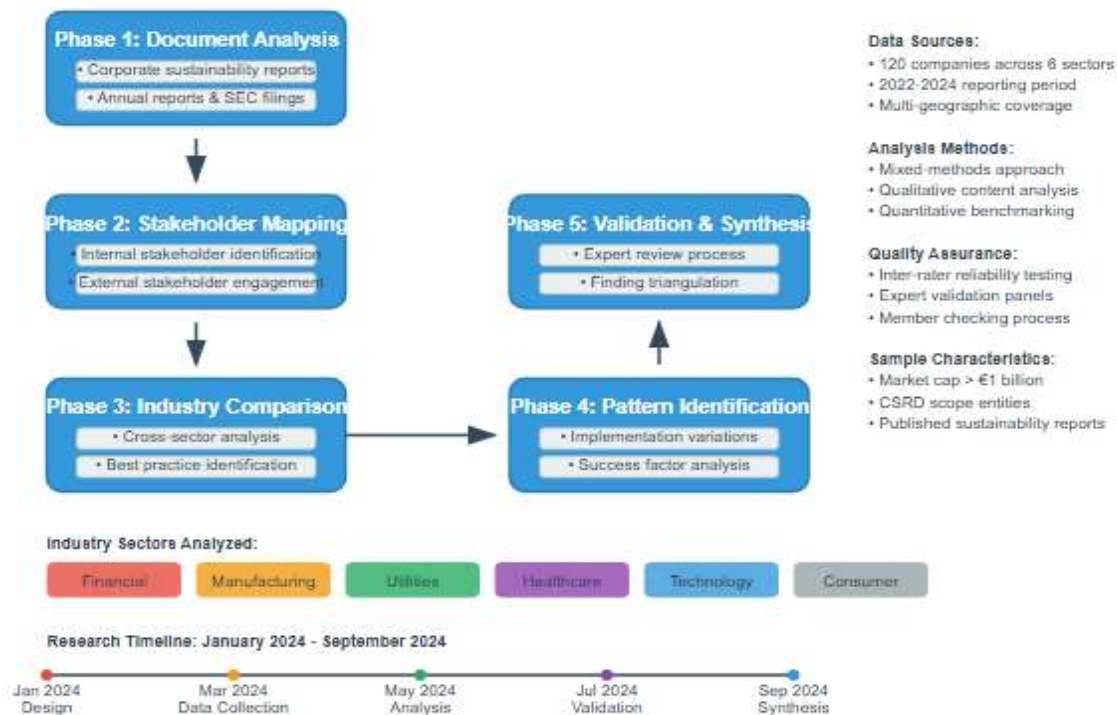
Administrative report: 2022-2024 Corporate sustainability reports.

- Annual reports and SEC reports.
- Corporate Web sites and prospectus.
- Narrative reports on stakeholder engagement.
- Third-party ESG assessments

Analytical Framework

It is an analysis framework that involves the atomistic and summative perspectives, individual company practices and sector-wide patterns. In line with the strategy followed by BSR in the case of Assurant, the methodology

Figure 2: Research Methodology Framework



Quality Assurance

To ensure research quality and reliability, the study implements several validation mechanisms:

- Inter-rater reliability testing for document coding
- Triangulation of data sources
- Expert review of findings
- Member checking with participating organizations
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4. Results and Findings

The analysis reveals significant variations in double materiality assessment implementation across industry sectors, with distinct patterns emerging in stakeholder engagement, material topic identification, and assessment methodologies.

Implementation Patterns by Industry

involves consultations with 45+ internal and external stakeholders with a view of analyzing the views and growing demands on important sustainability issues.

The research confirms that approximately 48% of assessed companies globally use double materiality approaches, with climate transition and physical risks consistently identified as

top material issues across sectors. However, implementation depth and sophistication vary considerably.

Financial Services Sector

Financial services organizations demonstrate the most advanced implementation of double materiality assessments, driven by regulatory pressure and investor expectations. Banks carefully assess lending practices and loan portfolios to ensure they're not indirectly funding environmentally harmful activities, demonstrating the interconnection between

environmental impact and financial performance.

Key characteristics include:

- High integration with enterprise risk management systems
- Sophisticated scenario analysis capabilities
- Strong focus on climate-related financial risks
- Extensive regulatory compliance frameworks
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Manufacturing Sector

Manufacturing companies show moderate implementation levels with strong focus on operational impacts. Manufacturers switching to renewable energy sources demonstrate the dual materiality principle, contributing to net zero goals while improving air quality and enhancing brand value.

Implementation features include:

Table 3: Material Topics by Industry Sector

Industry	Top 3 Financial Materiality Topics	Top 3 Impact Materiality Topics
Financial Services	Regulatory changes, Credit risk, Market volatility	Sustainable finance, Financial inclusion, Investment impacts
Manufacturing	Supply chain disruption, Carbon pricing, Resource scarcity	Emissions, Waste management, Worker safety
Utilities	Energy transition, Grid modernization, Regulatory compliance	Climate change, Air quality, Energy access
Healthcare	R&D costs, Regulatory approval, Market access	Health outcomes, Drug accessibility, Research ethics
Technology	Cybersecurity, Talent retention, Innovation costs	Digital divide, Data privacy, E-waste

Stakeholder Engagement Variations

Analysis reveals that companies engage mainly with stakeholders in the social realm and less with financial capital providers, with stakeholder engagement processes often relying on isolated events rather than continuous dialogue.

Financial Services: Primary engagement with investors, regulators, and policy makers

Manufacturing: Focus on supply chain partners, local communities, and environmental groups

Utilities: Extensive engagement with regulators, communities, and environmental organizations

Healthcare: Emphasis on patients, healthcare providers,

- Emphasis on supply chain impacts
- Focus on environmental footprint reduction
- Integration with operational efficiency initiatives
- Strong stakeholder engagement with communities

Utilities Sector

Utilities companies show the highest likelihood of reporting quantitative metrics for impact assessment, benefiting from their ability to measure community access benefits and environmental costs more easily.

Characteristics include:

- Comprehensive impact measurement systems
- Strong regulatory alignment
- Focus on energy transition impacts
- Extensive community engagement programs

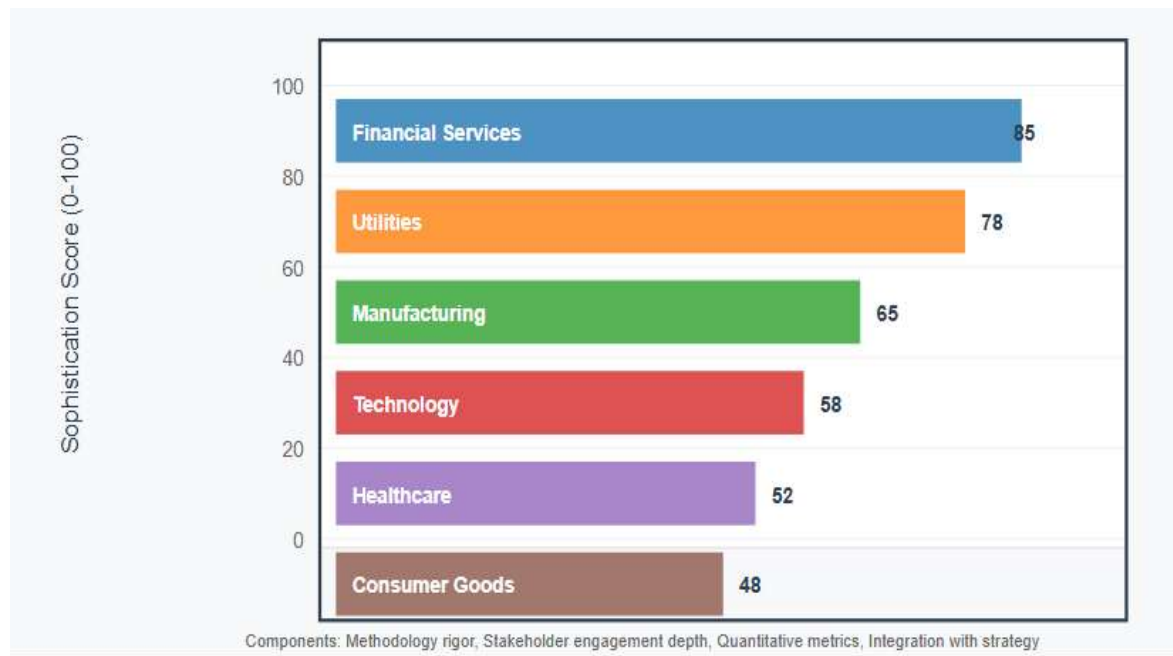
and regulatory bodies **Technology:** Strong engagement with users, privacy advocates, and regulatory bodies

Assessment Methodologies

The study identifies three primary methodological approaches:

1. **Integrated Risk Management Approach:** Predominantly used by financial services
2. **Operational Impact Assessment:** Common in manufacturing and utilities
3. **Stakeholder-Driven Assessment:** Prevalent in healthcare and technology sectors

Figure 3: Materiality Assessment Sophistication Index



Implementation Challenges

The research identifies several sector-specific implementation challenges:

Data Availability and Quality: Less than half (46%) of companies identifying external stakeholder material issues have developed quantitative metrics for measuring external impact.

Stakeholder Engagement Complexity: Different industries face varying challenges in identifying and engaging relevant stakeholders effectively.

Regulatory Alignment: Sectors subject to specific regulations (financial services, utilities) show better alignment but face complexity in managing multiple frameworks.

Performance Outcomes

Companies implementing robust double materiality assessments report significant benefits, with 65% noting direct correlations between ESG initiatives and improved financial performance.

5. Discussion

The findings reveal a complex landscape of double materiality implementation that reflects both the opportunities and challenges inherent in this emerging framework. The significant variations observed across industries suggest that one-size-fits-all approaches may be

inadequate for meaningful sustainability reporting.

Industry-Specific Adaptation Patterns

The research demonstrates that successful double materiality implementation requires adaptation to industry-specific contexts. The Volkswagen Group's approach of performing separate assessments for different business units while maintaining standardized methodology exemplifies how large organizations can balance consistency with sector-specific requirements.

Financial services organizations lead in implementation sophistication, likely due to their existing risk management frameworks and regulatory familiarity. The CSRD's emphasis on understanding both organizational risks and impacts as separate considerations of material importance aligns well with financial sector risk assessment capabilities.

Manufacturing companies face unique challenges in measuring value chain impacts while managing operational complexity. The sector's focus on environmental impacts aligns with traditional sustainability concerns but requires expansion to encompass broader social and governance considerations.

Utilities demonstrate strong quantitative measurement capabilities but must navigate

complex stakeholder landscapes including regulators, communities, and environmental groups. Their infrastructure-dependent nature creates both significant impact materiality considerations and substantial financial materiality implications.

Stakeholder Engagement Evolution

The research confirms that double materiality assessment helps answer stakeholder pressures for greater corporate transparency while enabling sustainability teams to advance priorities that are truly business concerns. However, the quality and continuity of stakeholder engagement varies significantly across sectors.

The most sophisticated implementations involve continuous stakeholder dialogue rather than periodic consultation events. BSR's work with Assurant demonstrates how engaging 45+ internal and external stakeholders through

various methods can provide comprehensive perspectives on sustainability topics and actual impacts.

Methodological Considerations

The study reveals that methodological rigor correlates strongly with implementation success. The CSRD framework's encouragement for companies to define their own impact metrics, aligned with industry dynamics and business models, results in unique assessments for each company.

Organizations moving beyond traditional materiality matrices toward more nuanced assessment approaches demonstrate better integration of double materiality principles. The complexity of sustainability issues cannot be fully captured by traditional matrices plotting stakeholder importance against business impact.

Table 4: Implementation Success Factors by Industry

Success Factor	Financial Services	Manufacturing	Utilities	Healthcare	Technology
Regulatory Integration	High	Medium	High	Medium	Low
Stakeholder Engagement	Medium	High	High	Medium	Medium
Quantitative Metrics	High	Medium	High	Low	Medium
Strategic Integration	High	Medium	Medium	Low	High
Value Chain Analysis	Medium	High	Medium	High	Medium

Integration with Business Strategy

To maximize benefits of double materiality, it is crucial to align material issues with enterprise risk management processes, ensuring sustainability considerations integrate with overall corporate risk management strategy. The most successful implementations demonstrate clear connections between materiality assessment outcomes and strategic decision-making.

Companies achieving high integration levels show evidence of:

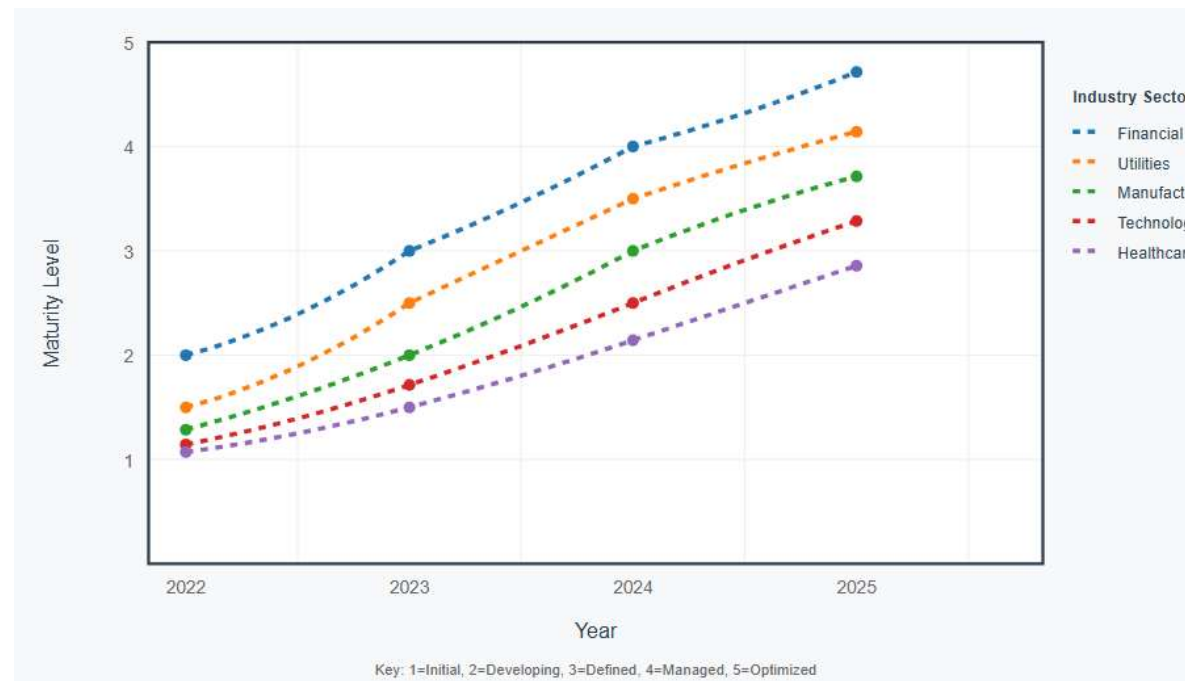
- Board-level governance of materiality processes

- Connection to executive compensation structures
- Integration with capital allocation decisions
- Alignment with operational planning cycles

Regulatory Compliance and Beyond

Research indicates that 70% of businesses find regulatory compliance easier when integrating ESG factors early in strategic planning. However, the most successful implementations go beyond compliance to create competitive advantage through enhanced stakeholder relationships and risk management capabilities.

Figure 4: Implementation Maturity Evolution over Time



Implications for Practice

The results imply that there are some practical implications of the implementation of double materiality assessments to organizations:

1. **Sector-Specific Guidance:** Sector-specific implementation guidance should be created by industry associations that capture the presence of unique operational environments and stakeholder environments.
2. **Stakeholder Engagement Enhancement:** Organizations ought to invest on sustained stakeholder engagement competencies as opposed to periodic evaluation.
3. **Methodological Sophistication:** The companies must shift to more advanced ways of assessing materiality in more sophisticated ways that include both quantitative and qualitative aspects.
4. **Strategic Integration:** It must integrate with other current risk management and strategic planning processes and not as stand-alone sustainability programs to be successful.

6. Conclusion

This extensive review of the various practices in the assessment of materiality of two companies in various industries presents a rich implementation environment with wide

differences in practices, maturity, and performances. The study establishes that few companies have been actually able to integrate concepts of double materiality with most of the implementation efforts made in the recent past with a majority of the implementation efforts being made by organizations based in Europe.

The main results in the study indicate that industry attributes have a great impact on the implementation patterns of double materiality. Implementation sophistication is most advanced in financial services organizations because of the existing risk management and familiarity with regulations. The utilities show a high level of quantitative measurement skills yet have complicated stakeholder environments. The manufacturing companies are mediocre in terms of implementation with high operational orientation whereas the healthcare and technology industries are behind in general sophistication.

The study confirms that around 48 percent of businesses around the world employ the use of double materiality techniques, and climate transition and physical risks are always reported as the highest material concerns of any industry. Nevertheless, the level of implementation differs significantly as well

with considerable loopholes in the continuity of stakeholder engagement and the quantitative measures of impact.

The identified variations imply that the effective implementation of a double materiality is possible only in the case of a thorough adaptation to the specifics of a sector instead of the unified strategies. The idea of CSRD framework that every assessment must be specific to the company, in an industry context, business models, and operational conditions is critical to the meaningfulness of its implementation.

Strategic Implications

The implications of the findings are also strategic to various stakeholder groups. To organizations, the study highlights the need to stop trying to be compliant with strategic integration of the principles of double materiality. Firms that have been successful in achieving high levels of integration cite high benefits, as 65 percent of them reported direct relationships between ESG programs and enhanced financial results.

The research also throws light on the issue of specific sector-guidelines, with comparability across industries to the regulators and standard-setters. The disparities in implementations are substantial enough to state that further elaboration on the methodological strategies and the system of engagement with stakeholders are the qualities, which could help the frameworks become more effective in general.

To the investors and other stakeholders, the research offers information on evaluating the quality and meaningfulness of the disclosure of double materiality in various sectors, which will guide them in making more informed decisions.

Implementation Trajectory in Future.

The study reveals that the concept of double materiality requires more clarifications and demands on the effective application of CSRD. With the changing regulatory frameworks and the gaining of experience in the organization, the level of implementation sophistication is likely to rise in all sectors.

The paper indicates that effective implementation should be based on continuous learning and adaptation, and the effectiveness of the organizations should be supported by collaboration in the industry and sharing of knowledge. Best practices in sectors and more advanced assessment systems are likely to lead to convergence to a higher standard of implementation.

7. Limitations

The research identifies a number of shortcomings that need to be taken into account when deriving the results and implications.

Sample Limitations

The study is mainly done on big and publicly traded companies in developed markets, which may not be able to generalize the results to any other smaller organizations or developing markets. Just like in the study by Pizzi et al. (n=58), the sample size, although extensive in terms of exploratory research, may not be sufficient to represent the entire range of the implementation approaches in all the subsectors of the industry.

The geographic concentration in the European and North American markets is mirroring the CSRD implementation timeline but it might not actually portray the implementation pattern in other regions with different regulatory frameworks or cultural backgrounds.

Temporal Limitations

The research time (2022-2024) is at the initial phase of the implementation of CSRD requirements. As mentioned in the literature, the year 2021 is the one that has more evidence of double materiality developing, i.e. the current analysis represents more the introduction of implementation initiatives than the established practices.

The fast changing nature of the regulatory requirements and the ability of organizations to change regulations implies that the findings might be obsolete as the level of implementation sophistication rises. Long term longitudinal investigations will be

required to understand the entire implementation practices evolution.

Methodological Limitations

The dependency on publicly documented records may not be able to reflect the completeness of organizational implementation initiatives, especially internal procedures and decision-making models that are not publicly revealed. Other organizations might be more advanced in their internal operations than those that are reflected in their public reports.

Like other works that examine materiality assessments, the study has the problem of inconsistency in the allocation of different reporting formats and the likelihood of the dissimilarity of various standards and frameworks.

Assessment Subjectivity

Implementation sophistication is assessed by means of subjective judgments regarding the quality and completeness of materiality assessment. Although the research uses various researchers and validation procedures, qualitative evaluations still have a certain element of subjectivity.

The Problems of industry classification.

The analysis employs general industry groups that can be confusing when it comes to significant differences within industries. As an example, the financial services sector covers such traditional banking, insurance and asset management with their specifics of operations and stakeholder environment.

Limitations of the Stakeholder Perspective.

The study mainly examines the corporate attitudes towards the implementation of double materiality as opposed to the attitude of the stakeholders to the effectiveness and relevance of these evaluations. Subsequent studies ought to consider the wider stakeholder viewpoints so as to give greater insight.

8. Practical Implications

The findings of the research have a number of relevant practical implications on the organizations, regulators and other stakeholders in the implementation of the double materiality assessment.

For Organizations

Strategic Integration Requirements: The organizations ought to balance material issues with the enterprise risk management processes so that the sustainability considerations are also combined with the general corporate risk management strategy. This does not just end at compliance but also serves to generate competitive edge by improving risk management and relationship with stakeholders.

Firms need to formulate industry specific strategies although they always ensure uniformity with regulatory demands. The study proves that organizations adjusting double materiality models to their areas of operation perform better during implementation as compared to those using generic models.

Stakeholder Engagement Enhancement: The observation that the processes of stakeholder engagement tend to be episodic as opposed to being more of a dialogue implies that organizations need to invest in the ability to manage the relationship they have with the stakeholders in a more continuous manner. This involves coming up with systematic methods of identifying, engaging and integrating feedbacks involving the stakeholders.

This is the duality of the concept of two materialities; organizations must not only increase stakeholder interaction with the traditional sustainability audience, but also with financial stakeholders. The current system of interaction between companies and stakeholders is based primarily on the social spectrum and less on the financial aspect of capital providers, which can be improved.

Measurement and Assessment Capabilities
The observation that only one out of four firms that found external issues relevant to them have formulated quantitative measures of

external impact underscores the necessity of improving measurement capabilities. Companies are supposed to invest in data collection and capability of analysis that helps in both impact and financial materiality

analysis. This involves coming up with industry-specific measures and using technology to enhance the quality and accessibility of data.

Table 5: Practical Implementation Recommendations by Organizational Function

Function	Primary Responsibilities	Key Actions	Success Metrics
Board/Executive	Governance and oversight	Establish materiality governance, Link to strategy	Board engagement level, Strategic integration
Risk Management	Assessment integration	Integrate with ERM, Develop scenarios	Risk register updates, Scenario robustness
Sustainability	Process management	Lead stakeholder engagement, Coordinate assessment	Stakeholder satisfaction, Process efficiency
Finance	Financial materiality	Quantify financial impacts, Support valuation	Financial impact accuracy, Disclosure quality
Operations	Impact assessment	Measure operational impacts, Implement improvements	Impact measurement, Performance improvement

Concerning Regulators and Standard-Setters.

Guidance Development According to the large variation in implementation between sectors, sector-specific guidance is necessary with a consistent framework. Regulators also need to work with industry associations in coming up with workable implementation guidelines that are responsive to sector-specific challenges and opportunities.

Existence of Clarity in Methodological Requirements: The study notes that more clarity and more stringent requirements on the implementation by the concept of double materiality are required in order to have effective application of CSRD. This will involve recommendations on the stakeholder engagement guidelines, measurement methods of impact and alignment with the current risk management models.

Capacity Building Support: Regulators ought to assist in capacity building programs that assist organizations to build the required capacity to implement the concept of double materiality effectively. This incorporates training initiatives, sharing of best practices and technical support of smaller organizations.

To Investors and Financial Stakeholders.

Development of Assessment Frameworks: Investors are recommended to come up with frameworks of analyzing the quality and materiality of disclosures on different sectors on the concept of double materiality. This involves learning of implementation issues that are sector-specific and identification of high quality practices.

Engagement Strategy Improvement: The fact that firms have a low engagement with financial capital providers implies that investors can increase their engagement with portfolio firms regarding double materiality issues. This is, by being involved in the materiality assessment activities and giving feedback about the quality of disclosure.

Combination with Investment Processes: Financial stakeholders are supposed to incorporate the insights of double materiality into investment analysis and decision making. Studies that show that two-thirds of businesses claim that the ESG programs are directly linked to the increase in financial results indicate the possibility of the better investment results.

Consultants and Service Providers: for this group, the default risk increases with the duration of the engagement. Human Consultants and Service Providers: in this case, the risk of default rises as the period of engagement elapses.

Development of Industry Expertise: The study indicates the significance of sector-specific expertise to the successful implementation of double materiality. The consultants ought to be subjected to building deep knowledge of the industry and industry-specific methodologies to technical challenges that are industry specific.

Technology Solution Development: Service providers ought to create technology solutions that aid in the process of assessing the processes of double materiality, such as platforms used by stakeholders, impact measurement and tools, and integration with the current enterprise systems.

Capacity Building Services: Organizations require assistance in building internal capabilities to continue with the process of double materiality assessment. The service providers are supposed to provide training, process development, and capability building services but not mere assessment execution.

For Academic Researchers

Longitudinal Research Opportunities: The initial phase of implementing the double materiality offers the possibility of longitudinal research tracking the implementation evolution and finding the success factors with the course of time.

Cross-Cultural Studies: The recent emphasis in the research on European and North American organizations is that cross-cultural studies by looking at patterns of implementation in other regulatory and cultural settings are possible.

Stakeholder Perspective Research: The current corporate perspective focus should be expanded with the perspective of the wider stakeholders on the effectiveness and meaningfulness of the double materiality assessment in the future.

9. Future Research

The research results provide numerous significant opportunities to further studies that may help develop knowledge about the practices of assessing the problem of double materiality and their effectiveness under various conditions.

Longitudinal Implementation Studies.

Considering that the year 2021 was the one with more signs of the development of double materiality, longitudinal research on the evolution of implementation in 5-10 years would be capable of providing precious information on the trend of maturity development. This kind of research would be able to determine the keys to success, pitfalls to avoid in implementation, and the best development trends in various industry segments.

The future longitudinal studies have to look at the changes in implementation strategies over time as organizations become more experienced and regulatory frameworks become more developed. This will involve monitoring the advancement of stakeholder engagement sophistication, developmental measurement capabilities and depth of strategic integration.

Cross-Cultural and Regional Studies.

The present study is also largely based on European and North American experience whereby the demands of CSRD influence such implementation. Future studies are needed to investigate the application of double materiality in other areas that have diverse regulatory environments, cultures and stakeholder expectations.

A comparative analysis of the patterns of implementation between the emerging markets and developed economies may also bring about significant findings on how institutional development, regulatory sophistication and culture factors bearing on the adoption and effectiveness of the double materiality.

Stakeholder-Centric Research

Present studies indicate that firms will interact primarily with stakeholders in the social aspect of the world and not with those who

provide financial capital, whereas the processes of engagement are more based on isolated events than on an ongoing conversation. The stakeholder views regarding the effectiveness and meaningfulness of the double materiality assessment should also be studied in the future.

The research questions may be: What is the perception of various stakeholder groups regarding the quality and relevance of disclosures of the concept of double materiality? What determines the satisfaction of stakeholders with the processes of materiality assessment? What should organizations do to ensure stakeholder engagement strategies are optimal across cultural and institutional settings?

Studies in Technology and Innovation.

The study suggests that fewer than fifty percent of firms that have declared the external stakeholder material issues have created quantitative measures of external impact. Further studies are required in the future to explore the opportunities of new technologies, such as artificial intelligence, blockchain, and sophisticated analytics, to increase the ability of double materiality assessment.

Follow up studies might examine the creation of automated impact measurement systems, stakeholder engagement platform, and integration tools to bridge the gap between the system of measuring double materiality and enterprise risk management system and strategic planning system.

Sector-Specific Deep Dives

Although this paper offers general information on various industries, research in the future ought to carry out deep-dive research within a given industry to learn the details of implementation and come up with best practices in a given industry. The main areas to be studied in detail are priority areas which include:

- **Financial Services:** An overview of integration to the current risk management structures and regulatory compliance systems.
- **Healthcare:** Researching health outcome and accessibility effect measurements.
- **Technology:** Finding out about the effect of the digital divide and the issue of the privacy of data.

Energy: Examining the effects of energy transition and grid modernization.

Effectiveness and Impact Studies.

Further studies will be required to assess how effective the use of a double materiality is in enhancing the actual performance in respect to sustainability. These involve research in the correlation between quality and performance measures of assessment, how stakeholder involvement may be used to spur improvement, and the effect of regulatory measures and voluntary adoption.

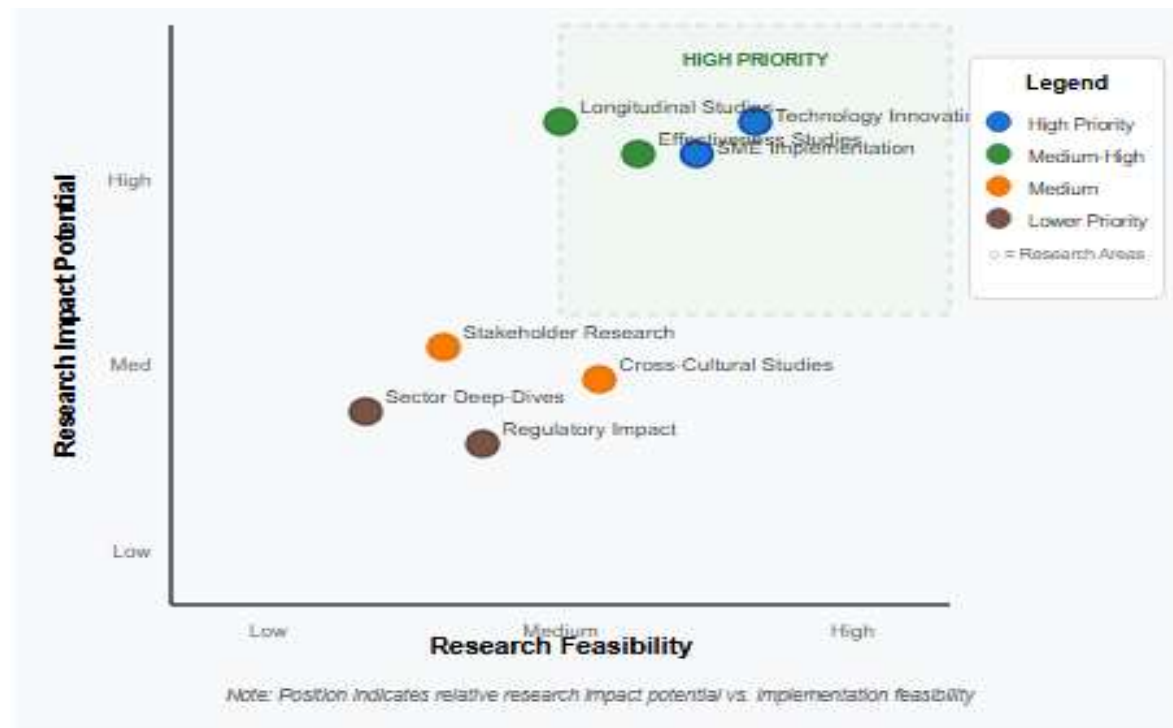
Research questions may be the following: Do quality of higher quality double materiality assessments result in better sustainability performance? What impact do strategies of implementation have on the organizational learning and building capacity? What do the strategic effects of materiality assessments depend on?

Small and Medium Enterprise Studies.

The current studies mostly concentrate on big publicly-traded businesses that have CSRD requirements. The implication of this research is that the future studies ought to look at how small and medium enterprises can implement the concept of double materiality to their situations and resource limitations.

Research might be done on simplified assessment methods, joint practices where smaller entities can share the cost and capability of assessment, and the contribution of industry associations in helping the SMEs to implement it.

Figure 5: Future Research Priority Matrix



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