Integrating Double Materiality –
As Simple as Ticking a Box?

Master's Thesis 30 credits
Programme: Master's Programme in Accounting and Financial Management
Specialisation: Management and Control

Department of Business Studies
Uppsala University
Spring Semester of 2024

Date of Submission: 2024-05-29

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Abstract

Regulatory frameworks for sustainability reporting have become increasingly more prevalent within the EU, with the latest being CSRD. CSRD requires companies to report both impact and financial materiality, a considerable change from preceding ones. By conducting a multiple case study with three large Swedish companies, this thesis examines how management controls can explain how companies integrate double materiality requirements, from a Management Control System (MCS) Package perspective (Malmi & Brown, 2008). Previous research has examined how companies implement sustainability strategies with help of the MCS package, however, not in light of double materiality. This thesis contributes to theory by concluding that the MCS package can be used to explain the level of double materiality integration, through plotting the completeness of controls corresponding to impact and financial materiality. Whilst companies have complete control systems for managing their impact, there is an observed lack of corresponding controls for financial materiality, implying a lower level of integration of double materiality requirements. The findings can be applied in practice to recognise which prerequisites organisations have to translate sustainability reporting into their operations, which can be used to ensure that controls for impact and financial materiality are equally prevalent.

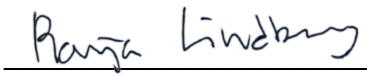
Key Words: CSRD, Double Materiality, Sustainability Strategies, MCS Package

Acknowledgements

First of all, we would like to thank the participants from the three companies for their time and valuable insights. We would also like to thank our supervisor Janina Hornbach and peers for constructive feedback and discussions. Finally, we would like to thank each other for these five rewarding months.

Uppsala, 29th of May, 2024

Lisa Fälth



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1. Introduction

1.1 Background

Sustainability reporting is an area that the European Union has long tried to regulate, with Directive 2014/95/EU (NFRD) being one step towards a more strict legislative landscape. However, after implementing a new green initiative in 2019 (The Green Deal), the Union discovered that the existing regulatory framework for sustainability reporting would not suffice to meet the new target of having no Greenhouse Gas (GHG) emissions by 2050. Therefore, a new directive was proposed by the European Parliament, Directive 2022/2464/EU (CSRD), which would force organisations operating within the EU to report their sustainability activities more extensively.

Beginning in 2024, large public-interest entities that exceed 500 employees on average during the financial year, and thus already subject to NFRD, are to comply with the new directive. However, as stated in CSRD Article 17, the growing demand for sustainability information has led to an increase in the scope of organisations that are required to report. Therefore, by 2026, all listed companies within the European Union will be required to report extensive sustainability information in accordance with CSRD.

The extensive sustainability information required to comply with CSRD is not limited to the current state of the organisation, requiring companies to include short-, medium- and long-term perspectives of both their own operations, and those of their value chain. In addition, firms will have to determine the resilience of their business model and strategy in relation to sustainability risks, adopting a double materiality perspective. Double materiality entails recognizing both the financial and impact materiality. Financial materiality concerns the risks associated with future cash flows of the company as a result of sustainability risks, whereas impact materiality refers to the effect the company, or their value chain, has on the environment (EFRAG, 2023). As a result of increased political pressure deriving from CSRD, organisations must respond by aligning their strategies to comply with the directive.

Strategies have been described as a dynamic pattern of decisions influencing an organisation's future, which underscores the intricate nature of strategic planning (Mintzberg, 1978). This emphasises that the significance of strategic decisions emerges when they are operationalized through organisational processes. Successful execution of strategies relies heavily on the

adept utilisation of management controls, a concept partly explored by Flamholtz et al. (1985) and Langfield-Smith (1997). These management control systems (MCS), become the foundation for the execution of strategic decisions and play a fundamental role in shaping organisational behaviour (Langfield-Smith, 1997). Consequently, sustainability strategies can be predicted to influence the controls necessary to integrate double materiality requirements.

1.2 Problematization

The introduction of CSRD by the EU signifies a significant shift in sustainability reporting regulations, necessitating extensive reporting on sustainability activities for companies operating within its jurisdiction. This directive, coupled with the concept of double materiality which emphasises both financial and impact materiality perspectives, poses a multifaceted challenge for companies seeking to comply with CSRD requirements. For companies that will need to report in accordance with CSRD during 2024, conducting double materiality assessments and adjusting Corporate Social Responsibility (CSR) strategies to ensure CSRD-compliance is likely to be crucial at this point in time.

Recent research has delved into the utilisation of diverse MCS by organisations to oversee CSR activities (Laguir et al., 2019). This work sheds light on the strategic deployment of MCS for effective CSR management, providing insights which potentially could be applied in the context of double materiality. Various analytical models have been employed to scrutinise the influence of MCS on sustainability strategies. For instance, both the Balanced Scorecard (Kaplan & Norton, 1992; Mio et al., 2022) and Simon's (1995) Levers Of Control (LOC) framework has been employed to explore how different management control conditions facilitate or hinder the integration of sustainability (Beusch et al., 2022; Gond et al., 2012), and to explore how MCS can foster strategic renewal (Arjaliès & Mundy, 2013).

Despite the prevalence of LOC in this area, criticism has been raised due to its incapacity to consider values (Johnstone, 2019). This highlights the need to consider alternative frameworks that may offer a more nuanced understanding of the complex dynamic between culture, management controls and the integration of sustainability strategies (Johnstone, 2019). The MCS package presented by Malmi and Brown (2008) has been used by researchers to examine how large companies establish a package of different controls to implement sustainable behaviour (Crutzen et al., 2017; Traxler et al., 2023; Traxler et al.,

2020; Ferretti et al., 2024), rather than studying MCS separately. Furthermore, the framework does not limit culture and values to something that must be formally controlled by top management, thus revealing an alternative approach to study this phenomenon.

Malmi and Brown (2008) stress the importance of viewing MCS as a package, pointing to the fact that different control systems can be used at different times, forming a package of systems. Similarly, Chenhall (2003) claims that studying MCS in isolation can lead to incorrect findings. The author exemplifies that while a control might have been successfully implemented in one organisation, its success could be contingent on other supporting controls and thus not have the same results in other organisations. Therefore, studying MCS in isolation would disregard this finding and another reason for using the Malmi and Brown (2008) framework becomes apparent.

As the implementation of CSRD draws nearer, the need for companies to conduct a double materiality assessment becomes increasingly more important. However, the need for integrating double materiality considerations into sustainability strategies remains unclear. This underscores the urgency of gaining a deeper understanding of how companies navigate the interconnectedness of sustainability strategies, double materiality requirements and management controls. As a result, it becomes interesting to see whether efforts are made to integrate double materiality requirements into operations – or if double materiality, on the contrary, is another 'ticking a box' type of framework that leaves strategies unaltered.

This study aims to conduct a qualitative exploration of the strategic adaptation and operationalization of the MCS package (Malmi & Brown, 2008) within the context of double materiality. Thus, the theoretical contribution of this thesis lies in its utilisation of the Malmi and Brown (2008) framework to shed light on the intricate dynamic between strategy, MCS and double materiality, providing a foundation for future research and practical implementation of sustainable practices. To conduct the study, the following research question has been formulated:

How can management controls explain how companies integrate double materiality requirements?

2. Literature Review

In this section, the theoretical foundation and previous literature is described in greater detail. Firstly, we establish a definition of double materiality and its implications for organisational strategy. Secondly, there is a transition into the realm of strategy and its relation to MSCs. We then move on to describing MCS in relation to sustainability practices, Lastly, the model of analysis that combines these concepts is introduced.

2.1 CSRD and Double Materiality

2.1.1 Background

Reporting in accordance with double materiality requirements entails recognizing both the environmental impact that derives from a firm's operations and the potential financial risks that could affect the company as a result of their sustainability risks (EFRAG, 2023). The concept of double materiality was first introduced by the Task Force on Climate-related Financial Disclosures (TCFD) in 2017 to decrease the ambiguity of the term of materiality found in NFRD (Baumüller & Sopp, 2022). Although the perspective gained broad support, the EU Commission stressed that the concept required clarification on how it should be applied in practice. As a result, CSRD operationalises the double materiality perspective, guiding organisations in application of the perspective (Baumüller & Sopp, 2022). CSRD clarifies that the perspective requires organisations to not only disclose information that is material from both financial and impact perspectives, but must also disclose information that is material from only one of the perspectives.

For many companies, conducting a double materiality assessment will require new mindsets, resources and processes (Chiu, 2022). These processes range from engagement with industry associations, internal assessments and dialogue with stakeholders, to applying sustainability frameworks and standards (Puroila & Mäkelä, 2019). When the material topics have been identified, they can be used to guide long-term company strategies (Puroila & Mäkelä, 2019). Double materiality serves as a framework that can help companies design their sustainability practices to serve the interests of both investors and stakeholders (Delgado-Ceballos et al., 2023).

2.1.2 Impact Materiality

When looking at firm-level sustainability, impact materiality considers the consequences of a business' activities on both society and the natural environment, where integrating this logic into business operations can contribute to global sustainability improvement (Delgado-Ceballos et al., 2023). This encompasses effects that are directly induced or influenced by the organisation itself, as well as impacts intricately connected to the organisation's activities both upstream and downstream in its value chain (EFRAG, 2022a). If the topic of GHG emissions is deemed material from the impact perspective, the focus lies on ensuring transparency about the scale and scope of the organisation's impacts. This could involve disclosing the quantities of various scopes of GHG emitted (EFRAG, 2022a). Additionally, if workforce training in a particular area is considered significant from the impact perspective, there may be requirements to disclose the development of skills and knowledge among employees responsible for implementing policies related to identified negative impacts (EFRAG, 2022a).

2.1.3 Financial Materiality

Previous lack of regulation has enabled companies to disregard disclosing certain emissions, failing to internalise environmental and social costs, rewarding them with profit at the expense of environmental deterioration (Stroehle et al., 2022). To counteract this, reporting risks and opportunities that are financially material may influence an organisation's ability to continue using the same resources or the organisation's ability to rely on relationships needed in its operations (EFRAG, 2022a). Furthermore, while information on GHG emissions can also be material from a financial perspective, the emphasis shifts to assessing its impact on the organisation's ability to create value. This may include evaluating the influence of GHG emissions on future cash flows, such as through carbon pricing mechanisms or participation in carbon allowances trading schemes. Similarly, if workforce training is material from a financial perspective, the focus is on how it influences the financial results of the organisation, including both positive outcomes and associated costs (EFRAG, 2022a).

Double materiality assessments can be used to guide the formulation of an organisation's strategy, by taking both financial and impact materiality into account. Apart from understanding how their material topics are identified, it therefore becomes interesting to understand how MCS are used within the organisation to execute sustainability strategies.

2.2 Strategy and Management Control Systems

2.2.1 Strategy

The overarching objectives of strategic formulation span a spectrum, encompassing responses to external forces, seizing new opportunities, accomplishing significant challenges, and meeting the varied expectations of stakeholders (Mishra & Mohanty, 2022). Strategy has also sometimes been defined adapting to change (Mishra & Mohanty, 2022). Furthermore, Mintzberg (1978) conceptualises it as a holistic system of decisions shaping the future of an organisation, with the impact of these decisions materialising through their effective implementation within the organisational processes and structure (Miles & Snow, 2003).

Strategy can take shape through deliberate planning, known as top-down strategy formulation, where specific outcomes are targeted (Kim & Arnold, 1996). Conversely, bottom-up strategy emerges organically, without explicit planning, often leading to outcomes that may differ from top management's intentions (Mintzberg & Waters, 1985). Yet, it's rare for changes to occur devoid of any intention; typically, there are broad directions guiding the process, albeit without detailed action plans (Mintzberg & Waters, 1985).

Having covered the breadth of strategic formulation, from its various objectives to implementation approaches, we can now transition to examining how organisations put these strategies into action through MCS.

2.2.2 Management Control Systems

The challenge of aligning divergent goals within an organisation underscores the fundamental issue of obtaining cooperation among individuals or units with partially congruent objectives (Ouchi, 1978). To address this, organisations often implement control systems aimed at aligning these interests (Langfield-Smith, 1997). While MCS have been defined in various ways, Anthony (1965) initially described them as processes enforced by managers to ensure the effective and efficient use of resources to achieve organisational objectives. However, this definition was criticised for its limitations (Langfield-Smith, 1997), leading to the popularity of definitions such as MCS being processes that influence behaviour (Flamholtz et al., 1985). Nevertheless, the lack of consistency in defining MCS has been noted to contribute to challenges in both researching and designing control systems (Malmi & Brown, 2008).

Control systems can also be used across different levels in an organisation in order to secure strategy implementation (Marginson, 2002). It is evident, based on this research, that there is a clear connection between strategy and MCS. This topic then brings us to the next part of our literature review, namely, previous research conducted about MCS package and sustainability, and what the connection between the two are.

2.3 Management Control Systems and Sustainability

2.3.1 Management Control System Package

In their model the 'Management Control System Package', Malmi and Brown (2008) distinguish five groups of controls: cultural controls, cybernetic controls, planning, reward and compensation, and administrative controls. The cultural controls are at the top of the model, emphasising their 'broad yet subtle controls'. The middle layer consists of cybernetic controls, planning and reward and compensation, and are claimed to have a clear connection. Finally, the authors have placed the administrative controls at the bottom, signalling their contribution to structure (Malmi & Brown, 2008). In their study, Crutzen et al. (2017) adopted the model, choosing to study the broad scope of how MCS work together, rather than focusing on them individually. Their study revealed that organisations show different patterns of control mechanisms, depending on their level of formal and informal controls.

Informal controls do not control behaviour through clear-cut measures, but rather concern values, traditions and beliefs that guide the behaviour of individuals in an organisation (Ouchi, 1978; Markus & Pfeffer, 1983). Additionally, individuals in organisations often gain these values, traditions and beliefs through interpreting and reading signals from their superiors and co-workers (Crutzen et al., 2017). In contrast, formal controls are purposefully designed, such as routines, processes and procedures. These support managers to safeguard that strategies and plans are implemented (Simons, 1995).

2.3.2 MCS Package and Sustainability

Previous research about management controls for sustainability, presents both informal and formal controls (Ghosh et al., 2019). In their study, Crutzen et al. (2017) attempts to clarify the intricate relationship between MCS and sustainability by delving into empirical investigations. The authors examined the degree to which organisations have formulated a comprehensive array of both formal and informal controls within the Malmi and Brown

(2008) MCS package. Crutzen et al. (2017) arrived at a significant conclusion: all the companies included in the study, to varying extents, employ sustainability management controls. Furthermore, their findings shed light on the diverse approaches organisations adopt in managing sustainability, either adopting formalised structures or more informal methods.

Below, Malmi and Brown's (2008) five groups of controls: cultural controls, cybernetic controls, planning, reward and compensation, and administrative controls, will be introduced in the context of sustainability.

Cultural Controls

Malmi and Brown (2008) claim that culture can be seen as a control system when it is used to regulate behaviour. Organisational culture has been defined as "the set of values, beliefs and social norms which tend to be shared by its members and, in turn, influence their thoughts and actions" (Flamholtz et al., 1985, p. 158; as cited in Malmi & Brown, 2008). Despite being a form of informal control, cultural controls are essential to promote planning, structure and governance of sustainability aspects, and can furthermore function as a form of internal peer pressure (Ghosh et al., 2019; Pondeville et al., 2013, as cited in Herremans & Nazari 2016).

Traxler et al. (2023) reveal a noteworthy finding regarding the significance of cultural controls in fostering an environment where sustainability initiatives are valued. They underscored the importance of establishing a corporate culture imbued with values and beliefs that prioritise sustainability. Moreover, Traxler et al. (2023) emphasised the need for this culture to transcend mere documentation and be tangibly experienced by employees. They cautioned that a lack of alignment between stated values and actual employee experiences could potentially undermine the efficacy of other control mechanisms. These findings are similar to what was found in other studies regarding cultural controls (Bauer et al., 2023; Ferretti et al., 2024; Ghosh et al., 2019).

*Cybernetic Control*s

Cybernetic controls create a link between behaviour and targets within an organisation, establishing accountability to ensure that they are being met (Malmi & Brown, 2008). Furthermore, these controls can be used to quantify underlying phenomena in an organisation (Green & Welsh, 1988). In their MCS package, Malmi and Brown (2008) take four types of

cybernetic controls into consideration: budgets, financial measures, non-financial measures and hybrids, that include both financial and non-financial measures. These controls have five characteristics: (1) they allow quantification, (2) there are specific targets, (3) there is a feedback process that enables evaluation of performance related to the target, (4) there is an analysis of the comparison and (5) the system or activities are adjusted accordingly (Malmi & Brown, 2008).

Cybernetic controls exert a significant influence on sustainability practices (Ferretti et al., 2024; Traxler et al., 2023). Particularly noteworthy is the discovery that external information demands, such as rankings and Global Reporting Initiative (GRI) guidelines (Traxler et al., 2023), can prompt organisational adaptations in processes and the incorporation of sustainability-related data into organisational information systems (Ferretti et al., 2024; Traxler et al., 2023). Another example of such controls are budgets which can be utilised to address sustainability concerns, providing a framework for tracking specific aspects of sustainability, such as progress towards eco-efficiency (Crutzen et al., 2017).

Planning

Planning serves as a crucial control mechanism that guides efforts and behaviours toward achieving organisational goals (Malmi and Brown, 2008). By establishing standards and goals across the organisation, planning facilitates activity control and encourages goal alignment (Malmi & Brown, 2008). While few companies exhibit a high level of integration of sustainability objectives into their corporate strategy, for most, sustainability practices are not closely linked with core management processes (Crutzen et al., 2017).

However, this perspective has evolved over time, with sustainability objectives increasingly becoming a fundamental aspect of organisational strategy, potentially leading to greater integration of sustainability into corporate strategy. Organisations also develop long-term plans to address environmental, social and governance (ESG) objectives, particularly in response to heightened regulatory pressures (Ferretti et al., 2024). Furthermore, changes in the planning process or changes in goals can also lead to changes in the sustainability report, where new goals result in changes in the content of the report (Traxler et al., 2023). The sustainability report could be seen as a form of control instrument to drive implementation of set goals (Traxler et al., 2023). Planning for sustainability often poses challenges, with some

companies prioritising long-term goals for legitimacy rather than recognizing planning for its instrumental value (Crutzen et al., 2017; Traxler et al., 2023).

Reward and Compensation

Controls related to reward and compensation target the motivation of employees, aiming to increase their performance by aligning their goals with those of the organisation (Bonner and Sprinkle, 2002; as cited in Malmi and Brown, 2008). Enhancing individual performance can be achieved through fostering either intrinsic or extrinsic motivation, with management accounting research primarily emphasising extrinsic rewards such as monetary remuneration (Traxler et al., 2020). Furthermore, Ferretti et al. (2024) argue that linking the control mechanism of reward and compensation to sustainability purposes increases accountability and thereby can promote sustainability commitment at various levels in an organisation. In contrast, Traxler et al. (2023) and Crutzen et al. (2017) claim that reward and compensation was the control that were the least observed, which was presumably due to the fact that certain sustainability measures are not only based on monetary incentive, but of moral ones. It could also be related to the fact that top management may not be interested in pursuing sustainability projects that contradict financial objectives (Crutzen et al., 2017).

Administrative Controls

Finally, administrative controls can be described as controls that affect employee behaviour through organisational design, accountability or policies (Malmi & Brown, 2008). These types of administrative controls, as highlighted by Traxler et al. (2023), play a crucial role in ensuring sustainability within organisations. For example, they can be used across multiple levels in an organisation to ensure strategy implementation (Marginson, 2002). Three categories of administrative controls can be identified: organisational design and structure, governance structures (such as board composition and meetings), and policies and procedures (including standard operating procedures, rules, and behavioural constraints) (Traxler et al., 2020). For instance, companies can establish dedicated units and formal management structures to oversee sustainability initiatives. This includes the creation of ESG boards and committees to provide strategic guidance and oversight (Ferretti et al., 2024). Such administrative measures are vital as they empower employees across all levels to contribute to sustainability efforts (Traxler et al., 2023). Furthermore, administrative controls consider to which degree top management and the board is involved in sustainability activities, and the higher the integration the higher the quality of the sustainability report (Traxler et al., 2020).

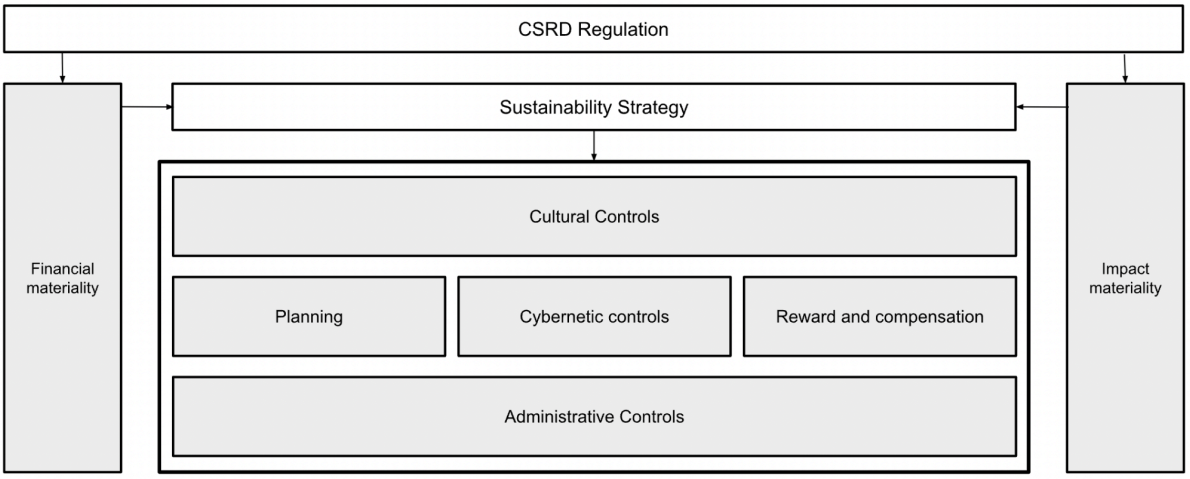
2.4 Model of Analysis

As the implementation of CSRD approaches, a corresponding necessity for companies to undertake a double materiality assessment arises. In light of double materiality, companies are expected to consider both the financial and impact materiality of their operations in their sustainability report (EFRAG, 2022b). This perspective aims to target the issue that companies previously have failed to internalise environmental and social costs, rewarding them with higher profits at the expense of environmental damage (Stroehle et al., 2022). As companies are accountable for both the financial and impact materiality of their operations, changes will likely be made to their sustainability strategies to cater to the needs of the environment, stake- and shareholders. Integrating these changes into their operations requires a plan for the operationalisation of their sustainability strategy.

The proposed model in Figure 1 emphasises the utilisation of MCS, drawing from Malmi and Brown's (2008) comprehensive framework. The MCS package encompasses various control mechanisms tailored to align strategic goals with operational activities, including cultural controls, cybernetic controls, planning, reward and compensation, and administrative controls. Cultural controls are typically regarded as slow to change, positioned at the top of the typology to denote their broad yet subtle nature, providing a contextual framework for other controls (Malmi & Brown, 2008). Cybernetic, planning, and reward and compensation controls are situated in the middle, closely interlinked in many organisations and presented in a sequence order from left to right. Administrative controls, located at the bottom, establish the structure within which cybernetic, planning, and reward and compensation controls are enforced (Malmi & Brown, 2008).

Figure 1

Model of Analysis



Model of analysis developed for the study, based on Malmi and Brown (2008).

This thesis proposes that organisations can effectively translate sustainability strategies into their operations by leveraging MCS components. This integrated approach ensures that sustainability considerations permeate organisations, driving both holistic and impactful sustainability efforts and CSRD compliance. Based on this, we aim to answer how management controls can explain how companies integrate double materiality requirements. The analytical model will be used to structure the thesis' discussion, based on the identified MCS components that are presented in the empirical findings.

3. Research Method and Approach

In this section we will present the method to how we reached our results. Firstly, we will discuss the operationalisation and preparatory research done before conducting the actual study. Thereafter, we explain the research design and the case study selection. Then we move on to discuss how the data was collected and analysed and lastly the empirical validity of the findings is presented.

3.1 Operationalisation and Preparatory Research

In order to operationalise Malmi and Brown's (2008) MCS package, the controls and components found in the model were complemented with examples of how they could be translated into the activities, as found in Table 1. These activities are based solely on operationalisations and results found in previous research by Traxler et al. (2020), Traxler et al. (2023), Crutzen et al. (2017), Ferretti et al. (2024) and Malmi and Brown (2008), as referenced below.

Table 1

Examples of Activities Based on Operationalisation of Controls and Their Components

Type of Control *Malmi and Brown (2008)*	**Components** *Malmi and Brown (2008)*	**Activities (Operationalisation of Components)** *Traxler et al. (2020), Traxler et al. (2023), Crutzen et al. (2017), Ferretti et al. (2024), Malmi and Brown (2008)*
Cultural	Value-based controls Clan controls Symbols	Education Internal/external communication Part of corporate strategy
Cybernetic	Budgets Financial measures Non-financial measures Hybrids (financial and non-financial measures)	Targets Quantified targets Industry benchmarking Process for assessment of target outcome Process for feedback into operations
Planning	Long range planning Action planning	Long-term planning Short-term planning Action plan
Rewards and Compensation	Rewards or compensation attached to achievement of goals	Remuneration policy

Administrative	Organisational design and structure Governance structures within the firm Procedures and policies	Sustainability department Participation in sustainability ratings ESG Related Documents Double materiality assessment Sustainability reports

However, as the study explored how management controls can explain how companies integrate double materiality, it was deemed vital to further operationalise and distinguish controls related to impact and financial materiality. This was done by conducting a preparatory study. The preparatory study consisted of a review of annual reports from eight listed companies that are required to comply with CSRD in 2024. Although the findings from these eight companies were not included as empirical evidence in our findings or discussion, analysing them allowed us to identify activities that could target either impact or financial materiality requirements, based on the examples of activities found in Table 1. By gaining this understanding, we were able to categorise said activities related into impact and financial materiality respectively, as exemplified in Table 2.

Table 2

Examples of Operationalised Controls Related to Double Materiality

Type of Control	**Activities (from Table 1)**	**Impact Materiality (examples from Appendix III)**	**Financial Materiality (examples from Appendix III)**
Cultural	Education Internal/external communication	Offering ESG-training for employees to promote reduced impact. Sustainability managers participate in department specific meetings to raise awareness.	Communicating ESG-training as part of strategy to attract and retain talent. Communicates sustainability work as a strategic enabler, helping them to become the industry leader.
Cybernetic	Quantified targets Process for assessment of target outcome	Quantified CO2-emission targets. Comparison to previous year outcome in sustainability report.	Reduction targets for financially quantified risks. On a yearly basis, an inventory of all risks under the responsibility of the unit, including climate-related risks, is conducted.

Planning	Long-term planning Short-term planning	Plan to reduce emissions, e.g. Net-Zero Plan. Plan to materialise opportunities and mitigate impact on a short-, medium- and long term.	Long-term plans to materialise impact related financial opportunities and mitigate threats. Plan to materialise CDP Response opportunities and mitigate threats on a short term.
Rewards and Compensation	Remuneration policy	% of short term incentive programs on a yearly basis evaluated on sustainability performance, e.g. emission reduction in Scope 1-3.	Financial compensation based on sustainability performance.
Administrative	Sustainability department Participating in sustainability ratings	Designated department for management of ESG-impact. Describes participation in the ratings as an additional way to follow up their sustainability efforts.	Designated department for financial ESG risks and opportunities. Sustainability ratings are used as a benchmark when comparing performance to competitors.

We were able to use the preparatory study as a method to test beforehand whether Malmi and Brown's (2008) framework and the operationalisation found in Table 1 and 2 would be a useful tool for us to adopt when coding our data from interviews and case company documents (Fereday & Muir-Cochrane, 2006). Furthermore, despite not including it in the empirical findings, the preparatory study helped us design research questions, select relevant study participants and further justify our research question and design (Bell et al., 2019).

3.2 Research design

Given the limited knowledge of how management controls can explain double materiality integration, we have conducted an exploratory multiple case study. We chose to include multiple cases in order to understand, from the perspective of different companies and industries, how management controls can explain how companies integrate double materiality requirements. This method is deemed to be particularly suitable to investigate relatively unexplored and complex phenomena when there is limited existing knowledge (Edmondson & McManus, 2007).

We selected a multiple case study approach to explore double materiality due to its capacity to yield robust and comprehensive findings (Yin, 2003). This methodology often enables the replication of results (Herriott & Firestone, 1983) and facilitates the comparison and extension of existing theories to accommodate empirical evidence (Halkias, 2022). Furthermore, multiple case studies are particularly advantageous for addressing broad "How" and "Why" questions, which often signify gaps in the literature (Halkias, 2022). Consequently, the decision to employ a multiple case study approach was driven by the desire to attain more compelling and thorough insights into the implementation of double materiality compared to a single case study methodology (Yin, 2003).

We carried out our analysis by gathering empirical data about sustainability practices in our case-companies. Furthermore, as management control is a broad concept, and thereby also difficult to develop practicable applications to organisations (Crutzen et al., 2017; Malmi & Granlund, 2009), we used the more practice oriented Malmi-Brown (2008) framework, as presented and operationalised in Table 1 and 2.

3.2.1 Case Study Selection

In this study each case was selected by the assumed similarity in that they would be affected by CSRD, however, to create more robust findings, we also included companies in different sizes and industries. Each case in a multiple case study must be carefully selected, so that it either predicts similar results from other cases or that it predicts contrasting results for predictable reasons (Yin, 2003). As seen in Table 3 there is one company within consumer retail and two in telecommunications. To ensure that the large differences in number of employees and net sales would not affect the comparability of the case companies, we opted to include different sizes of companies in our preparatory study. By doing so, we were able to test, and establish, that we were observing similar controls in companies despite their differences in size and specific industry. In addition, since all three case companies will be required to report in accordance with the same regulation (CSRD), we were able to further justify their comparability.

Table 3

Summary of All Case Companies

Anonymised Name	**Industry**	**Respondents**	**Number of Employees**	**Net Sales 2022**
Echo	Consumer Retail	3	~ 4 000	> 10 000 MSEK
Zenith	Telecommunications	2	~ 100 000	> 200 BSEK
Nova	Telecommunications	2	~ 4 500	> 20 000 MSEK

3.2.2 Selection of Respondents

In order to ensure that the respondents were relevant to answering the research question, we carried out a purposive sampling of participants (Bell et al., 2019). This sampling technique was used in combination with a snowball sampling technique, where initial relevant respondents helped us establish contact with other relevant participants (Bell et al., 2019).

When selecting the respondents, it was deemed important that all respondents either had been part of conducting the double materiality assessment or worked with sustainability within the organisation. This criteria ensured that they would have direct insight into how CSRD and double materiality requirements would influence the rest of the organisation. As displayed in Table 4, most participants worked for the sustainability department. Respondent 1 did not, but had been involved in conducting the double materiality assessment. Respondents 4 and 5 did not work full-time with sustainability, but were part of the company's sustainability group as representatives from their respective company functions.

3.3 Data Collection

3.3.1 Interviews

In preparation for the interviews, semi-structured questions based on the operationalisation of controls in Table 1 were developed to facilitate exploration of topics lacking consolidated knowledge, aligning with the exploratory nature of the case study (Griffith et al., 2015; Merriam & Tisdell, 2015; Bell et al., 2018; as cited in Ferretti et al., 2024). This flexible approach allowed for the formulation of an interview guide while granting interviewees the flexibility to respond according to their perspectives and experiences (Bell et al., 2019).

Empirical data collection primarily involved conducting open-ended interviews with semi-structured questions, supplemented by the review of company documents. Each interview, lasting between 27 to 50 minutes, was conducted via Zoom. Table 4 provides specific details about each interview and the interviewee. Both authors attended every interview, enhancing the reliability of findings through gaining diverse perspectives (Eisenhardt, 1991). Transcriptions were in Swedish for interviews conducted in that language, with subsequent translation to English for quotes. To mitigate potential biases, both researchers independently translated quotes, then discussed and selected the most appropriate translation.

Formulated as part of operationalization, the interview guide, detailed in Appendix I, focused on double materiality assessment and sustainability practices within the framework of Malmi and Brown (2008), ensuring alignment with the research question (Bell et al., 2019). The structure offered the interviewee flexibility in answering the questions while still allowing us to prompt them in the right direction so that we could gather the required information.

Table 4

Compilation of Respondents and Interview Information

Respondent	**Company**	**Role**	**Duration**	**Words Transcribed**
Respondent 1	Zenith	Project Manager	48 minutes	6316
Respondent 2	Nova	Sustainability Associate	29 minutes	3646
Respondent 3	Echo	Head of Sustainability	42 minutes	4959
Respondent 4	Echo	Member of Sustainability Group	27 minutes	2792
Respondent 5	Echo	Member of Sustainability Group	50 minutes	7053
Respondent 6	Nova	Sustainability Associate	48 minutes	5942
Respondent 7	Zenith	Sustainability Associate	40 minutes	5367

3.3.2 Company Documents

As this study was formulated as a case study, we not only wanted to include information gathered from the interviews, but also from published company documents. This gave us a more comprehensive view of the three case companies and allowed us to gain a deeper

understanding of the controls in place. The company documents were used to complement the interview findings, allowing us to further explore and verify our interview findings, as shown in Appendix III. Initially, we perused the companies' websites to extract insights pertaining to sustainability practices and their operational approach towards sustainability. Subsequently, we conducted a comprehensive review of the publicly available documents produced by the company. Our investigation revealed an array of materials including sustainability reports, policies, codes of conduct and other pertinent documents addressing sustainability and governance issues. Thereafter, documents that lacked relevance were sorted out and the suitable documents were thoroughly reviewed and coded. All the used documents for the different case companies are presented in Appendix II.

3.3.3 Ethical Considerations

When contacting respondents, an email was sent with information that included the purpose, objectives and scope of the study. The email also included information about the proposed length of the interview and interview setting. This was done in order to ensure voluntary informed consent, which proposes that research participants should be provided sufficient information about a study in order to make an informed decision about their participation (Bell et al., 2019). All participants individually consented to participating in the study through email. Three of the respondents requested and were provided with the questions beforehand, which can be argued to have further strengthened the principle of voluntary informed consent.

The respondents were made aware of their company's and personal anonymity beforehand and were asked whether they agreed to being recorded for transcription purposes. Anonymity was promoted through anonymizing the company name and respondents. To ensure anonymity of the case companies, quotes from company documents that have been included in the empirical findings have been paraphrased.

3.4 Data Analysis and Assessment of Empirical Trustworthiness

3.4.1 Data Analysis

After the interviews, we transcribed them in order to make an analysis possible. As transcribing interviews can be very time consuming (Gray, 2016), two different online

transcription tools were tested and used. The tools were used to facilitate and speed up the process, however, the material still needed to be checked for errors.

In order to code and analyse the interviews and the company documents, thematic analysis was used, as it stands out as a predominant method for examining qualitative data, offering an efficient means of identifying patterns within the data. This was done by pinpointing themes that served as categories for our analysis, and this approach facilitates a comprehensive understanding of the dataset (Fereday & Muir-Cochrane, 2006). Furthermore, thematic analysis was chosen as an appropriate method as it can be used for uncovering collective experiences and to delve deeper into qualitative data (Braun & Clarke, 2006).

More specifically, we adopted a template approach, starting with our interview guide (Appendix I), to identify themes in the data. Our approach was based on the framework by Malmi and Brown (2008) and our operationalization of double materiality as presented in section 3.1. This method was preferred over an inductive approach, where themes are derived from the data itself (Braun & Clarke, 2006). Given the extensive amount of data, the template provided a structured starting point for analysis. While we adhered to the template, our coding process was not confined by it; rather, it served as a guide. We summarised each data input and coded for different control systems, marked in different colours, including data related to double materiality, using the operationalisation found in Table 1 and 2. Irrelevant data was filtered out to streamline analysis. Following the coding, we identified themes and patterns, such as differences or similarities between cases (Fereday & Muir-Cochrane, 2006).

Both the interviews and the company documents were treated equally, meaning that we used a template approach when coding and analysing them both. This method was chosen so that the findings in both the interviews and the company documents could be compared. The information found in the interviews and the company documents alike did not contradict one another, but instead complemented each other. In Appendix III examples of identified controls are presented and their respective source (either interviews or company documents).

3.4.2 Compilation of Findings

In favour of structuring the coded data, the operationalisation in Table 1 and 2 was used to create a system so that we could in an orderly approach sort our findings. This approach was based on the structure tested when conducting our preparatory study. First, we coded the

documents and interview transcriptions to identify examples of operationalised controls found in Table 1. After identifying said controls, the different components of the controls were analysed to determine whether they targeted impact or financial materiality, using the operationalisation found in Table 2. This double operationalisation allowed us to compile our aggregated findings, found in Table 5 and Appendix III. For each checkmark found in Table 5, Appendix III has a corresponding comment with reference to information from internal documents/interviews. This approach gave us a holistic view of our coded data, which was important in order to ensure transparency when analysing such large amounts of information based on comparable controls in different companies.

3.4.3 Assessment of Empirical Trustworthiness

Trustworthiness is a way for both readers and authors to assure themselves that the findings of a study are noteworthy (Nowell et al., 2017). There are four criteria to trustworthiness, i.e. credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985). If requested by the respondents, quotes were sent for approval before the thesis was published. This also helped to increase credibility of the study, through addressing the fit between our respondents' views and our representation of them (Nowell et al., 2017). In addition, we triangulated different data collection modes in order to gain credibility, that is both interviews and company documents (Lincoln & Guba, 1985). Transferability was secured mostly by having a multiple case study, which made sure that case-to-case transfer was possible (Tobin & Begley, 2004). To attain dependability, we ensured that we had a rigorous method's chapter and also by documenting the empirical data and saving it in traceable files (Tobin & Begley, 2004). Confirmability is established when credibility, transferability, and dependability are all achieved (Lincoln & Guba, 1985). Additionally, we incorporated markers such as reasons for theoretical, methodological, and analytical choices throughout the study to facilitate understanding of the decision-making processes (Koch, 2006).

3.5 Methodological Limitations

Only conducting a few interviews in each of the case companies can be argued to make it difficult to understand how comprehensive the use of management controls to operationalise double materiality is. However, a multi-case study approach involving companies in different industries was chosen to gain a general understanding of how operationalisation processes can look, rather than an extensive case study on one in particular. In addition, the use of the

documents listed in Appendix II allowed for more comprehensive understanding, both complementing and validating information gathered from interviews with employees. However, the subjective nature of the operationalization could also potentially influence the interpretation and replicability of the results.

Conducting interviews with employees from different companies can be challenging due to their varied roles and responsibilities, making comparisons difficult. To address this, the interview guide included broad questions about the use and perception of control, allowing for meaningful discussion regardless of each respondent's specific involvement in sustainability efforts. Table 4 and section 3.2.2, Selection of Respondents, enhance transparency by detailing their roles and responsibilities related to sustainability.

Furthermore, while thematic analysis is adaptable, this adaptability can lead to inconsistency and a lack of coherence in finding themes in research data (Holloway & Todres, 2003). To ensure consistency and cohesion, we applied and explicitly articulated a theoretical framework in our literature review that can logically support the empirical claims of the study (Holloway & Todres, 2003).

4. Empirical Findings

In this section, the aggregated empirical findings from interviews and document analysis will be presented, followed by findings of controls grouped by each case company.

4.1 Introduction to Findings

Presented in Table 5 below is an overview of the aggregated empirical findings that have been consolidated using both published company documents and interviews. The empirical findings found in 4.2 through 4.4 have also been consolidated in Appendix III, which provides an explanation and reference to the source for which each check mark found in Table 5 has been based on. The documents listed under administrative controls were reviewed and coded to identify communication or descriptions of controls related to impact and financial materiality. As can be observed, Zenith and Nova have a complete control package for impact materiality, whereas Echo does not. Complete controls for financial materiality are lacking in all case companies, but at different levels.

Table 5

Aggregated Empirical Findings

	Echo		**Zenith**		**Nova**	
	Impact	**Financial**	**Impact**	**Financial**	**Impact**	**Financial**
Cultural						
Education	✓		✓	✓	✓	
Internal communication	✓		✓		✓	
External communication	✓		✓	✓	✓	✓
Part of corporate strategy		✓	✓	✓	✓	✓
Cybernetic						
Targets	✓		✓	✓	✓	✓
Quantified targets	✓		✓	✓	✓	✓
Process for assessment of target outcome	✓		✓	✓	✓	✓
Process for feedback into operations	✓	✓	✓	✓	✓	✓
Industry benchmarking			✓		✓	✓

Planning						
Long-term planning	✓	✓	✓	✓	✓	✓
Short-term planning	✓		✓	✓	✓	✓
Action plan			✓	✓	✓	✓
Reward & Compensation						
Remuneration policy	✓	✓	✓	✓	✓	✓
Administrative						
GRI Compliant	✓		✓		✓	
Double materiality assessment	Not finalised		✓		✓	
Code of conduct	Not public	Not public	✓		✓	
Supplier code of conduct	✓		✓		✓	
Sustainability department	✓		✓		✓	
Sustainability ratings			✓	✓	✓	✓
Sustainability representatives outside sustainability department	✓		✓		✓	

4.2 Echo

4.2.1 Introduction and Strategy

Echo is a multinational company within the customer retail industry, which focuses on their cost leadership strategy in order to be able to present the lowest possible price towards customers. However, Echo's employees emphasise during interviews that they do not believe that this opposes them to prioritise sustainability efforts. One respondent claims that for Echo, resource efficiency and a cost leadership strategy goes hand in hand:

> In our case, it has been quite easy and natural to connect resource efficiency and responsibility to environmental criteria. (Respondent 3, Echo)

When looking at Echo's strategy, interviewees claim that changes in the strategy and approach will be made leading up to CSRD and double materiality, however, this is mainly attributed to the ESRS standards:

> It has (sustainability initiatives) intensified in a way that we need to adhere to CSRD requirements, including materiality assessments. Previously, we have of course had stakeholder dialogue, followed up internally, identified key areas for reporting, and set activities and goals accordingly. Now, we need to base our efforts on the established ESRS standards, which means there is a little less room for interpretation in this area. (Respondent 5, Echo)

Also mentioned during the interviews is that the financial part of double materiality is new, requiring Echo to establish new strategies and processes around in order to implement it into operations. This is also reflected in their corresponding controls related to financial materiality, as observed in Table 5.

4.2.2 Cultural Controls

Respondents unanimously stressed the high prioritisation of sustainability and CSRD. They emphasised the seriousness of Echo's approach, with allocated resources and functions. For example, Respondent 5 noted increased participation from the finance department in sustainability groups, highlighting their historic lack of involvement due to perceived irrelevance. Both Respondents 3 and 5 emphasised that CSRD should transcend mere reporting obligations, advocating for its integration into operations to drive meaningful impact beyond annual key figures.

During interviews, it was noted that impact materiality takes precedence, while financial materiality is yet to be fully integrated. The only aspect of the sustainability strategy aligning with the corporate strategy is the synergy between sustainability and cost leadership (resource efficiency), reflecting financial materiality. However, beyond this alignment, the analysis of the interim report reveals that the sustainability strategy appears detached from the corporate strategy. Although the report frequently asserts that low prices are compatible with sustainable practices, this linkage lacks clarity in the corporate strategy.

In the company documents, a more holistic view of what Echo does from a cultural standpoint is provided:

> Each member of the management team holds significant responsibility within their respective departments, ensuring constant communication of relevant topics and issues to all colleagues. (Sustainability report, 2022/2023)

In both the External Code of Conduct and Sustainability report Echo communicates externally about their sustainability endeavours as well as how they educate both employees and suppliers. It was observed during the interviews that these internal initiatives solely communicate impact materiality.

4.2.3 Cybernetic Controls

Echo's sustainability report includes different kinds of sustainability data, measuring for example carbon dioxide emissions, sustainable cotton usage and gender distribution among employees. For some of these measurements there are quantified targets, i.e. to become climate neutral in scope 1, 2 and 3 by 2045. In the sustainability report there are also year to year comparisons of the targets. These targets only measure progress related to impact materiality, no targets were observed to measure financial materiality.

Respondent 3 mentioned during their interview that Echo has comparable data:

> In most areas, if we look at the six years we have reported on sustainability, we have become more refined in our follow-up. And thus, we have comparable data in many areas. Not all. But in many areas, we have comparable data year after year. (Respondent 3, Echo)

It was observed during the interviews that the evaluation of these set targets have influenced the operations. For instance, they have a target to use less virgin plastic, and each year they evaluate that and see how the previous year has gone. To reach this target, Echo has implemented new methods to use material more efficiently, demonstrating both impact and financial materiality, reducing environmental impact whilst simultaneously reducing costs.

4.2.4 Planning

Echo presents both short-, long-term, and action planning. This is observed in the sustainability report as they have both action plans and a long-term direction for each part of their sustainability strategy (social, environmental, economic and products). However, there are no tangible activities for the short-term goals, which is observed both in the interviews

and in the company documents. The different kinds of planning presented in the annual report can, however, only be observed from an impact materiality perspective.

During the interview with Respondent 4, they explain how Echo uses planning to ensure resource efficiency, as exemplified with the use of virgin plastic. One concern mentioned during the interviews is the potential need to plan in order to be able to internalise climate compensation costs, which might make it easier to also both plan environmental and economic impact:

> In the future, it will be much easier to set both financial goals in sales, margins, as well as a CO2 footprint for a business area, store, or warehouse. (Respondent 4, Echo)

This sort of planning shows that Echo takes both impact and financial materiality into account when long-term planning, as it is not yet materialised but is assumed to be so in the future.

4.2.5 Reward and Compensation

Echo has a remuneration policy that includes sustainability and sustainability goals. However, the exact proportion of the sustainability part is unclear. It could be argued that the remuneration policy targets both impact and financial materiality, due to the monetary compensation of the policy and its aim to reward decreased environmental or social impact.

4.2.6 Administrative Controls

Echo has administrative controls in place such as different policies, documents and formal structures. The supplier code of conduct ensures that Echo's suppliers follow a framework for safe work environments and work with environmental goals. The supplier code of conduct solely is material from the impact perspective.

Echo has a sustainability department consisting of one person, with sustainability representatives in the whole organisation. The sustainability department in cooperation with other departments conducted a mapping of their material risks and opportunities in preparation for their IPO, which Respondent 3 mentions also required them to quantify their risks monetarily. Their first annual report as a public company has yet to be published, which is planned to include their currently not yet finalised double materiality assessment. However,

as these risks are only mentioned in the sustainability report and in the prospectus and not explicitly quantified or planned for, it cannot be concluded how the sustainability department or representatives work actively with financial materiality. However, Respondent 5 affirms that Echo has seen a greater involvement from the finance department:

> I would say finance is getting more involved, partly because the formal requirements for reporting increase [...]. Perhaps a finance function is a little more used to it, so it becomes natural to link the two functions together. (Respondent 5, Echo)

4.3 Zenith

4.3.1 Introduction and Strategy

Zenith is a multinational company in the telecommunications industry. As communicated in their annual report, their vision is to always be in the forefront of their industry. They claim that sustainability and responsible business practices can drive progress and create value for their stakeholders.

When asked about the impact of the coming CSRD regulation on their strategy, both Respondent 1 and Respondent 7 claim that there have not been any major changes as of yet. Respondent 1 reasons that this could be a consequence having only just finished the double materiality assessment, which was accepted by the board during 2023 according to the annual and sustainability report:

> In the end it (the double materiality assessment) is putting a lot of questions into what we need to do as an organisation, across the organisation. [...] I think that will put some additional questions on our strategies, our priorities and how much effort we want to put in certain areas. (Respondent 1, Zenith)

Both Respondent 1 and Respondent 7 appear to agree that the strategies that Zenith has already set might need to be altered, but that it is more a matter of identifying and assessing gaps, rather than the changing strategies completely. Both respondents also emphasise that the work moving forward will focus on managing gaps in the topics that have been identified as material, as a result of the conducted materiality assessment.

4.3.2 Cultural Controls

Respondent 1 emphasised that the new CSRD regulation has altered Zenith's approach to sustainability within the organisation:

> We should not look at this as from a, you know, ´ticking the box´ type of exercise. We should take this opportunity to embed sustainability in the organisation. (Respondent 1, Zenith)

In order to do so, both respondents mentioned initiatives that are aimed to up-skill their employees, referring to ESG knowledge as being a critical skill for them as a company. Some mentioned examples include online education and communication and sharing of knowledge from the sustainability department. From this perspective, ensuring sufficient knowledge in order to efficiently work to reduce ESG-impacts can be seen as controls related to impact materiality. At the same time, their annual report also mentions that offering ESG-related training is a part of their strategy to attract and retain talent. This is also mentioned by Respondent 1:

> It's of course a big thing to be good for the environment, right? But it's also a big competitive advantage to have products which are energy efficient. The same thing around talent, being a company that is perceived as a diverse company, as an inclusive company, is very important to attract talent, which is the key pillar of the company which is so reliant on R&D, for instance. (Respondent 1, Zenith)

Indirectly acknowledging the financial opportunities of sustainability initiatives can be seen as a control related to financial materiality.

Both respondents claim that the intranet is commonly used to communicate different types of initiatives, for e.g. environmental efforts, diversity initiatives and well-being initiatives. Communication regarding the organisation's impact seems to be prioritised, whilst both agree that communication regarding financially material risks and opportunities is not done yet.

Finally, Zenith's corporate strategy was observed to have both financial and impact materiality, as they communicate not only to have a core focus to be a profit-driven cooperation, but also to initiate projects to compensate for their risks, environmental and social impact:

> Being at the forefront of the market and technology isn't enough for Zenith to be considered a leader in the industry. It's equally important for Zenith to demonstrate leadership in ethical, social, and environmental aspects. Our primary aim is to handle the most material impacts we have on people, communities, and the planet. We also prioritise a comprehensive approach to risk management, including environmental, social, and governance risks across our supply chain, operations, and downstream activities. (Annual and Sustainability Report, Zenith)

4.3.3 Cybernetic Controls

When looking at Zenith's cybernetic controls, it was observed during the interviews that the organisation has clearly set long- and short term 'Objective and Key Results' (OKRs) in the organisation. In order to be able to measure these objectives, Zenith, according to their environmental policy for business partners, sets requirements for their suppliers to be able to calculate different environmental KPIs and report back the result.

Their annual report quantifies ESG goals, with comparable numbers from previous year, allowing users of the information to understand their development. Zenith's annual report also provides users with quantified industry benchmarks, allowing for comparability between competitors. Furthermore, Zenith has used the Science Based Target Initiative (SBTi) to set environmental targets that are in line with the Paris agreement to reduce emissions.

It can be observed in the annual report that there is a bigger focus on targets that quantify their environmental and social impact, rather than financial materiality. Respondent 7 explains that the new regulations set higher demands that need to be met, stating that they are still in the process of evaluating how they best can quantify the financial effects of ESG impacts. At the same time, the respondents both explain that quantification can be difficult:

> Now, whatever we set as a target will be even more scrutinised going forward, so we have to be very clear on which targets we set and how we're going to achieve them, before we go around out and set new targets. (Respondent 1, Zenith)

When looking at the company's CDP report, the organisation shares quantified potential financial risks and opportunities for the company in connection to the environment. For instance, one potential risk is linked to a chance for increased taxation for GHG emissions.

Most of the CDP report is observed to address financial materiality, but is also the only found document that concerns financial materiality to such a degree. Furthermore, all risks (not only environmental) are also, on a yearly basis, assessed and reviewed by the responsible S&CR unit.

4.3.4 Planning

Respondent 1 explained that a large part of the preparation for CSRD involved ensuring that they had a process for collecting the necessary data needed to report:

> We mapped to see this is "we already reporting, [...] "we have the data, but we're not reporting" and [...] "we don't have the data yet". We have done this exercise and now [...] we have to go back to the executive team, leadership teams, and make it clear that these are the gaps that we have, this is the timeline that we have and then we need to start planning to be able to collect that information. (Respondent 1, Zenith)

This kind of planning is observed to be a kind of long-term planning. However, Zenith also has both short-term planning and action planning, for both impact and financial materiality.

An example of planning for financial materiality is their CDP report. In this Zenith communicates their plans to materialise the opportunities and mitigate the risks on a short-, medium- and long term. The opportunities and threats are quantified. Furthermore, this report also addresses planning for impact materiality, with action plans and short- and long-term plans.

4.3.5 Reward and Compensation

Respondent 7 refers to the Long Term Variable Compensation (LTV) as described in Zenith's annual report. Zenith's annual report shares that the LTV compensation related to ESG is split into two components: reducing carbon dioxide equivalent emissions in the organisation's own activities and increasing the representation of female leaders. The LTV is material both from an impact and financial perspective.

4.3.6 Administrative Controls

When looking at Zenith's administrative controls, the organisation has several policies in order to regulate and set goals for their operations. Examples of documents include their code

of business ethics, which serves as a governance framework for both share- and stakeholders, CDP Response, annual and sustainability report. As part of their 2023 annual- and sustainability report, the double materiality assessment which was approved by the board in 2023 was included. These documents mainly concern impact materiality, however, the annual report addresses financial risks and opportunities deriving from their operations.

Zenith's sustainability department operates within the marketing and external communication function. It serves as a liaison for ESG regulations and consolidates ESG data from across the organisation. While not owning the ESG goals, they translate regulations and oversee data consolidation. Some employees handle ESG matters alongside their regular workload. Impact materiality is administered mainly through the sustainability department, but each function has a responsibility to mitigate the impact. For managing financial materiality, Zenith utilises an Enterprise Risk Management (ERM) Framework to assess risks' significance, likelihood, and potential impact. Climate-related risks are overseen by the central Sustainability & Corporate Responsibility unit, which engages with all group functions and business areas. However, each function is responsible for handling these identified risks.

4.4 Nova

4.4.1 Introduction and Strategy

Nova is a multinational company within telecommunications, whose focus lies within being able to give the most efficient product to their customers. Furthermore, Nova communicates in their annual report that it is important for them to balance sales volume and sustainable growth.

In preparation for CSRD Respondent 6 claims that they have seen changes in the requirements from customers, and an increased expectation from society on how they should work with sustainability. Furthermore, they mention that sustainability is something that has been important for them for a longer period of time, however, CSRD changes the perspective from a more commercial point of view to doing things from a compliance perspective:

> When you look at the corporate strategy in general for all of Nova, sustainability is a strategic enabler [...], and if you look at the strategies for the respective business units, sustainability is integrated into all of them, and that is new. (Respondent 6, Nova)

During the interview with Respondent 6, it was observed that at Nova there is a clear connection between CSRD, double materiality and sustainability strategies:

> We have conducted a combined process where the double materiality assessment has yielded two key outcomes: firstly, identifying the essential aspects of ESRS to report on, which is particularly linked to CSRD requirements. Secondly, it has served as a basis for selecting priorities and focusing our (sustainability) strategy. (Respondent 6, Nova)

However, it is also mentioned during the interview that there was not a great difference in their new strategy compared to the old one.

4.4.2 Cultural Controls

Respondent 6, in addition to the annual and sustainability report, recognises sustainability as a strategic enabler. One example of how this is translated into their organisational culture is through including ESG-topics in their annual mandatory training for all employees. Nova communicates that sustainability is crucial for improving organisational performance, serving the interests of both shareholders and stakeholders:

> Our stakeholders' requirements give us confidence that our vision for our sustainability work – to be a leader in sustainability – is in line with the requirements that enable us to maximise business opportunities with a win-win-win perspective for Nova. (Annual and Sustainability Report, 2022)

This could entail that sustainability efforts are deemed to be material, both from a financial and impact perspective.

Sustainability efforts are something that the whole organisation is engaged in:

> …many want to understand how they can contribute and because there are many internal projects aimed at better integrating sustainability into their operations. (Respondent 6, Nova)

The nature of these projects often target efforts related to impact materiality.

Internal communication about sustainability is done by having frequent CEO-meetings as well as posting information on the company intranet. The communication only targets impact

materiality, as observed during the interviews. Furthermore, external communication takes place through sustainability reports, CDP responses and similar documents. Although their numerous external documents show both impact and financial materiality, there is a majority of information related to their impact materiality.

4.4.3 Cybernetic Controls

Respondent 6 describes that their system for reporting sustainability data is commonly used for evaluation of goals. The system allows them to visualise the data, enabling them to use sustainability data for reporting purposes, but also to evaluate goals and track their progression. The results can be found in their sustainability report, showing comparisons and progress to the previous year's outcome. Overall, Nova's ESG goals found in their sustainability report are quantified. In addition to comparing their emissions and other sustainability factors to last year, Nova also includes industry benchmarking.

Respondent 6 describes what can be seen as a feedback-loop, where evaluations are conducted throughout the year, for them to understand if they are working as they should and whether the business area has the prerequisites to reach their set goals:

> We don't just collect data annually. [...] When you collect data several times a year, you also have more opportunity to adapt and change than if you only do it once a year. (Respondent 2, Nova)

Apart from mentioned cybernetic controls for impact materiality, Nova also has a yearly CDP Response with quantified financial risks and opportunities, which will be further explained under administrative controls.

4.4.4 Planning

Nova's long term corporate strategy has been set by choosing four areas, where one is to be a leader in sustainability. They elaborate by saying that they aim to achieve their sustainability goals and to ensure that their sustainability is integrated in their business to meet the demands of both share- and stakeholders, communicating their focus on both impact and financial materiality When looking closer at their sustainability strategy, they have also identified four

focus areas that help them create the biggest impact and business value. For each of the four focus areas, yearly activities are set to help them progress. In addition to their own set goals, Nova's annual and sustainability report presents that they have adopted Science Based Targets (SBTi) that guide them until 2029, to reach net zero emissions.

Nova, like Zenith, plans for financial materiality by outlining strategies to seize opportunities and manage risks across short-, medium-, and long-term timeframes. They quantify impacts and address social and environmental concerns in their reports, reflecting a commitment to sustainable value creation, all in the CDP response.

4.4.5 Reward and Compensation

When looking at Nova's controls related to reward and compensation, they have a short-term incentive program which is evaluated on a yearly basis related to sustainability performance. As part of the incentive program, 5% of variable compensation is linked to impact reduction e.g. emission reduction in Scope 1-3:

> We are a small sustainability department, but the work needs to take place throughout the organisation. When you connect it to an incentive program, it also becomes clear that it will have an effect if you do not work with it. (Respondent 6, Nova)

The short-term variable compensation program that is included in Nova's remuneration policy and can be seen as a control connected to both impact and financial materiality. Despite directly targeting reducing the impact of the company's emissions, the program can also have a financial effect on the company.

4.4.6 Administrative Controls

When looking at Nova's policies and related documents, their reports range from the annual- and sustainability report, CDP Response, sustainability report, code of conduct, as well as those regulating social sustainability such as whistleblowing, human rights and diversity- and inclusion.

Nova has previously reported according to GRI standards, something that both Respondent 2 and Respondent 6 believe have helped them in preparation for CSRD. Respondent 2 explains:

> I am currently mapping all the indicators, all the KPIs, and I mostly use that document published by EFRAG where you map GRI indicators and ESRS and see which ones match each other. [...] We also use a system where we kind of "throw in" our materiality analysis and find out which data points we have to report. (Respondent 2, Nova)

As previously mentioned, Respondent 6 emphasises that the function of Nova's sustainability department is to enable sustainability in the organisation, but as they are not experts in all business areas, they want the business area's sustainability work to be conducted in each respective team. The respondent explains that they set the requirements based on the sustainability reporting directives, but that each of the areas owns and provides the necessary data from their operations. To ensure that this is done, Nova has sustainability contact persons across the organisation that helps the sustainability department with the reporting. In addition, apart from approving the annual and sustainability report, Nova's board of directors are also involved in approving the shorter-term sustainability goals and activities to reach set targets, where Respondent 6 explains that each focus area has a responsible person in the management team.

Connected to financial materiality, Respondent 6 explains that Nova's head of internal audit also is responsible for their Enterprise Risk Management, together with their internal audit committee. Apart from the committee, their finance department is also involved in handling risks. However, Nova's annual report communicates the ongoing work with their financial risks:

> The efforts concerning climate risks at Nova are still at an early stage, requiring an expansion in capacity and expertise on addressing climate risks and their implications. It is essential to disperse knowledge about climate change across the organisation. (Annual and Sustainability Report, 2022)

Nova participates in several sustainability ratings and has hired an employee to specifically handle the reporting required. Respondent 6 describes participation in the ratings as an additional way to follow up their sustainability efforts, and something that the executive team and board of directors takes into consideration when determining their performance. Ratings can both be viewed as controls for impact and financial materiality, as they aim to target emission reduction but also create financial opportunities for the company.

5. Discussion

In this section the literature review and empirical findings will be analysed and compared. The discussion is structured based on the model of analysis, which proposes that sustainability strategies can be effectively integrated into operations through leveraging MCS components.

5.1 Strategy and Management Control Systems

When examining strategy formulation in preparation for CSRD, none of the companies have made any significant changes, attributed to that they all communicate having a robust sustainability strategy. Despite this, Nova explains that there is a link between the double materiality assessment and their sustainability strategy. However, the double materiality assessment did not present many new material areas, and therefore did not alter the strategy. This appears to also be the case for Zenith and Echo alike, explaining that whilst they have identified new areas for which they need to report sustainability information, none of the new topics are expected to result in drastic changes. This finding could cause uncertainty, allowing one to question whether the scope of double materiality requirements necessitates strategic change, in line with Puroila and Mäkeläs (2019) finding about how identifying material topics can guide long-term strategies, or if increased sustainability reporting suffices.

Consequently, this finding also weakens our proposal regarding the use of MCS to implement new sustainability strategies. As Miles and Snow (2003) claim, strategic decisions must be materialised through implementation within organisational processes and structures in order for the strategy to have an impact on the organisation. Following this argumentation, previous research would therefore hold that before changes are made to strategies, we are not likely to see any changes in organisational processes and structures. However, this does not appear to hold true in the case companies, as controls targeting the CSRD's new financial materiality requirements have been observed in the operations. This suggests a counter-argument, proposing a bottom-up effect of financial materiality requirements on strategy.

The bottom-up approach can be viewed as naturally evolving, guided by overarching principles rather than specific action plans (Mintzberg & Waters, 1985). In the context of CSRD implementation, our observations in case companies demonstrate that sustainability departments take the lead while the board provides overarching guidance, suggesting a

bottom-up strategy. Although the board supports the sustainability departments' efforts regarding financial materiality, they lack detailed action plans, indicating an organic development of strategy guided by the board.

5.2 Management Control Systems and Sustainability

Before moving on to discuss each control in detail, let us consider them as a unified system. When studying organisations using the MCS Package, the observed levels of formal and informal control can affect an organisation's pattern of control mechanisms (Malmi & Brown, 2008). It is notable that examples of administrative controls, a form of formal control, for financial materiality were lacking, despite their critical role in providing the structure for the exercise of other controls (Malmi & Brown, 2008), as demonstrated in 2.4 Model of Analysis. Although we observed instances of financial materiality within planning, cybernetic control, and rewards and compensation, these were scarce, and most often observed in the CDP Responses. This scarcity raises questions about whether this observation could be a consequence of the absence of administrative controls. Furthermore, the lack of administrative controls might result in a lack of oversight in how planning and other functions are executed, as formal controls can be used to support managers in ensuring that strategies and plans are implemented (Simons, 1995). By doing so, managers can better ensure alignment between intended strategies and operational realities, thus bridging potential gaps highlighted by Simons (1995).

This lack of administrative controls is compounded by a similar absence of informal controls. As evident in Table 5, informal controls, such as cultural controls, related to financial materiality seem yet to be established. Cultural controls are typically regarded as slow to change (Malmi & Brown, 2008), which may explain the scarcity of controls related to financial materiality within this aspect. Their absence may be an indication of a lacking integration of financial materiality considerations throughout the three organisations, as individuals often acquire values and beliefs through interpreting signals from their superiors and co-workers (Crutzen et al., 2017), thus potentially affecting its implementation.

Our observations also question the reliability of the findings of the controls in the middle (planning, cybernetic, rewards and compensation) for financial materiality, as there does not seem to be sufficient guidance for how these should be exercised – which could be attributed

to the lack of administrative controls. The robust findings of impact materiality could be attributed to companies previously having to report efforts to mitigate environmental impact both out of regulatory obligation and stakeholder pressure, and have therefore already established routines, processes and values.

5.2.1 Cultural Controls

In all organisations, the use of cultural controls were rather similar, ranging from ESG-trainings, organisational meetings and internal communication on the companies respective intranets. However, most activities target reducing the organisations´ sustainability impact. When comparing cultural controls to the other controls, the organisations displayed fewer examples related to financial materiality. As noted by Traxler et al. (2023), there is a need for culture to transcend mere documentation and be tangibly experienced by employees. Despite this, most examples of financial materiality were displayed in the CDP responses for Nova and Zenith. Having acknowledged this in two of three case companies, it could be discussed whether financial materiality solely aims to increase transparency of risk in sustainability reporting, thus potentially explaining why few of the organisations displayed corresponding cultural controls. As previously mentioned however, an alternative explanation could also have to do with the slow reactiveness to change in cultural controls.

On the other hand, Traxler et al. (2023) found that a lack of alignment between values and employee experiences could affect the efficacy of other control mechanisms. With this, the lack of corresponding cultural controls for financial materiality could result in the CDP Responses and other quantifications of financial materiality to simply remain a reporting tool, thus limiting the effect it has on employee behaviours. This can be connected to research by Malmi and Brown (2008), who claim that culture can be seen as a control system when it is used to regulate behaviour. On the contrary, most organisations had several controls aligned with impact materiality. Considering that impact materiality and the organisation's environmental footprint has a more direct link to employee action, it could be questioned whether it is more difficult to establish values and cultures connected to financial materiality.

5.2.2 Cybernetic Controls

According to Malmi and Brown (2008), cybernetic controls can be used to establish accountability within an organisation, creating a link between behaviour and targets. This requires quantification of the targets, as well as a process for feedback, comparison and

adjustment in the operations (Malmi & Brown, 2008). One example of such a control for both Zenith and Nova is the use of sustainability ratings, which evaluate the organisations' environmental performance in relation to their peers. These ratings require quantification and can be used to establish accountability (Green & Welsh, 1988; Malmi & Brown, 2008) by providing a clear measure of the underlying operations that cause environmental impact. For investors and stakeholders, sustainability ratings increase transparency and enable more informed evaluation, thus establishing external accountability. Additionally, both stakeholders and shareholders can view the scrutiny provided by these ratings as a mechanism to ensure sustainable environmental practices, addressing both impact and financial materiality moving forward.

In addition to establishing accountability towards both share- and stakeholders, such external demands of information can prompt organisational adaptations in processes (Ferretti et al., 2024; Traxler et al., 2023). As described in both interviews and documents, participating in ratings and reporting in accordance with CSRD aims to increase information symmetry between companies and users of ESG information. For example, both Nova and Zenith describe their work of conducting their double materiality assessments as a method of quantifying and evaluating the materiality of the sustainability topics that they have previously worked with, whilst also identifying new topics that are material in the scope of double materiality requirements. In extension, this could result in changes in their operations, depending on their alignment with set ESG-targets and requirements.

Cybernetic controls can provide a framework for tracking specific aspects of sustainability progress (Crutzen et al., 2017). For example, all case companies have set KPI:s and targets which are evaluated at least once a year. However, the difficulties of quantifying environmental externalities, in combination with the previously mentioned lack of administrative controls, could necessitate an increased scrutiny of the feasibility of set targets.

5.2.3 Planning

Planning was the control which was one of the most observed for all case companies, both regarding impact and financial materiality. Earlier research (Crutzen et al., 2017) found that sustainability practices are not closely linked to core management practices, which appears to not hold true anymore. As sustainability has become more and more important from both a compliance and stakeholder perspective, companies have naturally linked their core

management practices to sustainability. Nova and Zenith are the most clear examples of this, as they have sustainability goals as part of their corporate strategy.

Organisations develop long-term goals to meet ESG objectives (Ferretti et al., 2024), which was evident in all the case companies. For instance, all companies had established net zero goals for GHG emissions or targets for reducing work-related fatalities, with objectives set to be achieved within three years. Ferretti et al. (2024) also found that companies particularly set suchgoals to comply with increasing legislation, such as that imposed by the CSRD. However, it appears that these goals were already in place before the CSRD came into effect, suggesting that contrary to previous research, they may have been created to meet the growing demands of stakeholders or shareholders, who have increasingly pressured companies to report on their environmental impact, rather than coercive legislation.

Often, companies prioritise long-term goals to gain legitimacy rather than planning for its instrumental value (Crutzen et al., 2017; Traxler et al., 2023), however, this did not seem to be true for double materiality implementation, as all case companies described their ambition to use the regulation as an opportunity to integrate sustainability into their operations. For example, both Zenith and Nova's long-term planning towards Net Zero has been validated by SBTi. Having their long-term planning scrutinised by an external party could be seen as evidence that they are planning for its practical value rather than to simply gain legitimacy.

Even though the double materiality assessment has now been approved in Nova and Zenith, the potential effects of the changes made might be delayed. For this reason, noticeable changes may solely be seen in the sustainability report at first, and the report could then be seen as a control mechanism that drives implementation of these set goals (Traxler et al., 2023). On that note, all three companies had rigorous planning and goals (short-, long-term and action plans) for impact materiality, which could also be seen in the content of the company documents. However, whilst planning for financial materiality could be observed in most cases, it did not seem to transcend mere documentation.

5.2.4 Reward and Compensation

It became clear that the part of the remuneration policy that had a sustainability factor, tried to speak to the extrinsic motivation of employees. However, during the interviews, most believed that the extrinsic motivation to do something purposeful, could increase

performance and thus have an impact on the environment (Traxler et al., 2020). Remuneration policies connected to sustainability aim to reduce the organisation's impact on the environment, which was mentioned during the interviews when asked about if they believed that the policy had any presumed impact. However, when determining the financial materiality of executive remuneration, the monetary reward was taken into consideration. Not much else could be said about the materiality aspect of reward and compensation.

Earlier research (Traxler et al., 2023; Crutzen et al., 2017), found little evidence of reward and compensation within sustainability efforts, which was attributed to the fact that sustainability measures are not only based on monetary incentive, but of moral ones. This is not true for the case companies in this thesis, as they all had rewards connected to sustainability metrics. The emergence of remuneration policies incorporating sustainability factors can be attributed to legislative mandates surrounding sustainability reporting, unlike before when stakeholder pressure primarily drove sustainability efforts. This could potentially explain the integration of sustainability metrics into remuneration policies. In extension, monetary incentives can therefore be seen as a way to motivate further commitment, past simply fulfilling the reporting requirements. As Ferretti et al. (2024) argued, reward and compensation can also increase accountability and thereby promote sustainability commitment, which could also be a reasoning behind our finding.

Another possible reason for companies to include ESG-performance in their remuneration policies could be that top management may not be interested in pursuing sustainability projects that contradict financial objectives (Crutzen et al., 2017). When referring to interviews with case companies however, respondents from the case companies seem to be in agreement, claiming that their top managers are involved and supportive of the organisations' sustainability work. Therefore, contrary to previous research, one could question if the increased pressures from both stakeholders, shareholders and regulations since 2017 have affected the use of the control in relation to sustainability and that it now does not contradict financial objectives. If this holds true, including sustainability factors in remuneration policies could be seen as a financial opportunity.

5.2.5 Administrative Controls

All three case companies demonstrated robust administrative controls to manage impact materiality, evident partly from the extensive public information available on their

sustainability endeavours. Consistent with prior research (Ferretti et al., 2024), dedicated units and formal management structures were established to oversee sustainability initiatives. Nova, in particular, made notable adjustments to its administrative controls in preparation for CSRD, hiring a new role specifically responsible for sustainability reporting and rankings. While similar structural changes were less pronounced in other case companies, there were observable signs in Echo of increased involvement from the financial department.

This trend suggests a growing integration of different departments in sustainability efforts and reporting, particularly as financial materiality bridges the financial and sustainability domains, as noted in interviews with Echo. Consequently, this increased administrative integration could lead to a securement of strategy implementation across multiple organisational levels (Marginson, 2002). This integration can also be viewed as a step toward a more goal-aligned organisation, as advocated by management control theories (Langfield-Smith, 1997). Enhanced departmental integration is also believed to empower employees across all levels to contribute to sustainability endeavours (Traxler et al., 2023), a sentiment echoed in interview responses where unanimous agreement was reached regarding active employee engagement in sustainability initiatives.

Throughout the interviews with all case companies, it became evident that their respective boards are actively engaged in the sustainability initiatives linked to CSRD. This heightened involvement may stem from the heightened accountability of boards, as a result of it becoming mandatory for them to sign sustainability reports that are subject to auditing, an obligation that was not present under the previous NFRD. The board's accountability may have prompted their deeper involvement in sustainability efforts. Additionally, prior research (Traxler et al., 2020) suggests that a more integrated board could contribute to a higher quality of sustainability reporting, potentially explaining the increased board engagement observed.

6. Conclusion

The purpose of this study was to investigate how management controls can explain how companies integrate double materiality requirements. The study's analytical model suggested that CSRD and its new requirements for financial and impact materiality will entail changes in the sustainability strategies of organisations. Furthermore, it was proposed that organisations can effectively translate sustainability strategies into operations through leveraging MCS components, ensuring the regulations' intended impact.

This thesis contributes to theory, and answers the research question, by concluding that the MCS package can be used to explain the level of double materiality integration, through plotting the completeness of operationalised controls corresponding to impact and financial materiality. This thesis points to that whilst companies have complete control systems for managing their impact, there is an observed lack of corresponding controls for financial materiality, implying a lower level of integration of double materiality requirements.

Contrary to our proposal, the findings suggest that the changes regarding financial materiality are happening bottom-up, where changes are guided by the operations, rather than the board. The reasoning behind this is that examples of financial materiality could be seen in planning, cybernetic controls and reward and compensation, but not within administrative controls. These findings can be used to recognise which prerequisites organisations have that enable them to translate sustainability reporting into activities visible in their operations.

The comparison of organisations reveals similarities in their use of cultural controls targeting their organisational impact. However, there were few examples of cultural controls related to financial materiality, which could be attributed to their slow-changing nature. This suggests that a lack of cultural controls could limit the impact of financial materiality on employee behaviour, thus potentially decreasing the operational effect of the regulation. Conversely, organisations displayed more controls aligned with impact materiality, which could be a result of sustainability impact being easier to connect directly to employee action.

Cybernetic controls such as sustainability targets and external ratings foster accountability, addressing both environmental impact and financial materiality, while also promoting information symmetry between companies and stakeholders. Despite observing cybernetic

controls for both impact and financial materiality, the difficulty of quantifying externalities and lack of administrative controls encourages increased scrutiny.

Planning is crucial for both impact and financial materiality, reflecting a trend towards integrating sustainability into core management practices. Companies communicate CSRD not as a chance to gain legitimacy, but rather as an opportunity to embed sustainability into operations. Notably, while planning for impact materiality is strong, planning for financial materiality seems less integrated into organisational behaviour beyond documentation.

Whilst previous research suggested the contrary, our findings showed that remuneration policies included sustainability metrics to motivate employees and align with regulatory requirements. Monetary rewards seem to target engagement beyond reporting obligations, driving commitment to sustainability goals and increasing accountability.

Robust administrative controls for managing impact materiality were found, with designated units overseeing sustainability efforts. Adjustments in how the sustainability departments work in preparation for CSRD was observed, either appointing new roles or increased involvement from other departments. This aligns with proposed theories and empowers employees to contribute to sustainability efforts. Furthermore, the results found heightened board involvement in sustainability initiatives, driven by increased accountability under CSRD. Finally, as mentioned, administrative controls for financial materiality were scarce.

The findings suggest that companies due to report in accordance with CSRD in the coming years can use this study as a framework or compass for implementing double materiality, resulting in a practical contribution. The lack of a clear structure for financial materiality might prompt organisations to create an administrational foundation before implementation, which might help to ensure that impact and financial materiality are equally integrated. Although integrating double materiality has proven not to be as simple as a ‘tick in the box’, ticking boxes could help companies incorporate double materiality into their operations – as CSRD intended.

6.1 Theoretical Limitations

As all case companies are at early stages in the process of implementing CSRD, it can be challenging to gauge its true effects on both strategy and controls. Moreover, during the process of writing this thesis the Swedish Government submitted a proposal to the Swedish Parliament for postponing the legislation of CSRD in Sweden. Although it is due to be decided on the 29th of May 2024, several case companies mentioned that the postponing of the regulation had affected their integration of financial materiality in particular. Contrary to our proposed analytical model, the case companies have not made any major changes to their strategies in preparation for CSRD. It is therefore possible to question whether the regulation truly necessitates strategic change, and consequently in their operations, or whether increased transparency in sustainability reporting suffices. These limitations underscore the need for caution in interpreting the study's findings and highlight areas for future research.

6.2 Suggestions for Further Research

Replicating the study after the first mandated reporting period would allow for an interesting comparison, gauging the true effects of double materiality. Additionally, this study mainly includes respondents from the sustainability department or those who work in close proximity. Including additional respondents post the implementation of CSRD could arguably give a more holistic view of how management controls can explain how companies integrate double materiality requirements. Finally, as we observed differences in the completeness of control systems between case companies, it would be interesting comparing how industry characteristics affect the use of MCS.

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Appendix

Appendix I: Interview Guide

Themes	**Question**
Introduction	We want to investigate how companies/organisations work to implement the requirements of double materiality into their operations in preparation for CSRD. Explanation of sustainability impact vs financial risks and opportunities: Sustainable: The impact of a company's operations on the environment and society at large. Financial: The financial risks and opportunities resulting from the company's operations, including costs, impact on image, capital costs, and potential expenses due to risks. RQ: How do companies operationalize double materiality requirements in preparation for CSRD compliance?
About the respondent	Could you tell us a bit about yourself and your role within the company?
Strategy, CSRD and Double Materiality	
Background CSRD	Have you noticed any changes in the intensity of sustainability efforts leading up to the implementation of CSRD?
Sustainability strategies	How has the organisation worked on strategy formulation ahead of the implementation of CSRD? Do you perceive that the double materiality assessment has influenced the design of your strategy?
Management Control Systems Package and Double Materiality	
Planning	How does the organisation work with planning in preparation for CSRD? (Goal, schedule, etc.) In what way do you take sustainability impact into account when working with sustainability goals, both in the short and long term? How do you take financial risks (opportunities) into account when working with sustainability goals, both in the short and long term?

Cultural	How do you feel that the topic of sustainability is prioritised within your organisation? - In what way are employees given the opportunity to participate? *(including both financial and environmental aspects such as environmental and societal consequences in education, meetings, etc.)* In what way does the organisation communicate internally about your social and environmental impact? And how does the organisation internally communicate your responsibility for managing the business's financial risks and opportunities?
Cybernetic	How do you quantify and set goals for your sustainability impact? (do you integrate sustainability data into your business system, for example) - *What kind of sustainability data do you work with? (Financial, environmental metrics related to sustainability initiatives)* How do you identify financial risks linked to the impact of your business (social, environmental)? How are they quantified? How is the outcome of set goals evaluated, and how does it affect the company's operations?
Rewards and Compensation	How do you work with initiative or incentive programs regarding sustainability? How do these programs promote work with your sustainability impact? (Bonuses, competitions, compensation, etc.)
Administrative	How has work with your sustainability impact been organised within the organisation? (appointed departments/teams/employees specifically working on sustainability, outsourcing) - *How does collaboration with other departments look like?* Is it the same department/team/employees that are responsible for managing financial risks resulting from operations? (linked to the environment/society around)

Appendix II: Compilation of Documents Used

	Echo	**Zenith**	**Nova**
CDP Response	No	Yes	Yes
Annual/Sus.	Q3 interim report 23-24	Annual + Sustainability Report 2023	Annual + Sustainability Report 2022
	Sustainability Report 22-23		
Social		Health Safety Well-Being Policy	Diversity and Inclusion Policy
		Safety Process for Suppliers	Conflict Minerals Policy
		OHS* Standards Supplier	Human Rights Policy
Environmental		Net Zero 2040 Plan	Environmental Policy
		Environmental Policy for Business Partners	
Governance	External Code of Conduct	Code of Business Ethics	Code of Conduct
	Remuneration Policy		Whistleblowing Policy
Some documents have been renamed for anonymity purposes.			
*Occupational Health and Safety			

Appendix III: Observations of Controls in Companies

	Echo	
	Impact	**Financial**
Cultural	**Interim Q3 report:** Cost leadership strategy in alignment with environmental impact. **Respondent 3, 4, 5:** Company-wide sustainability encouragement through education/workshops. Communication through sustainability reports, office screens etc. **Respondent 3:** Sustainability managers participate in department-specific meetings to raise awareness about sustainability.	**Respondent 4:** "That is sustainability work for me, that we become more efficient in everything that we do." (Explains that resource efficiency of plastic lowers consumption and costs.)
Cybernetic	**Sustainability report:** Comparison to previous year outcome in sustainability report. **Sustainability report:** Targets set for yearly assessment of impact, i.e. reduce C02 by 3% yearly in logistics and packaging. **Sustainability report, Respondent 3, 4:** Action for increased resource efficiency, i.e. less plastic for shipping through process improvement.	**Respondent 3, 4, 5:** Have yet to quantify financial risks and opportunities. **Sustainability report, Respondent 3, 4:** The action plan för increased efficiency also decreases cost of material for packaging.
Planning	**Interim Q3 report:** Short- and long term goals for sustainability strategy. **Sustainability report, Respondent 3, 4:** Planning for choice of materials and increased resource efficiency, i.e. plastic for shipping. **Respondent 3, 4, 5, Interim Q3 report, Sustainability Report:** No mention of tangible activities for short-term action.	**Sustainability report, Respondent 3, 4:** Planning for choice of materials and increased resource efficiency, i.e. plastic for shipping.
Reward & Compensation	**Remuneration Policy:** mentions promoting sustainability using quantitative measures, but no quantitative information available to analyse.	**Remuneration Policy:** monetary reward

Administrative	**Respondent 3:** PLM-system in place to track materials used in each product. **Supplier code of conduct/code of conduct** **Respondent 3:** Independent sustainability department introduced last year. **Respondent 3, 5:** Sustainability representatives in the organisation. **Respondent 3, 5:** Greater involvement from other departments.	**Respondent 4:** There is not one predetermined person or department that administers the risks and opportunities, but it is the person in charge of the risk/opportunity that does. **Respondent 5:** Newly chosen representative from the finance department to participate in sustainability meetings. **No public sustainability ratings** (or mentioning of such in interviews).

	Zenith	
	Impact	**Financial**
Cultural	**Respondent 1:** "We should not look at this as from a, you know, ´ticking the box´ type of exercise. We should take this opportunity to embed sustainability in the organisation". **Respondent 1, 7, Annual/Sustainability Report:** Training, as well as ESG-upskilling, offered to all employees.	**Respondent 1:** Acknowledges that working with ESG can be seen as a competitive advantage, both when it comes to developing efficient products and attracting talent. **Respondent 1, Annual/Sustainability Report:** The Sustainability department sits under function for marketing and external communication. **Annual/Sustainability Report:** Training offered to all employees as part of a strategy to attract and retain talent.
Cybernetic	**Annual/Sustainability Report:** Comparison to previous year outcome in sustainability report. **Environmental Policy for Business Partners:** Requirements for suppliers to calculate and report upon request, their environmental impact. **Respondent 1, 7, Annual/Sustainability Report, Net Zero 2040 Plan:** Quantified ESG goals. **Respondent 1:** Short- and long term OKRs (Objective and Key Results) **Annual/Sustainability Report:** Industry benchmarking in order to understand how they perform compared to competitors **Annual/Sustainability Report:** SBTi.	**Annual/Sustainability Report:** On a yearly basis, an inventory of all risks under the responsibility of the S&CR unit, including climate-related risks, is conducted.

Planning	**CDP Response:** Plan to materialise opportunities and mitigate impact on a short-, medium- and long term. **Respondent 1:** Global company goals are set with specific actions for specific regions in order to e.g. minimise supplier fatalities.	**CDP Response**: Plan to materialise CDP Response opportunities and mitigate threats on a short-, medium- and long term.
Reward & Compensation	**Annual/Sustainability Report. Respondent 7:** Long Term Variable Compensation (LTV) related to ESG	**Annual/Sustainability Report. Respondent 7:** Long Term Variable Compensation (LTV) related to ESG
Administrative	**CDP Response Document** **Code of Business Ethics** **Business Partner Environmental Requirements** **Respondent 1, Annual/Sustainability Report:** The Sustainability department sits under function for marketing and external communication. **Respondent 1, Annual/Sustainability Report:** Materiality assessment was approved by the board in 2023. **Respondent 1:** Certain employees working with ESG matters as part of their workload, despite not having a designated sustainability role. Overall sustainability work set by group function. **Annual/Sustainability Report:** Participates in ESG ratings where sustainability impact is scrutinised.	**Annual/Sustainability Report:** Each unit is responsible for assessing their own risks and opportunities, according to the risk framework set by the central group function. **CDP Response Document** **Code of Business Ethics:** includes compass for good governance towards both share- and stakeholders. **Respondent 1, Annual/Sustainability Report:** Enterprise Risk Management (ERM) Framework identifying significance, likelihood and estimated impact if materialised. **Annual/Sustainability Report:** Responsibility for climate-related risks is delegated to the central Sustainability & Corporate Responsibility (S&CR) unit which is a cross-functional team engaging with all Group functions, Business- and Market areas. **Respondent 1, Annual/Sustainability Report:** The Sustainability department sits under function for marketing and external communication. **Annual/Sustainability Report:** ESG ratings communicated as a method of stakeholder engagement with investors and analysts.

	Nova	
	Impact	**Financial**
Cultural	**Respondent 2, 6:** Mandatory training for all employees on a yearly basis, includes ESG topics. **Respondent 6:** Frequent CEO-meetings about sustainability as well as publishing of sustainability news within the company on the intranet	**Respondent 6, Annual/Sustainability Report:** Communicates sustainability work as a strategic enabler, helping them to become the industry leader.
Cybernetic	**Annual/Sustainability Report:** Comparison to previous year outcome in sustainability report. **Respondent 2, 6, Annual/Sustainability Report:** Industry benchmarking in order to understand how they perform compared to competitors. **Respondent 2, 6, Annual/Sustainability Report:** Quantified ESG goals. **Respondent 6, Annual/Sustainability Report:** The long term strategy for reaching four main focus areas are translated into yearly activities to progress and improve. **Annual/Sustainability Report, Environmental Policy:** KPIs related to long term goals. **Respondent 2, 6, Annual/Sustainability Report:** SBTi.	**Respondent 2, 6, Annual/Sustainability Report:** Sustainability ratings are referred to as a way for investors to compare them to other companies in the industry. **CDP Response:** Quantified risks for potential financial impact of e.g. climate related risks. **Respondent 2:** Climate issues are monitored on a continuous basis, and in particular during yearly reviews prior to reporting on climate-related KPIs through a GRI-based sustainability report.
Planning	**Respondent 6, Annual/Sustainability Report:** Long term strategy set by choosing four main focus areas. **Annual/Sustainability Report:** SBTi used to guide sustainability strategy until 2029.	**Annual/Sustainability Report:** Strategy includes plans to drive innovation in order to minimise costs and sustainability impact, while meeting customer demands.
Reward & Compensation	**Respondent 6, Annual/Sustainability Report:** 5% of short term incentive programs on a yearly basis evaluated on sustainability performance, e.g. emission reduction in Scope 1-3.	**Respondent 6, Annual/Sustainability Report:** 5% of short term incentive programs on a yearly basis evaluated on sustainability performance, e.g. emission reduction in Scope 1-3.

Administrative	**CDP Response Document** **Respondent 2, 6:** Hired a new person to handle sustainability reporting and ratings in preparation of CSRD. **Respondent 6:** Board of directors approves sustainability goals and activities to reach targets. **Respondent 2, 6:** Contact persons across the organisation that help with sustainability reporting. **Respondent 6:** Describes participation in the ratings as an additional way to follow up their sustainability efforts.	**CDP Response Document** **Annual/Sustainability Report:** Have created a framework for green financing. Have during the year emitted a green bond and sustainability linked rolling credit facility. **Respondent 2:** Sustainability ratings are used as a benchmark when comparing performance to competitors